SUB-05-06

Subdivision – 1200 Tamarisk

(32 Lot PUD)

THIS FILE WAS DENIED THEN APPEALED TO THE WEST LINN PLANNING COMMISSION

See File No. MISC-06-46

North property line, west half on tax lot 1500. Note-lacks drainage channel

North property line, northeast visual showing lack of drainage channel

Site Photos 2014
Willamette Dr & Shady Hollow Way
S&A 2293

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

Looking at north corner of tax lot 1500. Culvert outlet is 25' northeast of north property corner

Looking northwest

Site Photos 2014
Willamette Dr & Shady Hollow Way
S&A 2293

Schott & Associates
P.O. Box 589
Aurora, OR. 97002
503.678.6007

APOLLO DRAIN & ROOTER INC
2208 NW BIRDSDALE DR STE 8
GRESHAM OR 97030
503-239-8801
Fax : 503-669-9568
CCB 49418
Wa Lic # APOLLDR995MP

Proposal

Bid # 4126

Bill to:	CLAY MOORHEAD 3757 ROSEPARK DR W LINN OR 97068	Name Contact Job Site Job City	CLAY MOORHEAD REALTOR FOR BUYER 3757 ROSEPARK DR W LINN OR 97068
Phone	503-7489545		
EMail	CLAYM@JOHNLSCOTT.COM		

The work described below will be completed for the sum of: 9750.00
The amount of 4875.00 will be paid upon the execution of this Agreement.

We hereby propose to furnish all the materials and perform all the labor necessary for the completion of:
Remove a 3FT X 7FT section of asphalt in street and excavate with a depth of 10FT to expose existing sewer line. Cut and remove bad concrete section of pipe between existing 3034 pipe and man hole and instal new section of 3034 pipe just before man hole tap. Cover hole with steel plate at end of working day. Price includes flagging and traffic control plan for city. Price includes haul away native material and backfill with 3/4 minus rock and asphalt repair. Includes compaction testing for backfill and asphalt.

Apollo will leave nicely rounded mound where excavation has taken place. Customer agrees that mound will be left. Apollo recommends mound to be left for proper settling.
We will maintain integrity of existing utilities which have been located as per local codes and will confer with these utility companies as needed. Price includes all material, labor, permits, inspections, and mobilization. All work performed using OSHA-approved equipment and safety practices and will conform to city and or state plumbing code.
This proposal does Not include rain drain tie in if needed. If this line is holding water/roots, or if line has belly after burst/replacement added cost can incur.
Exclusions: Not responsible for removal or replacement of sheetrock or tile. Not responsible for electrical grounding. Excludes repairs of any existing utilities not discovered in locate prior to excavation. Directional bore method to be used where possible. If trench excavation is required, a change order would be required. Price does not include unforeseen impassable objects in route of work bid herein. Every precaution will be made to prevent damage to landscaping. Customer will be responsible for removal or replacement of landscaping in the route of work bid herein. If extreme site conditions, permits/fees beyond normal scope of line repair/replacement or expanded services are required, a Change order may be required.

Respectfully submitted by Brandon Bird Date 02/04/14

By signing this proposal, I understand, acknowledge & agree to all the additional terms, conditions and exclusions included herein. The above prices, specifications, conditions and exclusions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Accepted:

Signature _____ Date _____

Customer Copy

Additional Terms & Conditions Governing this Proposal / Contract

1) **EXISTING LANDSCAPING:** Unless otherwise provided for within this contract or it's attachments, the *Contractor* will in no way, shape or form be held responsible for replacement or repair to pre-existing landscaping, either damaged or destroyed by any means deemed necessary to complete the project. Replacement and/or repair to such landscaping shall be the sole responsibility of the customer. For the purposes of this contract, the term *Landscaping* shall include, but is not limited to: grass or sod; trees, bushes, shrubs, annual and perennial flowers, bulbs & tubers; fencing of any nature, decorative walls or terracing of any nature, driveways & walkways of any nature, above ground or subsurface irrigation systems, decorative lighting of any nature.

2) **INSPECTIONS:** Contractor guarantees to customer that all inspections required by either city, county, state or federal regulation, or any combination thereof, shall be done on all work to be performed by the contractor.

3) **SITE CONDITIONS:** Customer should be made aware that the use of heavy machinery on a project site inherently results in tracks, tire ruts & ground settling. Though the contractor shall exercise caution in keeping this condition to a minimum, the contractor shall not be held responsible for any/all damages caused by tracks, ruts or abnormal ground settling caused by any reason whatsoever, including, but not limited to, prevailing weather conditions.

4) **ADDITIONAL CHARGES:** The following conditions or situations will result in additional charges to the contract:

a) additional & unexpected septic tanks or cesspools discovered which must be pumped and/or abandoned per city, county, state or federal codes, or any combination thereof;
b) removal of rocks larger than thirty-six (36) inches in diameter;
c) additional or unexpected concrete & asphalt cutting and/or replacement;
d) concrete thicker than 4'6", or rebar/mesh wire that exists in floor;
e) cleaning chemicals such as lye, sulfuric acid, etc., standing in pipes;
f) additional or unexpected pumping of waste from cesspool, holding or septic tanks, and drywells;
g) if water service line is damaged or impacted during sewer replacement.

Customer further authorizes the contractor to perform these additional services & assess these additional charges without additional notification from the contractor.

5) **PRE-EXISTING CONDITIONS:** Customer represents that all water and waste disposal systems are in good repair and condition, and agrees to hold contractor harmless for the discovery of any of the following defective conditions:

a) improper or faulty plumbing, per code definition;
b) leaky or defective traps;
c) hidden or unknown lead piping;
d) rusted or defective pipes;
e) corrosion or unusual restrictions due to minerals or hard water build-up;
f) cleaning chemicals such as lye, sulfuric acid, etc;
g) lines which are settled, broken, deteriorated or damaged by any means whatsoever;
h) defective roofing.

6) **EXCLUSIONS:**

a) contractor is not responsible for replacement of any sheetrock that was removed in order to access pipes or drain lines;
b) contractor is not responsible for electrical grounding of a new or repaired water service line;
c) underground or undisclosed lines, such as oil, gas, water, heating;
d) contractor is not responsible for repairs for damage to any existing utilities not discovered in locate prior to excavation;
e) contract price does not include replacement of any tile removed by contractor;
f) contract price does not include unforeseen impassable objects in route of work bid herein;
g) every precaution will be made to prevent damage to landscaping and irrigation systems. Homeowner will be responsible for removal or replacement of landscaping in the route of work bid herein;
h) contractor does not have the ability to match the color of new concrete with existing concrete.

7) **CHANGE OF WORK ORDERED:** Customer reserves the right to order changes in said work; unless otherwise provided for herein, all such orders shall be in writing and become an addendum to the original contract. If the cost of the job thereby is increased or decreased, appropriate adjustments in the contract price shall be made. Contractor reserves the right to assess a "Change of Work Order" fee.

8) **CONSTRUCTION & MECHANIC'S LIENS:** Contractor will keep said premises free from all construction, mechanic's and other liens by reason of any materials or labor to be furnished to contractor by others. However, nothing herein shall prevent the contractor from filing a construction lien on contractor's own behalf to secure payment of the money to become due under this contract should contractor deem it necessary.

9) **WARRANTIES:** Contractor warrants its' work to be free from defects in material and workmanship for a period of one (1) year from the completion of this project. **All warranties are VOID if payment is not made when due.** Under this warranty, the contractor is not responsible for the following:

a) defective conditions listed in paragraph five (5) above;
b) defects & failures from mistreatment or neglect;
c) defects & failures from intervening causes, including, but not limited to improvement causing heavy weight upon sewer lines;
d) removal of excess root penetration which cannot be removed by typical sewer cleaning equipment, but require special heavy equipment or pipe replacement.

10) **FINANCE CHARGES:** The signing of this contract shall not be construed as an extension of credit by the contractor to the customer. However, should the balance owing on this contract not be paid as stipulated herein, a finance charge will be computed on the unpaid balance at a periodic rate of one and one-half percent (1 ½%) per month, ANNUAL RATE OF EIGHTEEN PERCENT (18%) , calculated daily until balance is paid in full.

11) **NSF FEES**: Should the customer pay for services rendered under this contract by personal or company check, and should the customer's bank refuse payment on the check for whatever reason whatsoever, customer shall incur an NSF fee in the amount of twenty-five dollars ($25.00) for each and every time said check is presented to customer's bank for payment and refused or returned.

12) **DEFAULT INDEMNIFICATION:** Unless otherwise provided for herein, this contract shall be considered to be in default should the customer not pay the balance owing on the contract within thirty (30) days of the date of completion of the project. In the event of default, customer agrees to pay any and all collection costs and reasonable attorney fees incurred by the contractor, whether or not a suit or other action is instituted by the contractor. These costs can include, but are not limited to (a) lien title search fees; (b) lien recording fees; (c) postage; (d) collection agent fees; (e) court filing fees;
(f) notary fees.

Consumer Protection Notice
Actions to Take When Hiring a Contractor
(ORS 701.330 (1))

TAKE ACTION TO HELP MAKE YOUR PROJECT SUCCESSFUL

1. Make sure your contractor is properly licensed before you sign a contract. Visit www.oregon.gov/ccb, and click on the link, **Check on a Contractor's License**, or call our offices at 503-378-4621. To be licensed in Oregon, contractors must take training and pass a test on business practices and law. Licensing is not a guarantee of the contractor's work.

- **A license also requires the contractor to have a surety bond and liability insurance** - Depending on the license endorsement or category, the CCB surety bond provides from $5,000 to $20,000 coverage if the contractor is ordered to pay damages in contract disputes. Insurance coverage provides from $100,000 to $500,000 in general liability for property damage and bodily injury caused by the contractor.
- **If your contractor is not licensed** - the CCB bond and dispute resolution services will not be available to you.

2. What you should know about bids, contracts, and change orders: GET IT IN WRITING! Always get bids, the contract, and any changes to the contract in writing. Make sure the contractor name, CCB number, and contact information are included on any written documents related to your project.

- **Bids** - *Do not automatically accept the lowest bid* - A low bid may make it necessary for the contractor to use lower quality materials and to cut corners in workmanship.
- **Contracts and Change Orders** - *Always get it in writing.* Your contractor is required to provide a written contract if the contract price is more than $2000. The CCB recommends that all contracts be in writing.
- **Make sure the contractor's name, CCB number, and contact information** is included in the contract.
- **For your protection** - *Contracts should be as detailed as possible.* Some items to include are materials and costs, permits, estimated start and completion dates, debris removal, and arbitration clauses.
- **Read and understand your contract before signing it** - Don't be pressured into signing your contract without taking the time needed to go through it. Make sure it includes enough details to avoid misunderstandings and to protect you and your property.

3. Additional contract information you should know:

- **A Payment Schedule** - should be included in the contract. Stick to the schedule and never pay in full for a project before the work is complete.
- **Special Note on Liens** - Subcontractors and material suppliers that work on your project are often paid by the general contractor. If a general contractor fails to pay, the subcontractor may file a lien on your property. For information on construction liens, visit the CCB's Consumer Help Page at www.oregon.gov/ccb, or contact an attorney.
- **Warranty on new residential construction** - Contractors must make an offer of a warranty when constructing a new residential structure. Consumers may accept or refuse the warranty.

4. If you should have a problem with your contractor - You can file a complaint with the CCB against a **licensed** contractor within one year of the substantial completion of work on your project. Contact the CCB office at 503-378-4621 for help.

NOTICE OF PROCEDURE
Regarding Residential Construction
Arbitrations and Lawsuits (ORS 701.330(2))

Oregon law contains important requirements that homeowners must follow before starting an arbitration or court action against any contractor, subcontractor, or supplier (materials or equipment) for construction defects.

Before you start an arbitration or court action, you must do the following:

1. Deliver a written notice of any conditions that you believe are defective to the contractor, subcontractor, or supplier that you believe is responsible for the alleged defect.
2. Allow the contractor, subcontractor, supplier, or its agent, to visually inspect the possible defects and also allow the contractor, subcontractor, or supplier to do reasonable testing.
3. Provide the contractor, subcontractor, supplier, or its agent, the opportunity to make an offer to repair or pay for the defects. You are not obligated to accept any offer made.

There are strict procedures and deadlines that must be followed under Oregon law. Failure to follow those procedures or meet those deadlines will affect your right to start an arbitration or court action.

You should contact an attorney for information on the procedures and deadlines required under Oregon law.

Your contractor is supplying this notice to you as required by Oregon law.

Information Notice to Owner About
CONSTRUCTION LIENS (ORS 87.093)

This is not a lien. Your contractor is required by law to provide this notice to inform you about construction lien laws. This notice explains the construction lien law, and gives steps you can take to protect your property from a valid lien.

As an owner, you should read this information notice carefully. This information notice is required to be given if you contract for residential construction or remodeling, if you are buying a new home, or at any time the contract price exceeds $2,000.

- Under Oregon law, your contractor and others who provide labor, materials, equipment, or services to your project may be able to claim payment from your property if they have not been paid. That claim is called a Construction Lien.
- If your contractor does not pay subcontractors, employees, rental equipment dealers, materials suppliers, or does not make other legally required payments, those who are owed money may place a lien against your property for payment. **It is in your best interest to verify that all bills related to your contract are paid, even if you have paid your contractor in full.**
- If you occupy or will occupy your home, persons who supply materials, labor, equipment, or services ordered by your contractor are permitted by law to file a lien against your property only if they have sent you a timely Notice of Right to Lien (which is different from this Information Notice), before or during construction. If you enter into a contract to buy a newlybuilt, partially-built, or newly-remodeled home, a lien may be claimed even though you have not received a Notice of Right to a Lien. If you do not occupy the building, a Notice of Right to Lien is not required prior to filing a lien.

This notice is not intended to be a complete analysis of the law. You should consult an attorney for more information.

Common Questions and Answers About Construction Liens

Can someone record a construction lien even if I pay my contractor? Yes. Anyone who has not been paid for labor, material, equipment, or services on your project and has provided you with a valid Notice of Right to Lien has the right to record a construction lien.

What is a Notice of Right to Lien? A Notice of a Right to Lien is sent to you by persons who have provided labor, materials, or equipment to your construction project. It protects their construction lien rights against your property.

What should I do when I receive a Notice of Right to Lien? Don't ignore it. Find out what arrangements your contractor has made to pay the sender of the Notice of Right to Lien.

When do construction liens need to be recorded? In Oregon, construction liens generally need to be recorded within 75 days from the date the project was substantially completed, or 75 days from the date that the lien claimant stopped providing labor, material, equipment, or services, whichever happened first. To enforce a lien, the lien holder must file a lawsuit in a proper court within 120 days of the date the lien was filed.

Steps That Consumers Can Take to Protect Themselves

- **Contact the Construction Contractors Board (CCB) and confirm that your contractor is licensed**. The law requires all construction contractors to be licensed with the CCB. Check a contractor's license online at the CCB consumer website: www.hirealicensedcontractor.com, or call 503-378-4621.
- **Review the Consumer Protection Notice (ORS 701.330(1))**, which your contractor must provide to you at the time of contract on a residential structure.
- **Consider using the services of an escrow agent** to protect your interests. Consult your attorney to find out whether your escrow agent will protect you against liens when making payments.
- **Contact a title company about obtaining a title policy** that will protect you from construction lien claims.
- **Find out what precautions, if any, will be taken** by your contractor, lending institution, and architect to protect your project from construction liens.
- **Ask the contractor to get lien waivers or lien releases** from every subcontractor, materials provider, equipment provider, and anyone else the contractor is responsible for paying. Do this before you give your contractor a progress payment.
- **Have a written contract with your contractor**. A written contract is required for projects greater than $2,000. An original contractor that fails to provide a written contract as required by law, may not place a construction lien against the owner's property.
- **If you receive a Notice of Right to Lien, ask for a statement of the reasonable value of the materials, labor, equipment, or services** provided to your project from everyone who sends you a Notice of Right to Lien. If the information is not provided in a timely manner, the sender of the Notice of Right to Lien may still be able to file a construction lien, but will not be entitled to attorney fees.
- **When you pay your contractor, write checks made jointly payable to the contractor, subcontractors, materials, equipment, or services providers**. The checks name both the contractor and the subcontractor, materials or equipment provider. The checks can only be cashed if both the contractor and the subcontractor, materials or equipment provider endorses it. This ensures that the subcontractor and other providers will be paid by your contractor, and can eliminate the risk of a lien on your property.
- **Should you have a dispute with your contractor**, you may be able to file a complaint with the CCB and be reimbursed in whole or in part from the contractor's bond. For more details about help available through the agency, write to the CCB at PO Box 14140, Salem, OR 97309-5052 or call 503-378-4621.
- **Consult an attorney**. If you do not have an attorney, consider contacting the Oregon State Bar Referral Service at 503-684-3763 or 1-800-452-7636.

NOTICE TO CUSTOMER
(Washington State)

This contractor is registered with the state of Washington, Registration No. APOLLDR995MP, as a general contractor and has posted with the State a bond or cash deposit of $12,000 for the purpose of satisfying claims against the contractor for negligent or improper work or breach of contract in the conduct of the contractor's business. The expiration date of this contractor's registration is August 16, 2008, and renewed every two (2) years thereafter.

THIS BOND OR CASH DEPOSIT MAY NOT BE SUFFICIENT TO COVER A CLAIM WHICH MIGHT ARISE FROM THE WORK DONE UNDER YOUR CONTRACT.

This bond or deposit is not for your exclusive use because it covers all work performed by this contractor. The bond or deposit is intended to pay valid claims up to $12,000, that you and other customers, suppliers, Subcontractors, or taxing authorities may have.

FOR GREATER PROTECTION, YOU MAY WITHHOLD A PERCENTAGE OF YOUR CONTRACT.

You may withhold a contractually defined percentage of your construction contract as retainage for a stated period of time to provide protection to you and help insure that your project will be completed as required by your contract.

YOUR PROPERTY MAY BE LIENED.

If any supplier of materials used in your construction project or any employee of the contractor or subcontractor is not paid by the contractor or subcontractor on your job, your property may be liened to force payment and you could pay twice for the same work.

FOR ADDITIONAL PROTECTION, YOU MAY REQUEST THE CONTRACTOR TO PROVIDE YOU WITH ORIGINAL "LIEN RELEASE" DOCUMENTS FROM EACH SUPPLIER OR SUBCONTRACTOR ON YOUR PROJECT.

The contractor is required to provide you with further information about lien release documents if you request it. General information is also available from the Department of Labor and Industries.

SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists

21018 NE Hwy 99E • P.O. Box 589 • Aurora, OR 97002 • (503) 678-6007 • FAX: (503) 678-6011

January 6, 2014

David A. Emami
3380 Barrington Drive
West Linn, OR 97068

Re: Drainage Channel North of Lot 1500

Dear David:

I enjoyed meeting with you on your property located northeast of the intersection of Willamette Drive and Shady Hollow Way (Tax Lots 1100, 1200, and 1500). Based on the pre-application conference meeting notes I see that the City of West Linn is concerned about a drainage channel mapped along the northern boundary of your property. I walked the property as well as up and down Willamette Drive. There is a culvert under Willamette Drive approximately 115' north of your northwest property corner. There is a catchment basin on the east side of Willamette Drive which directs the water to the southeast via a culvert. There is another catchment basin, which appears to be north of your property line, where the water is directed via a culvert to the northeast. The culvert opens approximately 25' past the northeast property line of tax lot 1500. Judging from the trees growing above the culvert the culvert has been in the ground for a significant amount of time. There is about a 14 inch caliper big leaf maple growing directly above the pipe near its terminus.

In summary, there is not an open channel along the northern property boundary of tax lot 1500. The drainage has been culverted. The culverted drainage has been in place quite a few years based on the mature trees growing above it.

Please contact me if you need further assistance, or have questions.

Sincerely,

Martin R. Schott, Ph.D., PWS

From: "Khoi Le" <kle@westlinnoregon.gov>
To: "Vicky and Pat" <patvicsmith@q.com>
Cc: "Lance Calvert" <LCALVERT@westlinnoregon.gov>, "Zach Pelz" <ZPELZ@westlinnoregon.gov>
Sent: Friday, November 15, 2013 1:53:34 PM
Subject: RE: Traffic Control Change at Mapleton

Vicky,
What installed on Mapleton is one of the two recommendations by our City Engineer for additional traffic control at Mapleton and Hwy 43. These recommendations are in accordance and/or exceed guidance from ODOT Traffic Control Plans Design Manual. Second recommendation involves installation of delineators along edge of pavement on Hwy 43 and will require permission from ODOT.
I have reached out to LOT in regards to where they are with ODOT permit process and other necessary coordination. I will get back to as soon as I hear back from them.
We do not have stamped engineering drawing or truck turning drawing.
Thanks,
Khoi

CITY OF West Linn
100 Years
1913 - 2013

Khoi Le
kle@westlinnoregon.gov
Civil Engineer II
22500 Salamo Rd.
West Linn, OR 97068
P: (503) 722-5517
F: (503) 656-4106
Web: westlinnoregon.gov

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Public Records Law Disclosure This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: Vicky and Pat [mailto:patvicsmith@q.com]
Sent: Friday, November 15, 2013 9:31 AM
To: Le, Khoi; Pelz, Zach
Subject: Traffic Control Change at Mapleton

Khoi -

As a parent with a child that must use the school bus stop at the corner of Mapleton and Hwy 43, I was surprised to see the traffic barrier/ delineators that appeared yesterday. I had heard there were concerns in this location of balancing the turning movements of the oversized vehicles that routinely use this route to access the LO Water treatment plant construction site and the local traffic exiting the neighborhood. What also had been mentioned in the limited emails I saw, was the concern about the possible impacts to the TriMet and School bus stops.

Since it seems either the City or the applicant developed a solution, please send me the stamped engineering drawing that reflect this traffic control change. Please include a copy of the oversized trucks that were considered and a copy of the graphics of the front and rear wheel wheel paths as they make this turn with the delineators in place.

Can you also confirm that there was coordination with the school district about this traffic control change, so that they were able to make their own assessment about the school bus location with respect to the traffic control change that was implemented.

I look forward to an answer today so that we know what choices we may need to make next Monday morning.

Thank you, Vicky

Spir, Peter

From: Brown, Bryan
Sent: Tuesday, March 27, 2007 11:39 AM
To: Spir, Peter
Subject: FW: My Client, Tony Marnella; Tamarisk Subdivision

Peter,

Do you plan on giving Mike a copy of Burgesses questions at the meeting tomorrow or have you already forwarded those. Otherwise this is FYI.

Bryan

-----Original Message-----
From: Bill Monahan [mailto:billm@rcclawyers.com]
Sent: Tuesday, March 27, 2007 10:43 AM
To: MRobinson@perkinscoie.com
Cc: Brown, Bryan
Subject: Re: My Client, Tony Marnella; Tamarisk Subdivision

Hi Mike,

Yes, we spoke of this. My recollection is that the City Council was to submit questions to staff by last Friday, and staff was to get them to you. You have until Monday, April 2 to submit responses to the City Council questions. The materials you submit will then be available to the public for review. At the April 23 meeting the hearing will be open for input from anyone regarding the new material that is received by the City. If you submit your summary memo in advance, I expect the council will make that available to the public and allow comments on it.

You intend to submit two letters, one summarizing the issues discussed at the hearing to this point, the other addressing the Council questions. I assume that after the public testimony is completed you will then have the opportunity for rebuttal and the Council may be in a po0sition to render a decision.

I hope this responds to your question.

Bill

*****PLEASE NOTE NEW E-MAIL ADDRESS*****
billm@rcclawyers.com

Bill Monahan
Attorney at Law
Ramis Crew Corrigan, LLP
1727 NW Hoyt Street
Portland, OR 97209
Phone: (503) 222-4402
Fax: (503) 243-2944
e-mail: billm@rcclawyers.com

>>> "Robinson, Michael C. (Perkins Coie)" <MRobinson@perkinscoie.com> 03/26/07 09:55AM >>>

Dear Bill,
I am writing to confirm our conversation from last Thursday night. I told you that I thought preparing a letter containing final argument and giving it to the West Linn City Council in advance of the continued April 23, 2007 hearing was consistent with both state law and their direction. The letter will not contain new evidence but will instead

summarize the issues discussed up to that point. We will submit a separate letter responding to the City Council questions. Please let me know if you disagree with my conclusion. Thanks again, Bill.

Mike

sent by Corinne F. Ryan
Legal Secretary to Michael C. Robinson
and Seth J. King
Perkins Coie LLP
1120 N.W. Couch Street, Tenth Floor
Portland, OR 97209-4128
Phone: (503) 727-2000
Direct: (503) 727-2137
Fax: (503) 727-2222

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City of West Linn
PLANNING & BUILDING DEPT.
MEMORANDUM

TO: City of West Linn City Council

FROM: Peter Spir, Associate Planner

DATE: March 26, 2007

SUBJECT: Tamarisk appeal update (MISC-06-46)

At the March 19, 2007 City Council hearing, the City Council continued the hearing to April 23, 2007. Michael Robinson, attorney for the applicant, agreed to an extension of the 120-day rule through May 11, 2007.

City Council had specific issues that they wanted addressed:
Plans and description of the four bridge designs proposed by OTAK
Expanded discussion of storm and sewer facilities, cost, schedule of installation and routing.

Councilor Burgess submitted some specific issues. Staff responds to them as follows:

1.To answer the question: "should phase two be built?" staff would respond that the CDC has provisions that allow the development of phase two and similarly constrained lands. The PUD provisions, for example, were developed specifically for these kinds of applications. Phase Two will impact the WRA and wetland area but the applicant's design minimizes and mitigates impacts. The likelihood of Tamarisk extending is not known. The examples of Killarney and other stub outs showed that stub outs could go for decades before being connected. So although TPR connectivity may be slow, the connection can ultimately be made to Woodbine or via undeveloped Wisteria Road. If the Council decides to not allow Phase 2 to be built, it would make it very unlikely that future connections could be made in the vicinity to solve the extended cul-de-sac situation. Additionally, if utilities are not extended through phase 2, the deadends will not end at a right-of-way. Waterline and sanitary sewer connections would likely be bored under I-205 but deadend at properties not controlled by the City. The waterline should be looped to minimize water-quality concerns of deadend lines. The point is well taken that if and when access to Woodbine would be available, Phase 2 could be constructed but it would still not ease the long cul-de-sac concern or the deadend waterline.

2. Regarding which bridge option is best; planning staff supports option A, which is similar to what was discussed at the last hearing. It would be pre-formed concrete blocks

containing fill. The bottomless box culvert would go under it. Because of the preformed concrete walls, the disturbed area would be smaller than the proposal in the original application. Engineering prefers Option A as well. Utilities placed underground are more stable and easier to access for maintenance and repair than utilities suspended from bridges.

Option B is also a planning staff favorite in that a span extends 100 feet over the WRA and thus long term disturbance of the WRA is minimized. The bridge would be tied into two graded areas at each end. The downside is that the utilities are strung underneath, which received poor grades from public works and engineering. If a bridge is desired, Engineering prefers Option B.

Both options would allow wildlife and fish passage.

3. Regarding Sewer/pump station please see Engineering comments. Engineering believes that access to Johnson Road for sanitary sewer is possible. The line could be bored. However, it would have to be above the existing level of the retain elevation to gravity all the way to Johnson Road. It would be possible to also bore from their Phase 1 site dialgonally across the ODOT I-205 ROW to reach Johnson Road but length of bore would likely exceed 800 feet. Both of the boring options would be expensive and difficult to find equal to their impact. Whether one or both phases are built, staff recommends the self-serving lift station and does not recommend boring a line for future gravity connection adjacent to Johnson Road.

4. There are two possible pedestrian/bike path designs. One would be a six to eight foot wide paved path on fill with a resultant impact area about 18 feet wide. The other design would be to construct a pedestrian/bike bridge on pilings about a foot or two above the wetland. The impact area would be about 8-10 feet wide. Both designs would have a fence on both sides to discourage kids and dogs from straying into the wetlands. Once the trail is out of the WRA, the trail ideally would cut north, working with the contours, at a 15-16% grade to the north end of Tract D. No steps would be needed.

5. Tract D is intended as a nursery of future significant trees and part of a pathway connecting Tamarisk with Woodbine Road. It may or may not become an attractive nuisance. A worst case scenario would be that creating access off Woodbine Road close to I-205 would make it an attractive spot for vagrants or other wayward activity. Alternately it could become a popular part of a citywide trail system.

Woodbine right of way is over 400 feet wide near Tract D. Part of the right of way extends up onto the ridge that Tract D is part of. At some point in the past, possibly Mr. Fritchie, the listed owner of this property, extended a gravel road from Woodbine Drive to Tract D. This driveway goes in front of the Grenier property and house. The gravel driveway would provide a comparatively level transition from Tract D down to Woodbine Road. It would also shift the point of access further away from I-205 and thus reduce the chances of it becoming an attractive nuisance due to improved surveillance and distance.

Regarding the crossing at culvert B2, neither the dirt road nor the culvert is on the applicant's property. Staff planners Gordon Howard and Peter Spir were at the site with the City Arborist Mike Perkins while the surveyors for OTAK were marking the property lines. Staff was surprised at the extent of damage associated with the work in the wetlands but it was all on properties are owned by Mr. Burke and Mr. Grenier. According to OTAK, a complaint has been filed with DSL but no enforcement action has been initiated.

Regarding waterline issues please see Engineering comments. The waterline through Tract D to Woodbine is part of the future 8-inch waterline extension as shown in the Water Master Plan. The waterline would not connect to another system but would eventually entend and connect to the future line extension in Johnson Road. The purpose of the line is to provide for water quality and redundancy.

The applicant is expected to remove invasive species in disturbed areas and in mitigation areas but not elsewhere.

TAMARISK PROPERTY – DRAINAGE CROSSING OPTIONS

OPTION A

Bottomless culvert with headwall at right-of-way.
This option is similar to what was originally submitted with the land use application, but the walls are moved to the proposed right-of-way line and the culvert size is increased to reduce wetland impacts. The utilities could still be buried under the road but there may be complications with placing the utilities with the structural geo-fabric from the wall construction.

OPTION B

Single span bridge.
This option minimizes disruption to the drainage by spanning the gap with a single span bridge (90' long). Fill will still be required behind the concrete abutments and the wing walls. The wing walls could be constructed with either concrete or block wall. The utilities would have to hang under the bridge. Future City maintenance and operation of the bridge and utilities should be considered with this option.

OPTION C

Triple span bridge.
This option provides the least amount of disruption to the drainage by spanning the gap with 3 bridge decks (40', 76', 40'). Some fill will still be required behind the abutments but there is less need for wingwalls and fill in the drainage. The utilities would have to hang under the bridge. Future City maintenance and operation of the bridge and utilities should be considered with this option.

OPTION D

Bottomless culvert with headwall at back of sidewalk/curb.
This option is similar to what was originally submitted with the land use application, but the walls are moved as close to the roadway surface as possible. The bottomless culvert will be sized to convey upstream flow. The utilities could still be buried under the road but there may be complications with placing the utilities with the structural geo-fabric from the wall construction.

OPTION E

Bottomless culvert with headwall at back of sidewalk/curb and wingwalls beyond wetland areas..
This option is similar Option D, but wingwalls are added to minimize wall area and create some area for landscape planting at top of wall. The bottomless culvert will be sized to convey upstream flow. The utilities could still be buried under the road but there may be complications with placing the utilities with the structural geo-fabric from the wall construction.

Based on balancing of natural resource area disturbance, constructability, economic feasibility, and future maintenance/operation costs, the preferred alternative is Option D or E.

otak

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(503) 635-3618 • fax (503) 635-5395
www.otak.com

CM
MISC-152-2M

07 MAR 14 AM 11:03
CITY OF WEST LINN

March 12, 2007

City Council of West Linn
c/o Chris Jordan, West Linn City Manager
22500 Salamo Road #100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Councilmembers:

I am writing in response to the memorandum from Peter Spir to Chris Jordan regarding the continued hearing for the Tamarisk Subdivision. The memorandum offers the staff-recommended conditions of approval should the City Council decide to approve the proposal. I have reviewed the proposed conditions and offer the following proposed amendments for the Council's consideration.

Condition 2, which states, *"Except for grading directly associated with the construction of Tamarisk Drive/Street A, no grading shall be allowed of lots 1-25 in the side and rear setback areas to avoid damage to significant trees in those setback areas. Requests to grade and remove trees will be reviewed by the City on a lot-by-lot basis and through the tree permit process at time of submittal for building permits. Full qualitative and quantitative mitigation shall be provided for the wetland and drainageway areas that are built upon or disturbed."*

While I agree that some additional review to the grading on certain lots is warranted, there are no significant trees identified on proposed lots 4, 5, 9-13, 15, 16, and 20, and currently, there is a proposed tree protection plan being considered by the City Council. Requiring the developer to go through a separate tree removal process for each lot negates the fact that this procedure is now being followed. Once the tree removal/preservation plan is approved by the Council, the only reason to require additional review would be to consider requests to vary the plan. We have identified nine trees in the proposed tree plan (identified by a blue circle) that would require additional consideration should the project be approved. Therefore, I am recommending the following language for this condition.

"The developer shall comply with the approved tree removal/preservation plan. No grading shall occur on lots 2, 3, 6, 7, 8, 18, and 25without prior City approval. Requests to grade and remove trees on these lots shall be reviewed by the City Planning Division on a lot-by-lot basis prior to the issuance of a building permit. All preserved trees shall be protected by a cyclone fence at the tree dripline plus ten feet. The City Arborist shall approve the tree protection fencing prior to site clearing, grading and development. The protective fencing shall remain in place through home construction."

As proposed, the condition still provides the oversight requested of staff, but eliminates the lots where there is no need for additional oversight.

Condition 9, which states, "*All trees identified by red on OTAK's 10/6/06 tree map that meet code exemptions may be removed,*" should be amended to reflect the final decision by the City Council. I recommend that the condition be deleted since it is already required in Condition 2, or I propose the following language.

"The applicant shall comply with the tree removal/protection plan approved by the City Council on (insert date).

I only offer this change because we requested the ability to remove the trees identified in blue on the plan if it is necessary to remove them for construction of the homes or lots.

Condition 10, which states, *"All trees identified in green and blue on that map shall be protected by a cyclone fence at the tree dripline plus ten feet. The City Arborist shall supervise and approve that fencing prior to site clearing, grading and development. The protective fencing shall remain in place through home construction,"* could be deleted with the language proposed in Condition 2.

Condition 15, which states, *"The applicant shall submit storm detention and treatment plans that meet the functional requirements of the city, in agreement with the city's construction code, and receive City Engineer approval."* should be amended, in light of our meeting with the City Engineer and Public Works Director, as follows:

"The applicant shall provide plans for water quality and detention to the City Engineer for approval. The facilities shall be designed to meet the functional requirements of the City in agreement with the City's design and construction standards. At the City Engineer's discretion, and with supporting documentation within a downstream analysis, detention facilities may be waived, and the treated water may be directly discharged to Fritchie Creek."

Thank you for your consideration in these matters. Please include this letter with your packet materials to the Council. Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs

Oregon
Theodore R. Kulongoski, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 378-3805
FAX (503) 378-4844
www.oregonstatelands.us.

State Land Board

Theodore R. Kulongoski
Governor

Bill Bradbury
Secretary of State

Randall Edwards
State Treasurer

RECEIVED
FEB 8 2008
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

February 4, 2008

Tony Marnella
550 Investments LLC
18318 SE Abernathy Lane
Milwaukie, OR 97267

Re: Wetland Delineation Report for Tamarisk Estates located Northeast of I-205 and West of Tamarisk Drive, West Linn; Clackamas County; T 2S R 1E Sec. 34A Tax Lots 600, 690 and 700; WD #07-0677; West Linn Local Wetlands Inventory wetland FR-01

Dear Mr. Marnella:

The Department of State Lands has reviewed the wetland delineation report prepared by SWCA Environmental Consultants for the site referenced above. Based upon the information presented in the report, we concur with the wetland and waterway boundaries as mapped in revised Figures 5a and 5b of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map. Within the study area, 15 wetlands (totaling approximately 1.09 acres) and two waterways were identified. The wetlands and waterways are subject to the permit requirements of the state Removal-Fill Law. A state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in the wetlands or below the ordinary high water line (OHWL) of a waterway.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will review the report and make a determination of jurisdiction for purposes of the Clean Water Act at the time that a permit application is submitted. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter, unless new information necessitates a revision. Circumstances under which the Department may change a determination and procedures for renewal of an expired determination are found in

OAR 141-090-0045 (available on our web site or upon request). The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within 60 calendar days of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5236 if you have any questions.

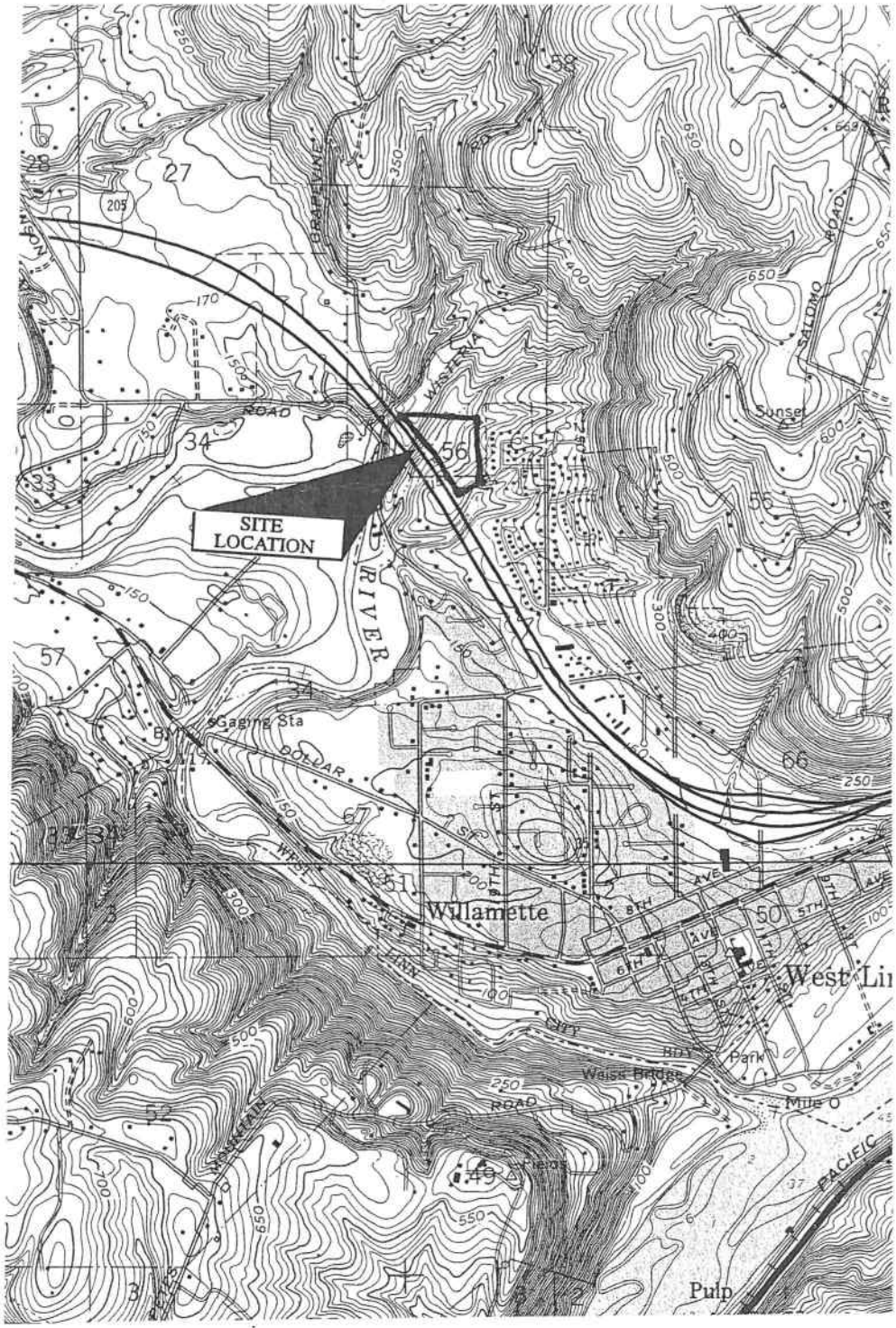
Sincerely,

Janet C. Morlan

Janet C. Morlan, PWS
Wetlands Program Manager

Enclosures

cc: C. Mirth Walker, SWCA Environmental Consultants
City of West Linn, Planning Department (Maps enclosed for updating LWI)
James Holm, Corps of Engineers
Mike McCabe, DSL



Legend

1 inch = 2,000 feet

N

Source: USGS 1961, photorevised 1985. Canby, Oregon 7.5' topographic quadrangle.

P:\10000\10379-203_WestLinnTamarisk\Figure 1 site location.doc

SWCA
ENVIRONMENTAL CONSULTANTS

Portland Office
434 NW Sixth Avenue, Suite 304
Portland, Oregon 97209-3652
Tel 503.224.0333 Fax 503.224.1851

Tamarisk Drive – West Linn
Wetland and Waters Delineation

SITE LOCATION MAP

Project 10379-203	December 2005	Figure 1

WOODBINE ROAD
EDGE OF PAVEMENT

4' WIRE FENCE

TAX LOT 700

APPROXIMATE LOCATION OF 10 FOOT WIDE PGE EASEMENT

FIR TREE THICKET 200 TREES 6" TO 12"

4' WIRE FENCE

I-205

I-205

I
163 SF

CREEK

Wetland extends off-site to north

SAB

U
859 SF

H
4796 SF

POND

U
209 SF

U
1633 SF

POND

H
5844 SF

CREEK

U
5581 SF

PROPERTY LINE

4' WIRE FENCE

CREEK

Wetlands + creek extend off-site to west

U
9945 SF

FILLED ROAD

G
2629 SF

E
3123 SF

F
342 SF

AREA OF ADDITIONAL FIR TREE THICKET 6"-12"

TAX LOT 600

4' WIRE FENCE

FALLEN WIRE FENCE

Z
1262 SF

Creek extends off-site

Y
1401 SF

CREEK

A
1427 SF

X
346 SF

B
1234 SF

W
401 SF

V
834 SF

CREEK

C
2597 SF

D
2942 SF

6' WOOD FENCE

4' WIRE FENCE

951+00 200' RT.

DSL WD # 07-0677
Approval Issued 2-4-2008
Approval Expires 2-4-2013

SOURCE: OTAK 2005

WETLAND A-I+ U-Z

TOP OF BANK

SCALE : 1"=80'

1" 80ft

= Wetland Determination Plots

MATCHLINE: NEXT SHEET

SAB= Study Area Boundary

SWCA
424 NW Sixth Avenue, Suite 304
Portland, OR 97209-3652
(ph)503-224-0333
(fax)503-224-1851

TAMARISK DRIVE, WEST LINN, OR

EXISTING SITE CONDITIONS

10379-203 | DEC 2005 | Revised Fig 5.a

WD07-0677

MATCHLINE: PREVIOUS SHEET

4' WIRE FENCE

SAN MH
RIM 190.90'
8" PVC OUT NE I.E. 181.00'
8" PVC IN NW I.E. 183.35'
8" PVC IN SW I.E. 181.30'

SAN MH
RIM 188.08'
8" PVC OUT NE I.E. 181.98
4" PVC IN W I.E. 182.08
4" PVC IN SE I.E. 182.08

SAB

RAMP
CURB
TAMARISK DRIVE
CURB
RAMP
SIDEWALK
RAMP

4' BARB WIRE FENCE

SHED IS 0.92' WEST OF PROPERTY LINE

SHED

TAX LOT 690

SAB

SAB

I-205

I-205

150
160
170
180
190
140

DSL WD # 07-0677
Approval Issued 2-4-2008
Approval Expires 2-4-2013

SOURCE: OTAK 2005

WETLAND

TOP OF BANK

SAB=Study Area Boundary

SCALE : 1"=80'

1" 80ft

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TAMARISK DRIVE, WEST LINN, OR

EXISTING SITE CONDITIONS

10379-203 | DEC 2005 | Revised Fig. 5b

Spir, Peter

From: Spir, Peter
Sent: Monday, November 20, 2006 9:01 AM
To: 'mrobinson@perkinscoie.com'
Subject: tamarisk

Mike

City Council will hold a hearing on January 8 2007 to consider the appeal.

Currently the 120 day period runs through December 24, 2006
per your verbal waiver at the Oct 12, 2006 Planning Commission hearing.
In order to prepare a final decision document for the mayor's signature after the January 8 hearing,
our attorneys say we need a waiver through January 12, 2007.

So we would need a statement from you that the 120 days is waived through January 12, 2007.

If that waiver does not work for you or your client we will need to know today so we can hold the hearing on Dec 13 as originally scheduled.

Thanks

Peter

WEST LINN PLANNING COMMISSION

FINAL DECISION NOTICE

SUB 05-06/MISC-05-56/VAR-05-06/ZC-05-09

IN THE MATTER OF A 34-LOT SUBDIVISION AT 1200 TAMARISK DRIVE

At their regular meeting of September 28, 2006, October 12, 2006 and October 26, 2006 the West Linn Planning Commission held public hearings to consider the request by Tony Marnella/550 Investments LLC to approve a 34-lot subdivision. The application also included a Class II Variance for cul de sac serving over 12 homes and more than 400 feet long, a Planned Unit Development and a natural drainageway/wetlands permit.

The property comprises 15.35 acres in size. The zoning is R-10 and R-15 meaning that the minimum lot size is 10,000 square feet in the R-10 zone and 15,000 square feet in the R-15 zone. The subdivision proposed access off Tamarisk Drive. The decision of the Planning Commission was based exclusively upon Community Development Code (CDC) Chapter 85 regarding subdivisions, Chapter 24 regarding PUDs, Chapter 32 regarding Natural drainageways, Chapter 30 regarding wetlands and CDC Chapter 75 regarding variances.

The site was further identified as Tax Lot 600, 690, and 700 Assessor's Map 2-1E-34A. The hearing was conducted pursuant to the provisions of CDC, Chapter 99.

In discussion, on October 26, 2006, Commissioner Stark found that the criteria were met and the application should be approved.

Commissioner Bonoff found that the 20% rule of CDC Chapter 55.100(B)(2) regarding tree preservation had not been met and that the applicant had not exhausted all options to achieve that savings even if it meant fewer lots.

Vice Chair Jones had not heard compelling testimony why the stub out should be allowed. He considered it a cul de sac and therefore in violation of the provisions of CDC Chapter 85 which limits cul de sacs to serving 12 lots and not being over 400 feet long. He did not see the appropriateness of the extension especially since it stubbed into Clackamas County. Vice chair Jones was also concerned about tree loss. He agreed that it is a heavily constrained site and that the applicant should have designed a better plan to accommodate those challenges.

Commissioner Fisher stated that he agreed with Vice Chair Jones in that too many lots were being squeezed into a heavily constrained site with side yards as small as 3 feet, versus the codes minimum of 5 feet, leading to homes as little as 6 feet apart and that there is a need to transition to Clackamas County property contiguous to the site.

Vice Chair Jones moved to deny the application on grounds stated in the discussion phase especially that the division and layout of lots was not planned to protect as many trees as possible and therefore it violates CDC Chapter 55.100(B)(2). He also found that the stub out constitutes a cul de sac and thus violates the standards of CDC Chapter 85.

Commissioner Bonoff seconded the motion. Voting in favor of the motion were Vice Chair Jones and Commissioners Bonoff and Fisher. Commissioner Stark voted against the motion. The motion passed. The application is denied.

This decision will become effective 14 days from the date of mailing of this final decision as identified below. Those parties with standing (i.e., those individuals who submitted letters into the record, or provided oral or written testimony during the course of the hearing, or signed in on the attendance sheet at the hearing, or who have contacted City Planning staff and made their identities known to staff) may appeal this decision to the West Linn City Council within 14 days of the mailing of this decision pursuant to the provisions of Chapter 99 of the Community Development Code. Such appeals would require a fee of $400 and a completed appeal application form together with the specific grounds for appeal to the Planning Director prior to the appeal-filing deadline.

J. Kovash — Nov. 1, 2006

JOHN KOVASH, CHAIR — DATE
WEST LINN PLANNING COMMISSION

Mailed this 6 day of November, 2006.

Therefore, this decision becomes final at 5 p.m., November 20, 2006.

FINAL DECISIONS MAILING LIST
Applicant & Persons of Standing/County Surveyor Zone Change

(c: Kathy Aha on ZC & Annexation))

File #: SUB-05-06 Date Mailed: November 6, 2006

Page: _____ of See attached

Applicant:

_____

_____

_____

Applicants Rep:

_____

_____

_____

Interested Parties:

_____

_____

_____

Neighborhood Association:

Willamette

_____

_____

Persons with Standing:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Mike Peebles
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Lake Oswego, OR 97035

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Perkins Coie
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Milwaukie, OR 97267

Don Burke & Katie Daniel
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West Linn, OR 97068

Brian Dunn
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Portland, OR 97202

Phillip Grillo
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Portland, OR 97204-3699

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Neal & Jana Rea
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Anna Wheeler
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Cindy Kauffman
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Tom Sieben
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Roberta & Edward Schwarz
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Brian Eastman
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Ellen Haggerty
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West Linn, OR 97068

Megan Bowers
19775 Derby St.
West Linn, OR 97068

(FINAL DECISION TAMARISK) SUB-05-06

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Jon Udell
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West Linn, OR 97068

Linda Kolstad
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Jack & Julia Simpson
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West Linn, OR 97068

Frank Wesson
2160 Valley View Dr.
West Linn, OR 97068

Mark Braverman
2190 River Heights Cir.
West Linn, OR 97068

Arlo Martindale
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Curt Sommer
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West Linn, OR 97068

Jim Koll
1880 Valley View Dr.
West Linn, OR 97068

Norinne & Allen Ballif
1827 Barnes Cir.
West Linn, OR 97068

Margaret & Fred Seewerker
1835 Barnes Cir.
West Linn, OR 97068

Ron Reams
2600 Umpqua Ln
West Linn, OR 97068

Alex McMurtrie
1803 Barnes Cir.
West Linn, OR 97068

Sheryl Watson
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West Linn, OR 97068

Carolyn & John McMath
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West Linn, OR 97068

Tamorah Comard
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Prischilla Panichello
3000 Stonebridge Wy
West Linn, OR 97068

Kathi Keller
2600 Umpqua Ln.
West Linn, OR 97068

+ Willamette N/A presidents

TAMARISK PERSONS W/ STANDING

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L.O 97035

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PDX 97204. 4128

Fritchie Trustee 21929 S. Clear Creek Rd
Estacada OR 97023

Tony Marnella 18318 SE Abernathy Lane
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DON Burke + Katie Daniel 1090 Woodbine Rd
W.L. 97068

Brian Dunn 7505 SE 32nd Ave PDX 97202

~~Janice Sauer 1800 Blankenship Rd~~
~~Suite 150 WL 97068~~

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PDX 97204-3699

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Tony Marnella PO Box 1988
LO 97035

Andrew Golay 3839 SW Marigold St
PDX 97219

Bill Maxwell 2570 Troy Ct W.L. 97068

West Linn Planning Department

West Linn Planning Commission Meeting

October 26, 2006

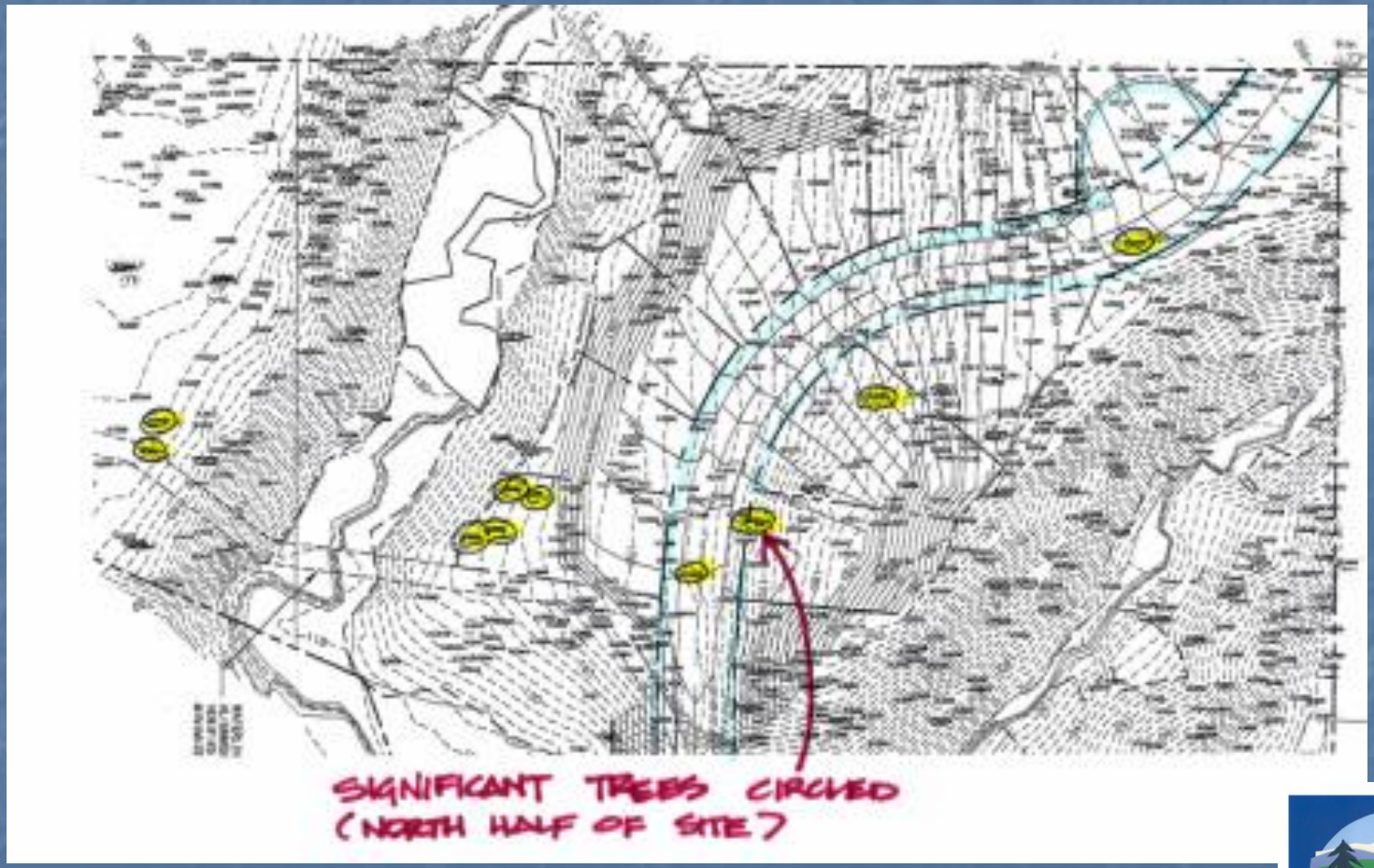
Application # SUB-05-06/ZC-05-09/VAR-05-10/MISC-05-56

- 34 lot PUD, zone change, variance, wetland and natural drainageway permit
- 1200 Tamarisk Drive
- Third public hearing

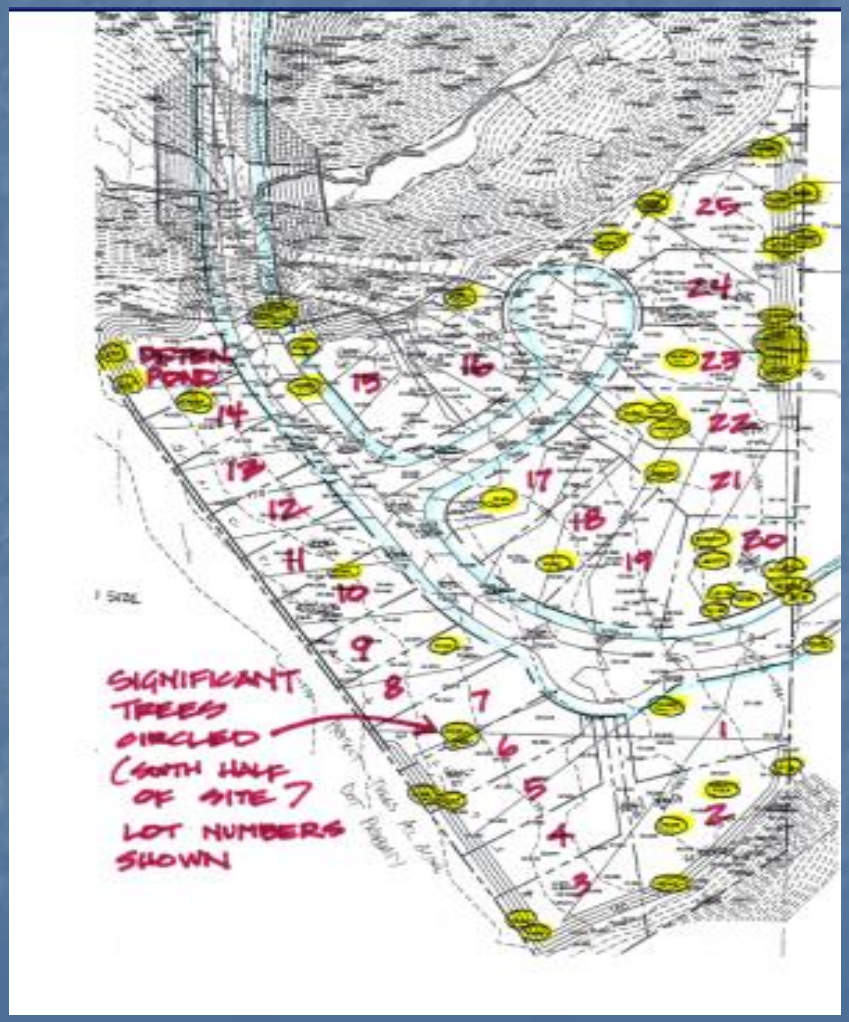
Vicinity Map

Aerial Photo

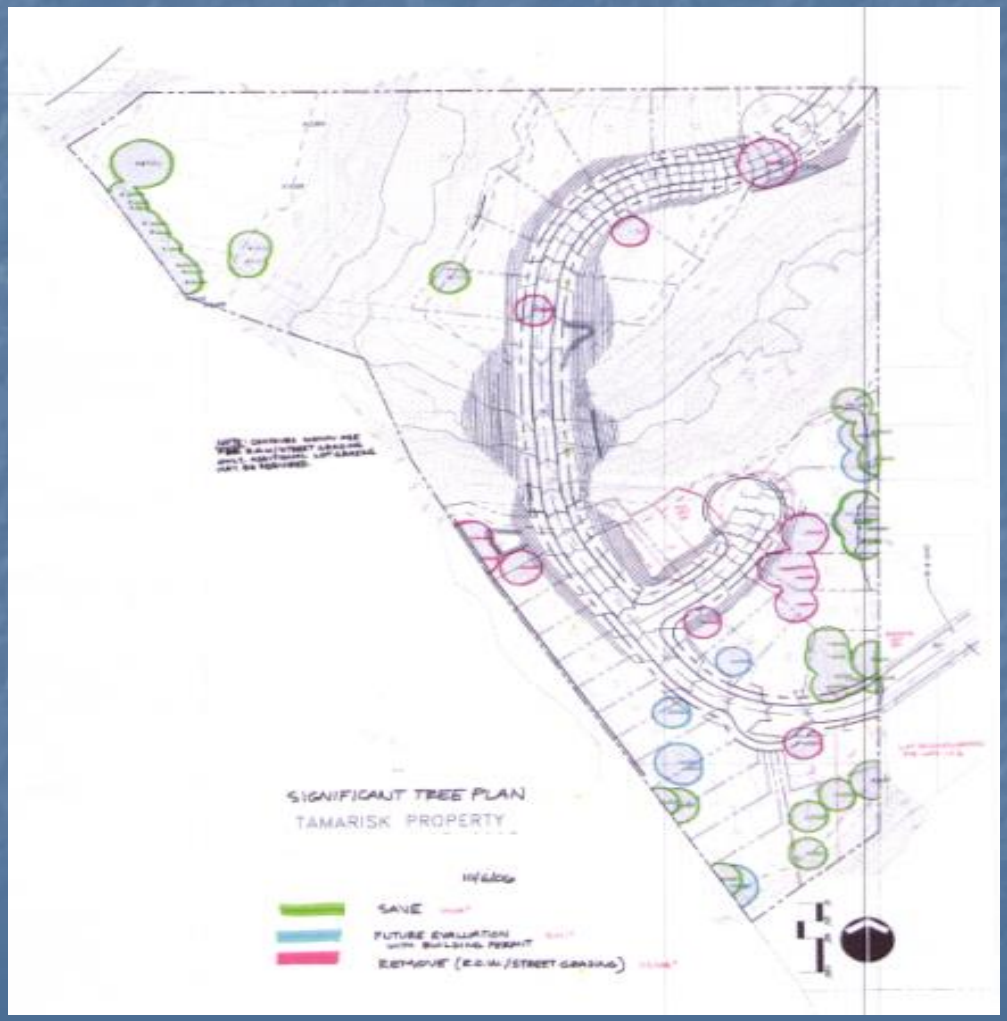
Site Plan- North Half



Site Plan- South Half



Otak 10/6/06 Tree Map



Findings Relevant to Recommendation

- Applicant modified application numerous times. This product protects outright two excellent groves along the eastern edge where trees can best be appreciated by abutting homeowners and site visitors.
- Other significant trees saved include a grove at the northwest corner.
- Significant trees to be removed meet exemptions of CDC 55.100(B)(2)(c,e,f).

Recommendation

Approval with the following conditions:

1. Applicant shall construct an 8-ft. wide all weather foot/bike path from Street A near Lot 29 through tract D to connect with Woodbine Rd. with grades not to exceed 15%. A 3-ft. high fence shall be installed on either side of the path as it traverses the wetland/creek area.

Recommendation (cotd.)

3. Except for grading directly associated with construction of Tamarisk Dr./Street A, no grading shall be allowed of lots 1-25 in the side and rear setback areas to avoid damage to significant trees there. Requests to grade and remove trees will be reviewed by the City on a lot-by-lot basis and through the tree permit process at time of submittal for building permits.

Recommendation (cotd.)

3. Applicant shall dedicate the northwest corner of the site, north of the north drainageway, to the city and initiate a forestry program to nurture young trees in that tract to mitigate for trees removed elsewhere on site under the exemptions of CDC 55.100(B)(2)(c,e, & f) on an inch-by-inch basis. The program shall operate with the city arborists supervision and approval.

Recommendation (cotd.)

4. Tamarisk Dr./St. A shall terminate at the northeast corner of the project site to accommodate future extension to abutting property. The terminus shall include turnaround facilities per TVFR standards.

Recommendation (cotd.)

5. Applicant shall contribute monies toward improvements at 8th Ave./8th Ct./10th St. and Blankenship/Tannler intersections in the amount proportionate to anticipated impacts identified in the applicant's traffic study. Applicant's share shall be based upon applicants PM pk. hr. trips at buildout through each intersection. Applicant's share of intersection improvements shall be brought current by ENR CCI application at time of payment. Money will be collected prior to final plat.

Recommendation (cotd.)

6. Additional water service capacity is needed prior to the first certificate of occupancy. If the developer wants to postpone looping and proceed with phase 1 construction, a PRV is required to supplement fire flow (not a permanent fix). Looping is still required. However if the developer wants to proceed with looping prior to cert. of occupancy, PRV is not needed.

Recommendation (cotd.)

7. 52-ft ROW required throughout subdivision. Reduced ROW permitted in traversing resource areas or by having part of 6-ft planter strip on easements on abutting lots.
8. Public improvements must meet TVF&R current requirements.

Recommendation (cotd.)

9. Applicant to provide bottomless culvert unless exempted by ACOE and ODF&W.
10. Applicant shall convey natural drainageways and wetland areas to City.

Recommendation (cotd.)

11. Sanitary sewer capacity must be verified to ensure that existing system (unimproved) has sufficient capacity to serve development. If capacity insufficient, Sanitary Sewer Master Plan (CIP#5- approx. 31% SDC eligible) upgrades on N. side of 205, or construct pump station on Johnson Rd. and connect subdivision under 205.

Recommendation (cotd.)

12. Detention pipes not allowed in Public ROW. Private detention tanks only allowed if above ground detention demonstrated as impracticable.
13. Detention ponds shall have a gravel access for backhoes to maintain public ponds.

Recommendation (cotd.)

14. An acoustic engineer shall be hired to recommend necessary measures to reduce the noise downwards towards levels shown in Table 1 if section 55.100(D). These measures shall include at min. a 6-ft. high solid wood sound attenuating barrier or functional facsimile along the edge of I-205 at the rear of lots 4-14.

Recommendation

15. All trees identified by red on OTAK's 10/6/06 tree map that meet code exemptions and may be removed.
16. All tree identified in green and blue on same map shall be protected by a cyclone fence at the dripline + 10 feet. The City arborist shall supervise and approve fencing prior to site clearing, grading, and development. This fencing shall remain in place through home construction.

Recommendation (cotd.)

17. The realignment of lots as depicted on the 10/6/06 map is approved as well as lot realignment to accommodate protection of those trees depicted in blue on this map, so long as final plat submittal shows that the lots meet the dimensional standards allowed by CDC Ch. 24 and the applicable standards of zones R-10 and R-15.

City of West Linn
Attendance Sign-Up Sheet

Date: October 26, 2006

PLANNING COMMISSION

Item #:
- a) SUB-05-06; 35-Lot PUD, ZC, Variance& Wetland, 1200 Tamarisk
- b) DR-06-27 Design Review & Natural Drainageway Willamette Market Place, 2000 8th
- c) MISC-05-01; CDC Amend MISC; Willamette Roiver Greenway-Docks
- d) MISC-05-43; CDC Amend Wetlands & Drainageways

Signing in on this sheet establishes your standing and your right to appeal in this quasi-judicial or legislative case as long as this is the first hearings body to review the case. PLEASE PRINT (illegible names may void your standing) and fill in Item # from above list.

NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
[illegible]	1207 Orchard St	656-5684	[signature]	4b
Rod McLeod	1425 Rosemont Rd	657-4473	[signature]	d
MARC JONGEWAXD	3670 SUMMERLINN DR	656-0370	[signature]	B
Graham Dwyer	1111 Main St Vanc WA 98660	503.702 9433	[signature]	B
FRANK VANDERHEYDEN	16587 MAPLE CIR. LO. 97035	702-9255	[signature]	
GREG MORSE	18335 Nixon, W.L.	635-6705	[signature]	D
Chris Johnson	2678 5th ave	557 6264	[signature]	D
MARC BUTORAC	610 SW Alder, Ste. 700 Portland, OR 97205	228-5230	[signature]	4B
JULIA KNUDSEN	610 SW Alder, Ste. 700 Portland, OR 97205	228.5230	[signature]	4B
Ronald Powell	1673 10th St	503-657-3158	[signature]	b d.
Lynn Fox	PO Box 236 Marylhurst OR 97036	5036556347	[signature]	a
BRIAN DUNN	7505 SE 32nd Ave POx, 97202	503-774-2669	[signature]	a
Bob MARTIN	2017 Maple Terrace	503-657-7858	[signature]	c
Alma Costin	5798 Hood	503.658 3548	Alma Costin	d
ERIC SMITH	2100 8th Court W.L.	503-502-2070	[signature]	b
KEN MCKINNEY	9400 SW GEMINI DRIVE BEAVERTON OR 97008	503 605-4140	[signature]	b

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NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
KEN PRYOR	219 GREENE	7230057		A, B
PAUL MacKay	19122 KANTARA WAY	699-2119		A, B, D
Ann Miller	1009 9th street	657-1967		D
Neal + Jana Rea	4240 Mapleton Dr	697-3572		A D
Anna wheeler	4300 Mapleton Dr	697-0931		A D
Brad Kilby	17355 SW Boones Ferry Dr	699-2495		A
Rupert Rusk	18375 Willamette Dr	635-4643		D
Shan Arnold	18244 Shady Hollow Way	653-1044		A B C
BARBARA WEBER	18525 ULSTA CT	636-8081		A B C
Cindy Kaufman	3993 Mapleton Dr	636-4413		A D
HOWARD FISHER	2115 8TH CT. WL	939-1674		B
	18402 OLD RIVER LANE	635-8129		B C
AMANDA DAVIDSON	220 8th Ct	722-1708		6
Ed Turkisher	4099 CORNWALL ST	656-1804		
Rob Marvin	1815 WILDWOOD PL	6363954		4 D
TOM SIEBEN	4950 MAPLETON DR	697-7928		A B

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NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
JEFF WRIGHT	1326 CUSHMAN	650-9141		D
ED ROBINSON	3777 OAKWOOD WAY	WL		1
Scott Silver	4405 Grant St	557-1377		
Marcel Salinas	20865 Willamette	657-9290		
Lydia Salinas	" "	"		
Alice Richmond	Parker			
M Frankel				
W BUAN	PO BOX 517	650 1950		
D Knuggenborger	Box 148	636-3544		
Douglas Hinkelbein	19090 Nixon	924 3192		
Terry Sulasky	3515 Hillcrest	317 0552		
ROBERTA SCHWARZ	2206 TANNLER DR.	723-5015	Roberta Schwarz	A+B
EDWARD SCHWARZ	2206 TANNLER DR.	723-5015	Edward Schwarz	
Tony Mancinelli	P.O. Box 1988 LO	709-3900		
Dan Burke	15607 SE Kellogg Dr	652-0175		
Katie Daniel	15607 SE Kellogg DR	5196521		

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NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
Chuck Kalyman	19030 Nixon Ave	699-7625		C+d
Sherrie Rawson	2150 8th Ct. West Linn	650 9911	Sherrie Rawson	B
Kevin Priblsky	19652 Willamette Dr. W.L.	635-3537		D
Fred & Lois Stiemer	2019 Maple Terrace	503 655 1827	Lois Stiemer	
Bob Repp	5697 River St	503-723-0230		C
Gwen Sieben	4950 S. Mapleton		Gwen L. Sieben	
Bob Cenia	19150 Nixon Ave	503 657 1870		C
MARYGRACE McDERMOTT	18996 Walling Cir		Mary Grace McDermott	D
Karie Oakes	1125 Marylhurst DR	5036759697	Karie Oakes	A,B,D
Dale Gibson	2021 Donegal Ct	503 650 3558		
Kyle Rawson	1011 Sw Schaefer Rd			
Reena Feijderman	1935 Hillhaise Dr	503-329-5953		
Jill Ashcraft	1325 Heater Ct	503 656 7492	Jill Ashcraft	D
Tamesha Jones	5796 Robert Moore	503 655 8884		

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME KEN PRYOR DATE 10/20

STREET ADDRESS 2119 GREEN

CITY WEST LINN STATE OR ZIP 97068

I wish to testify on the agenda item(s) listed below or offer information during community comments.

SUBJECT AND AGENDA #(s) ~~A & B~~ TAMARASK

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ✓

NAME OF ORGANIZATION (if applicable) TANNER BASIN NEIGHBORHOOD ASS

*If group, please list people you represent.

PLEASE BE PREPARED TO IDENTIFY THE SPECIFIC APPROVAL CRITERIA YOU ARE ADDRESSING.

PLEASE NOTE: Testimony or information on any agenda item shall be heard only during the time set aside for public hearings. The Chairman will control the time of testimony and may vary procedures. A majority vote of the Hearing body (i.e., Planning Commission, City Council) may permit variance from standard procedures. Testimony or information on non-agenda items may be accepted for placement on a future agenda.

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PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Roberta Schwarz DATE 10/26/06

STREET ADDRESS 2206 Tanner Dr

CITY WL STATE OR ZIP 97068

I wish to testify on the agenda item(s) listed below or offer information during community comments.

SUBJECT AND AGENDA #(s) A Tamarisk

IN SUPPORT ____ NEITHER FOR NOR AGAINST X IN OPPOSITION X

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) Neighbors for a Livable Westlinn

*If group, please list people you represent.

Neighbors from several neighborhoods of WL

PLEASE BE PREPARED TO IDENTIFY THE SPECIFIC APPROVAL CRITERIA YOU ARE ADDRESSING.

PLEASE NOTE: Testimony or information on any agenda item shall be heard only during the time set aside for public hearings. The Chairman will control the time of testimony and may vary procedures. A majority vote of the Hearing body (i.e., Planning Commission, City Council) may permit variance from standard procedures. Testimony or information on non-agenda items may be accepted for placement on a future agenda.

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October 26, 2006

City of West Linn
Planning Commission
22500 Salamo Road
West Linn, Oregon 97068

Members of the Planning Commission:

Please be advised that the Hidden Springs Neighborhood Association has requested a meeting with the developer's representatives which they have been unable to accommodate since the next HSNA meeting will not occur until November 21, 2006. Members of HSNA are concerned regarding the Tamarisk Development traffic issues and how this proposed development could impact traffic in Hidden Springs Neighborhood Association. In addition, the members are concerned regarding drainage way issues, tree mitigation issues and possible negative impacts on the quality of life in West Linn caused by this development about which they have not been informed.

Respectfully submitted,

Lynn Fox, President
Hidden Springs Neighborhood Association
PO Box 236
Marylhurst, Oregon 97036

BEFORE THE PLANNING COMMISSION

FOR THE CITY OF WEST LINN, OREGON

In the Matter of Marnella/550 Investments LLC's Application for Approval of a 34-lot subdivision, Planned Unit Development, Class II variance and Natural Drainageway permit at northwest end of Tamarisk Drive	File No. SUB 05-06/MISC-05-56/ ZC-05-09/VAR-05-10 TANNER BASIN NEIGHBORHOOD ASSOCIATION'S MEMORANDUM IN OPPOSITION DATED 10/12/06

To the Planning Commission,

My name is Ken Pryor. I live at 2119 Greene Street in West Linn. I come before you tonight as the Vice President and duly designated representative of the Tanner Basin Neighborhood Association. As such, I wish to submit these documents as written testimony and will be providing oral testimony as well.

At the August 23, 2006 special meeting of the Tanner Basin Neighborhood Association, the assembled members unanimously voted to request that the Planning Commission deny the Tamarisk application as currently submitted. The reasons for the vote will be discussed tonight.

The staff report on this application is brief and cursory and, in fact, incomplete. A central problem that exists throughout the staff report is the absence of findings for many of the applicable approval criteria of the West Linn Community Development Code.

For those in the council chamber tonight who don't know land use law, I would like to do a brief summary. In land use proceedings the approval authority (Planning Director, Planning Commission, and/or City Council) adopt findings for each and every applicable approval criteria as part of their approval of the application. Without demonstrating compliance with each required approval criteria the application is by definition (and by LUBA case law) deemed to be incomplete and cannot be approved.

The usual practice is for the Planning Staff to write up findings for each required approval criteria then the approval authority adopts these findings as part of their decision. Denials also require findings to show why one or more relevant criteria have not been met.

The approval authority can, and often does, produce some findings separate from those provided by staff (the Tannler East application was an example of this when it reached the City Council).

In any complex application there are often dozens of applicable approval criteria that must be met so the approval authority usually relies, at least partially, on the staff report findings. Sometimes, some planning staffers will use the applicant's own findings and simply note that they agree with the applicant on that particular point, but this is not considered to be good practice in planning circles.

In this case, staff did not produce individual findings for each approval criteria – nor did they cite the applicant's own findings and just agree with them. There are numerous approval criteria that do not have an identifiable staff finding.

INDIVIDUAL PROBLEMS

CDC Chapter 24 – Planned Unit Development

CDC 24.100(B)2-4 and 24.100(C)

There are no staff findings to show that approval criteria CDC 24.100(B)2-4 or 24.100(C) are met. In particular, there are no findings to show that CDC 24.100(A-C) or 24.130(A-B) are met, as is required by CDC 24.100(C). The city has done nothing to show that the density calculations and density transfer are correct. **The application should be denied based on its failure to meet these approval criteria.**

CDC 24.170(2)a-d – USABLE OPEN SPACE REQUIRED

CDC 24.170(2)a-d requires the applicant to provide a set amount of active recreational space as part of the application.

> ***24.170 USABLE OPEN SPACE REQUIRED***
> ***Residential planned unit developments (PUDs) shall comply with the following usable open space requirements:***
> ***1. PUDs that contain multi-family units shall comply with the requirements of Section 55.100(F).***
> ***2. PUDs that contain 10 or more single-family detached, single-family attached, or duplex residential units shall comply with the following usable open space requirements.***
> ***a. The plan shall include an open space area with at least 300 square feet of usable area per dwelling unit.***
> ***b. The usable open space shall meet the design requirements of Section 55.100(F)(2).***
> ***c. The usable open space shall be owned in common by the residents of the development unless the decision-making authority determines, based upon a request from the applicant and the recommendation of the City Director of Parks and Recreation, that the usable open space should be dedicated to the City for public use. If owned in common by the residents of the development then a homeowner's association shall be organized prior to occupancy to maintain the usable open space.***
> ***d. If the usable open space contains active recreational facilities such as hard surface athletic courts or swimming pools, then the usable open space area shall not be located on the perimeter of the development unless buffered by a transition pursuant to CDC Section 24.140(B). (ORD. 1463)***

The applicant claims that this requirement is met by creation of a pedestrian trail. If a pedestrian trail qualifies as active recreational area, we don't know why streets and sidewalks wouldn't qualify as well. The applicant should be required to provide **separate active recreational open space** and not commingle the independent requirements of 24.170(2)a-d and CDC 85.100(C). Staff makes no findings for CDC 24.170(2)a-d. **Thus, the application should be denied based on its failure to meet this approval criteria.**

CDC 24.180(B), (C) and (D)1-6 – APPLICABILITY OF THE BASE ZONE PROVISIONS

CDC 24.180(B), (C), and (D)1-6 have no staff findings. CDC 24.180 states,

> ***24.180 APPLICABILITY OF THE BASE ZONE PROVISIONS***
> ***The provisions of the base zone are applicable as follows:***
> *A. Lot dimensional standards. The minimum lot size and lot depth and lot width standards do not apply except as related to the density computation under Chapter 24.*
> ***B. Lot coverage. The lot coverage provisions of the base zone shall apply for detached single-family units. For single-family attached residential units, duplex residential units, and multiple-family residential units, the following lot coverage provisions shall apply, based upon the underlying base zone.***
>
> | | |
> |---|---|
> | ***R-40, R-20*** | ***35 percent*** |
> | ***R-15*** | ***40 percent*** |
> | ***R-10, R-7*** | ***45 percent*** |
> | ***R-5, R-4.5*** | ***50 percent*** |
> | ***R-3, R-2.1*** | ***60 percent*** |
>
> ***(ORD. 1442)***
> ***C. Building height. The building height provisions of the underlying zone shall apply.***
> ***D. Structure setback provisions.***
> ***1. Setback areas contiguous to the perimeter of the project shall be the same as those required by the base zone unless otherwise provided by the base zone or Chapter 55.***
> ***2. The side yard setback provisions shall not apply except that all detached structures shall maintain a minimum side yard setback of five feet, or meet the Uniform Building Code requirement for fire walls.***
> ***3. The side street setback shall be 10 feet.***
> ***4. The front yard and rear yard setbacks shall be 15 feet. Porches may encroach forward another five feet. Additional encroachments, such as porches, are allowed per CDC Chapter 38.***
> ***5. The setback for a garage in the front yard that opens onto the street shall be 20 feet unless the provisions of Section 41.010 apply. Garages in the rear yard may meet the standards of Section 34.050.***
> ***6. The applicant may propose alternative setbacks. The proposed setbacks must be approved by the decision-making body and established as conditions of approval, or by amendment to conditions of approval. The decision-making body will consider among other things maintenance of privacy, adequate light, defensible space, traffic safety, etc.***
> *E. All other provisions of the base zone shall apply except as modified by this chapter.*

CDC 24.180(B) sets forth particular requirements for maximum lot coverage percentages. In their application, the applicant states on page A-261 that "...it is feasible that it can be met." In other words, **the applicant is not showing compliance with a key provision of the PUD chapter**, they are merely stating that it is feasible that that it might be met. Needless to say, the standard for land use approval is that a criteria is shown to be actually met – not that at a future time it could feasibly be met. Staff makes no findings for CDC 24.180(B). **Thus, the application should be denied based on its failure to meet this approval criteria.**

CDC 99.125 – Staged or Phased Development, CDC 24.050 – Staged Development and CDC 24.030 – Expiration of Approval

Staged development is discussed on page A-287 of the application. Once again an applicant is proposing developing in phases in a situation where the individual stages are not in compliance with CDC 99.125 because the separate phases cannot be considered independently of one another. In this case, the water line extension and cul-de-sac turnaround in phase 2 (units 26-35) are needed to make phase 1 viable, so this is not a project that can be developed in phases.

> ***24.050 STAGED DEVELOPMENT***
> ***The applicant may elect to develop the site in stages. Staged development is defined as an application that proposes numerous phases or stages to be undertaken over a period of time. Typically, the first phase will be sufficiently detailed pursuant to the submittal standards of CDC Chapter 85. Subsequent phases shall provide the type of use(s); the land area(s) involved; the number of units; generalized location and size (square feet) of commercial, industrial, or office projects; parks and open space; street layout, access, and circulation; etc. Generalized building footprints for commercial, office, public, and multi-family projects and parking lot layout will be required. Staged development shall be subject to the provisions of Section 99.125.***
>
> ***99.125 STAGED OR PHASED DEVELOPMENT***
> ***An applicant may elect to develop a proposed project in phases. The timing of each development phase shall be set forth in the application and subject to approval by the appropriate approval authority. Each phase shall meet all applicable development standards individually (e.g., access, parking, landscaping, utilities, etc.) without having to rely upon subsequent phases. (ORD. 1474)***

In addition, please refer to CDC 24.030 – Expiration of Approval. On page A-287 the applicant states that "The second phase of the development will occur within the following four years depending on the number of homes constructed and sold within the development and market demands." In other words, depending on the speculative housing market, phase 2 might not start until 2011 and yet CDC 24.030 states that substantial construction needs to occur within three years of the time of approval.

> ***24.030 EXPIRATION OF APPROVAL***
> ***If no substantial construction has occurred within three years from the date of approval of the final plat or development plan, the application shall be null and void. (ORD. 1408)***

Thus, the application fails to meet CDC 99.125, CDC 24.050 and CDC 24.030 and must be denied.

CDC Chapter 30 – Wetland and Riparian Area Protection and CDC Chapter 32 – Natural Drainageway Protection

The only mention of either of these two chapters by staff is found on page 11 of the Staff Analysis and Recommendation where CDC 85.200(J) is quoted. Nowhere are there findings for the approval criteria required by these two critical chapters. This is particularly egregious because of the water line which is envisioned to go down a steep slope, through a stream and

wetland, and then up a very steep slope again. Particular CDC chapters which are not addressed include:

> ***CDC 30.100(B)***
> ***Alternatives which avoid all adverse environmental impacts associated with the proposed action shall be considered first. For unavoidable adverse environmental impacts, alternatives which reduce or minimize these impacts shall be selected.***

No alternatives are considered by the Planning Staff in this proposal.

Other important approval criteria that are not addressed include:

> ***CDC 30.100(A)***
> ***The Planning Director or Planning Commission, as applicable, shall make findings with respect to the following criteria when approving, approving with conditions, or denying an application. The provisions of the following chapters shall be met as applicable:***
> ***1. Chapter 27, Flood Hazard Construction.***
> ***2. Chapter 28, Willamette River Greenway.***
> ***3. Chapter 29, Tualatin River Bank Control.***
> ***4. Chapter 32, Natural Drainageway Protection.***
> ***(ORD. 1425)***

Staff also does not address the application's compliance with CDC chapters 30.100(C)1-4, 30.100(D)1-3, 30.100(E)1-4, 30.100(F)1-4 and 32.050(1-10).

CDC Chapter 75 – Variance

The application requests a variance for the length of the cul-de-sac but staff makes no findings with regards to this chapter. For a variance to be approved, all six criteria of CDC 75.060 must be met.

> ***CDC 75.060 – THE APPROVAL CRITERIA***
> ***The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The approval authority shall deny the variance if any of the criteria are not met.***
> ***1. Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the same zone or vicinity, and result from lot size or shape, legally existing prior to the date of this ordinance, topography, or other circumstances over which the applicant has no control.***
> ***2. The variance is necessary for the preservation of a property right of the applicant, which is substantially the same as a right possessed by owners of other property in the same zone or vicinity.***
> ***3. The authorization of the variance will not be materially detrimental to the purposes and standards of this Code, will not be inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.***
> ***4. The variance request is the minimum variance, which would alleviate the exceptional and extraordinary circumstance.***

5. The exceptional and extraordinary circumstance does not arise from the violation of this ordinance.
6. The variance will not impose physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification. (ORD. 1442)

By making no findings with respect to this chapter, staff has not indicated that the application meets all of these approval criteria. **Therefore, the application must be denied.**

CDC Chapter 85 – Land Division

Staff only addresses a very few of the approval criteria required to satisfy this chapter. Most of the approval criteria required by this chapter have no findings from staff. Some examples include:

CDC 85.200(A)8
Future Extension of Streets. Where necessary to give access to, or permit a satisfactory future subdivision of adjoining land, streets shall be extended to the boundary of the subdivision and the resulting dead-end streets may be approved without turnarounds. (Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long.)

CDC 85.200(A)11
Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75. All cul-desacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and do not include planter strips or sidewalks.

On page 3 of the Staff Analysis and Recommendation staff states "Tamarisk Drive will stub out at the northeast corner of the site and thus extend *at some point in the future* to Woodbine Road is a mitigating factor." [Emphasis added] However, the applicant's own traffic engineer correctly points out on pages A-307 and A-330 that this area is outside the Urban Growth Boundary (UGB) and that the UGB would have to be expanded (i.e. into the Stafford Triangle) and annexed into the city for such a connection to occur. Current city policy is that Stafford should be a permanent rural reserve. Is staff creating a new policy for the city as regards the future of Stafford or are they merely reflecting the city's real, unspoken policy? **Regardless, in light of the official policy of the city that Stafford remain rural, the end of Tamarisk Drive should be considered permanent and should therefore be configured to create an attractive cul-de-sac instead of an unsightly stub.**

CDC 85.200(C)6
The trail grade shall not exceed 12% except in areas of unavoidable topography, where the trail may be up to a 15% grade for short sections no longer than 50 feet. In any location where topography requires steeper trail grades than permitted by this section, the trail shall incorporate a short stair section to traverse the area of steep grades. (ORD. 1442)

The proposed pedestrian trail does not meet the criteria imposed by CDC 85.200(C)6 because it traverses a slope that varies in steepness from 25% to 50% (or greater) for at least 90 feet. Given the steepness of this slope, either a stairway would be necessary or a series of reinforced switchbacks. The proposed pedestrian trail also crosses a stream and wetland area that would require a bridge. **This illustrates that the proposed trail does not satisfy CDC 85.200(C)6 and thus the application should be denied.**

CDC 85.200(B)7 – Flag Lots

The applicant requests that it be allowed to create four flag lots. CDC 85.200(B)7 states, in part, ***"Flag Lots. Flag lots can be created where it can be shown that no other reasonable street access is possible to achieve the requested land division."*** Staff makes no findings to this effect. **The application should be denied.**

CDC 85.200(G) – Sewer

> ***CDC 85.200(G)9***
> ***A written statement, signed by the City Engineer, that sanitary sewers with sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.***

CDC 85.200(G)9 clearly states that the City Engineer must attest in writing that there is an ***existing ability*** to provide sewer service. No such letter from the acting City Engineer is included in the application or staff report. There is a letter (page A-523) from Dennis Wright describing how sewer service ***could be*** provided but it states, "If this connection preferred, application could not be approved until commitment in place to build the pump station and connecting system lines." No such commitment is found in the application. In the Staff Analysis and Recommendation staff incorrectly leaves the issue of sewer capacity to be resolved at a later date (see page 5, condition of approval 11). This date would be after the end of the public's involvement in the land-use process. **So, since there is no written statement verifying existing ability to provide sewer service as required by CDC 85.200(G)9, the application should be deemed incomplete and must be denied.**

CDC 85.200(J) – Supplemental Provisions

> ***CDC 85.200(J)9***
> ***Heritage Trees/Significant Tree and Tree Cluster Protection. All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers, shall be saved pursuant to CDC Section 55.100(B)(2). Trees are defined per the Municipal Code as having a trunk 6" in diameter or 19" in circumference at a point five feet above the mean ground level at the base of the trunk.***
> ***(ORD. 1403)***

This section sends us to CDC 55.100(B)2 relating to tree protection.

CDC 55.100(B)2

All heritage trees, as defined in the Municipal Code, all trees and clusters of trees (cluster is defined as three or more trees with overlapping driplines; however, native oaks need not have an overlapping dripline) that are considered significant by the City Arborist, either individually or in consultation with certified arborists or similarly qualified professionals, based on accepted arboricultural standards including consideration of their size, type, location, health, long term survivability, and/or numbers, shall be protected pursuant to the criteria of subsections 2(a-f) below. In cases where there is a difference of opinion on the significance of a tree or tree cluster, the City Arborist's findings shall prevail. It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant.

a. Non-residential and residential projects on Type I and II lands shall protect all heritage trees and all significant trees and tree clusters by either the dedication of these areas or establishing tree conservation easements. Development of Type I and II lands shall require the careful layout of streets, driveways, building pads, lots, and utilities to avoid heritage trees and significant trees and tree clusters, and other natural resources pursuant to this code. The method for delineating the protected trees or tree clusters ("dripline + 10 feet") is explained in subsection (b) below. Exemptions of subsections (c), (e), and (f) below shall apply.

b. Non-residential and residential projects on non-Type I and II lands shall set aside up to 20 percent of the area to protect trees and tree clusters that are determined to be significant, plus any heritage trees. Therefore, in the event that the City Arborist determines that a significant tree

cluster exists at a development site, then up to 20 percent of the non-Type I and II lands shall be devoted to the protection of those trees, either by dedication or easement. The exact percentage is determined by establishing the driplines of the trees or tree clusters that are to be protected. In order to protect the roots which typically extend further, an additional 10-foot measurement beyond the dripline shall be added. The square footage of the area inside this "dripline plus 10 feet" measurement shall be the basis for calculating the percentage (see figure below). The City Arborist will identify which tree(s) are to be protected. Development of non-Type I and II lands shall also require the careful layout of streets, driveways, building pads, lots, and utilities to avoid significant trees, tree clusters, heritage trees, and other natural resources pursuant to this code. Exemptions of subsections (c), (e), and (f) below shall apply. Please note that in the event that more than 20 percent of the non-Type I and II lands comprise significant trees or tree clusters, the developer shall not be required to save the excess trees, but is encouraged to do so.

c. Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss. These provisions shall also apply in those cases where access, per construction code standards, to a parcel is blocked by a row or screen of significant trees or tree clusters.

d. For both non-residential and residential development, the layout shall achieve at least 70 percent of maximum density for the developable net area. The developable net area excludes all Type I and II lands and up to 20 percent of the remainder of the site for the purpose of protection of stands or clusters of trees as defined in CDC Section 55.100(B)(2).

e. For arterial and collector street projects, including Oregon Department of Transportation street improvements, the roads and graded areas shall avoid tree clusters where possible. Significant trees, tree clusters, and heritage tree loss may occur, however, but shall be minimized.

f. If the protection of significant tree(s) or tree clusters is to occur in an area of grading that is necessary for the development of street grades, per City construction codes, which will result in an adjustment in the grade of over or under two feet, which will then threaten the health of the tree(s), the applicant will submit evidence to the Planning Director that all reasonable alternative grading plans have been considered and cannot work. The applicant will then submit a mitigation plan to the City Arborist to compensate for the removal of the tree(s) on an "inch by inch" basis (e.g., a 48-inch Douglas Fir could be replaced by 12 trees, each 4-inch). The mix of tree sizes and types shall be approved by the City Arborist.

On page 4 of the Staff Analysis and Recommendation, condition of approval 2 incorrectly leaves the issue of tree protection to be determined after the public land-use process is complete. Furthermore, condition of approval 2 confuses provisions of the West Linn Municipal Code (WLMC) dealing with **tree removal** with CDC tree protections. As pertains to tree and land use planning, the two codes are separate and are designed to operate separately. It is wholly inappropriate to fail to meet the tree protection standards of CDC 55.100(B)2 by pretending that they can be met after the parcel has been subdivided and the land-use approval process is finished. Thus, neither the application or the staff analysis correctly deals with this section of the CDC. **This section of the CDC is not met and the application must be denied.**

Traffic

As described in the applicant's own traffic study, the Blankenship Road/Tannler Drive intersection already operates at a Level Of Service (LOS) F during certain times of the day. Adding traffic from the proposed development will only exacerbate this already existing problem. The applicant's own traffic study estimates that "... **90 percent of the site-generated traffic is expected to travel to/from the southeast along Blankenship Road towards the I-205 interchange with 10th Street**..." Thus, using the applicant's own traffic study, this proposed development will add approximately 344 (383 X 0.90) traffic trips to an already overloaded intersection (Table 6, page A-321).

Further, the applicant's traffic study, included as a part of the application, states, "**Based on the findings presented in Tables 2 through 5, it appears some sort of treatment is needed to mitigate the adverse operating conditions forecasted for the Blankenship Road/Tannler Drive intersection during the weekday a.m. and p.m. peak hours, regardless of whether or not the Tannler East project is developed.**" (see Staff Analysis and Recommendation report, page A-318).

The application initially proposed two improvement alternatives to serve as possible mitigation measures for the increased traffic generated by this development. Alternative 1 was a raised median on Blankenship that would have eliminated left turns from Tannler Drive onto Blankenship – greatly inconveniencing people coming down Tannler to Blankenship who wished to turn left to enter the I-205 freeway. This proposal would have likely rerouted some Tannler traffic onto Greene Street – a street which was not designed to be a Collector. It also would have undoubtedly caused some traffic to turn right at the bottom of Tannler and then left into the Albertson's parking lot to allow for a cut through the parking lot to reenter Blankenship at the

second exit from the parking lot—greatly increasing traffic in the front of the Albertson's store. Mercifully, this alternative was withdrawn by the applicant in a letter from the applicant's traffic engineer, Mr. Brian Dunn, dated September 4, 2006 to the Planning Commission in which he stated that the applicant "...no longer supports the raised median concept." This withdrawal was also confirmed in a letter from Mr. Michael Robinson, the applicant's attorney, to the Planning Commission, dated September 25, 2006.

Proposed mitigation measure 2 was actually no more than a discussion of a possible realignment of Tannler Drive to change the location of its intersection with Blankenship Road. This realignment was being considered by City Planning Staff as a part of the now defunct Tannler East development. No further discussions of this mitigation are presently taking place.

So, while the applicant admits that traffic mitigation measures are necessary because of the traffic generated by this development, no actual mitigation measures are proposed. In his September 25, 2006 letter to the Planning Commission, Mr. Robinson mentions a Condition of Approval which would result in a payment from the applicant to be applied to future mitigation measures. He states that, the payment "...shall be based upon the Applicant's p.m. peak hour trips as a percentage of future p.m. peak hour trips at full build out through each intersection." **We object to a Condition of Approval which purports to look into the future to calculate a dollar figure for mitigation.** By basing the payment on "full build out," the applicant is ensuring that the minimum possible payment will be made. Also, this payment is not actually a mitigation for the traffic issues this development will be causing **today**, it is merely a payment which will be supposedly be spent by the city in the future for traffic mitigation in this area. Given the present financial condition of the City, who it to say whether this payment will even be able to be located in the future when these mitigation measures may be implemented?

Finally, in denying the proposed Tannler East development, the City Council has already expressed its dismay at the existing problems with the 10th Street corridor—which includes the Blankenship/Tannler intersection. The Tamarisk development, as proposed, will add in excess of 340 vehicle trips per day to this already LOS F intersection. **Adding more traffic to this intersection with no real mitigation is unacceptable and grounds for denial of this application.**

CONCLUSION

The overarching problem of this application is that staff's findings for many of the applicable approval criteria are nowhere to be found. **Without demonstrating compliance with each and every approval criteria, the application is fatally flawed and cannot be approved.** It is for these reasons, in addition to other concerns raised within the body of this memorandum, that we urge the Planning Commission to deny this application on the grounds included herein.

Signed: Ken Pryor

Ken Pryor, Vice President
Tanner Basin Neighborhood Association

Date: 10/12/06

City of West Linn
Attendance Sign-Up Sheet

Date: October 12, 2006

PLANNING COMMISSION

Item #:
- **a) SUB-05-06; 35-Lot PUD, ZC, Variance& Wetland, 1200 Tamarisk**
- **b) SUB-06-03; 6-Lot Subdivision & Wetlands, 2929 Parker Rd**
- **c) DR-06-30; Design Review & Non-Conforming Use, 18675 Willamette Dr, The Dog Club of West Linn.**

Signing in on this sheet establishes your standing and your right to appeal in this quasi-judicial or legislative case as long as this is the first hearings body to review the case. PLEASE PRINT (illegible names may void your standing) and fill in Item # from above list.

NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
MICHAEL ROBINSON	1120 NW COUCH ST, PORTLAND, OR 97209-4128	503 727-2264	MCRobA	A(a)+(b)
BRAD KILBY	13755 SW Borne Ferry Rd LAKE OSWEGO OR 97035	503 635-3618	Brady M King	A(a)+(b)
MIKE PEEBLES	" "	503 635 3618	Mike Peebles	A(a)+(b)
TONY MARNELLA	P.O. Box 1988 LAKE OSWEGO, 97035	503-709-3100		A(a)+(b)
BRIAN DUNN	7505 SE 32nd Ave	503-774-2669		A(a)(b)
Cathy Cox	~~35350~~ 18675 Willamette Dr West Linn, OR 97068	503-635-3523		C
Harold N. Cox	The Dog Club of West Linn 18675 Willamette Drive WL	503-635-3523		"C"
Vernon Lee	19353 SW Agnew Portland, OR 97225	503-245-7100		C
Katie Daniel & Don Burke	1090 SW Woodbine Rd	503-519-6524		A A
Alice Richmond	3939 Parker Rd			
Roberta Schwarz	22067 Miller Dr WL			a
GARY & NANCY	HOGUE 2929 PARKER Rd	657-3817		
Richie Kathy Grenier	1080 S. Woodbine	657-4376		A
Ken Pryor	2119 GREENE	723 0054		A
BILL MANNOCK	2570 TROY CT.	503 657 8274		A
Scott Sypowski	4740 Cole Ave	503-722-2277		B

City of West Linn
Attendance Sign-Up Sheet

Date: October 12, 2006

PLANNING COMMISSION

Item #:

a) SUB-05-06; 35-Lot PUD, ZC, Variance& Wetland, 1200 Tamarisk
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NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
Jeff Shope	16771 Boones Ferry Rd Lo 97035	503 496-0544		B

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Tamarack and Parker

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Brad Kilby DATE 10/12/06

STREET ADDRESS 17355 SW Boones Ferry Road

CITY Lake Oswego STATE OR ZIP 97035

I wish to testify on the agenda item(s) listed below or offer information during community comments.

SUBJECT AND AGENDA #(s) 4(a) + (b)

IN SUPPORT ✓ NEITHER FOR NOR AGAINST _____ IN OPPOSITION _____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) _____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) _____

NAME OF ORGANIZATION (if applicable) Applicant

*If group, please list people you represent.

_____ _____

_____ _____

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_____ _____

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Tamarisk

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Roberta Schwarz DATE 10·12·06

STREET ADDRESS 2206 Tannler Dr

CITY West Linn STATE OR. ZIP 97068

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SUBJECT AND AGENDA #(s) Tamarisk (Item a)

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ✓

NAME OF ORGANIZATION (if applicable) N. L. W. L.

*If group, please list people you represent.

Neighbors for a Livable West Linn includes residents from several different neighborhoods in West Linn.

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Tanorash

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Katie Daniel DATE 10/12/06

STREET ADDRESS 1090 SW Woodbine

CITY West Linn STATE _____ ZIP

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SUBJECT AND AGENDA #(s) 4A

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

_____ _____

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Tamarack

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Ken Pryor DATE 10/12/06

STREET ADDRESS 2206 Tanner Dr

CITY WL STATE OR ZIP 97068

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SUBJECT AND AGENDA #(s) (a) Tamarisk

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (~~10 MIN. LIMIT~~) ✓ 20 please

NAME OF ORGANIZATION (if applicable) TBNA

*If group, please list people you represent.

Tanner Basin Neighborhood Assn

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Tamarack Applicant

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME BRIAN DUNN DATE 10/12/06

STREET ADDRESS 7505 SE 32nd AVE.

CITY PORTLAND STATE OR 97202 ZIP

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SUBJECT AND AGENDA #(s) Tamarish PUD

IN SUPPORT X NEITHER FOR NOR AGAINST ____ IN OPPOSITION ____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) X Applicant

NAME OF ORGANIZATION (if applicable) DUNN TRAFFIC ENGINEERING

*If group, please list people you represent.

TONY MARNELLA

PLEASE BE PREPARED TO IDENTIFY THE SPECIFIC APPROVAL CRITERIA YOU ARE ADDRESSING.

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Tomorrow Applicant

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME MIKE PEEBLES - Otak DATE 10/12/06

STREET ADDRESS 17355 SW Boones Ferry Rd

CITY Lake Oswego STATE OR ZIP 97035

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SUBJECT AND AGENDA #(s) 4a

IN SUPPORT X w/ applicant NEITHER FOR NOR AGAINST ____ IN OPPOSITION ____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) ____

*If group, please list people you represent.

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Tamarack Applicant

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME MICHAEL ROBINSON DATE 10.12.06

STREET ADDRESS 1120 NW COUCH ST, TENTH FLOOR

CITY PORTLAND STATE OR ZIP 97209.4128

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SUBJECT AND AGENDA #(s) 4(a) - TAMARACK SUBDIVISION

IN SUPPORT ____ ✓ (APPLICANT) NEITHER FOR NOR AGAINST ____ IN OPPOSITION ____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

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TO: Planning Commission
Peter Spir
Bryan Brown
David Rittenhouse
Ken Pryor
Roberta Schwarz
Willamette Neighborhood Association

FROM: Jack and Julia SIMPSON, 1671 Killarney Drive, 97068

SUBJECT: Restatement and *Amendment* of Request for Denial of Tamarisk Subdivision (SUB-05-06, et al)

Ref (1): P Spir Memo dtd 18 AUG 06 re: above-cited PUD
Ref (2): Staff Report, Findings and Approval Criteria dtd 24 AUG 06 re: above-cited PUD

DATE: 12 OCT 06

1. We request that this E-mail be entered into the record of the COWL Planning Commission deliberations on this PUD as *amendment of* our *earlier written* testimony regarding this subject.

2. We continue to oppose this PUD, and urge the Commission to deny applicants' requests as set forth in Ref (2) above.

3. Foremost among our objections to this application are constraints imposed by trees, traffic access and egress (especially under emergency conditions) and ecological protections. But we also object to this application because of other points of noncompliance with both the letter and intent of city code statutes.

4. Staff's voluminous report (Ref 2) reflects efforts to bend ordinances to accommodate this development and to justify its recommendation of approval. The most egregious instance concerns traffic impacts, not only near the development itself, but also reflecting onto more distant problematic traffic patterns.

5. As implied by Mr. Spir, there is no magic wand to wave over the 10th/Blankenship/Tannler/Salamo corridor. This development, as proposed, does not address the traffic impacts that will result. The solutions proffered by applicant's traffic engineer of additional signalization along Blankenship or diversion of traffic flow onto Green or through the Albertson's parking lot are totally unacceptable.

6. The solution proposed by staff in Condition of Approval #5 (Ref 1, p. 3) also is unacceptable. It gives the developer carte blanche to increase the traffic impact on an already failing set of intersections and streets, with the vague promise of amelioration through dedicated developer funds "*in the amount proportionate to the anticipated*

impacts ***identified in the applicant's traffic study."*** We restate our objections to this inadequate level of traffic planning. The impact of increased traffic on these intersections alone should be the basis for denial of this application. It is poor policy, in our opinion, to approve this application on the mere hope that the traffic situation eventually will be rectified. An extra traffic signal will not solve the present traffic problems

7. In the Commission's meeting of 24 AUG 06, applicant stated that $5,000 would be an appropriate amount in this instance. We strongly disagree, and suggest instead an immediate minimum cash contribution of $100,000 with a bond guaranteeing reimbursement to the city of a minimum of $1 million of potential costs. Further, we request the Commission to require applicant to submit an up-to-date traffic impact analysis by an engineering firm satisfactory to the commission.

8. Were there to be a large fire or other major emergency within the development or along DeBok before its intersection with Killarney Drive, emergency vehicles and the emergency itself would severely hinder, if not prevent, regular traffic movement or any kind of escape route. We call Commissioners' attention to the recent fire in the Manzana Restaurant in Lake Oswego. Constrained egress from that complex's parking structure trapped motorists and eliminated any legal escape by vehicle. Obviously panicked motorist who did drive away from the parking structure chose the highly dangerous (and illegal) course of driving over charged fire hoses with no regard for the safety of fire personnel. It takes little imagination to visualize a similar disastrous scenario along Tamarisk or DeBok.

9. The extended *cul de sac* along Tamarisk and DeBok created by this proposed development presents insurmountable barriers to effective first responder access, and creates an effective inescapable trap for users of those streets. We point out to the Commission that virtually all traffic from the additional housing units must funnel onto Tamarisk Drive and onto DeBok, thence into the 10th Street traffic corridor–an intolerable overload on this failed intersection

10. Mr. Spir states that applicant's drawing of "*Proposed Mitigation for Blankenship Intersection*" at Tannler Drive is "*a best guess–nothing more*" A "best guess" is not, in our opinion, adequate for approval.

11. Should the Commission, despite these and other glaring insufficiencies, approve this PUD, it should include the condition that the developer abide fully by the 20% Rule regarding tree preservation by requiring elimination of proposed Lot #20 and preservation of the three identified significant trees thereon. Conditions also should be imposed to insure continued health of the trees during and after development, with protective fencing as stated in the working version of the Tree Technical Manual. In this proposed PUD, only the "insignificant trees" identified by City Arborist Mike Pekins stand between proposed new homes and the I-205 freeway. Those trees are the only interposing softening elements that now reduce sound penetration in the proposed development and

on further to the north into established housing areas. Although we object to the underlying principle of Measure 37, we urge the Commission to consider that approval of this application might well raise the spectre of lawsuits alleging devaluation of neighboring established properties because of increased sound levels. Many people do not readily understand that freeway noise drives away potential buyers. As former co-chairs of the ad hoc Tree Ordinance committee, we wish to point out underlying, basic tenets of the ordinance–that the tree canopy of West Linn should not be unduly jeopardized, and that clever paper transfers of "credits" to satisfy an arbitrary 20% of trees that must be preserved do not recognize the reality of the proposed solutions–that trees will be felled and noise will increase, and property values will suffer.

12. WE STRONGLY URGE DENIAL OF THIS REQUEST.

City of West Linn
PLANNING & BUILDING DEPT.
MEMORANDUM

TO: West Linn Planning Commission

FROM: Peter Spir, Associate Planner

DATE: October 5, 2006

SUBJECT: Significant tree protection for Tamarisk Subdivision (SUB-05-06, et al)

Significant Trees

On September 21, 2006, OTAK submitted their latest calculations for significant tree protection. (see attached exhibit). Of the total 408,593 square feet of non-type I and II lands, significant trees cover 70,234 square feet or 17.2% of the non-type I and II lands. That is not too far off the 20% goal.

The applicant goes on to offer saving just 27,468 square feet of those significant trees. That knocks the percent saved down to 6.7%. Well below the 20%. That number is even further reduced by 5,950 square feet of significant treed area in the right of way (ROW). The net result is that the applicant is saving only 21,518 square feet or 5.2 percent of non-type I and II lands for significant tree protection (21,518 divided by 408,593).

When the CDC language for significant trees was adopted by City Council, Councilor Dee Burch made it clear to staff that the 20% figure was not aspirational or optional. He wanted the full 20% when a site comprises significant trees. And if the number of significant trees amounted to just 10% of the site then all of those trees should be saved.

There are exemptions. CDC Section 55.100(B)(2)(c, e, f) lists those exemptions. Currently, both Parks and Planning staff are unconvinced that the application meets those exemptions to justify the removal of significant trees. For example, it has been repeatedly stated by staff that grading to produce flatter more buildable lots is not acceptable basis for tree removal.

Staff wants to see a tree inventory with each tree slated for removal identified and a notation in table form on the tree map that explains how each tree removal meets the exemptions of CDC 55.100(B)(2)(c, e, f). Exemptions are where the tree is clearly in the road ROW, where the tree blocks access to the site (not just access to a lot) or are clearly necessary for street grading. We will also allow exemption for detention facility construction. City Engineering will ultimately recommend the necessity of the type and extent of street grading.

Staff expects that many trees will fail that test and will have to be retained.
The applicant can either not build on those lots compromised by those trees or may re-configure the lots so that more of the trees fall on common lot lines and therefore do not get in the way of home footprints or construction. To accomplish this, a continuance may be required with commensurate 120-day waiver. Proceeding with the application "as is" on October 12, 2006 will see a continuing staff recommendation of denial.

Mitigation is allowed for tree loss but ONLY for exempted tree loss per 55.100(B)(2)(b). The set aside of the area at the northwest corner of the site was recognized as a nice gesture but it should not have been seen as "buy off" by the city that would allow all non-exempted trees to be removed.

---

otak

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

RECEIVED
OCT 11 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. _____ TIME _____

October 6, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Peter:

Pursuant to our conversation yesterday, Mike Peebles and I have gone over the grading plan, made adjustments where possible, and preserved additional trees. I am providing a list of the 53 trees that Walt Knapp and Mike Perkins put together and have put individual comments at the end of each tree explaining why the tree would have to be removed. I am also providing a color exhibit reflecting the information provided in this table. The information is summarized in the paragraph below.

There are a total of 59 significant trees onsite. There are 5 additional trees that were considered significant by our arborist, but never confirmed by the City Arborist. Therefore, we did not consider the 5 additional trees within the calculations provided to you with this submittal. Of the 59 significant trees onsite, we are saving 37, proposing to monitor another 9 during the course of construction because they are located within a building envelope or setback, and proposing to remove a total of 13 significant trees to accommodate construction of the streets within the development and the driveways onto the lots from the street grades. The profiles of the streets and driveways have been designed to satisfy the City of West Linn Design and Construction Standards.

We propose to save the trees that were originally on lot 20 and replace that lost lot between proposed lots 15 and 16 (please see the attached exhibit). We are also proposing to re-align the lot line between proposed lots 1 and 2 into a north/south orientation to save some additional trees on those two lots. There are some trees identified in blue on the attached exhibit that are located in very precarious locations that may or may not be significantly affected by the proposed construction. We are proposing that protection of these 4 trees be re-evaluated at the time of building construction.

As it stands then, the canopy area of all of the significant trees represents 17.2 percent of the total type III and IV lands. Of the 17.2 percent significant tree canopy area, 5.5 percent of the canopy is being removed to accommodate street, access, and utility construction, 2 percent of the canopy is located in the building envelope and would need to be evaluated at the time of placing structures on the site, and the remaining 9.7 percent would be protected. We will work towards preservation over removal in final design.

Finally, we propose to mitigate for the 7.5 percent of lost canopy by dedicating the northwesterly acre of land on the west side of the lower drainage for protection and preservation of future significant trees. There are currently several hundred trees within that area that are not considered significant, but could become significant much sooner than replacing the trees on an inch-by-inch basis.

Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosures: Tree Table
Tree Exhibit – Color

FINAL SIGNIFICANT TREE PLAN 10/06/06

Svy. Point	Species	DBH	Description	C-Rad (ft)	Land Type	Significant	Rx	Comments
1138	western redcedar	24	Cedar-24	13	4	x	Remove	SAVE/ Located on the property line within r.o.w. at entry to site
1144	bigleaf maple	24	Maple-24	18	4	x	Save	
1152	western redcedar	18	Cedar-18	11	4	x	Remove	SAVE
1153	bigleaf maple	24	Maple-24	18	4	x	Remove	SAVE
1157	western redcedar	16	Cedar-16	11	4	x	Remove	SAVE
1158	western redcedar	36	Cedar-36	13	4	x	Remove	SAVE
1173	bigleaf maple	18	Maple-18	15	4	x	Remove	SAVE
1178	bigleaf maple	24	Maple-24	18	4	x	Save	
1212	western redcedar	30	Cedar-30	13	4	x	Remove	SAVE
1216	western redcedar	24	Cedar-24	13	4	x	Remove	SAVE
1239	western redcedar	24	Cedar-24	13	4	x	Remove	Tree located within building envelope/ Future evaluation required
1285	Douglas-fir	30	Fir-30	14	4	x	Save	
1286	bigleaf maple	30	Maple-30	22	4	x	Remove	Tree located within building envelope/ Future evaluation required
1307	bigleaf maple	18	Maple-18	15	4	x	Remove	SAVE
1309	Douglas-fir	20	Fir-20	11	4	x	Save	
1312	western redcedar	26	Cedar-26	13	4	x	Remove	Tree located within building envelope/ Future evaluation required
1313	bigleaf maple	24	Maple-24	18	4	x	Remove	Tree located within building envelope/ Future evaluation required
1326	western redcedar	36	Cedar-36	13	4	x	Remove	Tree located within building envelope/ Future evaluation required
1362	western redcedar	18	Cedar-18	11	4	x	Remove	Tree located within building envelope/ Future evaluation required
1374	western redcedar	30	Cedar-30	13	4	x	Remove	Tree located within building envelope/ Future evaluation required
1421	western redcedar	24	Cedar-24	13	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1534	bigleaf maple	18	Maple-18	15	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1535	bigleaf maple	18	Maple-18	15	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1536	bigleaf maple	18	Maple-18	15	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1614	bigleaf maple	20	Maple-20	16	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1618	bigleaf maple	20	Maple-20	16	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1619	bigleaf maple	20	Maple-20	16	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1620	bigleaf maple	18	Maple-18	15	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1681	bigleaf maple	18	Maple-18	15	4	x	Remove	SAVE
1682	bigleaf maple	24	Maple-24	18	4	x	Save	
1684	bigleaf maple	18	Maple-18	15	4	x	Save	
1685	bigleaf maple	30	Maple-30	22	4	x	Save	
1687	bigleaf maple	18	Maple-18	15	4	x	Save	
1688	bigleaf maple	18	Maple-18	15	4	x	Save	
1693	bigleaf maple	18	Maple-18	15	4	x	Save	
1696	western redcedar	30	Cedar-30	13	4	x	Save	
1699	bigleaf maple	20	Maple-20	16	4	x	Save	
1701	bigleaf maple	18	Maple-18	15	4	x	Remove	Tree located within building envelope/ Future evaluation required
1757	bigleaf maple	24	Maple-24	18	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
1879	western redcedar	38	Cedar-38	13	4	x	Remove	Tree located within building envelope/ Future evaluation required
1886	Douglas-fir	40	Fir-40	15	3	x	Save	
2981	western redcedar	30	Cedar-30	13	3	x	Save	

3103	bigleaf maple	36	Maple-36	25	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
3105	western redcedar	22	Cedar-22	12	4	x	Save	
3400	bigleaf maple	18	Maple-18	15	4	x	Save	
3401	western redcedar	34	Cedar-34	13	4	x	Save	
3564	western redcedar	24	Cedar-24	13	4	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
3623	western redcedar	22	Cedar-22	12	3	x	Remove	Tree is located within an area affected by grading to make the street grades work, impedes access to the property, or is located in an area being graded for water quality facilities.
3679	Douglas-fir	12	Fir-12EDG	8	4	x	Save	Significant: Screening - freeway
3680	Douglas-fir	12	Fir-12EDG	8	4	x	Save	Significant: Screening - freeway
3681	Douglas-fir	14	Fir-14EDG	9	4	x	Save	Significant: Screening - freeway
3682	Douglas-fir	14	Fir-14EDG	9	4	x	Save	Significant: Screening - freeway
3684	Douglas-fir	16	Fir-16EDG	10	4	x	Save	Significant: Screening - freeway
3686	Douglas-fir	16	Fir-16EDG	10	4	x	Remove	SAVE
3688	Douglas-fir	12	Fir-12EDG	8	4	x	Save	Significant: Screening - freeway
3689	Douglas-fir	12	Fir-12EDG	8	4	x	Save	Significant: Screening - freeway
3690	Douglas-fir	12	Fir-12EDG	8	4	x	Save	Significant: Screening - freeway
3713	bigleaf maple	30	Maple-30	22	4	x	Save	
3714	bigleaf maple	36	Maple-36	25	4	x	Save	

Svy. Point	Species	DBH	Description	C-Rad (ft)	Land Type	Significant	Rx	Comments
3147	western redcedar	30	Cedar-30	13		?	Save	Reconsider significance
3325	western redcedar	20	Cedar-20	12	4	?	Save	Reconsider significance
3359	bigleaf maple	24	Maple-24	18	4	?	Save	Reconsider significance
3429	bigleaf maple	18	Maple-18	15		?	Save	Reconsider significance
3431	bigleaf maple	16	Maple-16	14		?	Save	Reconsider significance

x = significant tree
? = potentially significant

Spir, Peter

From: Spir, Peter
Sent: Thursday, October 05, 2006 1:43 PM
To: 'brad.kilby@otak.com'
Cc: Brown, Bryan; 'mrobinson@perkinscoie.com'
Subject: tamarisk

Brad
I spoke w/ Bryan Brown and he agreed that section C below can be reasonably applied to access driveways to individual lots (e.g. lots 22 and 23) where grading is needed to construct the access driveway and/or construct the driveway to the city's construction code standard of 15%.

c. *Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss.* ***These provisions shall also apply in those cases where access, per construction code standards, to a parcel is blocked by a row or screen of significant trees or tree clusters.***

e. *For arterial and collector street projects, including Oregon Department of Transportation street improvements, the roads and graded areas shall avoid tree clusters where possible. Significant trees, tree clusters, and heritage tree loss may occur, however, but shall be minimized.*

f. *If the protection of significant tree(s) or tree clusters is to occur in an area of grading that is necessary for the development of street grades, per City construction codes, which will result in an adjustment in the grade of over or under two feet, which will then threaten the health of the tree(s), the applicant will submit evidence to the Planning Director that all reasonable alternative grading plans have been considered and cannot work. The applicant will then submit a mitigation plan to the City Arborist to compensate for the removal of the tree(s) on an "inch by inch" basis (e.g., a 48-inch Douglas Fir could be replaced by 12 trees, each 4-inch). The mix of tree sizes and types shall be approved by the City Arborist.*

We also think it is important that you map the extent of grading required to build the roads and cul de sac to construction code standards.

Preserving the significant tree cluster on lot 20 is regarded as a positive move.

Also, aligning the lots so that more trees straddle common lot lines will help preserve more trees. (It is

understood that you may not necessarily propose that these trees be protected by easements.)
Please let me know what percent of the non-type I and II lands is saved as a result of these changes.
We will still anticipate using the area at the NW corner of the site for planting trees to mitigate tree losses elsewhere on a one inch to one inch basis.
The Planning Department stands by the interpretation that the 20% rule is not aspirational or optional.
Let me know, ideally by e-mail, if I have missed any point of discussion.
Peter

City of West Linn
PLANNING & BUILDING DEPT.
MEMORANDUM

TO: West Linn Planning Commission

FROM: Peter Spir, Associate Planner

DATE: October 5, 2006

SUBJECT: Significant tree protection for Tamarisk Subdivision (SUB-05-06, et al)

Significant Trees

On September 21, 2006, OTAK submitted their latest calculations for significant tree protection. (see attached exhibit). Of the total 408,593 square feet of non-type I and II lands, significant trees cover 70,234 square feet or 17.2% of the non-type I and II lands. That is not too far off the 20% goal.

The applicant goes on to offer saving just 27,468 square feet of those significant trees. That knocks the percent saved down to 6.7%. Well below the 20%. That number is even further reduced by 5,950 square feet of significant treed area in the right of way (ROW). The net result is that the applicant is saving only 21,518 square feet or 5.2 percent of non-type I and II lands for significant tree protection (21,518 divided by 408,593).

When the CDC language for significant trees was adopted by City Council, Councilor Dee Burch made it clear to staff that the 20% figure was not aspirational or optional. He wanted the full 20% when a site comprises significant trees. And if the number of significant trees amounted to just 10% of the site then all of those trees should be saved.

There are exemptions. CDC Section 55.100(B)(2)(c, e, f) lists those exemptions. Currently, both Parks and Planning staff are unconvinced that the application meets those exemptions to justify the removal of significant trees. For example, it has been repeatedly stated by staff that grading to produce flatter more buildable lots is not acceptable basis for tree removal.

Staff wants to see a tree inventory with each tree slated for removal identified and a notation in table form on the tree map that explains how each tree removal meets the exemptions of CDC 55.100(B)(2)(c, e, f). Exemptions are where the tree is clearly in the road ROW, where the tree blocks access to the site (not just access to a lot) or are clearly necessary for street grading. We will also allow exemption for detention facility construction. City Engineering will ultimately recommend the necessity of the type and extent of street grading.

Staff expects that many trees will fail that test and will have to be retained.
The applicant can either not build on those lots compromised by those trees or may re-configure the lots so that more of the trees fall on common lot lines and therefore do not get in the way of home footprints or construction. To accomplish this, a continuance may be required with commensurate 120-day waiver. Proceeding with the application "as is" on October 12, 2006 will see a continuing staff recommendation of denial.

Mitigation is allowed for tree loss but ONLY for exempted tree loss per 55.100(B)(2)(b). The set aside of the area at the northwest corner of the site was recognized as a nice gesture but it should not have been seen as "buy off" by the city that would allow all non-exempted trees to be removed.

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The applicant can either not build on those lots compromised by those trees or may re-configure the lots so that more of the trees fall on common lot lines and therefore do not get in the way of home footprints or construction. To accomplish this, a continuance may be required with commensurate 120-day waiver. Proceeding with the application "as is" on October 12, 2006 will see a continuing staff recommendation of denial.

Mitigation is allowed for tree loss but ONLY for exempted tree loss per 55.100(B)(2)(b). The set aside of the area at the northwest corner of the site was recognized as a nice gesture but it should not have been seen as "buy off" by the city that would allow all non-exempted trees to be removed.

Spir, Peter

From: Spir, Peter
Sent: Friday, September 29, 2006 8:29 AM
To: 'brad.kilby@otak.com'
Cc: 'mrobinson@perkinscoie.com'; Brown, Bryan
Subject: tamarisk

Brad
For the Oct 12 hearing , in order for staff to support the tree plan, I propose that you list each tree that is proposed to be cut down and then tie that tree to one of the three rationale listed in CDC 55.100(B)(2)(c,e or f). It is only after the tree's removal has been justified in that way that mitigation at the NW corner is allowed per subsection (f) above.
So for example : "*tree #1380 to be removed due to grading for street A which will is expected to cover the tree base w/ 2 feet of fill and damage the root system*"
This list should be in our hands by Monday Oct 9 at the latest.

If the tree is being removed for a flatter lot to make it more marketable and/or to expedite development then we will review those requests on a case by case basis with the individual builders for those lots at the time they submit their building permits. If you have any other ideas please let me know as soon as you can.
Thanks
Peter

Spir, Peter

From: Brad Kilby [brad.kilby@otak.com]

Sent: Thursday, September 28, 2006 2:38 PM

To: Spir, Peter; Brown, Bryan; Jordan, Chris

Cc: mrobinson@perkinscoie.com; marnella@comcast.net; Mike Peebles; walt.knapp@comcast.net; brian@dunntraffic.com

Subject: content.pdf

Peter, Bryan, and Chris,

I am attaching a signed letter requesting that the Planning Commission continue the public hearing for the Tamarisk Subdivision **FILE NOS. SUB-05-06/ZC-05-09/VAR 05-10/MISC-05-56** until the October 12th Hearing. I can be reached at (503)699-2495 if you have any questions. Thank you.

Brad Kilby, AICP | Planner
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.2495 | f: 503.635.5395
www.otak.com

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RECEIVED
SEP 29 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. _____ TIME _____

September 28, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Hearing of September 28, 2006
Otak Project No. 13458

Dear Peter:

On behalf of my client "550 Investments, LLC", we would like to request a continuance to this evening's hearing on the Tamarisk Subdivision. This request is being made in a good faith effort to resolve the issue related to trees with City staff prior to going back before the Planning Commission. We are also granting an extension of two weeks to the 120-day time clock. If more time is needed after this continuance, we are amicable to discussing another reasonable extension.

I would also like to take this opportunity to formally request a meeting with you, Bryan Brown, and Chris Jordan to discuss the tree issue. Our preference would be to meet sometime next week to allow us time to prepare additional information for the October 12, 2006 hearing. Call me at (503) 699-2495 if you have any questions.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
cc: Bryan Brown (via email)
Chris Jordan (via email)
Mike Robinson
Tony Marnella

City of West Linn
Attendance Sign-Up Sheet

Date: September 28, 2006

PLANNING COMMISSION

Item #:
- a) SUB-05-06; 35-Lot PUD , 1200 Tamarisk
- b) MISC-06-11; City Surface Water Management Plan
- c) MISC-05-46; CDC Amend Adequate Public Facilities
- d) MISC-06-30; CDC AmendAppeal Process

Signing in on this sheet establishes your standing and your right to appeal in this quasi-judicial or legislative case as long as this is the first hearings body to review the case. PLEASE PRINT (illegible names may void your standing) and fill in Item # from above list.

NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
BRIAN EASTMAN	1827 Sylvan Way. W Linn	503 914 6221		
J. ELLEN HACCREY	2237 ST MORITZ LN	503-723-5916		
Moon [illegible]	19775 Derby ST	503 344 0716		
Allied Richmond	Parker Rd			
JIM OHMENS	7285 TANNLER DR	503-557-5175		
Lynn Fox	PO Box 731 [illegible]	503 655 5647		
DAVID RITENHOUSE	2101 GREENE ST	503 655 0820		MISC 6-30
Jon Udell	2255 Tannler Dr	503 722 9425		
Karie Oakes	1125 Marylhurst DR.	503-675-9697		MISC 05-5[illegible] & MISC 06-[illegible]
Linda Kulstad	2115 Greene ST			

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City of West Linn
Attendance Sign-Up Sheet

Date: September 28, 2006

PLANNING COMMISSION

Item #:

a) SUB-05-06; 35-Lot PUD , 1200 Tamarisk
b) MISC-06-11; City Surface Water Management Plan
c) MISC-05-46; CDC Amend Adequate Public Facilities
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Signing in on this sheet establishes your standing and your right to appeal in this quasi-judicial or legislative case as long as this is the first hearings body to review the case. PLEASE PRINT (illegible names may void your standing) and fill in Item # from above list.

NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
KEN PRYOR	2119 GREENE	723-2554	Ken Pryor	
Jack Simpson	1671 Killarney Dr.	655 9819		
Frank Hessen	2160 Valley View Dr	635-4741		
MARK DEACHMAN	2190 River Hgts Cir	655 9711		
Julia Simpson	1671 Killarney Dr	655-9519	Julia Simpson	
Carla Martinkat	1872 Hillcrest Dr	639-0917		
Jeff Treece	1880 Hillcrest Dr	656 1218		MISC 06-30
Ben Burki & Katie Daniel	1010 S Woodbine Rd	519-6521		
Cathy Grenier Rich Grenier	1080 S Woodbine Rd	656-1215		
Curt Sammer	3038 Clubhouse Ct	655 2682		
Jim Koll	1990 Valley View	810-1101		
Norine Baillif	1827 Barnes Cir	657-5344		
Margaret Smith	1835 Barnes Cir	657-0995		
Fred Seemann	1835 Barnes Circle	657-0995		
ALLEN BAILLIF	1827 BARNES CIR	657-5344		
BILL MAXWELL	2570 TROY CT.	657-8279		

PLEASE PRINT

CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Katie Daniel DATE 9/28/04

STREET ADDRESS 1010 SW Woodbine

CITY West Linn STATE _____ ZIP _____

I wish to testify on the agenda item(s) listed below or offer information during community comments.

SUBJECT AND AGENDA #(s) 4 A

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION L

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

PLEASE BE PREPARED TO IDENTIFY THE SPECIFIC APPROVAL CRITERIA YOU ARE ADDRESSING.

PLEASE NOTE: Testimony or information on any agenda item shall be heard only during the time set aside for public hearings. The Chairman will control the time of testimony and may vary procedures. A majority vote of the Hearing body (i.e., Planning Commission, City Council) may permit variance from standard procedures. Testimony or information on non-agenda items may be accepted for placement on a future agenda.

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City of West Linn
PLANNING & BUILDING DEPT.
MEMORANDUM

TO: West Linn Planning Commission

FROM: Peter Spir, Associate Planner

DATE: For September 28, 2006 hearing

SUBJECT: Staff responds to questions and issues raised by Planning Commission at the August 24, 2006 hearing for Tamarisk Subdivision (SUB-05-06, et al)

Setbacks in PUDs

Commissioner Fisher inquired about the side yard setbacks in PUDs.
CDC Section 24.180 states:

D. Structure setback provisions.

1. *Setback areas contiguous to the perimeter of the project shall be the same as those required by the base zone unless otherwise provided by the base zone or Chapter 55.*
2. ***The side yard setback provisions shall not apply except that all detached structures shall maintain a minimum side yard setback of five feet, or meet the Uniform Building Code requirement for fire walls.***
3. *The side street setback shall be 10 feet.*
4. *The front yard and rear yard setbacks shall be 15 feet. Porches may encroach forward another five feet. Additional encroachments, such as porches, are allowed per CDC Chapter 38.*
5. *The setback for a garage in the front yard that opens onto the street shall be 20 feet unless the provisions of Section 41.010 apply. Garages in the rear yard may meet the standards of Section 34.050.*

6. *The applicant may propose alternative setbacks. The proposed setbacks must be approved by the decision-making body and established as conditions of approval, or by amendment to conditions of approval. The decision-making body will consider among other things maintenance of privacy, adequate light, defensible space, traffic safety, etc.*

The applicant will use (D)(2) above and meet the TVFR Fire Separation requirement of three feet for the side yard setback. A setback of three feet (six feet between units) is common throughout West Linn's many town home projects in the Barrington Heights, Hidden Springs and Cascade Summit neighborhoods. Staff has received no complaints from residents on that issue over the years.

Neighborhood Meetings

Commissioner Babbitt expressed concern about lack of a neighborhood meeting with the Tanner Basin Neighborhood Association. Lynn Fox and Roberta Schwarz also expressed concern that their neighborhood associations had not been consulted under the provisions of CDC Section 99.038.

CDC 99.038 states

2. *The applicant shall contact by letter **all recognized neighborhood associations whose boundaries contain all or part of the site of the proposed development** and all property owners within 500 feet of the site.*

The only neighborhood association contiguous to the Tamarisk subdivision is the Willamette Neighborhood Association. The applicant met with that association per code. All requirements of CDC Section 99.038 have been met.

FYI: As the crow flies, the nearest edge of the Tanner Basin NA is 2,001 feet away from the project site, the Hidden Springs NA is 5,431 feet or one mile away and the Blankenship/Tannler intersection is 4,313 feet away.

10th Street and I-205 Area Traffic Impacts
Proportionality Calculations for Off-Site Street Improvements

The applicant has already formally retracted any proposal to identify specific improvements at this interchange area. Hopefully, after receiving both written and oral declarations confirming that fact during the Planning Commission hearing, concern about closing left turns on Tannler Drive will be quieted for good.

Instead, the applicant has agreed to contribute monies towards improvements at 8th Ave./8th Court and 10th Street intersection and the Blankenship and Tannler Drive intersection in the amount proportionate to the anticipated impacts identified in the applicant's traffic studies. (The Planning Commission has already heard testimony from City Engineer Gary Parkin that the applicant's traffic study has been reviewed and found to be credible.) The applicant's proportionate share shall be based upon the applicant's PM peak hours trips as a percentage of future PM peak hour trips at full build out through each intersection. The money will be collected prior to final plat.
The money will be directed to improvements per the, as yet to be completed, Transportation System Plan (TSP). The City is fast tracking the preparation of a TSP sub-element dealing specifically with this interchange area but it will not be ready until 2007.

Commissioner Babbitt wanted to see the proportionality calculations from City Engineering staff regarding street improvements.

The City of West Linn Engineering staff prefers not to identify a specific dollar amount at this time since inflation could ensue in intervening years before final platting to the extent that the year 2006 dollars would no longer cover the proportionate share of impacts to make the needed improvements.

Having said that, if the money were to be exacted today from the applicant, the applicant would be expected to pay 777 dollars for every PM peak hour trip generated by this subdivision at the 8th Ave and 10th Street intersection. The applicant would also have to pay 500 dollars for every PM peak hour trip generated by this subdivision at the Tannler and Blankenship intersection. Again these dollar amounts are expected to increase with inflation by final plat phase.

Natural Drainageway Dedication vs. Easement

Chair Kovash and Commissioner Bonoff were concerned about the applicant's early unwillingness to dedicate the open space areas (wetlands, drainageways, creeks etc) to the City of West Linn. The applicant proposes that these areas be protected by an easement.

Protective or conservation easements are not preferred because natural drainageways and transition areas protected by easements have shown to be vulnerable to encroachment by abutting property owners. This encroachment or "backyard creep" phenomenon is a citywide problem as abutting homeowners build trails down into the drainageway, cut down trees, and extend their gardens into the easement areas. Associated problems include loss of native vegetation, habitat areas, reduced water quality, storm carrying capacity, and reduced hillside stability.

City Parks Director Ken Worcester was contacted and stated that the Parks Department would be very pleased to accept the dedication and manage it. The fact that a trail is proposed through the drainageway per the Parks Master Plan is all the more reason why it should be dedicated to the city.

At a meeting with staff on September 19, 2006, the applicant stated that he has no problem dedicating these lands to the city.

Cul de sac

Commissioner Stark asked for a definitive definition of cul de sacs and whether there are precedents for stub outs at the city/ county boundary.

CDC Section 2.030 provides definitions:

Cul-de-sac. A street or streets having one end open to traffic and the other end or ends terminating in a vehicle turnaround. (ORD. 1463)

CDC Section 85.200

11. Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75. All cul-de-sacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and do not include planter strips or sidewalks.

However, staff has long regarded streets such as Tamarisk Drive under another category. CDC section 85.200 (A)(1). Streets states:

Streets should provide for the continuation, or the appropriate projection, of existing principal streets in surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto.

That section goes on in CDC 85.200(A)(8) to state:

8. Future Extension of Streets. *Where necessary to give access to, or permit a satisfactory future subdivision of adjoining land,* ***streets shall be extended to the boundary of the subdivision and the resulting dead-end streets may be approved without turnarounds.*** *(Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long.)*

Even Clackamas County's development code contemplates this street configuration in section 1014.03(E). It states:

"street stubs shall be provided to allow for future access to adjacent undeveloped property."

The expectation was that roads such as Tamarisk Drive would stub out at the edge of the subdivision and be extended through the adjacent property at such time that it is developed. These roads were never considered to be cul de sacs. In this application, staff considers the extension of Tamarisk Drive to Woodbine Road to be a reasonable long-term outcome.

Examples of future extensions abutting county property include Landis Street in the Tanner Stonegate subdivision. It was approved with a length of 1,028 feet and serving 19 homes. It stubbed out into County property, which was ultimately annexed and developed seven years later as Parker Crest. For 19 years, Killarney Drive was a de facto cul de sac with a length of 2,728 feet and serving 98 homes. Finally, when the Tanner Basin annexations took place, Killarney Drive was punched through to Alpine Drive.

Dozens of "extensions of future streets" within the city have taken place over the past twenty years.

Noise Protection

Commissioners Fisher and Stark asked about code language relating to noise protection. In virtually every case heard by the Planning Commission or Planning Director the concern has been what noise would be created by the new use and would that noise meet noise standards of CDC Chapter 55? That is not the case here. The proximity of I-205

appropriately raises the opposite question: "What can be done to protect the new residents of the proposed use from the I-205 noise?"

CDC 55.100(D)(2) states:

2. *Residential dwelling units shall be placed on the site in areas having minimal noise exposure to the extent possible. Natural appearing sound barriers shall be used to lessen noise impacts where noise levels exceed the design standards of Table 1 below.*

This code section provides the Planning Commission with the grounds for requiring a solid wood sound-attenuating barrier along the edge of I-205. It would be reasonable to require an acoustic engineer to be hired to recommend necessary measures to reduce the noise towards levels shown in Table 1 of section 55.100(D). It should be noted that this code section does not require meeting the standards of 55.100(D), simply that the noise be lessened.

Significant Trees

Commissioner Stark expressed concern that the definition of significant trees is too vague. The language shown in CDC 55.100 is as follows:

2. *All heritage trees, as defined in the Municipal Code, all trees and clusters of trees (cluster is defined as three or more trees with overlapping driplines; however, native oaks need not have an overlapping dripline) that are considered significant by the City Arborist, either individually or in consultation with certified arborists or similarly qualified professionals, based on accepted arboricultural standards including consideration of their* ***size, type, location, health, long term survivability, and/or numbers,*** *shall be protected pursuant to the criteria of subsections 2(a-f) below. In cases where there is a difference of opinion on the significance of a tree or tree cluster, the City Arborist's findings shall prevail. It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant.*

True, the language is often regarded as vague but the important thing to remember is that the identification of significant trees is a subtle science. Each tree is unique. To craft a

"one size fits all" definition of significant trees is simply not possible. So much of it comes with experience.

That leads us to the next point. No member of planning staff, the Planning Commission or City Council are certified arborists and are thus not expected or qualified to make the call as to what is significant. The code makes constant reference to the fact that the city's certified arborist is the final arbiter of what is and what is not a significant tree.

Commissioner Babbitt made reference to the Municipal Code's Tree Ordinance as having applicability. As far as providing a very good definition for "Heritage Trees" then the ordinance meets the task. However no trees at the Tamarisk site are heritage trees. The Municipal Code's definition for "tree" is basic in that it uses tree circumference/size as the criteria. There is no definition of "significant trees" in the Municipal Code.

It is also important to remember that the 20% of the non-type I and II lands that are to be saved to protect significant trees is the maximum required to be saved. If only 5% of the total square footage of the site comprises significant trees then it should not surprise anyone that the application will be shy of the desired 20%. Similarly, there are specific exemptions from the 20% figure. If the road ROW has to go through a significant tree then it is not expected to be saved by code. Similarly if a row of significant trees blocks access to a lot, it is acceptable to remove those blocking trees. Mitigation for those trees lost in the ROW has to be made however. Typically this mitigation is on an inch-by-inch basis.

On September 21, 2006, OTAK submitted their latest calculations for significant tree protection. (see attached exhibit). Of the total 408,593 square feet of non-type I and II lands, significant trees cover 70,234 square feet or 17.2% of the non-type I and II lands. That is not too far off the 20% goal.

The applicant goes on to offer saving just 27,468 square feet of those significant trees. That knocks the percent saved down to 6.7%. Well below the 20%. That number is even further reduced by 5,950 square feet of significant treed area in the right of way (ROW). The net result is that the applicant is saving only 21,518 square feet or 5.2 percent of non-type I and II lands for significant tree protection (21,518 divided by 408,593).

To mitigate for those tree losses in the ROW, the applicant is proposing to dedicate the northwest corner of the site to the city and initiate a forestry program to nurture the young trees in that tract to significance. The City Arborist regards this as an acceptable means of mitigation. The City Arborist noted that whereas to the casual observer the non-type I and II are heavily treed, very few of them are significant. Most were commercially logged by the previous owner in earlier decades.

So whereas the City Arborist is satisfied with this mitigation, the application still falls short in terms of significant tree protection. Certainly staff appreciates the fact that the row of trees at the rear of lots 22-25 are saved but the loss of all but one of the nine significant trees on lot 20 is disturbing. Staff recommends that either lot 20's significant

trees be saved or a revised grading plan be prepared to save at least nine additional significant trees on other lots.

Transition on the north edge of the site

Mrs. Daniel of 1090 Woodbine Road expressed concern that a transition is needed between lots 33-35 on the north edge of the site where it abuts her property. Her property is in the County and zoned Rural Residential (RRFF-5) five-acre minimum lot size. RRFF-5 is primarily a single-family residential zone.

Clackamas County Planned Unit Development (PUD) provisions in section 1013 of their zoning code only requires a 30 foot setback/transition in the rear, equal to the setback of the underlying RRFF-5 zoning. Thus, the 12 foot rear yard setback proposed by Tamarisk's applicant is not too far removed from the County setback. Meanwhile the City of West Linn's PUD standards are clear on the subject of transitions:

24.140 TRANSITIONS AND LIMITATIONS ON DENSITY TRANSFER

A. Because the PUD and the provisions of this chapter allow increased residential densities and various housing types, it is necessary that some kind of transition be provided between the project site and the surrounding properties. These transitions will, for example, mitigate the impacts of multi-family housing next to single-family housing. **Transitions are not required in all cases, however. The following exceptions shall apply:**

1. **Single-family PUD next to single-family non-PUD does not require a transition (e.g., even though it is R-5 single-family next to R-10, etc.).** Also, similar type housing does not need to transition (e.g., duplex next to duplex).

Phasing

The applicant has proposed phasing the subdivision with the first phase being lots 1-25 and the remaining lots in the final phase. The danger to phasing is that applicants sometimes find the infrastructure cost of the final phase unattractive when balanced against the number of lots generated by the final phase. For that reason, staff needed either guarantees that the improvements would be made or must recommend against

phasing. One infrastructure element that is critical is water. The City Engineer will require the following:
Additional water service capacity is needed prior to the first certificate of occupancy. If the developer wants to postpone looping and proceed with phase 1 construction, a PRV (pressure reducing valve) is required to supplement fire flow but this is not a permanent fix. Looping is still required. However, if the developer wants to proceed with looping prior to certificate of occupancy, the PRV work is not needed.

Supplemental Conditions of Approval

If it is Planning Commissions finding that the application should be approved, staff recommends the following conditions of approval:

1. Either lot 20's significant trees are saved or a revised grading plan is prepared to save at least nine significant trees on other lots.

2. Applicant shall dedicate the northwest corner of the site to the city and initiate a forestry program to nurture the young trees in that tract to significance under the supervision and approval of the city arborist.

3. An acoustic engineer shall be hired to recommend necessary measures to reduce the noise towards levels shown in Table 1 of section 55.100(D). These measures shall include, at minimum, a six-foot tall solid wood sound-attenuating barrier along the edge of I-205 at the rear of lots 4-14.

4. The applicant shall contribute monies towards improvements at 8th Ave./8th Court and 10th Street intersection and the Blankenship and Tannler Drive intersection in the amount proportionate to the anticipated impacts identified in the applicant's traffic studies. The applicant's proportionate share shall be based upon the applicant's PM peak hours trips as a percentage of future PM peak hour trips at full build out through each intersection. The money will be collected prior to final plat.

5. The applicant shall dedicate all natural drainageways and wetland areas to the city.

6. Additional water service capacity is needed prior to the first certificate of occupancy. If the developer wants to postpone looping and proceed with phase 1 construction, a PRV (pressure reducing valve) is required to supplement fire flow but this is not a permanent fix. Looping is still required. However, if the developer wants to proceed with looping prior to certificate of occupancy, the PRV work is not needed.

Rec'd 9-25-06 PS

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September 25, 2006

Via Email

Mr. John Kovash, Chair
City of West Linn Planning Commission
22500 Salamo Road
West Linn, OR 97068

Re: City of West Linn File Nos. SUB-05-06/ZC-05-09/VAR-05-10/MCSC-05-06

Dear Chair Kovash and Members of the Commission:

This office represents the applicant. I am writing to address the issues raised at the public hearing on August 24, 2006.

1. Procedural Status.

At the request of others, the Planning Commission continued the public hearing until September 28, 2006 at 7:30 p.m. The September 28, 2006 public hearing will provide the Applicant with an opportunity to rebut all evidence and argument, not just evidence and argument submitted at the August 24, 2006 hearing.

Pursuant to ORS 197.763(6)(d), the applicant did not agree to or request the continuance. The continued hearing would have been allowed in any event because ORS 197.763(6)(a) requires a continued hearing or open record period if requested prior to the close of the initial evidentiary hearing. The motivation for the request was the incorrect assumption that the applicant had not met the City's neighborhood meeting requirements.

The applicant has agreed to discuss an extension of the 120-day clock. Staff calculated that the 120-day clock will expire on November 10, 2006, so as of the hearing date, the City had eighty-eight (88) days to take final action on the application, including resolution of all appeals. This is sufficient time for the City to act on the application. An extension of the 120-day clock on August 24 was unnecessary.

2. The Applicant has satisfied the requirements for a neighborhood meeting prior to submittal of the application.

Several parties told the Planning Commission that the applicant failed to satisfy the required neighborhood association meeting prior to submittal of the application. Mr. Pryor, Vice President of the Tanner Basin and Neighborhood Association, cited CDC 99.038 and argued the Applicant had failed to discuss the application with the Tanner Basin Neighborhood Association. Mr. Pryor's letter cites only a portion of CDC 99.038, however.

CDC 99.038(2) provides in its entirety: **"The applicant shall contact by letter all recognized neighborhood associations whose boundaries contain all or part of the site of the proposed development and all property owners within five hundred (500) feet of the site."** (*See also* ORS 197.763(2)(b) providing that notice shall be given to any neighborhood organization whose boundaries include the site). There is no dispute that the Applicant contacted the Willamette Neighborhood Association. **Exhibit 1** is the Willamette Neighborhood Association boundary map as shown on the City's website. **Exhibit 1** shows that this site is located wholly within the boundary of the Willamette Neighborhood Association. The Applicant has satisfied the CDC requirement for contact with the recognized neighborhood association whose boundary contains all or part of the site. The Tanner Basin Association area is located east of Tannler Drive and Bland Circle and does not include this site.

3. The Cul-De-Sac Length Variance is Appropriate and Should Be Granted.

A. The cul-de-sac will be longer than 400 feet in any event.

This site cannot be developed without a cul-de-sac longer than 400 feet. Tamarisk Drive is stubbed into the site in the existing subdivision to the north. It is clear that the City believed that Tamarisk Drive would be extended through this site to the western boundary because the City did not require a turn-around at the end of the street. The Applicant's proposal to extend Tamarisk Drive to its western boundary is no different than allowing the stubbing of Tamarisk Drive in the existing subdivision to the north. As Planner Peter Spir told the Planning Commission, the City's long-standing practice has been to not apply the cul-de-sac maximum length standard to a subdivision where a road is stubbed to its boundary in order to provide for a future

Extension. That is the case in this application and the city should follow its historical practice.

B. A variance to the 400' length is justified if a variance is required.

If a variance to the cul-de-sac maximum is required, the application satisfies the applicable approval criteria. In the event the City denies the variance, the property cannot be developed because any road extension will constitute a cul-de-sac extension.

The cul-de-sac length is an appropriate use of a variance, which is described in the purpose statement of CDC 75.010 as ". . . to provide standards for the granting in variances from the applicable zoning requirements of this Code where it can be shown that, owing to exceptional and extraordinary circumstances related to a specific piece of property, the literal interpretation of the provisions of [the] applicable zone would create a burden upon a property owner with no corresponding public benefit, except that no use variance shall be granted."

The Planning Commission can find that no variance is required because Tamarisk Drive is intended to be extended to the west if and when the UGB is expanded. Alternatively, in the event a variance is required, the Planning Commission can find that the variance application satisfies the applicable approval criteria, that an extension of the street is necessary and that the creation of a cul-de-sac exceeding the maximum length is necessary to allow development of this site.

C. The TSP justifies the extension.

The City's Transportation System Plan ("TSP") justifies the cul-de-sac extension. The TSP (Staff Report at page 7) (**Exhibit 2**) shows a proposed local street between this site and the property to the west. Notwithstanding that the area to the west is outside of the Portland Metropolitan Urban Growth Boundary ("UGB"), it is the City's practice, as reflected in its acknowledged TSP, to extend streets through sites to their boundaries to provide for future street extensions. For the sake of discussion, in the event the property to the west of this site is brought into the UGB in the future, failure to provide an extension of the public street means that the City will be unable to connect the site to its local street system.

Although some parties argued that the UGB will not be expanded to the west, even Mr. Burke and Ms. Daniel in their August 16, 2006 letter stated "I understand the

property to the north is considered Clackamas County – but it is within the Urban Growth Boundary and it is just a matter a [sic] time before it is included in the City of West Linn. It would be prudent on the part of the Planning Commission to look at the future expansion of the City limits." In other words, if there is any chance that the UGB will be extended to the west, it is prudent to extend Tamarisk Drive to the boundary so that it can serve local streets that might be created in the future.

D. The CDC calls for the street extension.

The CDC intends for streets to be extended to the site's west boundary. CDC 85.200.A.1 provides, in relevant part, that "streets should provide for the continuation of . . . existing principal streets in the surrounding areas . . ." In other words, streets should be extended to site boundaries to provide for connectivity. CDC 85.200.A.8 provides, "when necessary . . . to permit a satisfactory future subdivision of adjacent land, streets shall be extended to this boundary of the subdivision ....." This means that adjacent property should develop with connections to proposed subdivisions in order to provide street connections.

Additionally, CDC 85.200.11 provides that cul-de-sacs are not allowed except as required by topography, slope, site limitations and lot shapes. The Planning Commission can find that topography and site limitations justify a cul-de-sac in the subdivision. As the City Engineer has already noted, site topography prevents a loop street to the north. Moreover, no other street exists with which to connect except existing Tamarisk Drive to the north. This is a significant site limitation. Therefore, this provision of the CDC provides for a cul-de-sec in this location.

E. A loop street cannot be provided.

It is physically impossible to provide a loop street on this site that is not a cul-de-sac. The subdivision to the north has no other street connections and, even if it did, the terrain between the proposed extension of Tamarisk Drive and the boundary of this site prohibits another street connection. City Engineer Dennis Wright noted this fact in his written comment when he stated, "other [street] looping is prohibited due to deep drainage ways crossing properties" (Staff Report at page A-253).

The Applicant met with City staff on September 19, 2006. Both Planning Department and Public Works staff repeated their support for extending the stub street to the boundary of the site. The Applicant and staff also agreed that there is no possibility

of a connection at Woodbine Road because of the topography between proposed Tamarisk Drive and Woodbine Road.

4. The Tualatin Valley Fire and Rescue District does not object to this application.

One party told the Planning Commission that emergency access would be inadequate to this area. However, the Tualatin Valley Fire and Rescue District has not objected to this application. The District is in the best position to determine whether it can provide adequate service to this area.

5. The Planning Commission has the Discretion to Not Require Preservation of 20% of the Significant Trees on Non Type I and II Lands

The CDC is unambiguous as to whether 20% of significant trees on non-Type I and II lands must be required. The Planning Commission has the discretion to conclude that is not required to preserve the maximum number of trees.

First, CDC 55.100.B.2.b provides that "up to" 20% of an area to protect significant trees shall be preserved. Had the legislative body meant that 20% was always required to be preserved, it would not have used the phrase "up to"; it would have required that 20% of the area shall be preserved.

Second, CDC 85.200.A.1 provides that up to 20% of the remaining non-Type I and II trees "may be" excluded for the protection of significant trees. In other words, another section of the CDC that deals with the same topic clearly provides the discretion not to require the maximum number of trees.

Further, the example described in the Planning Commission hearing of language providing for a small number of trees to be preserved actually suggests that the Planning Commission ***need not*** preserve up to 20%. Assuming that a site has five (5) significant trees on non-Type I and Type II lands to be preserved, the current interpretation offered by staff would provide that only one of those five trees need be preserved. If interpreted as suggested by staff, the CDC does not require the preservation of all significant trees. However, had the City Council wanted this result, it would have simply said all significant trees. Instead, the City Council said that "up to" a certain percentage be preserved, leaving the Planning Commission with the discretion to do so.

6. The Applicant has withdrawn its proposal for traffic mitigation at the intersection of Tannler Drive and Blankenship Road and will agree to a modified Condition of Approval regarding a proportional contribution to certain intersections.

The Applicant's traffic engineer is Brian Dunn. Mr. Dunn submitted a letter dated September 4, 2006 to the Planning Commission in which he stated that the Applicant "no longer supports the raised median concept."

The Applicant has met with the Planning Department staff to discuss the proposed Condition of Approval regarding proportionate contribution to nearby intersections. The Applicant will agree to a modified Condition of Approval that provides that the proportional share shall be based upon the Applicant's p.m. peak hour trips as a percentage of future p.m. peak hour trips at full build-out through each intersection. The Planning Commission approved a similar condition of approval for the seventy-one (71) lot Willamette Cove subdivision.

The Applicant proposes that the payment be made prior to recording of the final plat.

7. The proposed Planned Unit Development is not incompatible with the property to the west at 1090 S. Woodbine Road.

The owners of the property at 1090 S. Woodbine Road told the Planning Commission that the proposed Plan Unit Development does not conform to Clackamas County RRFF-5 zoning.

CDC 24.140 is entitled "Transitions and Limitations on Density Transfer." CDC 24.140.A.1 provides, in part, that "single-family PUD next to single-family non-PUD does not require a transition...." In other words, single-family PUDs next to single-family developments are deemed compatible and do not require mitigation of impacts. This conclusion also applies to the relationship between this PUD and lots 33, 34, and 35 to the north.

8. The Applicant will agree to a dedication of a portion of the natural drainage way.

The Applicant met with Planning Department and Public Works Department staff on September 19, 2006 to discuss the Planning Commission's request that the drainage way area be dedicated to the City instead of dedicated to a homeowners' association. The Applicant has agreed to the dedication and will provide an exhibit showing the area to be dedicated.

Very truly yours,

Michael C. Robinson

MCR:lcr

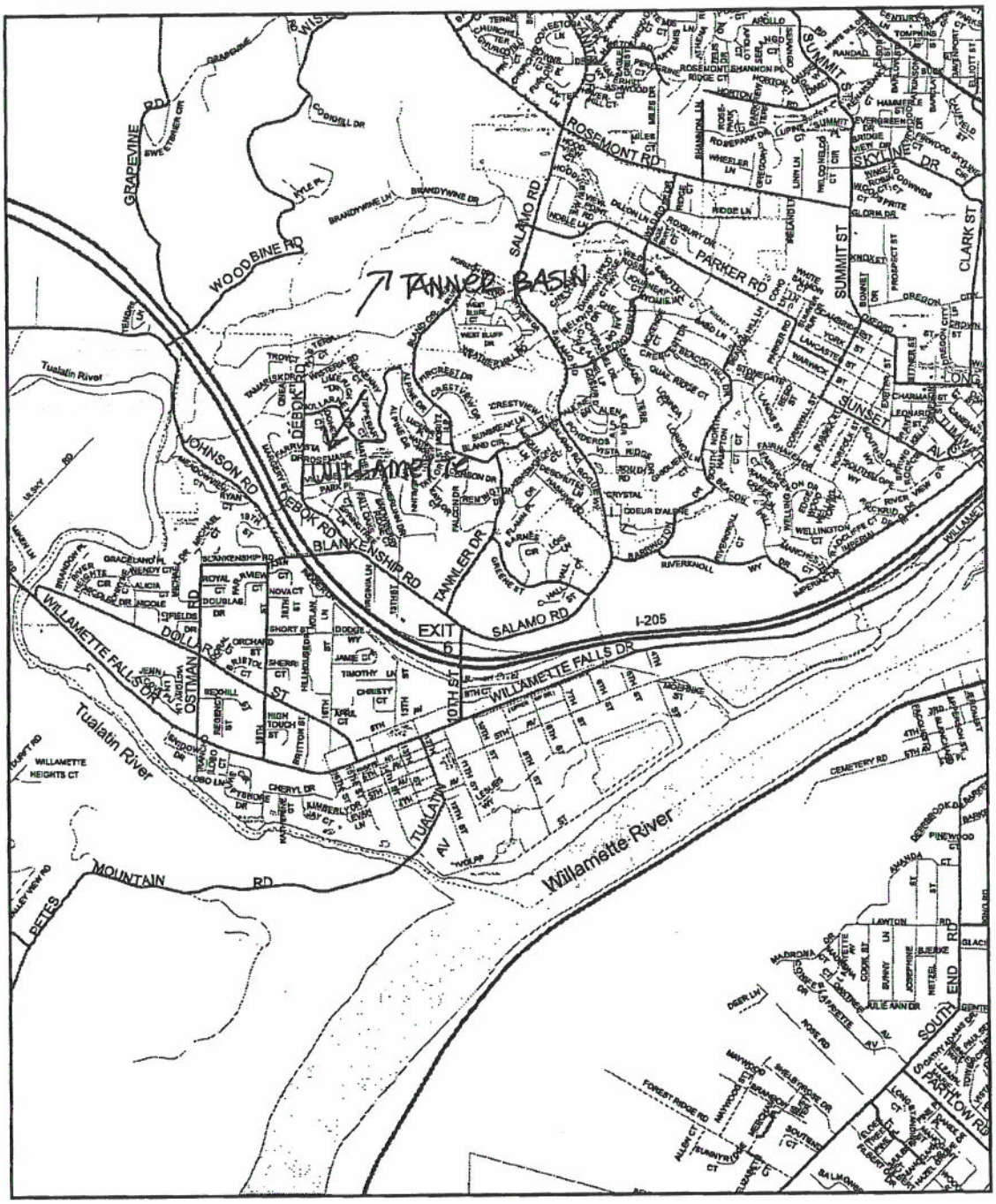
Enclosures

cc: Mr. Tony Marnella (w/encls.) (via email)
Mr. Mike Peebles (w/encls.) (via email)
Mr. Bryan Dunn (w/encls.) (via email)
Mr. Brad Kilby (w/encls.) (via email)
Mr. Peter Spir (w/encls.) (via email)
Mr. Bryan Brown (w/encls.) (via email)
Mr. Gary Firestone (w/encls.) via email)

Willamette Neighborhood Assocation

STREET MAP

WEST LINN GIS, MARCH 2006



This map and other information have been compiled for preliminary and general purposes. They are not intended to be complete and accurate for any other purposes. Specifically, this information is not intended to be complete for purposes of land use restriction, zoning, title, size, and suitability of the property for specific uses.

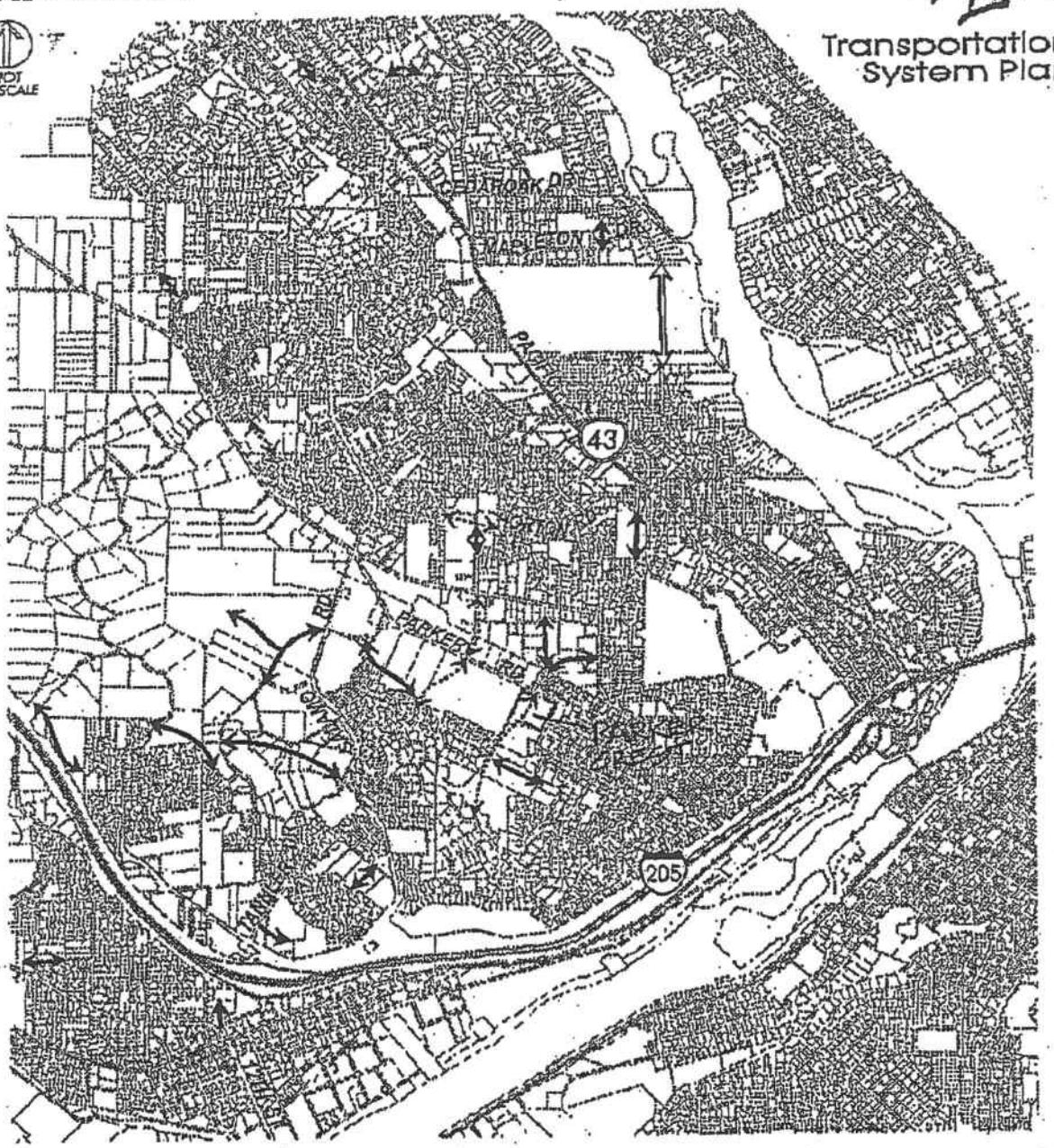
neighborhood_streetmaps\na_streetmaps.mxd \ aha \ 12-8-03, 5-24-04, 8-30-04, 3-2-06

EXHIBIT 1

DKS Associates

West Linn

Transportation System Plan



LEGEND

- Local Street Connection *
- Neighborhood Route
- Pedestrian/Bike Connection (No Autos)

*NOTE: General connection route indicated. Precise alignments to be determined

Figure 3-18
LOCAL STREET CONNECTIVITY MAP

Received: 2/27/2008 3:35PM; SMITH #889; Page 16
Feb 27 08 10:12a Ken Olson 503-660-6005 p.16

EXHIBIT 2

interchanges at 10th Street and at Highway 43 serve the entire city of West Linn. Interchanges are grade-separated facilities with arterial or principal arterial streets. No intermediate vehicular or pedestrian access is allowed.

Principal Arterials are typically state highways that provide the high level roadway capacity to local land uses. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterial or collectors. These highways generally span several jurisdictions and many times have statewide importance (as defined in the ODOT State Highway Classification).[24] These facilities should provide for a high level of transit service and include transit priority measures to expedite bus travel.

Arterial streets serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets in lieu of a well placed arterial street. This designation represents a change from the city's previous function classification system that had a major and minor arterial designation. The new naming convention will combine them into one category, arterial streets.

Collector streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.

Neighborhood routes are usually long relative to local streets and provide connectivity to collectors or arterials. They generally have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/large area circulation. They are typically about a quarter to a half mile in total length. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management is often appropriate (including devices such as speed humps, traffic circles and other devices to be referred to in a later section in this chapter). However, it should not be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

Local Streets have the primary function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design. However, local street provide convenient routes for circulation within neighborhoods to close-by destinations. They also provide convenient pedestrian and bicycle routes that are often safer than adjacent higher classification streets.

[24] Oregon Highway Plan, ODOT, 1999, Appendix D, Highway Classification by Milepost.

Feb 27 06 10:13a Ken Olson 503-650-6006 p.16
Received: 2/27/2006 3:38PM; ->JT SMITH; #888; Page 16

Spir, Peter

From: Ryan, Corinne F. (Perkins Coie) [CRyan@perkinscoie.com] on behalf of Robinson, Michael C. (Perkins Coie) [MRobinson@perkinscoie.com]

Sent: Friday, September 22, 2006 2:31 PM

To: david.grelewizc@nike.com; daver@europa.com; wlhsna@msn.com

Cc: brad.kilby@otak.com; mike.peebles@otak.com; marnella@comcast.net; Spir, Peter; Robinson, Michael C. (Perkins Coie)

Subject: Tamarisk Subdivision, City of West Linn File No. SUB-05-06, et al.; Deletion of Proposed Raised Median on Blankenship Road

I am the land use attorney representing the applicant. My colleague Brad Kilby has sent you an email indicating that the applicant would be happy to meet with you prior to the upcoming continued planning commission hearing. I also want to make sure that you are aware of a September 4, 2006 letter from the applicant's traffic engineer that is now in the Planning Commission record.

Several parties told the Planning Commission that the proposed raised median at Blankenship Road and Tannler Drive would be a bad idea. The applicant responded to this testimony by asking its traffic engineer, Brian Dunn, to send a letter to the Planning Commission withdrawing this proposal. Mr. Dunn's September 4, 2006 letter states that the applicant "no longer supports the raised median concept." This means the applicant has withdrawn this proposal as mitigation for any traffic impacts. Instead, the applicant has agreed to a condition of approval with the City staff, which City staff will recommend to the Planning Commission, providing for a proportionate share of payment of improvements for certain intersections.

Please feel free to contact me if you have any questions.
Mike

sent by **Corinne F. Ryan**
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Fax: (503) 727-2222

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Wright, Dennis

From: Wright, Dennis
Sent: Wednesday, September 20, 2006 12:55 PM
To: Spir, Peter
Cc: Parkin, Gary
Subject: FW: Tamarisk

Peter,
I'll try it once more and hope I get it right.
Additional water service capacity is needed prior to the first certificate of occupancy. If the developer wants to postpone looping and proceed with phase 1 construction, a PRV (pressure reducing valve) is required to supplement fire flow but this is not a permanent fix. Looping is still required.
However, if the developer wants to proceed with looping prior to certificate of occupancy, the PRV work is not needed.
Thanks for your patience.
Sincerely,
Dennis

-----Original Message-----
From: Wright, Dennis
Sent: Tuesday, September 19, 2006 5:11 PM
To: Spir, Peter
Cc: Parkin, Gary
Subject: Tamarisk

Peter,
I spoke with Gary after your meeting and he clarified something for me that I need to add to the staff report.
Regarding the water utility. We want the looping to be bonded as previously discussed but we also need a PRV to be installed prior to certificate of occupancy on any Phase 1 unit. The PRV is needed to ensure adequate fire flow into the subdivision and is needed not just for Phase 2 but also for Phase 1. I thought that if we got the looping that the need for the PRV went away...I was mistaken in my understanding...so we need the PRV as noted above.
Also, is the stormwater detention situation resolved? Gary said that it did not come up during the meeting.
Thanks for your assistance.
Dennis

City of West Linn
Attendance Sign-Up Sheet

Date: August 24, 2006

PLANNING COMMISSION

Item #:
a) **MISC-06-27; Natural Drainageway 3765 Ridgewood**
b) SUB-05-06 1202 Tamarisk
c) **SUB-06-04; 71-Lot Subdivision 985 Cove Place**

Signing in on this sheet establishes your standing and your right to appeal in this quasi-judicial or legislative case as long as this is the first hearings body to review the case. PLEASE PRINT (illegible names may void your standing) and fill in Item # from above list.

NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
MICHAEL ROBINSON	PERKINS COIE/PORTLAND 97209-4128 1120 NW COUCH, TENTH FLOOR	503.727.2264	MCRobA	4.B
DAVE PEEBLES	OTAK L.O. OR 97035 17355 SW Boones Ferry Rd	5036353618		4.B
BRIAN DUNN	7505 SE 32nd AVE. PORTLAND, OR 97202	5032604114		4B
BRAD Kilby	17355 SW BOONES FERRY LAKE OSWEGO OR	503-635 3618		4B
Roberta Schwarz	2206 Tanner Dr	(503) 723-5015		(Tamarisk)
TONY MARINELLA	P.O. Box 1988 LAKE OSWEGO OR 97035	635-2569		4B
ANDREW GOLAY	3839 SW MARIGOLD ST PORTLAND, OR 97219	246-4618		
FRED + MARGARET SEEWERKER	1835 Burns Circle West Linn 97068	657-0495		4B
Norine Baillif	827 Barnes Circle	503-6575344		4B
ALLEN BAILLIF	West Linn OR 97068	"		4B
Jan Sauer	1384 Tamarisk Dr.	5036554[illegible]		4B
Don Burke	1090 S Woodbine Rd.	(503) 519-6521		4B
Rich Granier	1080 S Woodbine Rd	(503) 652-0175		4B
Priscilla Pomichallo	3000 Stonebridge Way	503 636-9589		4B
Ken PRYOR	2119 GREENE	503 7230057		4B
Kathi Keller	2600 UMPQUA LN	655-3023		4B

City of West Linn
Attendance Sign-Up Sheet

Date: August 24, 2006

PLANNING COMMISSION

Item #:
a) MISC-06-27; Natural Drainageway 3765 Ridgewood
b) SUB-06-03; 6-Lot Subdivision and Wetlands 2929 Parker Road
c) SUB-06-04; 71-Lot Subdivision 985 Cove Place

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NAME	ADDRESS (Incl. city/zip if not West Linn)	PHONE	SIGNATURE	Item #
Ron Reams	2600 Umpqua Lane	503 655-3023	Ron Reams	4B
Bill Maxwell	2570 Troy Ct.	503-657-8278	Bill Maxwell	4B
David Kittenhouse	2101 Greene St.	635 0800	David Kittenhouse	4B
Alex McMurtrie	1803 Barnes Circle	503 655 5745	Alex McMurtrie	4B
Sheryl Watson	3099 Kensington Ct	503 539-6517	Sheryl Watson	4B
Carolyn McMath	1737 Killarney Pr	503-557-8912	Carolyn McMath	4B
John McMath	" " "	" " "	John McMath	4B
Lynn Fox	PO Box 232	503 655 6394	Lynn Fox	4B
Alice Richmond	3939 Parker Rd.	SO 3557915 8		
Tamara Conard	2121 Greene St	5033657604	Tamara Conard	4B
Katie Daniel	1090 S. Woodhaven West Linn	503 519-652	Katie Daniel	4B

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Brad Kilby / Mike Peebles DATE 8/24/06

STREET ADDRESS 17355 SW Boones Ferry Road

CITY Lake Oswego STATE OR ZIP 97035

I wish to testify on the agenda item(s) listed below or offer information during community comments.

SUBJECT AND AGENDA #(s) 4B Tamarisk Subdivision

IN SUPPORT ✓ NEITHER FOR NOR AGAINST _____ IN OPPOSITION _____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) _____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) _____

NAME OF ORGANIZATION (if applicable) Otak Inc.

*If group, please list people you represent.

Applicant's Representative

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME JAN SAUER DATE 08/24/06

STREET ADDRESS 1386 TAMARISK DRIVE

CITY WEST LINN STATE OR ZIP 97068

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SUBJECT ~~AND AGENDA~~ TAMARISK #(s) SUB-05-06/ZC-05-09/VAR-05-10/MISC-05-56

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION X

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) X

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

_____ _____

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Alice Richmond DATE 8-24-06

STREET ADDRESS 3939 Parker Rd

CITY West Linn STATE Oregon ZIP 97068

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SUBJECT AND AGENDA #(s) _____

IN SUPPORT ____ NEITHER FOR NOR AGAINST ✓ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) Land use on (B)

*If group, please list people you represent.

Opposite - no left turn - it needs left turn

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Katie Daniel DATE 08-24-06

STREET ADDRESS 1090 S. Woodbine Rd

CITY West Linn STATE OR ZIP 97068

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SUBJECT AND AGENDA #(s) 4B

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ✓

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME KEN PRYOR DATE 8/24

STREET ADDRESS 2119 GREENE

CITY WL STATE 97068 ZIP

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SUBJECT AND AGENDA #(s) 4.3

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ✓

NAME OF ORGANIZATION (if applicable) TANNER BASIN NA

*If group, please list people you represent.

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Lynn Fox (HSNA) DATE 8/28/06

STREET ADDRESS PO Box 236 Hidden Springs OR 97036

CITY _____ STATE _____ ZIP

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SUBJECT AND AGENDA #(s) Tanner Creek (4B)

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

Hidden Springs Neighborhood Assoc

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME Roberta Schwarz DATE 8/24/06

STREET ADDRESS 2206 Tanner Dr

CITY W.L. STATE OR. ZIP 97068

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SUBJECT AND AGENDA #(s) 4B Tamarisk

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION ✓

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ✓

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME BRIAN DUNN DATE 8/24/06

STREET ADDRESS 7505 SE 32nd AVE.

CITY PORTLAND STATE OR ZIP 97202

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SUBJECT AND AGENDA #(s) TAMARSK PUD

IN SUPPORT X NEITHER FOR NOR AGAINST ____ IN OPPOSITION ____

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) ____

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) X

NAME OF ORGANIZATION (if applicable) APPLICANT

*If group, please list people you represent.

APPLICANT

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CITY OF WEST LINN
PLANNING COMMISSION
TESTIMONY FORM

NAME DAVID RITTENHOUSE DATE 8-24-2006

STREET ADDRESS 2101 GREEN ST

CITY WL STATE _____ ZIP 97068

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SUBJECT AND AGENDA #(s) 4 B

IN SUPPORT ____ NEITHER FOR NOR AGAINST ____ IN OPPOSITION X

SPEAKING AS INDIVIDUAL (5 MIN. LIMIT) X

SPEAKING ON BEHALF OF A GROUP OR ORGANIZATION* (10 MIN. LIMIT) ____

NAME OF ORGANIZATION (if applicable) _____

*If group, please list people you represent.

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Brown, Bryan

From: Spir, Peter
Sent: Thursday, August 24, 2006 10:06 AM
To: Wright, Dennis; Brown, Bryan
Subject: FW: tamarisk

-----Original Message-----
From: Spir, Peter
Sent: Thursday, August 24, 2006 9:51 AM
To: 'Brad Kilby'
Subject: RE: tamarisk

Brad
Geotech is up to you...the main reason for geotech is to address concerns of property owner on Troy Ct. ... those concerns could be substantially quieted if it was clear that no grading or tree removal would occur at rear of lots 23-25. Re: lot 20, unless the applicant clearly demonstrates he is saving 20% of non type I and II lands for signif tree protection I have no problem reversing recommendation to denial. The fact that a lot of the site (type I and II lands) are set aside is not germane to the "20%" criteria.
I appreciate concerns about blank check for 10th street and I am sure you can understand that PC doesn't want some vague COA either. Hammering out COAs ("design on the fly") in the context of a hearing invariably yields poor results for both sides. You may want to consider a **request for continuance** to get a definitive estimate of the 10th street improvements (Group McKenzie submitted a build out design for Tannler West this week and it may be good to orchestrate something w/ them as well as get a handle on cost.)...Also you could profit by a continuance by getting the exact % of set aside of non type I and II lands for signif trees.
Currently, the vague COAs/lack of data are being understandably attacked by neighborhood associations.
Peter

> -----Original Message-----
> **From:** Brad Kilby [mailto:brad.kilby@otak.com]
> **Sent:** Thursday, August 24, 2006 9:34 AM
> **To:** Spir, Peter
> **Cc:** mrobinson@perkinscoie.com; Mike Peebles; Marnella@comcast.net; Brian Dunn; walt.knapp@comcast.net
> **Subject:** RE: tamarisk
>
> Peter,
>
> We spoke to the client yesterday in a strategy session. He feels that the current plan sets aside 50% of the entire area for resource and tree protection. We will have an exhibit at tonight's hearing that shows the cut and fill areas over 4 feet and above on the overall site. We are not proposing mass grading anymore, and there are some opportunities for individual trees to be saved, but at this point, there is no indication from the client that he intends to relinquish lot 20.
>
> Mike Peebles, our engineer has been coordinating with Dennis Wright regarding utility extension and phasing. I should know more about that by this afternoon.
>
> We do want to speak to the traffic condition, I believe that it's condition #5. It appears to be asking for a "blank check", and the client certainly isn't comfortable with that. That being said, he's not opposed to paying a proportionate portion to future improvements, so we are working on recommended amendments to the condition.
>
> How important do you think it is to have our geo-tech present?

Otak

Brad Kilby, AICP | Planner
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.2495 | f: 503.635.5395
www.otak.com

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From: Spir, Peter [mailto:PSpir@ci.west-linn.or.us]
Sent: Thursday, August 24, 2006 9:06 AM
To: Brad Kilby
Subject: tamarisk

Brad
The opposition to Tamarisk is growing w/ particular emphasis upon the lack of a traffic solution in the 10th St corridor.
Engineering's COA calls for your applicant paying a proportionate amount of the traffic fix.
Dennis Wright will be there tonight to address traffic
There are continuing issues about trees.
Any response regarding trees as to whether applicant will back off on the grading and not develop lot 20 etc to save sig trees?
Other issues/concerns?
Peter

8/22/06

Peter,

Please call Janice Sauer re: Tamarisk. She stopped by & reviewed staff report on Tues. afternoon.

-Dylan

CITY OF WEST LINN

PLANNING AND DEVELOPMENT

PLANNING COMMISSION HEARING
August 24, 2006

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **34-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

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STAFF ANALYSIS AND RECOMMENDATION

TO: West Linn Planning Commission

FROM: West Linn Planning Staff (Peter Spir, Associate Planner)

HEARING DATE: August 24, 2006

FILE NO: SUB 05-06/MISC-05-56/ZC-05-09/VAR-05-10

SUBJECT: 34-lot subdivision, PUD, Class II variance, and Natural Drainageway permit at northwest end of Tamarisk Drive.

Planning Director's Initials _____
City Engineer's Initials_____

SPECIFIC DATA

OWNER: Fritchie Trustee, 21929 S. Clear Creek Road, Estacada, OR. 97023

APPLICANT: Marnella / 550 Investments LLC 18318 SE Abernethy Lane, Milwaukie, OR 97267

CONSULTANT: OTAK

SITE LOCATION: Northwest end of Tamarisk Drive

SITE SIZE: 15.35 acres.

LEGAL DESCRIPTION: Assessor's Map 2-1E-34A, Tax Lot 600, 690 and 700

COMP PLAN DESIGNATION: Low density residential

ZONING: R-15 and R-10

APPROVAL CRITERIA: Chapter 85 (Land Division,) Chapter 32 (Natural Drainageway) Chapter 75 (Variance) and Chapter 24 (PUD)

120-DAY RULE: This application was deemed complete on June 5, 2006. The City of West Linn must exhaust all local review by September 29, 2006 to meet the 120-day rule. The applicant originally received a

recommendation of denial on three specific issues. The applicant requested a continuance and granted a 42-day waiver of the 120-day rule. Thus the 120 days now lapses on November 10, 2006.

PUBLIC NOTICE: Public notice was mailed to property owners within 500 feet of the site on June 14, 2006. And the property was posted with a sign on June 30, 2006. Notice was also posted on the City's website. Consequently, the notice requirements of the Community Development Code have been fully satisfied.

BACKGROUND

The 15.35-acre site comprises a large flat area of orchard trees at the end of Tamarisk Drive. As one moves north, the site is bisected by two drainageways with a ridgeline between them. These areas will accommodate the development. The south edge of the site is defined by yet another steep drainageway. There is a two-acre area adjacent to Woodbine Road that could be developed but it is surrounded by steep slopes, wetlands and the extremely high noise levels of I-205. Consequently, it will not be developed at this time.

The applicant proposes to develop the 34 lots in two phases. The zoning is predominantly R-15 with a small one acre tract at the south edge of the site zoned R-10. The minimum lot sizes of those zones are 15,000 and 10,000 square feet respectively. Because of the physical challenges of the site it is being developed as a Planned Unit Development (PUD). PUD's allow variations in lot size not typically allowed by the underlying zoning. Lots will range in size from 4,019 to 13,292 square feet.

Tamarisk Drive will be the only street accessing the site. It will stub out at the northeast end of the ridgeline with the expectation that future development will extend it, ultimately, to Wisteria and Woodbine Roads. A Class II Variance is required to allow a cul de sac to serve more than 12 homes and be over 400 feet long.

MAJOR ISSUES

Cul de sac length

The Community Development Code (CDC) limits cul de sacs to serving no more than 12 homes with a maximum length of 400 feet long. Tamarisk Drive, which will serve as the only access route to this subdivision is already a 1,200-foot long cul de sac as measured from the De Bok-Killarney intersection. Tamarisk Road combined with De Bok Road and other feeder cul de sacs already serves 60 homes. There is only one way in and out of the area north of the Killarney Drive and De Bok Road intersection. Extending Tamarisk Road an additional 1,400 lineal feet to serve 34 more homes in the proposed subdivision increases the problem. Thus, a Class II Variance is required. The fact that

Tamarisk Drive will stub out at the northeast corner of the site and thus extend at some point in the future to Woodbine Road is a mitigating factor.

Connectivity

In addition to reducing potential, albeit remote, hazards associated with a single point of ingress/egress to a subdivision, having more than one way in or out serves the Transportation Planning Rule (TPR). The state mandated TPR seeks to reduce consumption of fossil fuels, reduce pollution, reduce the length of trips, and encourage multi-modal travel (walking and biking) by increasing the number of routes (roads, sidewalks, bike paths etc.) available to the public.

Whereas this site's connectivity potential is limited by I-205, wetlands and the Urban Growth Boundary (UGB), there are still options. First, Tamarisk/Street A can be stubbed out to the northeast so that at some time in the future, Street A can connect with Wisteria Road and Woodbine Road.

In the short term, a pedestrian/bicycle route can be provided connecting Street A with Woodbine Road. Such a route would be entirely within the project boundary and would not extend outside the UGB. There would be design challenges in terms of negotiating the wetlands and steep slopes but it would yield a valuable and attractive link. By accessing Woodbine Road, walkers and bikers could proceed to Johnson Road and loop east to access Willamette or head west in the direction of Stafford Road. Turning north on Woodbine Road offers runners and bikers a gradual climb up to Rosemont and Hidden Springs Roads. None of these options currently exist for residents on the north side of I-205 without significant time consuming detours.

Tree Protection

Protection of the wetlands and drainageways is a concern that has been addressed by the applicant through conservation easements and minimal disturbance. The tree inventory revealed a large number of significant trees. Many of these trees are in the drainageway transition and setback areas. Although a large number are being protected, this application falls short of the 20% target for non-type I and II lands to be set aside to protect significant trees. According to the applicant's most recent analysis five percent of the non-type I and II lands or 22,663 square feet are being set aside for protection of trees deemed significant by City Arborist Mike Perkins. CDC 55.100(B)(2)(b) states that up to 20% of the site *shall* be set aside to protect significant trees. That same section, code language states that when right of way alignment is limited, as in this case, significant trees loss is unavoidable. The applicant's proposal to grade a number of lots to increase their attractiveness to builders is considered by staff as unnecessary and an opportunity to save even more significant trees.

PUBLIC COMMENTS

About seven months ago, Bill Maxwell of 2570 Troy Court expressed concern about the effect of the development on the slopes at the rear of his property and the potential for

erosion or slope failure. Both OTAK and Staff provided the resident with a copy of the project's geotechnical report which demonstrated that the soil and site is stable. Further, in protecting trees adjacent to Mr. Maxwell's property, no soil disturbance or slope failure is expected.

RECOMMENDATION

Based upon the adopted findings of the applicant and staff's findings, staff recommends approval of the application with the following conditions:

1. The applicant shall construct an eight-foot wide all weather foot and bicycle path from Street A in the vicinity of lot 29 through tract D to connect with South Woodbine Road with grades not to exceed 15%. A three-foot high fence shall be installed on either side of the path as it traverses the wetland/creek area.

2. Except for grading directly associated with the construction of Tamarisk Drive/Street A, no grading shall be allowed of lots 1-25 in the side and rear setback areas to avoid damage to significant trees in those setback areas. Requests to grade and remove trees will be reviewed by the City on a lot-by-lot basis and through the tree permit process at time of submittal for building permits.

3. The applicant shall convey the open space areas to the city of West Linn.

4. Tamarisk Drive/Street A shall terminate at the northeast corner of the project site to accommodate future extension to abutting property. The terminus shall also include turnaround facilities per TVFR standards.

5. Applicant shall contribute monies toward improvements at 8th Ave/8th Ct/10th St and Blankenship Rd/Tannler Dr intersections in the amount proportionate to the anticipated impacts identified in the applicant's traffic study.

6 - Waterline looping to be constructed during Phase I of development.

7 - 52-foot ROW required throughout subdivision. Reduced ROW permitted in traversing resource areas or by having part of six-foot planter strip on easements on abutting lots.

8 - Developer must provide parking plan acceptable to the Planning Department.

9 - Public improvements must meet TVF&R current requirements.

10 - Complete Road "A" improvements to property line.

11 - Applicant to provide bottomless culvert unless exempted by Army COE and ODF&W.

12 - Sanitary sewer capacity must be verified to ensure that existing system (unimproved) has sufficient capacity to serve this development. If capacity insufficient, Sanitary Sewer Master Plan (CIP#5 - approximately 31% SDC eligible) upgrades on North side of I-205, or construct pump station on Johnson Road and connect subdivision under I-205.

13 - Detention pipes not allowed in Public ROW. Private detention tanks only allowed if above ground detention demonstrated as impracticable.

14 - Detention ponds shall have a gravel access for backhoes to maintain public ponds.

ADDENDUM

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **34-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

STAFF FINDINGS

LAND DIVISION

85.200 APPROVAL CRITERIA

No tentative subdivision or partition plan shall be approved unless the Planning Commission or Planning Director, as applicable, find that the following standards have been satisfied, or can be satisfied by condition of approval.

A. ***Streets***

1. *General. The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the generalized or reasonable layout of streets on adjacent undeveloped parcels, to topographical conditions, to public convenience and safety, to accommodate various types of transportation (automobile, bus, pedestrian, bicycle), and to the proposed use of land to be served by the streets.*

The street system shall assure an adequate traffic or circulation system with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Streets should provide for the continuation, or the appropriate projection, of existing principal streets in

surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto. To accomplish this, the emphasis should be upon a connected continuous pattern of local, collector, and arterial streets rather than discontinuous curvilinear streets and cul-de-sacs. Deviation from this pattern of connected streets should only be permitted in cases of extreme topographical challenges including excessive slopes (35 percent plus), hazard areas, steep drainageways, wetlands, etc. In such cases, deviations may be allowed but the connected continuous pattern must be reestablished once the topographic challenge is passed.

FINDING NO. 1

Staff's initial reaction to this street configuration was that it violates the aforementioned code section that calls for connectivity and the need to avoid cul de sacs. Additionally staff notes that the adopted Transportation System Plan (TSP) calls for a "local street connection" to connect Tamarisk with Woodbine Road. The TSP also calls for a bike and pedestrian link to Woodbine Road. These facts combine to make a strong case for a connection.

Obstructing the connection are the wetlands, steep slopes and I-205. Collectively, they make the street connection to Woodbine Road impossible at this time. A substitute route is possible however. The route involves stubbing out Tamarisk Road at the northeast corner of the site with a future extension of that road so that it connects with Wisteria and Woodbine Roads. That connection would satisfy the local street connector requirement. But it may however be 10 or more years before that connection is made. In the meantime, a pedestrian and bicycle link could be constructed from Tamarisk to Woodbine Road through the constrained areas with modest impacts and thus meet the TPR.

85.200(A)(1)

Streets shall also be laid out to avoid and protect clusters and significant trees, but not to the extent that it would compromise connectivity requirements per CDC Section 85.200(A)(1), or bring the density below 70 percent of the

maximum density for the developable net area. The developable net area is calculated by taking the total site acreage and deducting Type I and II lands; then up to 20 percent of the remaining land may be excluded as necessary for the purpose of protecting significant tree clusters or stands as defined in CDC Section 55.100(B)(2).

(ORD. 1408)

FINDING NO. 2

The City Arborist found that there are at least 74 significant trees in the developable areas of the site. (The arborist did not inventory trees in the type I and II lands since all significant trees are to be saved in that area.) As the code states, up to 20% of the non-type I and II portion of the site SHALL (*emphasis added*) be set aside for the protection of significant trees. The protected area is the tree dripline plus 10 feet.

The applicant's arborist Walt Knapp, using the USDA Forest Service tree inventory coefficients and tree diameter, calculated the crown radius of the tree. He then added 10 feet to the crown radius in compliance with the City of West Linn Development Code.

As it stands, the applicant is preserving 22,663 square feet or 5 percent of area outside of type I and II lands for the preservation of significant trees as identified by Mike Perkins.

That is 15% shy of the maximum amount. Certainly staff appreciates the fact that a large part of the site comprises Type I and II lands, which will be set aside but the 15% deficit, could be improved upon. The means are available to protect additional trees by using less grading on the already flatter lots 1-25. The last ten years have seen a lot of developers sculpting/grading the subdivision lots so that the lots are all flat even in cases where the existing natural grade is less than ten percent. Such is the case here. The applicant's grading plan, for the sake of flat lots, proposes to scrape the top two to four feet off the lots with the result that the tree's roots will be damaged and the trees would then have to be cut down. Staff recommends that, except for grading directly associated with the construction of Tamarisk Drive, no other grading shall be allowed on these lots, which would result in tree loss to along the proposed side and rear property lines. In particular, the trees at the rear of lots 16, 25, 24, and 23 need to be protected. By condition therefore, staff finds that the criterion is met.

C. ***Pedestrian and Bicycle Trails***

1. *Trails or multi-use pathways shall be installed, consistent and compatible with federal ADA requirements and with the Oregon Transportation Planning Rule, between subdivisions, cul-de-sacs, and streets that would otherwise not be connected by streets due to excessive grades, significant tree(s), and other constraints natural or man-made. Trails shall also accommodate bicycle or pedestrian traffic between neighborhoods and activity areas such as schools, libraries, parks, or commercial districts. Trails shall also be required where designated by the Parks Master Plan. (ORD. 1425)*

2. *The all-weather surface (asphalt, etc.) trail should be eight feet wide at minimum for bicycle use and six feet wide at minimum for pedestrian use. Trails within 10 feet of a wetland or natural drainageway shall not have an all-weather surface, but shall have a soft surface as approved by the Parks Director. These trails shall be contained within a corridor dedicated to the City that is wide enough to provide trail users with a sense of defensible space. Corridors that are too narrow, confined, or with vegetative cover may be threatening and discourage use. Consequently, the minimum corridor width shall be 20 feet. Sharp curves, twists, and blind corners on the trail are to be avoided as much as possible to enhance defensible space. Deviations from the corridor and trail width are permitted only where topographic and ownership constraints require it. (ORD. 1463)*

3. *Defensible space shall also be enhanced by the provision of a 3-4 foot high matte black chain link fence or acceptable*

alternative along the edge of the corridor. The fence shall help delineate the public and private spaces.

4. *The bicycle or pedestrian trails that traverse multi-family and commercial sites should follow the same defensible space standards but do not need to be defined by a fence unless required by the decision-making authority.*
5. *Except for trails within 10 feet of a wetland or natural drainageway, soft surface or gravel trails may only be used in place of a paved, all-weather surface where it can be shown to the*
6. *Planning Director that the principal users of the path will be recreational, non-destination oriented foot traffic, and that alternate paved routes are nearby and accessible.*

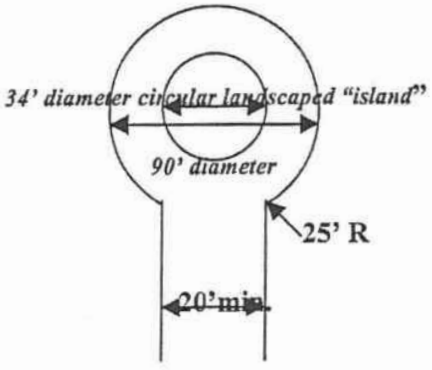
   (ORD. 1463)
7. *The trail grade shall not exceed 12% except in areas of unavoidable topography, where the trail may be up to a 15% grade for short sections no longer than 50 feet. In any location where topography requires steeper trail grades than permitted by this section, the trail shall incorporate a short stair section to traverse the area of steep grades.*

FINDING NO.3

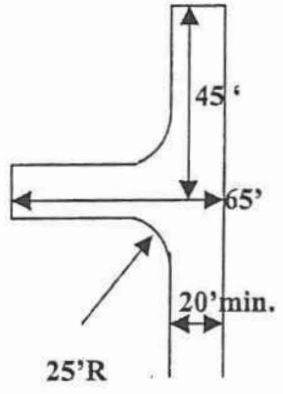
The adopted Transportation System Plan (TSP) calls for a bike and pedestrian link to Woodbine Road. The draft Parks Master Plan also shows a link through this area to connect to Woodbine Road, which is a major trail corridor. This link would allow people in the Tamarisk/DeBok area access to the Woodbine trail corridor without backtracking to Blankenship and Johnson Roads. Meanwhile, the addition of a multi-modal trail would serve the interests of the TPR. These facts combine to make a strong case for a connection. The applicant shows such a path on their site plan generally parallel the water line easement. Construction of trails and utility routing across wetlands is permitted per CDC Chapter 30. Therefore this criterion is met.

---

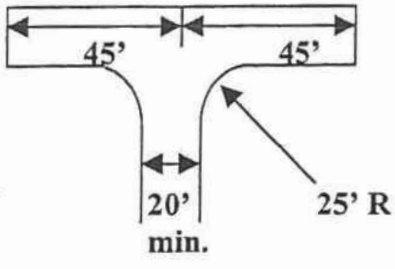
11. Cul-de-sacs. *Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75. All cul-de-sacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and*



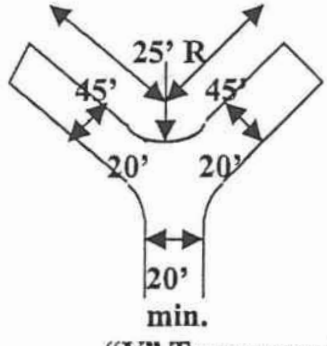
Cul-de-Sac Turnaround



Hammer Head Turnaround



"T" Turnaround



"Y" Turnaround

FINDING NO.4

As stated in the criteria the cul de sacs are only allowed when the applicant can demonstrate topographic, slope and site limitations. Staff agrees with the applicant that these physical limitations exist in large measure. The natural and man-made barriers: wetlands, steep heavily forested drainageways, and I-205 have made this Tamarisk/De Bok cul de sac inevitable. These conditions are unique in West Linn and for that reason staff supports the applicant's associated variance. Staff also notes that that the applicant has provided a stubout at the city's request so that at some point in the future, a link to

Woodbine may be facilitated and the street will cease to be a cul de sac. As an interim solution, the applicant will provide a turnaround per the standards of the CDC and TVFR.

J. ***Supplemental Provisions***

1. *Wetland and Natural Drainageways. Wetlands and natural drainageways shall be protected as required by Chapter 30, Wetland and Riparian Area Protection, and Chapter 32, Natural Drainageway Areas. Utilities may be routed through the protected corridor as a last resort, but impact mitigation is required.*

FINDING NO. 5

The Storm Water Master Plan classifies two of the four creeks that converge on this site as major storm channels with potentially erosive velocities. The other two are classed as minor drainageways. The northernmost creek is called Fritchie creek after the property owner. In addition to the drainageways, extensive wetlands are associated with these bodies of water. These drainageways and wetlands will be protected by appropriately dimensioned easements. Wetland mitigation is provided to offset the disturbance by the footpath and water line. Therefore the criterion is met.

J. *(9)* *Heritage Trees/Significant Tree and Tree Cluster Protection. All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers, shall be saved pursuant to CDC Section 55.100(B)(2). Trees are defined per the Municipal Code as having a trunk 6" in diameter or 19" in circumference at a point five feet above the mean ground level at the base of the trunk.*

FINDING NO. 6

The City Arborist found that there are at least 74 significant trees in the developable areas of the site. (The arborist did not inventory trees in the type I and II lands since all significant trees are to be saved in that area.) As the code states, up to 20% of the non-type I and II portion of the site SHALL (*emphasis added*) be set aside for the protection of significant trees. The protected area is the tree dripline plus 10 feet.

The applicant's arborist Walt Knapp, using the USDA Forest Service tree inventory coefficients and tree diameter, calculated the crown radius of the tree. He then added 10 feet to the crown radius in compliance with the City of West Linn Development Code.

As it stands, the applicant is preserving 22,663 square feet or 5 percent of area outside of type I and II lands for the preservation of significant trees as identified by Mike Perkins. That is 15% shy of the maximum amount per code. Certainly staff appreciates the fact that a number of trees are in the ROW which is pretty much set in its alignment. Support for tree removal in association with ROW construction is found in section 85.200(J)(9) and section 55.100(B)(2). For example, 55.100(B)(2) states: "*Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss.*" Thus staff finds that the loss of significant trees in the ROW is reasonable since the stub out of Tamarisk, the connection across a narrow logging track and the stub-out to the northeast preordains the route of Street A/Tamarisk.

Staff also notes that a large part of the site comprises Type I and II lands which will be set aside and with that comes extensive significant tree protection.

Still the 15% deficit could be improved upon. The means are available to protect additional trees by using less grading on the already flatter lots 1-25. The last ten years have seen a lot of developers sculpting/grading the subdivision lots so that builders will

have nice flat building sites to work with. So for the sake of flat lots, the applicant proposes to scrape the top two to four feet off the lots with the result that the tree's roots will be damaged and the trees would then have to be cut down. While grading lots makes some sense when the topography is very steep the existing natural grade of lots 1-25 is less than ten percent. Staff recommends that, except for grading directly associated with the construction of Tamarisk Drive, no other grading shall be allowed on these lots, which would result in tree loss along the proposed side and rear setback areas. In particular, the trees at the rear of lots 16, 25, 24, and 23 need to be protected. By condition therefore, staff finds that the criterion is met.

PLANNED UNIT DEVELOPMENT

24.100 APPROVAL CRITERIA

A. The approval criteria of Section 55.100, Design Review, shall apply to non-exempted projects per Section 55.025. Single-family detached, single family attached, and duplex residential units proposed shall comply with the provisions of Chapter 43.

(Ord. 1463)

B. The application shall also demonstrate compliance with the following criteria:

1. The proposal shall preserve the existing amenities of the site to the greatest extent possible by relating the type and design of the development to the topography, landscape features, and natural amenities existing on the site and in the vicinity.

FINDING NO. 7

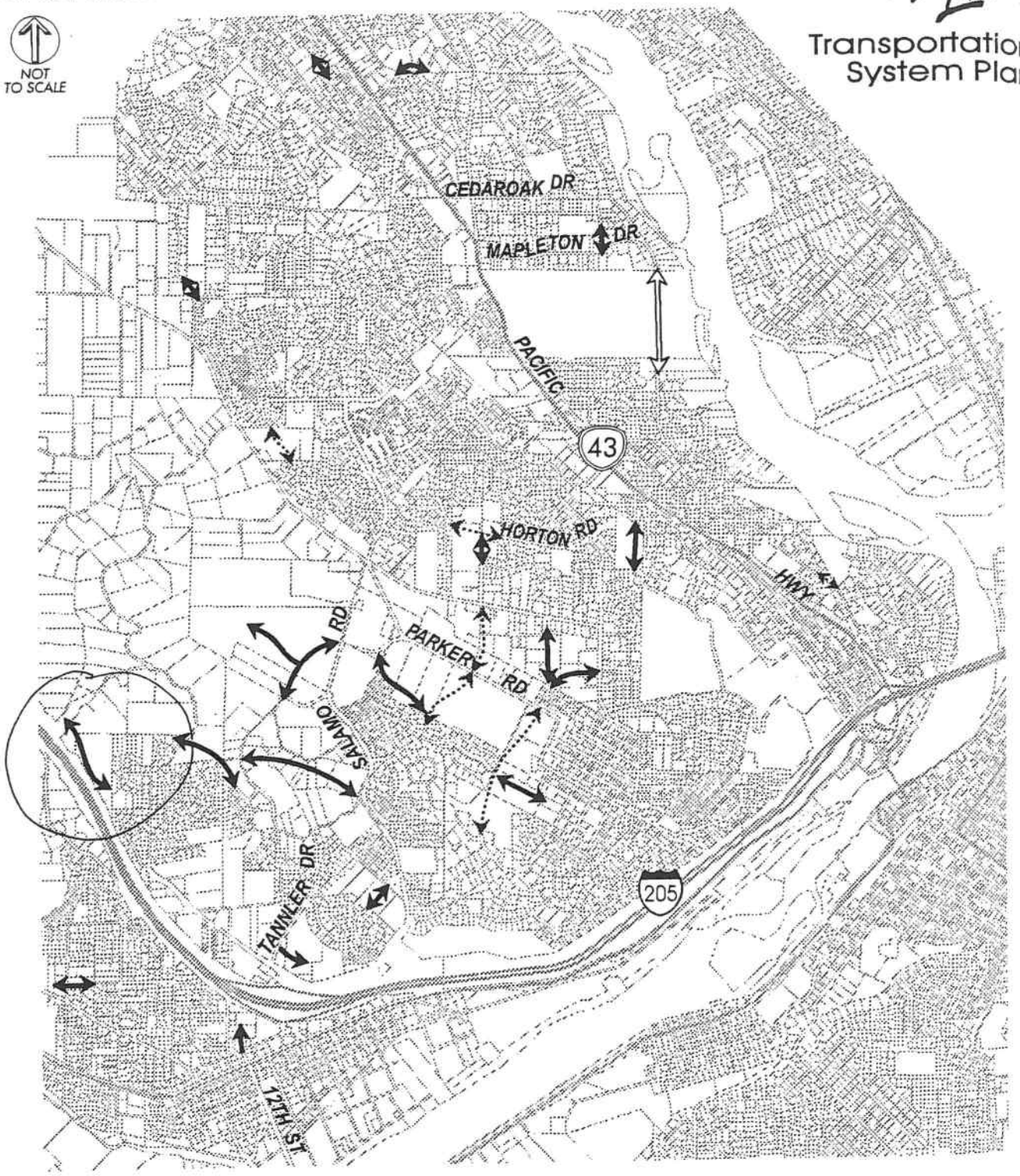
This application's tentative plan has gone through two versions. Both looked pretty much the same in terms of the road alignment. The change is that the original 35 lots was reduced to 34 due to the density calculation requirements of CDC Chapter 24 and the grading plan was modified. The grading plan was then identified as a problem based upon staff's observation that a number of trees in the flatter orchard area of lots 1-25 were to be cut down to accommodate a grading plan that would produce flat lots. Most of this area is already flat so it seemed wrong to cut down trees to avoid a very modest two to four foot elevation change over 100 feet.

Regarding the total site staff finds that this application correctly sets aside the type I and II lands (hillsides, stream corridors, wetlands) and that the only intrusion into the wetlands is for a necessary street, footpath and utility connection. Therefore staff finds that the criterion is met by condition referenced in finding number 6.

Staff Exhibits

DKS Associates

West Linn Transportation System Plan



LEGEND

- Local Street Connection *
- Neighborhood Route
- Pedestrian/Bike Connection (No Autos)

*NOTE: General connection route indicated. Precise alignments to be determined

Figure 3-18
LOCAL STREET CONNECTIVITY MAP

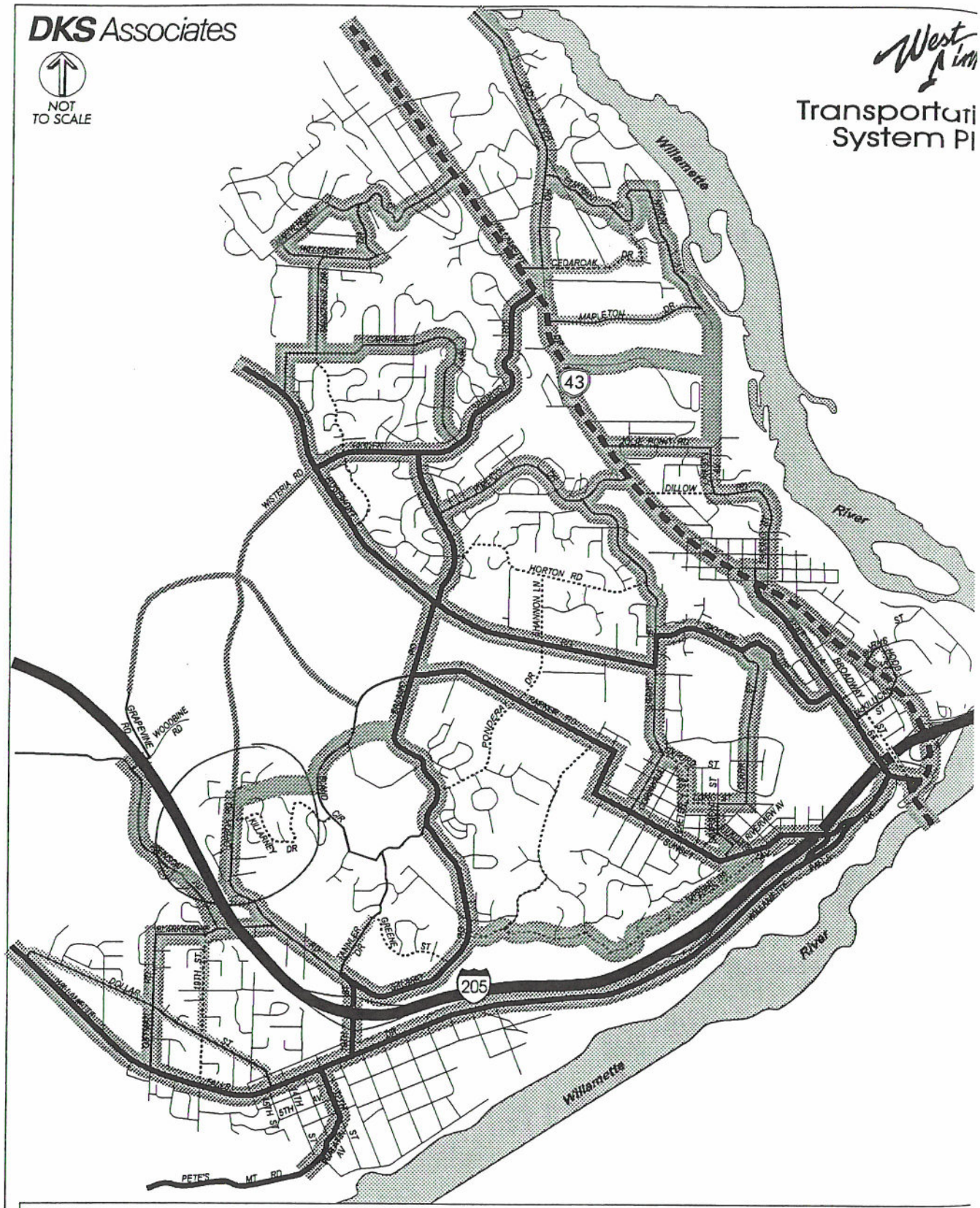


Figure 3-1
PROPOSED
FUNCTIONAL CLASSIFICATION

Spir, Peter

From: Brad Kilby [brad.kilby@otak.com]

Sent: Wednesday, June 28, 2006 3:05 PM

To: Spir, Peter

Cc: tony@stearnsmarnella.com; nick@stearnsmarnella.com; Mike Peebles; Grillo, Phillip; jimbrie@geopacificeng.com; Fares Kekhia

Subject: SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09

Peter,

As we discussed on the telephone, please continue our hearing until August 24th, so that we can respond to the issues raised in the staff report. I have spoken with the client, and we are voluntarily granting an extension of the 120-day clock for a period of 42 days. We will be working dilgently on the issues raised in the staff report and have a revised plan and narrative to you as soon as possible. Please call me if you have any questions or need any additional information. Thanks.

Otak Inc.

Brad Kilby, AICP | Planner
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.2495 | f: 503.635.5395
www.otak.com

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West Linn

Planning Department

June 5, 2006

Stearns Marnella Communities LLC
18318 SE Abernathy Lane
Milwaukie, OR 97267

SUBJECT: SUB 05-06, Tamarisk Subdivision Completeness Determination

Dear Mssrs. Stearns and Marnella:

With the re-submittal of OTAK's material and the cover letter from Mr. Phil Grillo, dated June 1, 2006, the Engineering and Planning Departments find that the subdivision application for Tamarisk subdivision is **complete**. The city of West Linn now has 120 days from June 1, 2006 to exhaust all local review. That period lapses on September 29, 2006.

I will schedule your case for hearing by the Planning Commission on Thursday, July 13, 2006 at 7:30PM.

Please contact me at 656-4211 if you have any questions or, better yet, e-mail me at pspir@ci.west-linn.or.us.

Sincerely,

Peter Spir
Associate Planner

PC: Brad Kilby, OTAK, 17355 SW Boones Ferry Road, Lake Oswego, OR 97035
Phillip Grillo, 3400 US Bancorp Tower, 111 S.W. Fifth Avenue, Portland, OR 97204-3699

:/devrvw/completeness check/COMPLETE-SUB 05-06-TAMARISK

(503) 656-4211 • FAX (503) 656-4106
22500 Salamo Road, #1000 West Linn, OR 97068

Bill Maxwell
2570 Troy Ct
West Linn, OR 97068

February 21, 2006

Peter Spir – Associate Planner
West Linn Planning & Development
22500 Salamo Rd #1000
West Linn, OR 97068

Dear Peter,

I am writing this letter as a third attempt to document what I feel should be a significant concern for you regarding the Tamarisk Development application you are reviewing. As you may recall from my prior letter and email to you my primary concern is in the stability of the steep slopes located on the north portion of the proposed planned development.

I have been in contact with Brad Kilby at OTAK Development to explain my concerns to him and listen to his brief explanation of how they are addressing the issues of the steep slopes and instability of the ground. They have hired a geo-technical engineering firm to review their plans and make recommendations based on their own site surveys.

What I would like to know is once this planning process is completed, who is retaining responsibility for the ongoing stability of the undeveloped slopes dropping into the designated wetland? Over the 10 years that we have lived in this home this has not been a concern since the natural features of trees, shrubbery and groundcover have provide the drainage necessary to support the delicate slopes.

Once construction begins, the trees will be removed, ground will be scraped and graded and the wheels will be set in motion for ongoing erosion and potential loss of property for myself, existing neighbors and even the new homes being developed along this slope.

I have included some documentation I was able to copy from the USDA's National Resources Conservation Service including soil survey results with outlined map of the specific area being developed. In addition I have obtained tabular data relating to hazard of erosion for each of the 3 soil types located in the proposed development area.

I don't suggest that my rudimentary research on this topic is anything other than a suggestion that this needs to be a significant concern for all parties involved. I would like to know that each party involved in the development of the Tamarisk PUD from approval of the plans to building of the homes is going to retain responsibility for any degradation of the land from erosion or landslide both during construction and once the homes are completed.

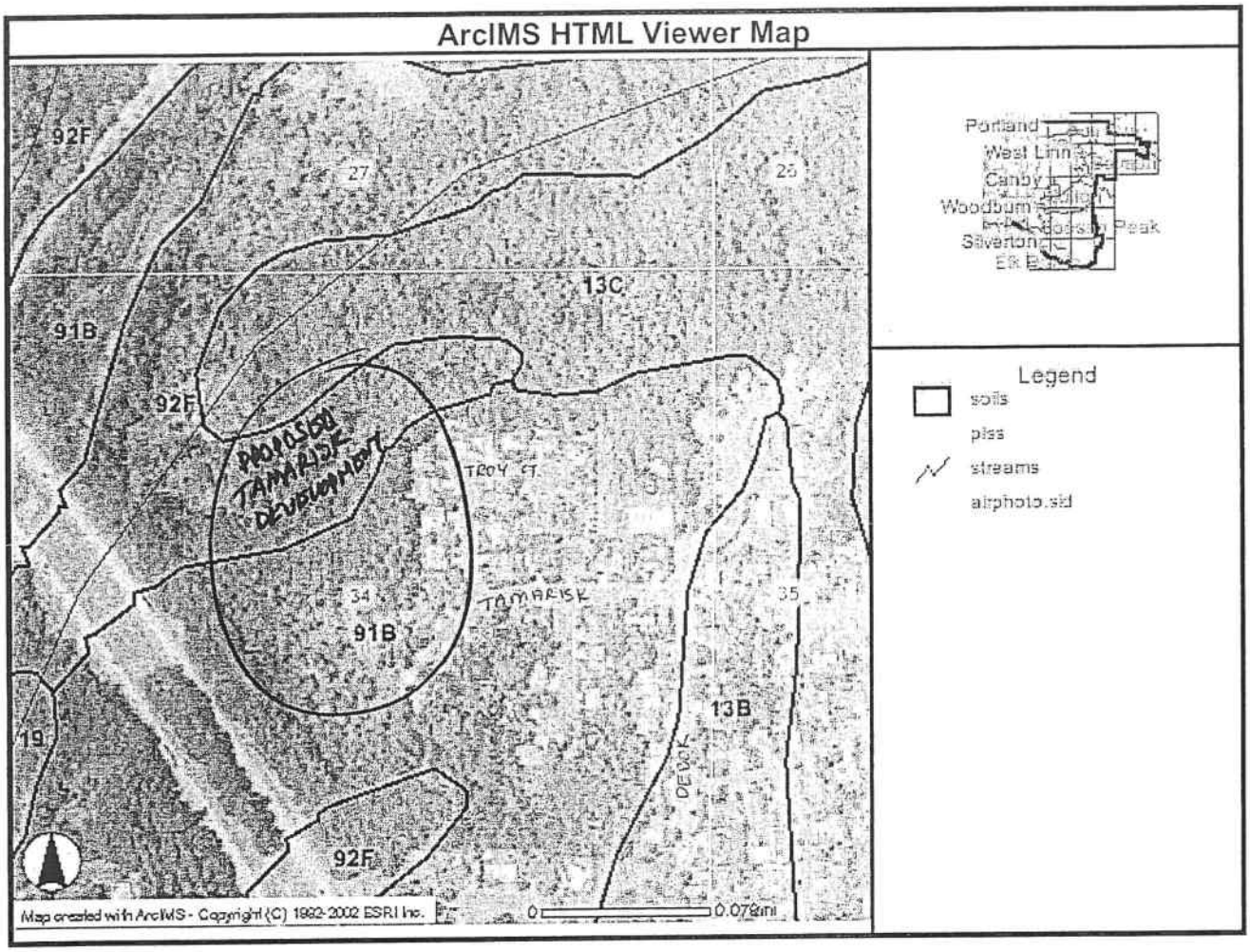
As I've felt from the beginning, I'm not opposed to homes being developed in the area behind our neighborhood, provided it is done in a manner that does not cause property loss to me or my neighbors. In the rush to control costs however, It is quite possible that OTAK or Stearns/Marnella might have greater interest in meeting only the basic needs to complete the construction of these homes in a timely manner.

I would like some reassurance from the city planning department that this risk is being addressed in a manner that substantially mitigates the potential loss of property from erosion or landslide to my property, my neighbor's property and to new homeowners in the proposed development. I can be reached during weekdays at 503-288-8818, in evenings at 503-657-8279 or by email at billm@timmco.com .

Sincerely,

Bill Maxwell

Cc: Bryan Brown


ArcIMS HTML Viewer Map
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21

Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
92F:							
Xerochrepts	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1
						Low strength	0.5
Haploxerolls	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1
						Low strength	0.5

Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13C:							
Cascade	80	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.5	Slope/erodibility	0.95	Slope	0.5
						Low strength	0.5

Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
91B:							
Woodburn	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.5	Low strength	0.5

91B-Woodburn silt loam, 3 to 8 percent slopes. This deep, moderately well drained soil is on broad valley terraces. It formed in stratified glaciolacustrine deposits. The vegetation in areas not cultivated is mainly native grasses, western hazel, poison-oak, Douglas-fir, and Oregon white oak. Elevation is 150 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

Typically, the surface layer is very dark brown and dark brown silt loam about 16 inches thick. The upper 22 inches of the subsoil is dark yellowish brown and dark brown silty clay loam, and the lower 16 inches is dark brown silt loam. The substratum to a depth of 60 inches or more is dark brown silt loam that is slightly brittle.

Included in this unit are small areas of Aloha, Amity, Huberly, Dayton, and Willamette soils. Included areas make up about 10 percent of the total acreage.

Permeability of this Woodburn soil is moderate to a depth of 38 inches and slow below this depth. Available water capacity is about 10 to 13 inches. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The water table is at a depth of 24 to 36 inches in winter and early in spring. This soil is droughty in summer.

Most areas of this unit are used for crops, mainly sweet corn, beans, strawberries, and small grain. Among the other crops grown are alfalfa, nursery stock, filberts, and pasture. Some areas are used as homesites and wildlife habitat and for recreation and timber production. This unit is subject to increased use as homesites. Where the unit has been used for homesite development, as much as 80 percent of the area not covered by buildings or other impervious material has been disturbed. The disturbed areas have been covered by as much as 20 inches of fill material or have had as much as 30 inches of the original profile removed by cutting or grading. The fill material is most commonly from adjacent areas of Woodburn soils that have been cut or graded.

This unit is suited to cultivated crops. It is limited mainly by wetness. Wetness generally limits the suitability of this unit for deep-rooted crops. Tile drainage can be used to reduce wetness if a suitable outlet is available. In summer, irrigation is needed for maximum production of most crops. Sprinkler irrigation is a suitable method of applying water.

Excessive cultivation can result in the formation of a tillage pan, which can be broken by subsoiling when the soil is dry. When the soil is wet, grazing and other activities that cause trampling result in compaction of the surface layer, poor tilth, and excessive runoff. If the soil in this unit is plowed in fall, runoff and erosion can be reduced by fertilizing and seeding to a cover crop. Diversions and grassed waterways may be needed.

Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Grain and grasses respond to nitrogen; legumes respond to phosphorus, boron, sulfur, and lime; and vegetables and berries respond to nitrogen, phosphorus, and potassium.

This unit is well suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 160 to 175. On the basis of a site index of 169, the potential production per acre of merchantable timber is 10,800 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 102,080 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is wetness. Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if heavy equipment is used when the soil is wet. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills. Brushy plants such as western hazel and blackberry limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the slow permeability, wetness, and low soil strength. Drainage is needed if roads and buildings are constructed. Wetness is reduced by installing drain tile around footings. Roads and buildings should be designed to offset the limited ability of the soil in this unit to support a load. Septic tank absorption fields do not function properly during rainy periods because of wetness and the slow permeability.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Plants that tolerate wetness and droughtiness should be selected unless drainage and irrigation are provided.

This map unit is in capability subclass IIe.

91C-Woodburn silt loam, 8 to 15 percent slopes. This deep, moderately well drained soil is on broad valley terraces. It formed in stratified glaciolacustrine deposits. The vegetation in areas not cultivated is mainly native grasses, western hazel, poison-oak, Douglas-fir, and Oregon white oak. Elevation is 150 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

Typically, the surface layer is very dark brown and dark brown silt loam about 16 inches thick. The upper 22 inches of the subsoil is dark yellowish brown and dark brown silty clay loam, and the lower 16 inches is dark brown silt loam. The substratum to a depth of 60 inches or more is dark brown silt loam that is slightly brittle.

Included in this unit are small areas of Aloha, Willamette, and Dayton soils. Included areas make up about 10 percent of the total acreage.

Permeability of this Woodburn soil is moderate to a depth of 38 inches and slow below this depth. Available

water capacity is about 10 to 13 inches. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The water table is at a depth of 24 to 36 inches in winter and early in spring. This soil is droughty in summer.

This unit is used mainly for crops such as small grain, hay, and pasture. Berries are also grown. Some areas of the unit are used for timber production and as wildlife habitat and homesites. This unit is subject to increased use as homesites. Where the unit has been used as homesites, as much as 75 percent of the area not covered by buildings or other impervious material has been disturbed. The disturbed areas have been covered by as much as 24 inches of fill material or have had as much as 36 inches of the original profile removed by cutting or grading. The fill material is most commonly from adjacent areas of Woodburn soils that have been cut or graded.

This unit is suited to cultivated crops. It is limited mainly by wetness and slope. Wetness generally limits the suitability of this unit for deep-rooted crops. Crops that require good drainage can be grown if a properly designed tile drainage system is installed. In summer, irrigation is needed for maximum production of most crops. Sprinkler irrigation is a suitable method of applying water.

Excessive cultivation can result in the formation of a tillage pan, which can be broken by subsoiling when the soil is dry. When the soil is wet, grazing and other activities that cause trampling result in compaction of the surface layer, poor tilth, and excessive runoff. If the soil in this unit is plowed in fall, runoff and erosion can be reduced by fertilizing and seeding to a cover crop. All tillage should be on the contour or across the slope. Diversions and grassed waterways may be needed.

Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Grain and grasses respond to nitrogen; legumes respond to phosphorus, boron, sulfur, and lime; and berries respond to nitrogen, phosphorus, and potassium.

This unit is suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 160 to 175. On the basis of a site index of 169, the potential production per acre of merchantable timber is 10,800 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 102,080 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is wetness. Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if heavy equipment is used when the soil is wet. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills.

Brushy plants such as western hazel and blackberry limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the slow permeability, wetness, low soil strength, and slope. Drainage is needed if roads and buildings are constructed. Wetness is reduced by installing drain tile around footings. Roads and buildings should be designed to offset the limited ability of the soil in this unit to support a load. Preserving the existing plant cover during construction helps to control erosion. Septic tank absorption fields do not function properly during rainy periods because of wetness and the slow permeability.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Plants that tolerate wetness and droughtiness should be selected unless drainage and irrigation are provided.

This map unit is in capability subclass IIIe.

92F-Xerochrepts and Haploxerolls, very steep. This map unit is on terrace escarpments. Slope is 20 to 60 percent. The native vegetation is mainly Douglas-fir, Oregon white oak, bigleaf maple, western redcedar, red alder, western hazel, Oregon-grape, and salal. Elevation is 50 to 1,000 feet. The average annual precipitation is 40 to 60 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 165 to 210 days.

This unit is about 50 percent Xerochrepts and 35 percent Haploxerolls. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Saum, Jory, Cascade, Witzel, and Woodburn soils. Included areas make up about 20 percent of the total acreage.

Xerochrepts are deep and well drained. They formed in colluvium derived dominantly from igneous rock. No single profile of Xerochrepts is typical, but one commonly observed in the survey area has a surface layer of dark brown silt loam about 8 inches thick. The upper 7 inches of the subsoil is dark brown gravelly loam, and the lower 33 inches is brown and dark yellowish brown gravelly clay loam. The substratum to a depth of 60 inches or more is brown very cobbly clay loam.

Permeability of the Xerochrepts is moderate to moderately slow. Available water capacity is about 5 to 10 inches. Effective rooting depth is 40 to 60 inches or more. Runoff is rapid, and the hazard of water erosion is severe.

Haploxerolls are deep and well drained. They formed in colluvium derived dominantly from basic igneous rock. No single profile of Haploxerolls is typical, but one commonly observed in the area has a surface layer of very dark grayish brown silt loam about 12 inches thick. The upper 12 inches of the subsoil is dark brown silt loam, and the lower 26 inches is dark yellowish brown

silty clay loam and gravelly silty clay loam. The substratum to a depth of 60 inches or more is dark yellowish brown very gravelly loam.

Permeability of the Haploxerolls is moderate to moderately slow. Available water capacity is about 8 to 12 inches. Effective rooting depth is 40 to 60 inches or more. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used for timber production and as wildlife habitat and homesites.

This unit is suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 130 to 155. On the basis of a site index of 140, the potential production per acre of merchantable timber is 8,700 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 77,280 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is steepness of slope. The steepness of slope limits the kinds of equipment that can be used in forest management. Highlead or other cable logging methods can be used for harvesting timber. Use of these methods is limited during December through March.

The soils in this unit are subject to slumping, especially if road cuts are made in the steeper areas. Slumping can be minimized by locating roads in the more gently sloping areas and by using properly designed road drainage systems. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills. Brushy plants such as red alder and western hazel limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are steepness of slope and the instability of the soils. The soils are subject to slumping, especially if road cuts are made in the steeper areas. Slumping can be minimized by locating roads in the more gently sloping areas and by using properly designed road drainage systems. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. This unit generally is too steep to install septic tank absorption fields. Absorption lines should be placed in adjoining areas that are more nearly level.

This map unit is in capability subclass VIIe.

93E-Xerochrepts-Rock outcrop complex, moderately steep. This map unit is on high terraces and rolling uplands. Slope is 0 to 30 percent. The native vegetation is mainly Douglas-fir, Oregon white oak, western hazel, Oregon-grape, poison-oak, and grasses. Elevation is 100 to 500 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

This unit is about 60 percent Xerochrepts and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Witzel, Nekia, and Saum soils. Included areas make up about 10 percent of the total acreage.

Xerochrepts are shallow to moderately deep and are well drained. They formed in colluvium derived dominantly from andesite and basalt. No single profile is typical of Xerochrepts, but one commonly observed in the survey area has a surface layer of dark brown gravelly loam or loam about 8 inches thick. The subsoil is brown gravelly loam or loam about 18 inches thick. Basalt is at a depth of 26 inches. Depth to basalt ranges from 15 to 40 inches.

Permeability of the Xerochrepts is moderate to moderately slow. Available water capacity is about 3 to 7 inches. Effective rooting depth is restricted by the depth to basalt. Runoff is medium, and the hazard of water erosion is moderate. This soil is droughty in summer.

Rock outcrop consists of areas of exposed bedrock. These areas support only moss and lichens.

This unit is used as wildlife habitat and homesites and for timber production.

This unit is poorly suited to the production of Douglas-fir. On the Xerochrepts, the site index for Douglas-fir ranges from 110 to 125. On the basis of a site index of 115, the potential production per acre of merchantable timber is 6,360 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 57,960 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 90 years old.

The main concerns in producing and harvesting timber are the restricted rooting depth and large areas of Rock outcrop, which can interfere with felling, yarding, and other operations involving the use of equipment. The low available water capacity generally influences seedling survival in areas where understory plants are numerous. Brushy plants such as western hazel and Oregon-grape limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the areas of Rock outcrop and depth to rock. topsoil can be stockpiled and used to reclaim areas disturbed during construction. Removal of gravel in disturbed areas is needed for best results when landscaping, particularly in areas used for lawns. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. The limited depth to bedrock interferes with excavation for utilities and septic tank absorption fields.

This map unit is in capability subclass VIIs.

94D-Zygore gravelly loam, 5 to 30 percent slopes. This deep, well drained soil is on mountainous uplands. It formed in colluvium derived dominantly from basalt and andesite mixed with volcanic ash. The native

Spir, Peter

From: Bill Maxwell [billm@timmco.com]
Sent: Monday, February 06, 2006 8:33 AM
To: Spir, Peter
Subject: Tamarisk 35-lot PUD - Current resident inquiry

Hi Peter,

My name is Bill Maxwell and I live at 2570 Troy Ct, which is adjacent to the planned unit development proposed at the end of Tamarisk Rd (Sub 05-06, ZC 05-09, MISC 05-56). I've been in contact with the developer as well as their planner to keep apprised of their ongoing plans for the property. You might also recall I sent you a letter back in January addressing my concerns for the steep slope (above designated wetlands) that runs at an angle from the back corner of my property, directly through the development planned by Stearns/Marnella Communities.

I have a copy of the original plan of 48 units which shows homes being built right on the top of each side of the ridge, and I have been advised that the number has been reduced to 35 units recently but that the street and utility patterns are still the same as the original plans.

Can you explain to me if the plan is still to build directly on the edge of the ridge (each side) and if so what precautions you will be requiring the developer to take to prevent any future instability in the slope (for both new homes and existing homes), or damage to the designated wetlands below? I'm extremely concerned about this as it stands to reason if all of the trees and supporting shrubbery are removed as planned (currently flagged from survey for removal), this steep slope will not support the loss of natural drainage and root structure stability.

While I'm not opposed to the developing of land for future residents, I am aware of Stearn/Marnella's past projects and their niche of building cheaper homes to target first time homeowners. In this scenario, they do not have the margin nor desire to spend resources on aspects other than the building of these homes and getting them on the market. I know it is up to the city to hold them to the standards necessary to insure that current residents and taxpayers in West Linn are not negatively impacted by this developent.

I appreciate your time Peter.

Sincerely,

Bill Maxwell

Timmco Insurance, Inc.
Wk: 503-288-8818
Fax: 503-288-8764

28

RECEIVED
JAN 19 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

January 18, 2006

Peter Spir –Associate Planner
City of West Linn
22500 Salamo Rd #1000
West Linn, OR 97068

Re: SUB-05-06, ZC-05-09, MISC-05-56 Tamarisk-35 Lot PUD

Dear Peter,

I am writing this letter to you as a concerned resident regarding the proposed 48-lot (per original plan from Brad Kilby) PUD at 1200 Tamarisk Drive. Since you are listed as the Project Manager for this application I felt obligated to voice to you my concerns and the concerns of my neighbors affected by this development.

Obviously as part of the pre-application process that has taken place you have at least been made aware of the number and type of concerns the residents have. The proposed density change (through density transfer), reduced lot size and lack of a reasonable solution to limit traffic congestion in what amounts to a very large cul-de-sac in an already congested traffic area are a few of them.

While these are certainly concerns I share, of greater concern to me is the construction of homes on or near the upper slopes of the designated wetland causing instability in the delicate drainage. The tree survey flags which were placed on the trees to be removed indicate a significant number of trees and shrubs will be removed from the area, leaving little to keep these slopes intact. As a matter of fact, very few trees are not marked for removal.

These concerns are further highlighted by events that have already occurred in our neighborhood. My neighbor at 1347 Tamarisk Drive had to bring in multiple dump truck loads of fill dirt to replace land lost to a slide two years ago. This affected two homes which have had no construction around them nor removal of trees, and resulted in significant costs and loss of property.

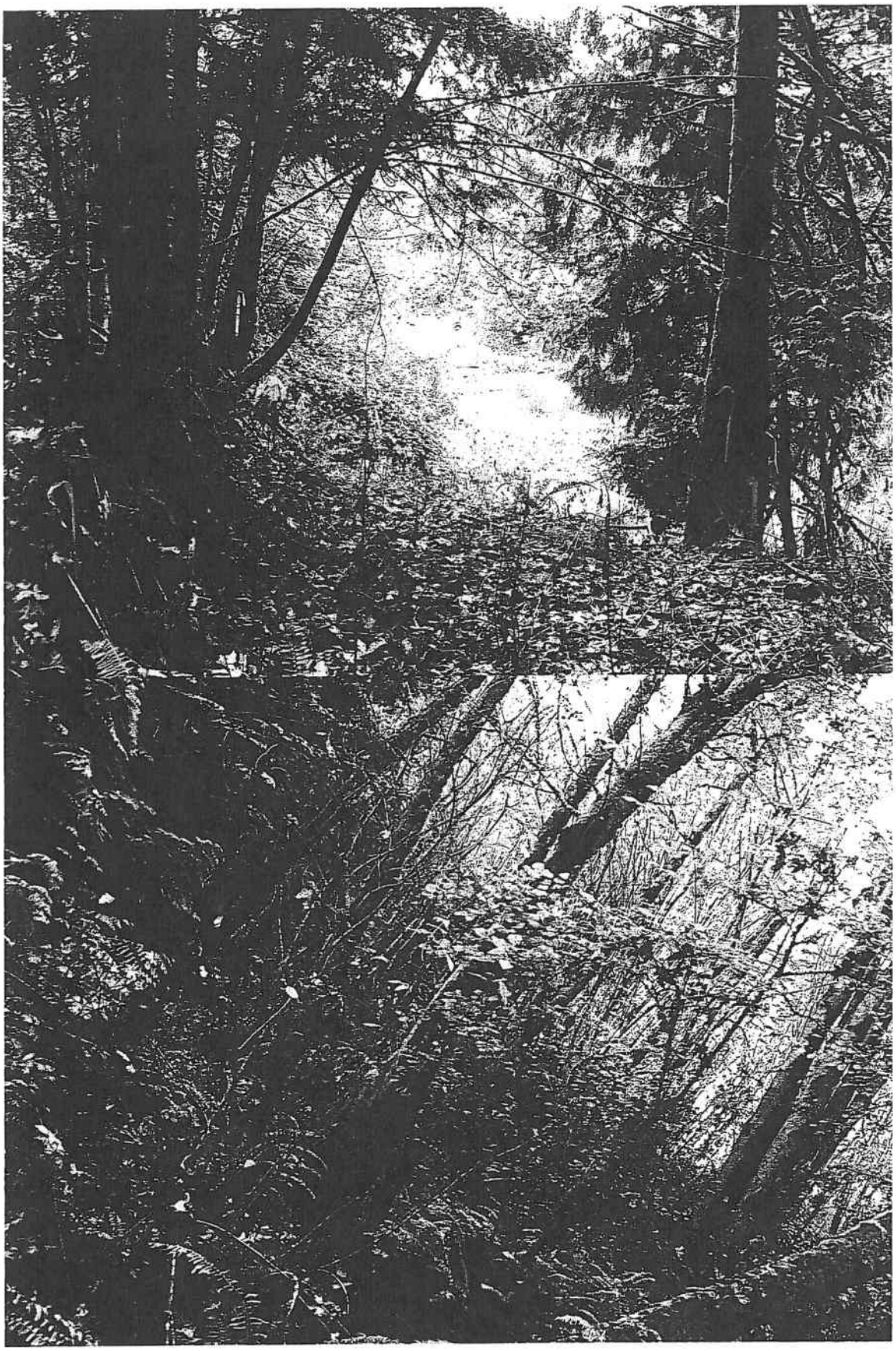
In the news this past week is just one of many reports of a neighborhood in Oregon City on Newell Ridge Rd battling with slide conditions that are threatening to undermine their homes. At the time those homes were built I'm sure the developer chose to maximize usable land in lieu of more conservative setbacks protecting against such an occurrence.

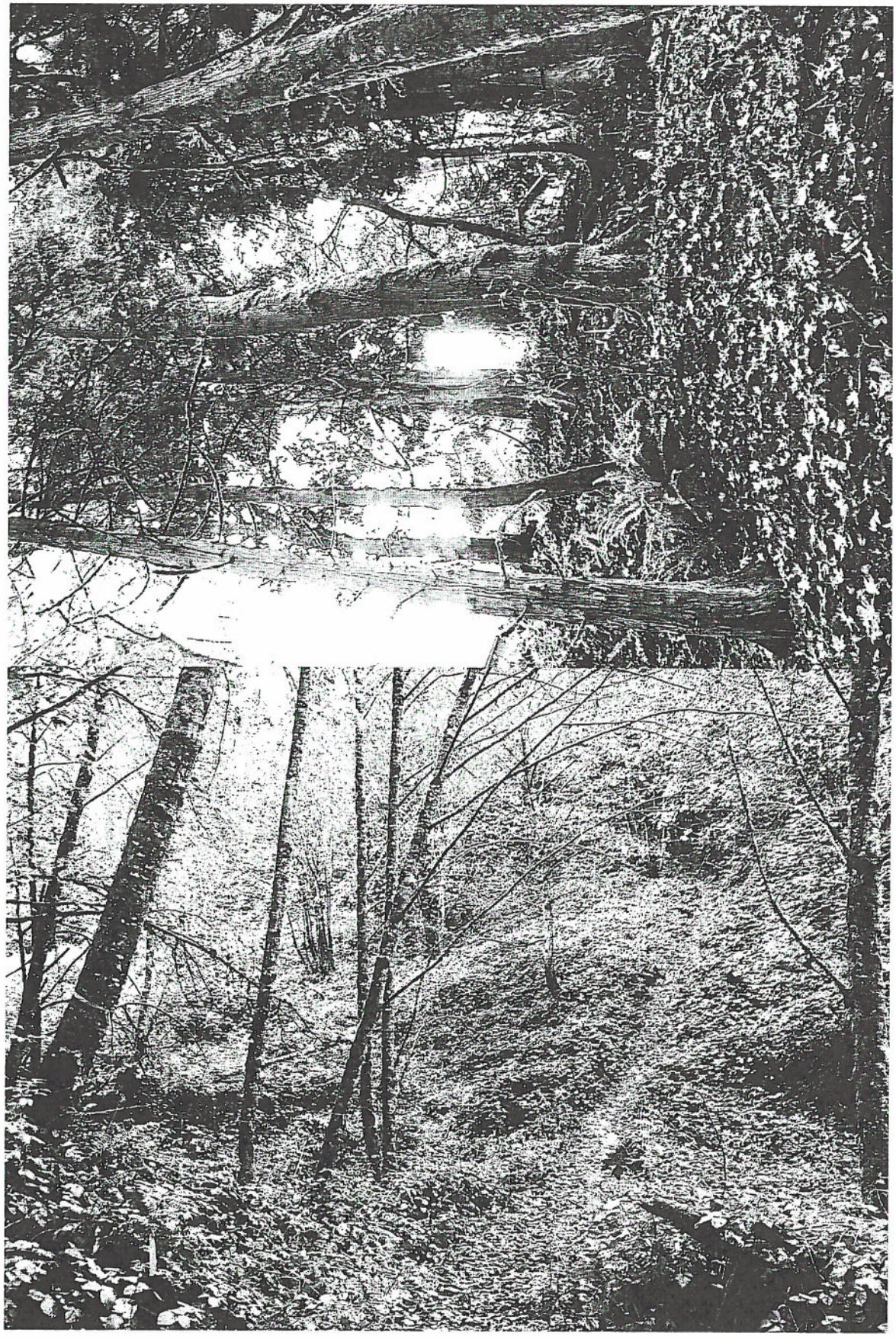
Not only does this concern me for my own property, but also for the properties of my neighbors and those that choose to purchase the homes built upon this unstable portion of the property.

I'm sure you have many land use applications to review and pass judgment upon and this project has many other obstacles which you must address. I simply wanted to further highlight the potential consequences that will likely arise if the developer is allowed to clear and build as close to the slopes as they propose on this very sensitive natural drainage.

Respectfully,

Bill Maxwell
2570 Troy Ct
West Linn, OR 97068





CITY OF WEST LINN
PLANNING AND DEVELOPMENT

EXHIBIT PC-7

APPLICANT'S SUBMITTAL

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **34-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

otak

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

August 8, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Peter:

I am providing you with a revised tree report and exhibit that illustrates the amount of land being set aside for the significant trees identified by Mike Perkins at our last meeting. As we discussed in that meeting, we are providing the areas as prescribed by our arborist, Walt Knapp. According to Walt, the areas were calculated using the USDA Forest Service tree inventory coefficients and tree diameter to calculate the crown radius of the tree. We added 10 feet to the crown radius in compliance with the City of West Linn Development Code.

As it stands, we are preserving 22,663 square feet or 5 percent of area outside of type I and II lands, and outside of any rights-of-way for the preservation of significant trees as identified by Mike Perkins. In addition, there is approximately 13,643 square feet or 3 percent of area outside of type I and II lands where the significant trees identified by Mike Perkins fall within an area of public right-of-way. I realize that this falls short of the target that the code hopes to achieve, but we are willing to negotiate a mitigation plan, and as I have stated in previous correspondence, if we are working within the site, and find that we will be able to save more trees, we will.

In speaking with the project engineer, and going over the tree removal/retention plan in conjunction with the grading plan, he pointed out several locations that you and I discussed that wouldn't work due to the amount of cut or fill occurring in or around the trees that would jeopardize their health.

We will work towards preservation over removal in final design, and ask that you please consider the amount of trees and significant features that are being preserved on the site as opposed to focusing in on the twenty percent standard. It is evident in past decisions made within the City that the 20 percent is a target and not a mandate. As I have suggested in the past, we realize that mature trees

provide more value to the development, and we will work diligently to keep additional trees, but we simply cannot make that type of commitment until we are in the process of physically developing the site.

I am providing you with ten full-size copies of the plans and three half-size sheets as you requested. Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby

Brad Kilby, AICP

BK:sjs
Enclosures: Revised Plan Set (10 copies)
Amended Tree Removal/Save Spreadsheet (3 copies)

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1138	western redcedar		24	13	4	x	Remove
1139	western redcedar		24	13		x	Save
1140	western redcedar		10	9	4	x	Save
1141	western redcedar		8	8	4	x	Save
1142	western redcedar		30	13	4	x	Remove
1143	western redcedar		18	11	4	x	Remove
1144	bigleaf maple		24	18	4	x	Remove
1152	western redcedar		18	11	4	x	Remove
1153	bigleaf maple		24	18	4	x	Remove
1154	bigleaf maple	2	2x6 - 8	14	4	x	Remove
1156	western redcedar		10	9	4	x	Remove
1157	western redcedar		16	11	4	x	Remove
1158	western redcedar		36	13	4	x	Remove
1173	bigleaf maple		18	15	4	x	Remove
1174	bigleaf maple	3	3x6 - 12	14	4	x	Remove
1178	bigleaf maple		24	18	4	x	Remove
1212	western redcedar		30	13	4	x	Remove
1216	western redcedar		24	13	4	x	Remove
1239	western redcedar		24	13	4	x	Remove
1285	Douglas-fir		30	14	4	x	Save
1286	bigleaf maple		30	22	4	x	Remove
1306	bigleaf maple		14	13	4	x	Remove
1307	bigleaf maple		18	15	4	x	Remove
1308	bigleaf maple		14	13	4	x	Remove
1309	Douglas-fir		20	11		x	Save
1310	bigleaf maple		14	13	4	x	Remove
1312	western redcedar		26	13	4	x	Remove
1313	bigleaf maple		24	18	4	x	Remove
1326	western redcedar		36	13	4	x	Remove
1362	western redcedar		18	11	4	x	Remove
1374	western redcedar		30	13	4	x	Remove
1421	western redcedar		24	13	4	x	Remove
1526	red alder	2	2x12	9	4	x	Remove
1534	bigleaf maple		18	15	4	x	Remove
1535	bigleaf maple		18	15	4	x	Remove
1536	bigleaf maple		18	15	4	x	Remove
1580	western redcedar		30	13	4	x	Remove
1613	bigleaf maple	2	2x6 - 8	11	4	x	Remove
1614	bigleaf maple		20	16	4	x	Remove
1617	Douglas-fir		12	8	4	x	Remove
1618	bigleaf maple		20	16	4	x	Remove
1619	bigleaf maple		20	16	4	x	Remove
1620	bigleaf maple		18	15	4	x	Remove
1681	bigleaf maple		18	15	4	x	Remove
1682	bigleaf maple		24	18	4	x	Remove
1683	bigleaf maple		12	12	4	x	Remove
1684	bigleaf maple		18	15	4	x	Remove
1685	bigleaf maple		30	22	4	x	Remove
1686	bigleaf maple		14	13	4	x	Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1687	bigleaf maple		18	15	4	x	Remove
1688	bigleaf maple		18	15	4	x	Remove
1693	bigleaf maple		18	15	4	x	Remove
1696	western redcedar		30	13	4	x	Remove
1699	bigleaf maple		20	16	4	x	Remove
1701	bigleaf maple		18	15	4	x	Remove
1757	bigleaf maple		24	18	4	x	Remove
1798	bigleaf maple		18	15	4	x	Remove
1879	western redcedar		38	13	4	x	Remove
1886	Douglas-fir		40	15	3	x	Remove
1893	red alder	2	2X6	8	3	x	Remove
1894	red alder		8	8	3	x	Remove
1895	bigleaf maple		16	14	2	x	Remove
1899	bigleaf maple		16	14	2	x	Remove
2117	bigleaf maple		24	18	1	x	Remove
2118	bigleaf maple		12	12	1	x	Remove
2119	bigleaf maple		22	17	1	x	Remove
2120	bigleaf maple	6	6X6 - 8	15	1	x	Remove
2121	bigleaf maple		8	10	1	x	Remove
2122	western redcedar		16	11	2	x	Remove
2123	bigleaf maple		16	14	1	x	Remove
2651	western redcedar		18	11	3	x	Save
2980	western redcedar		18	11	3	x	Save
2981	western redcedar		30	13	3	x	Save
2982	western redcedar		24	13	3	x	Save
3103	bigleaf maple		36	25	4	x	Remove
3400	bigleaf maple		18	15	4	x	Save
3401	western redcedar		34	13	4	x	Save
3564	western redcedar		24	13	4	x	Remove
3589	western redcedar		12	10	4	x	Remove
3591	western redcedar		14	10	4	x	Remove
3623	western redcedar		22	12	3	x	Remove
3713	bigleaf maple		30	22	4	x	Save
3714	bigleaf maple		36	25	4	x	Save
1145	bigleaf maple	9	9x6 - 10		4		Remove
1146	bigleaf maple		12		4		Remove
1147	bigleaf maple	3	3x6 - 12		4		Save
1148	red alder	2	2x8 - 10		4		Remove
1149	elm	2	2x8		4		Remove
1150	western redcedar		24		4		Remove
1151	bigleaf maple	8	8x6 - 8		4		Remove
1155	bigleaf maple	5	5x6 - 10		4		Remove
1159	bigleaf maple		8		4		Remove
1160	Douglas-fir		6		4		Remove
1161	red alder		6		4		Remove
1162	red alder		14		4		Remove
1163	red alder		10		4		Remove
1164	red alder		8		4		Remove
1165	red alder		8		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1166	bigleaf maple		14		4		Remove
1167	bigleaf maple		12		4		Remove
1168	bigleaf maple		10		4		Remove
1169	elm		8		4		Remove
1170	Douglas-fir		10		4		Remove
1171	Douglas-fir		8		4		Remove
1175	bigleaf maple	5	5x6 - 8		4		Remove
1179	bigleaf maple		6		4		Remove
1180	Douglas-fir		12		4		Remove
1181	bigleaf maple		27		1		Save
1182	bigleaf maple		18		1		Save
1183	western redcedar		12		1		Save
1184	bigleaf maple		18		1		Save
1185	Douglas-fir		8		1		Save
1186	Douglas-fir		8		1		Save
1187	bigleaf maple	2	2x6		1		Save
1188	Douglas-fir		8		1		Save
1189	bigleaf maple	2	2x6 - 15		1		Save
1190	Douglas-fir		8		1		Save
1191	bigleaf maple		24		1		Save
1192	Douglas-fir		10		1		Save
1193	Douglas-fir		8		1		Save
1194	bigleaf maple	2	2x30		1		Save
1195	Douglas-fir		6		1		Save
1196	Douglas-fir		6		1		Save
1197	bigleaf maple		6		4		Remove
1198	bigleaf maple	2	2x10 - 12		1		Save
1199	Douglas-fir		8		1		Save
1200	Douglas-fir		6		1		Save
1201	Douglas-fir		12		1		Save
1202	bigleaf maple		18		1		Save
1203	Douglas-fir		18		1		Save
1204	Douglas-fir		18		4		Remove
1205	Douglas-fir		15		4		Remove
1206	Douglas-fir		6		1		Remove
1207	bigleaf maple		18		1		Save
1208	bigleaf maple	2	2x12		1		Save
1209	bigleaf maple		24		1		Save
1210	Douglas-fir		8		1		Save
1211	bigleaf maple		30				Save
1213	bigleaf maple	4	4x6 - 12		4		Remove
1214	bigleaf maple	5	5x6 - 8		4		Remove
1215	bigleaf maple		6		4		Remove
1217	western redcedar	2	2x10 - 15		4		Remove
1236	bigleaf maple	7	7x6 - 10		4		Remove
1237	red alder		12		4		Remove
1238	Douglas-fir		24		4		Remove
1240	bigleaf maple	5	5x6 - 8		4		Remove
1241	bigleaf maple	8	8x6 - 12		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1242	western redcedar		18		4		Remove
1243	bigleaf maple	8	8x6 - 8		4		Remove
1244	bigleaf maple		6		4		Remove
1245	bigleaf maple	3	3x8 - 12		4		Remove
1246	bigleaf maple	6	6x6 - 10		4		Remove
1247	bigleaf maple	2	2x6 - 8		4		Remove
1248	bigleaf maple		8		4		Remove
1249	bigleaf maple		8		4		Remove
1251	bigleaf maple	6	6x6 - 8		4		Remove
1257	bigleaf maple		30		1		Save
1261	bigleaf maple		10		4		Save
1262	bigleaf maple	5	5x10 - 20		4		Save
1263	bigleaf maple		10		4		Save
1264	red alder		10		4		Save
1265	red alder		12		4		Save
1266	Douglas-fir		6		4		Remove
1267	red alder	2	2x6		4		Remove
1268	bigleaf maple		8		4		Remove
1269	bigleaf maple	6	6x6 - 10		4		Remove
1270	bigleaf maple		6		4		Remove
1271	bigleaf maple	2	2x6 - 8		4		Remove
1274	bigleaf maple	2	2x8 - 10		4		Remove
1275	bigleaf maple		8		4		Remove
1276	bigleaf maple	6	6x6 - 12		4		Remove
1277	bigleaf maple	6	6x6 - 10		4		Remove
1278	bigleaf maple	4	4x8 - 10		4		Remove
1280	bigleaf maple		8		4		Remove
1281	bigleaf maple	10	10x6 - 12		4		Remove
1282	bigleaf maple	9	9x6 14		4		Remove
1283	bigleaf maple	3	3x6 - 8		4		Remove
1284	bigleaf maple	2	2x6		4		Remove
1311	western redcedar		18		4		Remove
1314	bigleaf maple	9	9x6 - 12		4		Remove
1315	bigleaf maple	9	9x6 - 8		4		Remove
1316	red alder	5	5x6 - 10		4		Remove
1317	western redcedar		12		4		Remove
1318	bigleaf maple	7	7x6 - 8		4		Remove
1319	bigleaf maple	10	10x6 - 8		4		Remove
1320	bigleaf maple	5	5x6 - 10		4		Remove
1321	bigleaf maple	8	8x6 - 10		4		Remove
1322	bigleaf maple		10		4		Remove
1323	bigleaf maple	5	5x6		4		Remove
1324	bigleaf maple	12	12x6 - 8		4		Remove
1325	bigleaf maple	10	10x6 - 10		4		Remove
1327	bigleaf maple		6		4		Remove
1328	bigleaf maple		6		4		Remove
1329	bigleaf maple	2	2x8 - 10		4		Remove
1330	bigleaf maple		6		4		Remove
1331	bigleaf maple	10	10x6 - 10		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1332	red alder		12		4		Remove
1333	red alder		8		4		Remove
1334	Douglas-fir		8		4		Remove
1335	Douglas-fir		8		4		Remove
1336	red alder		8		4		Remove
1337	Douglas-fir		8		4		Remove
1338	Douglas-fir		10		4		Remove
1339	Douglas-fir		8		4		Remove
1340	Douglas-fir		10		4		Remove
1341	bigleaf maple		10		4		Remove
1342	bigleaf maple		6		4		Remove
1343	bigleaf maple		6		4		Remove
1344	red alder		12		4		Remove
1345	red alder		10		4		Remove
1346	red alder		6		4		Remove
1347	red alder	3	3x6 - 8		4		Remove
1348	red alder	2	2x10 - 12		4		Remove
1349	bigleaf maple		12		4		Remove
1350	Douglas-fir		6		4		Remove
1351	Douglas-fir		10		4		Remove
1352	Douglas-fir		6		4		Remove
1353	Douglas-fir		6		4		Remove
1354	red alder		8		4		Remove
1355	Douglas-fir	2	2x6 - 8		4		Remove
1356	red alder		6		4		Remove
1357	Douglas-fir		6		4		Remove
1358	Douglas-fir		8		4		Remove
1359	Douglas-fir		8		4		Remove
1360	bigleaf maple	2	2x10 - 18		4		Remove
1361	bigleaf maple	6	6x6 - 8		4		Remove
1363	bigleaf maple	5	5x6 - 8		4		Remove
1364	bigleaf maple	8	8x6 - 8		4		Remove
1365	bigleaf maple	2	2x6		4		Remove
1366	western redcedar		36		4		Remove
1367	red alder	2	2x10		4		Remove
1368	bigleaf maple		14		4		Remove
1369	bigleaf maple	5	5x6 - 10		4		Remove
1370	bigleaf maple	8	8x6 - 8		4		Remove
1371	bigleaf maple	6	6x6		4		Remove
1372	bigleaf maple		14		4		Remove
1373	bigleaf maple	7	7x6 - 12		4		Remove
1375	bigleaf maple	4	4x8 - 10		4		Remove
1376	bigleaf maple	10	10x6 - 8		4		Remove
1377	bigleaf maple	10	10x6 - 8		4		Remove
1378	bigleaf maple	7	7x6 - 8		4		Remove
1379	bigleaf maple		6		4		Remove
1380	bigleaf maple		8		4		Remove
1381	bigleaf maple	2	2x6 - 8		4		Remove
1382	bigleaf maple	2	2x6		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1383	bigleaf maple		6		4		Remove
1384	bigleaf maple		14		4		Remove
1385	deciduous		10		4		Remove
1386	deciduous		10		4		Remove
1387	deciduous		8		4		Remove
1388	deciduous		6		4		Remove
1389	deciduous		6		4		Remove
1390	deciduous		8		4		Remove
1391	deciduous		6		4		Remove
1392	western redcedar		18		4		Remove
1393	deciduous		8		4		Remove
1394	deciduous		6		4		Remove
1395	bigleaf maple	2	2x6 - 8		4		Remove
1396	deciduous		10		4		Remove
1397	western redcedar		18		4		Remove
1398	bigleaf maple		8		4		Remove
1399	bigleaf maple		10		4		Remove
1400	black cottonwood		18		4		Remove
1401	black cottonwood	3	3x14 - 18		4		Remove
1402	bigleaf maple	2	2x8 - 10		4		Remove
1403	red alder		10		4		Remove
1404	western redcedar		30		4		Remove
1405	western redcedar		26		4		Remove
1406	bigleaf maple	6	6x6 - 8		4		Remove
1407	bigleaf maple	4	4x6 - 8		4		Remove
1408	bigleaf maple		12		4		Remove
1409	bigleaf maple	3	3x6 - 14		4		Remove
1410	bigleaf maple		6		4		Remove
1411	bigleaf maple		10		4		Remove
1412	bigleaf maple		6		4		Remove
1413	bigleaf maple		6		4		Remove
1414	bigleaf maple		8		4		Remove
1415	bigleaf maple		8		4		Remove
1416	bigleaf maple		8		4		Remove
1417	bigleaf maple		10		4		Remove
1418	western redcedar		18		4		Remove
1419	bigleaf maple		10		4		Remove
1420	bigleaf maple		8		4		Remove
1422	Douglas-fir		10		4		Remove
1423	Douglas-fir		6		4		Remove
1424	Douglas-fir		8		4		Remove
1425	Douglas-fir		10		4		Remove
1426	Douglas-fir		6		4		Remove
1427	Douglas-fir		10		4		Remove
1428	Douglas-fir		8		4		Remove
1429	Douglas-fir		8		4		Remove
1430	bigleaf maple	5	5x6 - 8		4		Remove
1431	bigleaf maple	10	10x6 - 10		4		Remove
1440	bigleaf maple	3	3x6 - 8		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1441	bigleaf maple	4	4x6 - 8		4		Remove
1442	bigleaf maple		16		4		Remove
1443	red alder		8		4		Remove
1444	red alder		12		4		Remove
1445	bigleaf maple		16		4		Remove
1446	bigleaf maple		8		4		Remove
1447	red alder		12		4		Remove
1448	red alder	2	2x8 - 10		4		Remove
1449	red alder		8		4		Remove
1450	bigleaf maple	6	6x6 - 8		4		Remove
1451	bigleaf maple	2	2x6 - 8		4		Remove
1452	bigleaf maple	2	2x6 - 8		4		Remove
1453	bigleaf maple		10		4		Remove
1454	western redcedar		28		4		Remove
1455	western redcedar		24		4		Remove
1456	bigleaf maple	6	6x6 - 8		4		Remove
1457	bigleaf maple		6		4		Remove
1458	bigleaf maple		12		4		Remove
1459	Douglas-fir		6		4		Remove
1460	bigleaf maple		6		4		Remove
1461	Douglas-fir		6		4		Remove
1462	bigleaf maple		6		4		Remove
1463	bigleaf maple		8		4		Remove
1464	bigleaf maple	3	3x6		4		Remove
1465	bigleaf maple	9	9x6 - 10		4		Remove
1466	bigleaf maple		8		4		Remove
1467	red alder		10		4		Remove
1468	bigleaf maple		18		4		Remove
1469	bigleaf maple	6	6x6 - 8		4		Remove
1471	bigleaf maple	5	5x6 - 12		4		Remove
1472	red alder		12		4		Remove
1473	bigleaf maple		18		4		Remove
1474	bigleaf maple		10		4		Remove
1478	bigleaf maple	4	4x6 - 8		4		Remove
1479	bigleaf maple	5	5x6 - 10		4		Remove
1480	red alder		12		4		Remove
1481	red alder		12		4		Remove
1482	red alder	2	2x10		4		Remove
1483	red alder		10		4		Remove
1484	western redcedar		18		4		Remove
1485	bigleaf maple		10		4		Remove
1486	bigleaf maple		12		4		Remove
1487	red alder		16		4		Remove
1488	red alder		8		4		Remove
1489	red alder		8		4		Remove
1490	red alder		8		4		Remove
1491	bigleaf maple		8		4		Remove
1492	red alder		6		4		Remove
1493	red alder		10		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1494	red alder		10		4		Remove
1495	red alder		8		4		Remove
1496	red alder		6		4		Remove
1497	red alder		12		4		Remove
1498	red alder		6		4		Remove
1499	bigleaf maple	3	3x6 - 8		4		Remove
1500	red alder		6		4		Remove
1501	red alder	2	2x8 - 10		4		Remove
1502	bigleaf maple		18		4		Remove
1503	western redcedar		18		4		Remove
1504	western redcedar		12		4		Remove
1505	bigleaf maple		6		4		Remove
1506	bigleaf maple		8		4		Remove
1507	red alder		6		4		Remove
1508	black cottonwood		18		4		Remove
1509	black cottonwood		18		4		Remove
1510	black cottonwood		18		4		Remove
1511	bigleaf maple	6	6x6 - 8		4		Remove
1512	bigleaf maple	12	12x6 - 8		4		Remove
1513	bigleaf maple	2	2x6 - 8		4		Remove
1514	bigleaf maple	5	5x6 - 8		4		Remove
1515	red alder		8		4		Remove
1516	bigleaf maple	3	3x6 - 8		4		Remove
1517	bigleaf maple		6		4		Remove
1518	bigleaf maple		8		4		Remove
1519	bigleaf maple		8		4		Remove
1520	red alder		14		4		Remove
1521	bigleaf maple	2	2x6		4		Remove
1522	red alder		12		4		Remove
1523	red alder		10		4		Remove
1524	red alder		8		4		Remove
1525	black cottonwood		14		4		Remove
1527	red alder	2	2x12		4		Remove
1528	western redcedar		18		4		Remove
1529	bigleaf maple		8		4		Remove
1530	red alder		12		4		Remove
1531	bigleaf maple	4	4x6 - 10		4		Remove
1533	bigleaf maple	2	2x12 - 18		4		Remove
1537	red alder		12		4		Remove
1538	red alder		8		4		Remove
1539	red alder		10		4		Remove
1540	red alder		8		4		Remove
1541	red alder		8		4		Remove
1542	bigleaf maple	5	5x6		4		Remove
1543	red alder		10		4		Remove
1544	red alder		6		4		Remove
1545	red alder		14		4		Remove
1546	red alder		14		4		Remove
1547	red alder		12		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1548	bigleaf maple		10		4		Remove
1549	red alder	2	2x8		4		Remove
1550	bigleaf maple		14		4		Remove
1551	Douglas-fir		18		4		Remove
1552	Douglas-fir		18		4		Remove
1553	bigleaf maple	5	5x6		4		Remove
1554	bigleaf maple	2	2x6		4		Remove
1555	red alder		14		4		Remove
1556	red alder	2	2x10 - 12		4		Remove
1557	red alder		8		4		Remove
1558	western redcedar		24		4		Remove
1559	red alder		10		4		Remove
1560	red alder		10		4		Remove
1561	red alder	3	3x6 - 8		4		Remove
1562	red alder		12		4		Remove
1563	red alder		14		4		Remove
1564	red alder		6		4		Remove
1565	red alder		6		4		Remove
1566	red alder		10		4		Remove
1567	red alder		8		4		Remove
1568	red alder		8		4		Remove
1569	bigleaf maple	2	2x6		4		Remove
1570	red alder		12		4		Remove
1571	red alder		10		4		Remove
1572	red alder		14		4		Remove
1573	bigleaf maple		8		4		Remove
1574	red alder		6		4		Remove
1575	bigleaf maple	2	2x6 - 8		4		Remove
1576	bigleaf maple	5	5x6 - 8		4		Remove
1577	bigleaf maple	7	7x6 - 8		2		Remove
1578	red alder		8		4		Remove
1579	red alder		10		4		Remove
1581	bigleaf maple	4	4x6 - 8		2		Remove
1582	red alder		8		4		Remove
1583	red alder	4	4x6 - 8		4		Remove
1584	red alder	2	2x6 - 10		4		Remove
1585	bigleaf maple	2	2x6 - 10		4		Remove
1586	red alder		8		4		Remove
1587	bigleaf maple	3	3x6		4		Remove
1588	red alder		6		4		Remove
1589	bigleaf maple		8		4		Remove
1590	bigleaf maple	6	6x6 - 10		4		Remove
1591	bigleaf maple		8		4		Remove
1592	elm		10		4		Remove
1593	red alder		6		4		Remove
1594	western redcedar		18		4		Remove
1595	bigleaf maple		12		4		Remove
1596	bigleaf maple	2	2x8 - 10		4		Remove
1610	red alder		6		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1611	red alder	2	2x10 - 12		4		Remove
1612	bigleaf maple	15	15x6 - 10		4		Remove
1621	Douglas-fir		8		4		Remove
1622	Douglas-fir		8		4		Remove
1623	red alder		16		4		Remove
1624	red alder		14		4		Remove
1625	Douglas-fir		6		4		Remove
1626	red alder		14		4		Remove
1627	red alder		10		4		Remove
1628	red alder		6		4		Remove
1629	red alder		8		4		Remove
1630	red alder		8		4		Remove
1631	Douglas-fir		8		4		Remove
1632	Douglas-fir		8		4		Remove
1633	Douglas-fir		6		4		Remove
1634	red alder	5	5x10		4		Remove
1635	red alder	2	2x6 - 12		4		Remove
1636	red alder		8		4		Remove
1637	red alder		12		4		Remove
1638	red alder		8		4		Remove
1639	red alder		12		4		Remove
1640	red alder		8		4		Remove
1641	red alder		10		4		Remove
1642	red alder		6		4		Remove
1643	red alder		8		4		Remove
1644	red alder		10		4		Remove
1645	red alder		10		4		Remove
1646	red alder		10		4		Remove
1649	western redcedar		36		4		Remove
1650	bigleaf maple		8		4		Remove
1651	western redcedar		14		4		Save
1652	bigleaf maple	8	8x6 - 10		4		Remove
1667	bigleaf maple	5	5x6 - 10		4		Remove
1668	bigleaf maple	7	7x6 - 8		4		Remove
1669	bigleaf maple	6	6x6 - 8		4		Remove
1670	bigleaf maple	4	4x6 - 8		4		Remove
1671	bigleaf maple	4	4x6 - 10		4		Remove
1672	red alder		18		4		Remove
1673	red alder		12		4		Remove
1674	red alder		10		4		Remove
1675	red alder	2	2x6 - 8		4		Remove
1676	red alder		10		4		Remove
1677	red alder		12		4		Remove
1678	red alder		10		4		Remove
1679	red alder		8		4		Remove
1680	bigleaf maple	2	2x6 - 8		4		Remove
1689	bigleaf maple	3	3x6		4		Remove
1690	red alder		8		4		Remove
1691	bigleaf maple	5	5x6 - 8		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1692	bigleaf maple		6		4		Remove
1694	bigleaf maple		10		4		Remove
1695	bigleaf maple		10		4		Save
1697	bigleaf maple		24		4		Remove
1698	bigleaf maple	4	4x14 - 30		4		Remove
1700	bigleaf maple		12		4		Remove
1702	bigleaf maple		20		4		Remove
1703	bigleaf maple		10		4		Remove
1704	red alder		14		4		Remove
1705	red alder		10		4		Remove
1706	red alder		6		4		Remove
1707	red alder		12		4		Remove
1708	red alder		6		4		Remove
1709	red alder		10		4		Remove
1710	red alder		12		4		Remove
1711	red alder		10		4		Remove
1712	red alder		12		4		Remove
1713	red alder		14		4		Remove
1714	red alder		6		4		Remove
1715	red alder		10		4		Remove
1716	red alder		14		4		Remove
1717	western redcedar		14		4		Remove
1718	red alder		6		4		Remove
1719	red alder		10		4		Remove
1720	red alder		6		4		Remove
1721	red alder	2	2x8		4		Remove
1722	red alder		14		3		Remove
1723	bigleaf maple	2	2x6		4		Remove
1724	bigleaf maple	4	4x8 - 14		4		Remove
1725	red alder		8		4		Remove
1726	red alder	2	2x10 - 14		4		Remove
1727	red alder		12		4		Remove
1728	red alder		10		4		Remove
1729	red alder		14		4		Remove
1730	red alder		14		4		Remove
1731	red alder		10		4		Remove
1732	red alder		10		4		Remove
1733	red alder		12		4		Remove
1734	red alder		6		4		Remove
1735	red alder		10		4		Remove
1736	red alder		8		4		Remove
1737	red alder		8		4		Remove
1738	red alder		10		4		Remove
1739	red alder		6		4		Remove
1740	bigleaf maple	2	2x6		4		Remove
1741	bigleaf maple		6		4		Remove
1742	bigleaf maple		8		4		Remove
1743	red alder		8		4		Remove
1744	red alder		10		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1745	red alder		8		4		Remove
1746	red alder		10		4		Remove
1747	red alder		12		4		Remove
1748	red alder		12		4		Remove
1749	red alder		8		4		Remove
1750	red alder		6		4		Remove
1751	red alder		8		4		Remove
1752	red alder		8		4		Remove
1753	red alder		8		4		Remove
1754	red alder		6		4		Remove
1755	bigleaf maple		12		4		Remove
1756	red alder	5	5x6 - 16		4		Remove
1758	red alder		10		4		Remove
1759	red alder	2	2x12		4		Remove
1760	red alder		14		4		Remove
1761	red alder		8		4		Remove
1762	red alder		8		4		Remove
1763	red alder		14		4		Remove
1764	red alder		6		4		Remove
1765	red alder		6		4		Remove
1766	red alder		8		4		Remove
1767	red alder		14		4		Remove
1768	red alder		12		4		Remove
1769	red alder	3	3x12		4		Remove
1770	red alder		8		4		Remove
1771	red alder		6		4		Remove
1772	red alder		6		4		Remove
1773	red alder		10		4		Remove
1774	red alder		12		4		Remove
1775	red alder	4	4x6 - 14		4		Remove
1776	red alder		14		4		Remove
1777	red alder		8		4		Remove
1778	red alder		8		4		Remove
1779	red alder		6		4		Remove
1780	red alder	2	2x8		4		Remove
1781	red alder		6		4		Remove
1782	red alder	2	2x8		3		Remove
1783	red alder	2	2x6 - 8		3		Remove
1784	red alder		10		2		Remove
1785	red alder		8		3		Remove
1786	red alder		10		4		Remove
1787	red alder		6		3		Remove
1788	red alder		8		4		Remove
1789	red alder		6		3		Remove
1790	red alder		14		3		Remove
1791	red alder		12		3		Remove
1792	red alder	4	4x6 - 8		3		Remove
1793	red alder		10		4		Remove
1794	red alder		8		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1795	western redcedar		24		4		Remove
1796	red alder		8		3		Remove
1797	red alder		12		3		Remove
1821	bigleaf maple	2	2X8		3		Remove
1822	bigleaf maple		8		3		Remove
1823	bigleaf maple	4	4X6 - 8		3		Remove
1824	bigleaf maple		8		3		Remove
1825	bigleaf maple		8		2		Remove
1826	bigleaf maple		8		2		Remove
1827	red alder		6		3		Remove
1828	red alder		6		3		Remove
1829	red alder	2	2X6 - 8		3		Remove
1830	red alder		8		3		Remove
1831	black cottonwood		16		3		Remove
1832	bigleaf maple	2	2X6		3		Save
1833	bigleaf maple	3	3X6 - 8		4		Save
1834	bigleaf maple	2	2X6 - 10		2		Save
1835	western redcedar		24		2		Save
1836	western redcedar		14		4		Save
1837	bigleaf maple		30		1		Save
1838	red alder		8		2		Remove
1839	western redcedar		20		1		Save
1840	bigleaf maple		30		1		Save
1841	western redcedar		10		1		Save
1842	western redcedar		12		1		Save
1844	red alder		8		2		Save
1845	red alder		6		2		Save
1858	black cottonwood		14		1		Save
1859	western redcedar		24		1		Save
1860	black cottonwood	3	3X10 - 14		1		Save
1861	red alder		6		1		Save
1862	black cottonwood		16		1		Save
1863	black cottonwood		16		1		Save
1864	black cottonwood		16		1		Save
1865	bigleaf maple	2	2X6 - 12		1		Save
1866	black cottonwood		16		1		Save
1867	black cottonwood		10		1		Save
1868	black cottonwood		26		1		Save
1869	black cottonwood		12		1		Save
1870	bigleaf maple	2	2X8		1		Save
1872	bigleaf maple	4	4X6 - 10		1		Save
1873	bigleaf maple		14		1		Remove
1875	bigleaf maple	5	5X6		2		Remove
1876	western redcedar		6		4		Remove
1877	bigleaf maple		12		4		Remove
1878	black cottonwood	2	2X10 - 18		4		Remove
1880	Douglas-fir		14		4		Remove
1881	Douglas-fir		10		4		Remove
1882	Douglas-fir		10		4		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1883	Douglas-fir		8		4		Save
1884	bigleaf maple	2	2X18 - 36		3		Remove
1885	bigleaf maple	3	3X6 - 18		3		Remove
1887	Douglas-fir		6		4		Remove
1888	bigleaf maple	2	2X14 - 24		3		Remove
1889	western redcedar		12		3		Remove
1890	red alder	2	2X6 - 8		4		Remove
1891	red alder	3	3X6 - 8		3		Remove
1892	red alder		6		3		Remove
1896	black cottonwood		14		2		Remove
1897	black cottonwood		6		2		Remove
1898	black cottonwood		10		2		Remove
1905	bigleaf maple		12		1		Save
1906	bigleaf maple		12		1		Save
1907	western redcedar		30		1		Save
1908	bigleaf maple		26		1		Save
1909	bigleaf maple		10		3		Remove
1910	bigleaf maple		20		3		Remove
1919	red alder	2	2X6 - 10		1		Save
1920	bigleaf maple		10		1		Save
1921	bigleaf maple	2	2X14		1		Save
1922	bigleaf maple	4	4X4 - 6		1		Save
1923	bigleaf maple		6		1		Save
1924	bigleaf maple		16		1		Save
1925	bigleaf maple		36		1		Save
1926	bigleaf maple	4	4X6 - 8		1		Save
1932	red alder		8		1		Save
1936	bigleaf maple	5	5X12 - 18		1		Save
1937	bigleaf maple	3	3X6 - 8		1		Save
1938	bigleaf maple		8		1		Save
1939	bigleaf maple		14		1		Save
1941	bigleaf maple	4	4X8 - 12		1		Save
1942	bigleaf maple	3	3X6		1		Save
1943	western redcedar		8		1		Save
1944	western redcedar	2	2X10 - 24		1		Save
1945	bigleaf maple		40		1		Save
1950	red alder		8		1		Save
1951	bigleaf maple		12		1		Save
1952	bigleaf maple	2	2X18 - 22		1		Save
1953	western redcedar		12		1		Save
1954	bigleaf maple		16		1		Save
1955	bigleaf maple		12		1		Save
1956	bigleaf maple		8		1		Save
1957	western redcedar		10		1		Save
1958	western redcedar		28		1		Save
1959	bigleaf maple		12		1		Save
1960	bigleaf maple		16		1		Save
1961	bigleaf maple		10		1		Save
1962	western redcedar		28		1		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
1963	western redcedar		18		1		Save
1964	bigleaf maple		10		1		Save
1965	bigleaf maple		18		1		Save
1966	bigleaf maple		10		1		Save
1967	bigleaf maple	2	2X6 - 14		1		Save
1968	bigleaf maple		12		1		Save
1969	western redcedar		18		1		Save
1970	western redcedar		10		1		Save
1971	bigleaf maple		15		1		Save
1972	bigleaf maple		20		1		Save
2084	red alder		8		2		Remove
2085	red alder		10		2		Remove
2086	red alder		10		2		Remove
2087	red alder		12		2		Remove
2101	bigleaf maple		12		4		Remove
2102	bigleaf maple		8		1		Save
2103	bigleaf maple	2	2X6		1		Save
2104	bigleaf maple		16		1		Save
2105	bigleaf maple	8	8X8 - 14		1		Save
2106	bigleaf maple		12		1		Save
2107	bigleaf maple	3	3X8 - 12		1		Save
2108	bigleaf maple	5	5X8 - 12		1		Remove
2109	bigleaf maple	4	4X8 - 14		1		Remove
2110	bigleaf maple	2	2X8 - 12		1		Remove
2111	bigleaf maple		10		3		Remove
2112	bigleaf maple	2	2X8 - 10		3		Remove
2113	bigleaf maple		8		3		Remove
2114	bigleaf maple	2	2X6		1		Remove
2115	bigleaf maple	5	5X6 - 10		1		Remove
2116	bigleaf maple	3	3X8 - 12		1		Remove
2124	bigleaf maple	2	2X6		1		Remove
2125	bigleaf maple	2	2X6 - 8		1		Remove
2126	bigleaf maple		8		1		Remove
2127	bigleaf maple		10		1		Remove
2128	bigleaf maple	2	2X6 - 10		1		Save
2129	bigleaf maple	3	3X6 - 14		1		Save
2130	bigleaf maple	4	4X6 - 10		1		Save
2131	bigleaf maple	3	3X10 - 12		1		Save
2132	bigleaf maple		10		1		Save
2133	bigleaf maple		10		1		Save
2134	bigleaf maple		10		1		Save
2137	bigleaf maple		8		1		Save
2138	bigleaf maple	3	3X6 - 8		1		Save
2140	bigleaf maple		12		1		Save
2141	bigleaf maple		12		1		Save
2142	bigleaf maple		14		1		Save
2143	bigleaf maple		8		1		Save
2144	bigleaf maple	6	6X6 - 12		1		Save
2207	bigleaf maple		8		1		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2209	red alder		10		1		Remove
2210	red alder		8		1		Remove
2213	red alder		8		1		Remove
2214	red alder		6		1		Remove
2215	red alder		6		1		Remove
2217	bigleaf maple	5	5X8		1		Remove
2219	red alder		10		1		Save
2221	bigleaf maple	3	3X6 - 12		1		Remove
2223	bigleaf maple		8		1		Save
2224	bigleaf maple	3	3X6 - 12		1		Save
2225	bigleaf maple		6		1		Save
2226	bigleaf maple	2	2X6 - 8		1		Save
2227	bigleaf maple	3	3X6		1		Save
2228	bigleaf maple	3	3X6		1		Save
2229	bigleaf maple		8		1		Save
2230	bigleaf maple		12		1		Save
2231	bigleaf maple	2	2X6		1		Save
2232	bigleaf maple		6		1		Save
2234	bigleaf maple	3	3X8		1		Save
2235	bigleaf maple		6		1		Save
2236	bigleaf maple	3	3X8		1		Save
2237	bigleaf maple	2	2X6 - 8		1		Save
2238	bigleaf maple		6		1		Save
2245	bigleaf maple	3	3X8		1		Remove
2246	bigleaf maple	5	5X6		1		Remove
2248	bigleaf maple		6		2		Remove
2249	bigleaf maple		6		1		Remove
2250	bigleaf maple		10		1		Remove
2251	red alder		12		2		Remove
2256	bigleaf maple	5	5X6 - 12		1		Save
2258	bigleaf maple		8		1		Save
2259	bigleaf maple		10		1		Save
2260	bigleaf maple		22		1		Save
2261	bigleaf maple		8		1		Save
2263	western redcedar		18		1		Save
2264	bigleaf maple		20		1		Remove
2265	red alder		6		1		Remove
2269	red alder		10		2		Remove
2274	red alder		12		1		Remove
2348	red alder		12		2		Save
2349	bigleaf maple	2	2*14 - 18		1		Save
2359	western redcedar		10		1		Save
2378	western redcedar		12		1		Save
2379	western redcedar		28		1		Save
2380	red alder		20		1		Save
2386	western redcedar		36		1		Save
2398	western redcedar		12		1		Save
2400	western redcedar		12		1		Save
2404	western redcedar		12		2		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2427	western redcedar		10		1		Save
2428	bigleaf maple	2	2*18 - 20		1		Save
2430	bigleaf maple		14		1		Save
2431	red alder		22		1		Save
2433	western redcedar		20		1		Save
2435	red alder		18		1		Save
2436	western redcedar		20		1		Save
2437	bigleaf maple		10		1		Save
2440	western redcedar		20		1		Save
2441	bigleaf maple		10		1		Save
2442	bigleaf maple		10		1		Save
2445	bigleaf maple		8		1		Save
2446	bigleaf maple		10		1		Save
2447	bigleaf maple		8		1		Save
2448	western redcedar		20		1		Save
2449	western redcedar		14		1		Save
2450	bigleaf maple		12		1		Save
2451	bigleaf maple		12		1		Save
2452	bigleaf maple		8		1		Save
2453	bigleaf maple		12		1		Save
2454	bigleaf maple		22		1		Save
2455	western redcedar		16		1		Save
2456	bigleaf maple		12		1		Save
2457	bigleaf maple	2	2*12 - 14		1		Save
2459	bigleaf maple		18		1		Save
2460	Douglas-fir		40		3		Remove
2461	Douglas-fir		40		3		Remove
2464	bigleaf maple		20		1		Save
2466	bigleaf maple		20		1		Save
2467	bigleaf maple	2	2*10 - 16		1		Save
2468	western redcedar		12		1		Save
2469	western redcedar		14		1		Save
2470	red alder		18		1		Save
2471	western redcedar		6		1		Save
2472	western redcedar		14		1		Save
2473	red alder		18		1		Save
2479	red alder	2	2*10 - 18		1		Save
2490	western redcedar		18		2		Save
2505	red alder		18		3		Remove
2508	bigleaf maple		8		2		Remove
2513	bigleaf maple		10		2		Save
2554	red alder		10		2		Save
2556	red alder		12		2		Remove
2631	bigleaf maple	8	8X6		2		Save
2638	black cottonwood		48		2		Save
2639	black cottonwood		30		3		Save
2640	Douglas-fir		10		3		Save
2641	Douglas-fir		10		3		Save
2642	Douglas-fir		6		3		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2643	Douglas-fir		10		3		Save
2644	Douglas-fir		6		3		Save
2645	Douglas-fir		8		3		Save
2646	black cottonwood		36		3		Save
2647	Douglas-fir		6		3		Save
2648	Douglas-fir		10		3		Save
2649	western redcedar		12		2		Save
2719	Douglas-fir		40		1		Save
2766	western redcedar		14		1		Save
2767	western redcedar		30		1		Save
2769	western redcedar		36		1		Save
2808	western redcedar		18		2		Save
2809	western redcedar		12		2		Save
2810	western redcedar		18		2		Save
2811	Douglas-fir		30		1		Save
2812	bigleaf maple	8	8X6		1		Save
2813	western redcedar		16		1		Save
2814	western redcedar		16		1		Save
2815	western redcedar		18		1		Save
2816	bigleaf maple	5	5X6 - 8		1		Save
2819	black cottonwood	2	2x18				Save
2820	bigleaf maple	5	5x6 - 10				Save
2821	bigleaf maple		18				Save
2822	bigleaf maple		6		2		Remove
2823	bigleaf maple	5	5X6 - 8		2		Save
2824	bigleaf maple		6		2		Save
2825	bigleaf maple	5	5X6 - 8		2		Save
2829	bigleaf maple	2	2X12 - 18		3		Save
2830	bigleaf maple	3	3X6 - 8		3		Save
2832	bigleaf maple	2	2X8		3		Save
2837	red alder		8				Save
2855	bigleaf maple	6	6X6 - 12		1		Save
2856	western redcedar		10		1		Save
2857	western redcedar		20		1		Save
2858	western redcedar		20		1		Save
2859	western redcedar		20		1		Save
2860	western redcedar		18		1		Save
2861	western redcedar		16		1		Save
2862	western redcedar		24		1		Save
2863	western redcedar		18		1		Save
2864	bigleaf maple	4	4X6 - 12		1		Save
2865	western redcedar		20		1		Save
2866	western redcedar		12		2		Save
2867	western redcedar		18		2		Save
2868	bigleaf maple	7	7X6 - 12		2		Save
2869	Douglas-fir		8		3		Save
2870	red alder		6		3		Save
2871	red alder		8		3		Save
2872	red alder		10		3		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2873	bigleaf maple	4	4X6 - 8		3		Save
2874	red alder	3	3X6 - 10		4		Save
2875	red alder		8		4		Save
2876	red alder		10		4		Save
2877	red alder		6		3		Save
2878	red alder		6		3		Save
2879	red alder		6		3		Save
2880	red alder		6		3		Remove
2881	red alder	3	3X6 - 10		3		Remove
2882	Douglas-fir		8		2		Save
2883	Douglas-fir		12		2		Save
2884	Douglas-fir		8		2		Save
2885	Douglas-fir		12		4		Remove
2886	Douglas-fir		12		3		Remove
2887	bigleaf maple	3	3X6 - 8		3		Remove
2888	red alder		8		3		Remove
2889	bigleaf maple	12	12X6		4		Remove
2890	Douglas-fir		6		4		Remove
2891	Douglas-fir		10		4		Remove
2892	Douglas-fir		6		4		Remove
2893	Douglas-fir		6		4		Remove
2894	red alder		8		4		Save
2895	red alder		10		4		Remove
2896	Douglas-fir		12		4		Remove
2897	bigleaf maple	12	12X6 - 8		4		Remove
2898	black cottonwood		36		3		Remove
2900	bigleaf maple	2	2X8		2		Remove
2901	bigleaf maple		6		2		Remove
2902	red alder	3	3X8 - 10		3		Remove
2903	black cottonwood		18		3		Remove
2904	black cottonwood		12		3		Save
2905	red alder		8		3		Save
2906	red alder		8		3		Save
2907	red alder		8		2		Remove
2908	red alder		8		2		Remove
2909	red alder		8		2		Remove
2910	bigleaf maple	6	6X6 - 8		2		Save
2911	bigleaf maple	5	5X6 - 10		2		Remove
2912	bigleaf maple	12	12X6 - 10		2		Remove
2913	bigleaf maple		10		2		Save
2914	bigleaf maple	10	10X6 - 8		2		Remove
2915	bigleaf maple	5	5X6 - 8		3		Remove
2916	bigleaf maple	8	8X6 - 10		3		Remove
2917	red alder		8		3		Remove
2918	black cottonwood		8		3		Remove
2919	black cottonwood		12		3		Remove
2920	black cottonwood		10		3		Remove
2921	black cottonwood		8		3		Remove
2922	black cottonwood		12		3		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2923	black cottonwood		10		3		Remove
2924	black cottonwood		8		4		Remove
2925	black cottonwood		12		3		Remove
2926	black cottonwood		14		3		Remove
2927	black cottonwood		14		4		Remove
2928	bigleaf maple	2	2X6		4		Remove
2929	bigleaf maple	4	4X6 - 8		4		Remove
2930	black cottonwood		8		4		Remove
2931	bigleaf maple	3	3X6 - 8		4		Remove
2932	Douglas-fir		8		4		Remove
2933	bigleaf maple	10	10X6 - 10		3		Remove
2934	bigleaf maple	5	5X6 - 8		3		Remove
2935	bigleaf maple	4	4X6		3		Remove
2936	Douglas-fir		10		3		Remove
2937	bigleaf maple	15	15X6 - 12		3		Remove
2938	bigleaf maple	5	5X6 - 8		3		Remove
2939	bigleaf maple	7	7X6 - 8		3		Remove
2940	bigleaf maple	4	4X6 - 8		3		Remove
2941	bigleaf maple	5	5X6 - 10		3		Remove
2942	bigleaf maple	5	5X6 - 10		2		Remove
2943	Douglas-fir		6		3		Remove
2944	Douglas-fir		6		3		Remove
2945	black cottonwood	4	4X6 - 14		3		Remove
2946	bigleaf maple	15	15X6 - 12		3		Remove
2947	bigleaf maple		8		3		Remove
2948	Douglas-fir	2	2X6		3		Remove
2952	red alder		12		2		Remove
2955	bigleaf maple	5	5X6 - 8		1		Remove
2956	Douglas-fir		10		1		Save
2957	Douglas-fir		12		1		Save
2958	red alder		6		4		Save
2960	Douglas-fir		10		4		Save
2967	red alder		12		3		Remove
2968	Douglas-fir		6		3		Remove
2969	red alder		8		3		Remove
2970	Douglas-fir		6		3		Remove
2972	bigleaf maple	6	6x8 - 10		3		Save
2973	bigleaf maple	2	2x6 - 12		1		Save
2974	bigleaf maple	8	8X6 - 10		1		Save
2975	Douglas-fir		12		1		Save
2976	bigleaf maple	4	4x18		1		Save
2977	bigleaf maple	5	5x8		1		Save
2979	Douglas-fir		8		1		Save
2983	Douglas-fir		6		3		Remove
2984	Douglas-fir		6		4		Remove
2985	bigleaf maple	4	4x8 - 10		4		Remove
2986	bigleaf maple	2	2x6 - 8		3		Remove
2987	Douglas-fir		8		3		Save
2988	Douglas-fir		8		3		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
2989	Douglas-fir		12		4		Remove
2990	Douglas-fir		10		4		Remove
2991	Douglas-fir		6		4		Save
2992	red alder		6		4		Save
2993	bigleaf maple		8		4		Save
2994	red alder		12		4		Remove
2995	red alder		8		4		Save
2996	red alder		8		4		Remove
2997	red alder		10		4		Save
2998	Douglas-fir		8		3		Save
2999	bigleaf maple		8		2		Save
3009	bigleaf maple		20		1		Save
3010	bigleaf maple		12		1		Save
3013	bigleaf maple	3	3X6		1		Save
3014	bigleaf maple		12		1		Save
3016	bigleaf maple	2	2X6		1		Save
3017	western redcedar		36		1		Save
3018	western redcedar		36		1		Save
3019	western redcedar		36		1		Save
3020	western redcedar		12		1		Save
3021	western redcedar		6		1		Save
3022	bigleaf maple	5	5X6 - 12		1		Save
3023	western redcedar		10		1		Save
3024	western redcedar		15		1		Save
3025	western redcedar		15		1		Save
3026	bigleaf maple	4	4X6		1		Save
3027	bigleaf maple	4	4X6 - 10		1		Save
3029	bigleaf maple	5	5X6 - 8		1		Save
3030	western redcedar		6		1		Save
3031	bigleaf maple		15		1		Save
3032	bigleaf maple	3	3X6 - 12		1		Save
3033	bigleaf maple	7	7X6 - 10		1		Save
3034	western redcedar		18		1		Save
3035	western redcedar		22		1		Save
3036	western redcedar		22		1		Save
3037	bigleaf maple	7	7X6 - 8		1		Save
3038	western redcedar		24		1		Save
3039	bigleaf maple	2	2X6 - 8		1		Save
3040	western redcedar		20		1		Save
3041	western redcedar		15		1		Save
3042	bigleaf maple	2	2X8		1		Save
3043	bigleaf maple	2	2X8		1		Save
3044	western redcedar		15		1		Save
3045	western redcedar		36		1		Save
3046	western redcedar		24		1		Save
3047	western redcedar		18		1		Save
3049	bigleaf maple	3	3X6		1		Save
3050	bigleaf maple		12		1		Save
3051	bigleaf maple		6		1		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3052	bigleaf maple	5	5X3 - 6		1		Save
3053	bigleaf maple	2	2X18		1		Save
3056	bigleaf maple		18		1		Save
3058	bigleaf maple	5	5X4 - 8		1		Save
3059	bigleaf maple		10		4		Save
3060	bigleaf maple		12		4		Save
3063	bigleaf maple	4	4X3 - 6		4		Save
3064	bigleaf maple	3	3X4 - 8		4		Save
3065	bigleaf maple	3	3X4 - 8		3		Remove
3066	bigleaf maple	8	8X4 - 10		4		Remove
3067	bigleaf maple	4	4X4 - 6		4		Save
3068	bigleaf maple	4	4X4 - 8		3		Remove
3069	bigleaf maple	4	4X4 - 6		4		Remove
3070	bigleaf maple	4	4X4 - 10		1		Save
3071	bigleaf maple	8	8X3 - 8		1		Save
3072	bigleaf maple	3	3X8 - 12		1		Save
3073	bigleaf maple		6		1		Save
3074	bigleaf maple	3	3X4 - 6		1		Save
3079	bigleaf maple	4	4X6		4		Remove
3080	bigleaf maple	8	8X6		4		Remove
3081	bigleaf maple	2	2X6		4		Remove
3082	western redcedar		10		4		Remove
3083	bigleaf maple	8	8X6 - 10		4		Remove
3084	bigleaf maple	11	11X6		4		Remove
3085	bigleaf maple	9	9X6		4		Remove
3086	bigleaf maple	8	8X6		1		Save
3087	bigleaf maple	4	4X6		1		Save
3088	bigleaf maple		10		1		Save
3089	deciduous		8		1		Save
3090	Douglas-fir		8		4		Remove
3091	bigleaf maple	5	5X6		4		Remove
3092	Douglas-fir		8		4		Remove
3093	bigleaf maple		6		4		Remove
3094	Douglas-fir		6		4		Remove
3095	Douglas-fir		6		4		Remove
3096	Douglas-fir		6		4		Remove
3097	Douglas-fir		12		4		Remove
3098	bigleaf maple	7	7X4 - 10		4		Save
3099	bigleaf maple	11	11X4 - 10		4		Remove
3100	western redcedar		12		4		Remove
3101	western redcedar		15		4		Save
3102	bigleaf maple	5	5X4 - 8		4		Save
3105	western redcedar		22		4		Save
3106	bigleaf maple	6	6X4 - 8		4		Remove
3107	bigleaf maple		12		4		Remove
3108	bigleaf maple	4	4X6		4		Remove
3109	bigleaf maple		8		4		Remove
3110	Douglas-fir		6		4		Remove
3111	bigleaf maple		6		4		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3112	bigleaf maple		8		4		Remove
3113	bigleaf maple		8		4		Remove
3114	bigleaf maple		32		4		Remove
3115	bigleaf maple		30		4		Remove
3116	bigleaf maple		6		4		Remove
3117	bigleaf maple		12		4		Remove
3118	bigleaf maple		10		4		Remove
3119	bigleaf maple		10		3		Remove
3120	bigleaf maple	6	6X4 - 8		3		Remove
3121	bigleaf maple		12		4		Remove
3122	red alder	2	2X8		4		Remove
3123	bigleaf maple		15		4		Remove
3124	bigleaf maple		12		4		Remove
3125	bigleaf maple		12		4		Remove
3126	bigleaf maple	2	2X18 - 24		4		Remove
3127	bigleaf maple	4	4X6 - 18		4		Remove
3128	bigleaf maple	4	4X6 - 18		4		Remove
3129	western redcedar	3	3X6 - 18		4		Remove
3130	bigleaf maple	5	5X6		4		Remove
3131	bigleaf maple		6		4		Remove
3132	red alder		8		4		Remove
3133	red alder		8		4		Remove
3134	red alder	2	2X6		4		Remove
3135	red alder		6		4		Remove
3136	red alder		6		4		Remove
3143	red alder	3	3*6		4		Remove
3144	western redcedar		24		4		Remove
3147	western redcedar		30				Save
3148	western redcedar		6		4		Remove
3149	western redcedar		6		4		Remove
3150	bigleaf maple	3	3*6		4		Remove
3151	bigleaf maple	8	8*10 - 12		4		Remove
3152	bigleaf maple	5	5*4 - 8		4		Remove
3153	bigleaf maple		12		4		Remove
3154	bigleaf maple	6	6*6		4		Remove
3155	bigleaf maple	6	6*4 - 8		4		Remove
3156	bigleaf maple		8		4		Remove
3157	red alder		10		4		Remove
3159	bigleaf maple	14	14*4 - 6		4		Remove
3160	bigleaf maple	10	10*8		3		Remove
3161	western redcedar	6	6*6		4		Remove
3162	bigleaf maple	6	6*4 - 6		3		Remove
3163	bigleaf maple	4	4*4 - 8		3		Remove
3164	bigleaf maple	4	4*4 - 8		3		Remove
3165	bigleaf maple	7	7*3 - 10		2		Remove
3166	bigleaf maple	7	7*3 - 10		2		Remove
3167	bigleaf maple	6	6*3 - 8		3		Remove
3168	bigleaf maple	2	2*2 - 10		3		Remove
3169	bigleaf maple		8		3		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3170	bigleaf maple		12		3		Remove
3171	bigleaf maple		10		2		Remove
3174	bigleaf maple	10	10*4 - 6		2		Remove
3175	bigleaf maple	10	10*6 - 10		2		Remove
3176	bigleaf maple	10	10*6 - 10		2		Remove
3177	bigleaf maple	8	8*6 - 12		4		Remove
3178	bigleaf maple	8	8*6 - 12		4		Remove
3179	bigleaf maple	3	3*6		4		Remove
3181	bigleaf maple	10	10*6 - 10		4		Remove
3182	bigleaf maple		12		4		Remove
3183	bigleaf maple		12		4		Remove
3185	bigleaf maple		36		4		Remove
3186	bigleaf maple		12		4		Remove
3187	bigleaf maple		12		4		Remove
3188	western redcedar		14		3		Remove
3189	bigleaf maple		8		4		Remove
3190	bigleaf maple		10		3		Remove
3191	bigleaf maple		8		1		Save
3192	bigleaf maple		8		1		Remove
3193	bigleaf maple		8		1		Save
3194	bigleaf maple		12		1		Save
3195	bigleaf maple		8		1		Save
3196	western redcedar		12		1		Save
3197	bigleaf maple	8	8*6		4		Remove
3198	western redcedar		12		1		Save
3199	bigleaf maple	2	2*12		1		Save
3200	western redcedar		6		4		Remove
3201	western redcedar	2	2*6		1		Save
3202	bigleaf maple	4	4*6 - 10		1		Save
3203	western redcedar		14		1		Save
3204	western redcedar		14		1		Save
3205	western redcedar		12		1		Save
3206	western redcedar	2	2*10		1		Save
3207	bigleaf maple		12		1		Save
3209	western redcedar		24		1		Save
3210	western redcedar		24		1		Save
3211	western redcedar		26		1		Save
3212	bigleaf maple	8	8*4 - 8		1		Save
3213	western redcedar		28		1		Save
3214	western redcedar		20		1		Save
3215	western redcedar		28		1		Save
3216	western redcedar		18		1		Save
3217	western redcedar		14		1		Save
3218	bigleaf maple		18		1		Save
3219	bigleaf maple	4	4*6		1		Save
3220	western redcedar		12		1		Save
3221	western redcedar		16		1		Save
3224	western redcedar		24		1		Save
3225	western redcedar		28		1		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3226	western redcedar		26		1		Save
3227	western redcedar		42		1		Save
3228	western redcedar		12		1		Save
3229	western redcedar		26		1		Save
3230	bigleaf maple	6	6*3 - 8		1		Save
3231	bigleaf maple	10	10*3 - 12		1		Save
3232	bigleaf maple	10	10*3 - 12		1		Save
3233	bigleaf maple	10	10*3 - 12		1		Save
3234	bigleaf maple	2	2*6		1		Save
3235	bigleaf maple	12	12*3 - 12		1		Save
3236	bigleaf maple		12		4		Save
3237	bigleaf maple	10	10*3 - 12		4		Save
3238	bigleaf maple	2	2X8 - 12		2		Remove
3239	bigleaf maple	2	2X6		2		Remove
3240	bigleaf maple	3	3X6		2		Remove
3241	western redcedar		18		2		Save
3242	western redcedar		24		1		Save
3243	western redcedar		20		1		Save
3244	bigleaf maple	2	2X6		1		Save
3245	western redcedar		8		1		Save
3246	bigleaf maple	5	5X6		1		Save
3247	bigleaf maple	5	5X6 - 12		1		Save
3248	western redcedar		15		1		Save
3249	bigleaf maple	5	5X4 - 10		1		Save
3250	western redcedar		15		1		Save
3251	western redcedar		15		1		Save
3252	western redcedar		12		1		Save
3253	western redcedar		30		1		Save
3254	bigleaf maple	3	3X6 - 8		1		Save
3255	bigleaf maple		10		1		Save
3256	bigleaf maple	5	5X6		1		Save
3257	western redcedar		12		1		Save
3258	western redcedar		12		1		Save
3259	western redcedar		12		1		Save
3260	western redcedar		10		1		Save
3261	bigleaf maple		15		1		Save
3262	bigleaf maple		12		1		Save
3263	bigleaf maple		10		1		Save
3264	western redcedar		18		1		Save
3265	western redcedar		18		1		Save
3266	western redcedar	2	2X10		1		Save
3267	bigleaf maple	3	3X6 - 8		3		Remove
3268	bigleaf maple	8	8X4 - 8		3		Remove
3274	bigleaf maple		24				Save
3275	western redcedar		12				Save
3276	western redcedar		15				Save
3279	western redcedar		18		1		Save
3280	western redcedar		18		1		Save
3281	bigleaf maple		18		1		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3282	western redcedar		24		1		Save
3283	western redcedar		18		1		Save
3284	western redcedar		10		1		Save
3285	bigleaf maple	2	2X24		1		Save
3286	western redcedar		12		1		Save
3287	western redcedar		8		1		Save
3288	bigleaf maple		18		1		Save
3289	western redcedar		8		1		Save
3290	bigleaf maple	7	7X6 - 12		1		Save
3291	western redcedar		15		1		Save
3292	western redcedar		12		1		Save
3293	bigleaf maple		12		1		Save
3294	western redcedar		20		1		Save
3295	western redcedar		12		1		Save
3296	western redcedar		30		1		Save
3297	western redcedar		10		1		Save
3298	western redcedar		18		1		Save
3299	western redcedar		24		1		Save
3302	western redcedar		15		1		Save
3303	bigleaf maple	7	7X6 - 12		1		Save
3304	western redcedar		30		1		Save
3305	bigleaf maple	6	6X6 - 8		1		Save
3306	western redcedar		12		1		Save
3307	western redcedar		24		1		Save
3308	Douglas-fir		20		1		Save
3309	western redcedar		8		1		Save
3310	western redcedar		8		1		Save
3311	bigleaf maple	10	10X6 - 10		1		Save
3312	bigleaf maple	3	3X3 - 6		1		Save
3313	bigleaf maple	6	6X4 - 6		1		Save
3314	bigleaf maple	7	7X6 - 10		1		Save
3315	western redcedar		18		1		Save
3316	bigleaf maple	6	6X6		1		Save
3317	bigleaf maple	11	11X6 - 10		1		Save
3319	Douglas-fir		10		4		Save
3320	bigleaf maple		8		2		Save
3321	bigleaf maple	7	7X8 - 12		2		Save
3322	bigleaf maple	6	6X6		4		Save
3323	bigleaf maple	3	3X6		4		Save
3324	bigleaf maple	4	4X6		4		Save
3325	western redcedar		20		4		Save
3326	bigleaf maple	2	2X12		4		Save
3327	Douglas-fir		6		4		Save
3328	Douglas-fir		8		4		Save
3329	red alder	3	3X6 - 10		4		Save
3330	Douglas-fir		18		1		Save
3331	Douglas-fir		18		1		Save
3332	Douglas-fir		10		1		Save
3333	bigleaf maple	6	6X8		1		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3334	western redcedar		24		1		Save
3335	red alder		8		1		Save
3336	western redcedar		15		1		Save
3337	western redcedar		12		1		Save
3338	western redcedar		24		1		Save
3339	western redcedar		18		1		Save
3340	western redcedar	2	2X15 - 22		1		Save
3341	western redcedar		22		1		Save
3342	western redcedar		24		1		Save
3343	western redcedar	2	2X18		1		Save
3344	Douglas-fir		24		1		Save
3345	western redcedar		18		1		Save
3346	Douglas-fir		10		4		Save
3347	Douglas-fir		10				Save
3348	Douglas-fir		10				Save
3349	Douglas-fir		10		4		Save
3350	Douglas-fir		12		4		Save
3351	Douglas-fir		12				Save
3352	Douglas-fir		10		4		Save
3353	Douglas-fir		12		4		Save
3354	Douglas-fir		8		4		Save
3355	Douglas-fir		8		4		Save
3356	Douglas-fir		10		4		Save
3357	Douglas-fir		10		4		Save
3358	Douglas-fir		6		4		Save
3359	bigleaf maple		24		4		Save
3361	bigleaf maple		12		4		Save
3362	bigleaf maple	4	4*3 - 8		4		Save
3363	bigleaf maple	7	7*3 - 8		4		Save
3364	bigleaf maple	4	4*3 - 8		4		Save
3366	Douglas-fir		4		4		Save
3367	Douglas-fir		4		4		Save
3368	bigleaf maple	5	5*6 - 10		4		Save
3369	bigleaf maple	2	2*8 - 14		4		Save
3371	Douglas-fir		10		4		Save
3372	Douglas-fir		8		4		Save
3373	Douglas-fir		10		4		Save
3374	Douglas-fir		12		4		Save
3375	Douglas-fir		10		4		Save
3376	Douglas-fir		14		4		Save
3377	Douglas-fir		8		4		Save
3380	Douglas-fir		8		4		Save
3381	Douglas-fir		12		4		Save
3382	Douglas-fir		8		4		Save
3383	Douglas-fir		8		4		Save
3384	Douglas-fir		8		4		Save
3385	Douglas-fir		10		4		Save
3390	Douglas-fir		10		4		Save
3391	Douglas-fir		10		4		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3392	Douglas-fir		10		4		Save
3393	Douglas-fir		10		4		Save
3394	bigleaf maple		12		4		Save
3397	Douglas-fir		8		4		Save
3398	Douglas-fir		8		4		Save
3399	Douglas-fir		8		4		Save
3402	western redcedar	3	3*6 - 24		2		Save
3403	bigleaf maple	7	7*4 - 8		2		Save
3404	western redcedar		8		4		Save
3405	bigleaf maple	7	7*3 - 10		1		Save
3406	bigleaf maple	7	7*3 - 10		1		Save
3407	bigleaf maple	7	7*3 - 10		1		Save
3408	western redcedar		32		1		Save
3409	bigleaf maple	2	2*10 - 14		1		Save
3410	Douglas-fir		20		1		Save
3412	Douglas-fir		18		1		Save
3413	bigleaf maple	7	7*8 - 12		1		Save
3414	bigleaf maple	3	3*6 - 12		1		Save
3415	bigleaf maple	10	10*4 - 10		1		Save
3416	bigleaf maple	5	5*4 - 12		1		Save
3417	bigleaf maple	4	4*4 - 8		1		Save
3418	western redcedar		12		1		Save
3420	bigleaf maple		30		1		Save
3425	western redcedar		16		2		Save
3426	bigleaf maple		16		3		Save
3427	bigleaf maple	3	3*8		4		Save
3429	bigleaf maple		18				Save
3431	bigleaf maple		16				Save
3434	bigleaf maple	2	2*12 - 14				Save
3500	red alder		8		2		Remove
3501	Douglas-fir		8		3		Remove
3502	Douglas-fir		8		2		Remove
3503	Douglas-fir		8		3		Save
3504	Douglas-fir		8		2		Save
3505	red alder		10		2		Save
3506	red alder		8		3		Save
3507	Douglas-fir		6		3		Save
3508	western redcedar		20		2		Save
3509	red alder		10		3		Save
3510	western redcedar		18		2		Save
3511	bigleaf maple	5	5X6 - 10		2		Save
3512	western redcedar		24		2		Save
3513	bigleaf maple	5	5X6 - 10		2		Remove
3518	red alder		10		4		Save
3519	red alder		6		4		Save
3520	red alder		10		4		Remove
3521	red alder		6		4		Remove
3522	Douglas-fir		6		4		Remove
3523	Douglas-fir		6		4		Remove

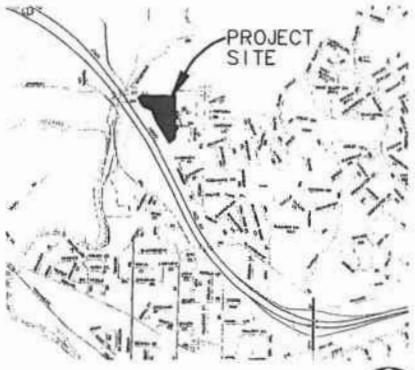
Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3524	red alder		12		4		Remove
3525	Douglas-fir		6		4		Remove
3526	bigleaf maple	4	4x8 - 12		4		Remove
3527	red alder		6		4		Save
3528	red alder		12		4		Save
3529	red alder		8		4		Remove
3530	bigleaf maple	2	2x10 - 12		1		Remove
3531	bigleaf maple	7	7X6 - 8		1		Remove
3532	bigleaf maple	12	12X6 - 16		1		Remove
3533	western redcedar		30		2		Remove
3534	bigleaf maple		8		3		Remove
3535	bigleaf maple	5	5X8 - 12		3		Remove
3536	Douglas-fir		10		4		Remove
3537	bigleaf maple		6		4		Remove
3538	Douglas-fir		6		3		Remove
3539	Douglas-fir		6		3		Remove
3540	bigleaf maple	7	7X6 - 8		3		Remove
3541	bigleaf maple	7	7X6 - 8		4		Remove
3542	bigleaf maple	3	3X6		2		Remove
3543	bigleaf maple	3	3X6		3		Remove
3544	bigleaf maple		8		2		Remove
3545	bigleaf maple	3	3X6		2		Remove
3546	bigleaf maple	6 6	6 6 - 10		1		Remove
3547	bigleaf maple	6 6	6 6 - 10		1		Remove
3548	bigleaf maple		6		1		Remove
3549	bigleaf maple		36		1		Remove
3550	bigleaf maple		6		1		Remove
3551	bigleaf maple	9	9X6 - 10		1		Remove
3552	western redcedar		24		1		Remove
3553	bigleaf maple	6	6X6 - 8		1		Remove
3554	western redcedar		18		1		Remove
3555	bigleaf maple	6	6X6 - 10		1		Remove
3556	bigleaf maple	4	4X6		1		Remove
3557	bigleaf maple	5	5X6 - 10		1		Remove
3558	Douglas-fir	3	3X6		4		Remove
3559	Douglas-fir		6		4		Remove
3560	red alder		6		4		Remove
3565	Douglas-fir		10		4		Remove
3566	Douglas-fir		8		4		Remove
3567	Douglas-fir		6		4		Remove
3568	bigleaf maple	2	2X8 - 10		4		Remove
3569	Douglas-fir		6		4		Remove
3570	Douglas-fir		12		4		Remove
3571	Douglas-fir		8		4		Remove
3572	Douglas-fir		6		4		Remove
3573	Douglas-fir		8		4		Remove
3574	Douglas-fir		10		4		Remove
3575	Douglas-fir		6		4		Remove
3576	Douglas-fir		10		3		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3577	Douglas-fir		10		4		Remove
3578	Douglas-fir		8		4		Remove
3579	Douglas-fir		6		3		Remove
3580	Douglas-fir		8		4		Remove
3581	bigleaf maple	7 6	7 6 - 10		4		Remove
3582	bigleaf maple	12	12X6		4		Remove
3583	bigleaf maple		8		4		Remove
3584	Douglas-fir		10		4		Remove
3585	bigleaf maple	5	5X6 - 10		4		Remove
3586	Douglas-fir		10		4		Remove
3587	Douglas-fir		10		4		Remove
3588	Douglas-fir		8		4		Remove
3590	bigleaf maple	6	6X6		1		Remove
3592	bigleaf maple	10	10X6 - 10		1		Remove
3593	bigleaf maple	12	12X6 - 12		2		Remove
3594	Douglas-fir		12		2		Remove
3595	bigleaf maple		14		2		Remove
3598	black cottonwood	3	3X6 - 12		3		Remove
3599	black cottonwood		8		3		Remove
3600	black cottonwood		12		3		Remove
3601	bigleaf maple	2	2x6		4		Remove
3602	black cottonwood		8		4		Remove
3603	black cottonwood		6		4		Remove
3604	black cottonwood		10		3		Remove
3605	Douglas-fir		10		3		Remove
3606	Douglas-fir		8		3		Remove
3607	Douglas-fir		8		3		Remove
3608	Douglas-fir		6		3		Remove
3609	Douglas-fir		8		3		Remove
3610	black cottonwood		14		3		Remove
3611	black cottonwood		12		3		Remove
3612	black cottonwood		12		3		Remove
3613	black cottonwood		12		3		Remove
3614	black cottonwood		6		3		Remove
3615	black cottonwood		12		3		Remove
3616	black cottonwood		8		3		Remove
3617	black cottonwood		12		4		Remove
3618	black cottonwood		8		3		Remove
3619	western redcedar		12		3		Remove
3620	bigleaf maple	6	6X6 - 10		3		Remove
3621	bigleaf maple	12	12X6 - 12		3		Remove
3622	bigleaf maple	4	4X6 - 8		2		Remove
3624	bigleaf maple	6	6X6 - 12		3		Remove
3625	black cottonwood		10		3		Remove
3626	bigleaf maple	10	10X6 - 10		4		Remove
3627	Douglas-fir		10		3		Remove
3628	Douglas-fir		8		3		Remove
3629	Douglas-fir		8		3		Remove
3630	Douglas-fir		8		3		Remove

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3631	Douglas-fir		6		3		Remove
3632	bigleaf maple	10	10X6 - 10		3		Remove
3633	bigleaf maple	10	10X6 - 10		2		Remove
3634	bigleaf maple	4	4X6 - 12		2		Remove
3635	bigleaf maple	10	10X6 - 12		2		Remove
3637	bigleaf maple	5	5X6 - 10		3		Remove
3638	bigleaf maple	6	6X6 - 8		3		Remove
3639	bigleaf maple	6	6X6 - 8		3		Remove
3640	Douglas-fir		6		3		Remove
3641	red alder		6		3		Remove
3642	red alder		8		3		Remove
3643	red alder		10		3		Remove
3644	Douglas-fir		6		3		Remove
3645	Douglas-fir		8		3		Remove
3646	red alder		8		3		Remove
3649	Douglas-fir		10		3		Remove
3654	Douglas-fir		6		3		Remove
3655	bigleaf maple	6	6X6 - 12		3		Remove
3656	Douglas-fir		6		3		Remove
3657	western redcedar	2	2X12		1		Save
3658	western redcedar		14		1		Save
3659	western redcedar		10		1		Save
3660	bigleaf maple	10	10X6 - 14		1		Save
3664	Douglas-fir		6		4		Remove
3665	Douglas-fir		6		4		Save
3666	Douglas-fir		6		4		Save
3667	Douglas-fir		6		4		Save
3668	Douglas-fir		8		4		Save
3669	Douglas-fir		8		4		Save
3670	Douglas-fir		8		4		Save
3671	Douglas-fir		8		4		Save
3672	Douglas-fir		8		4		Save
3673	Douglas-fir		8		4		Save
3674	Douglas-fir		8		4		Save
3675	Douglas-fir		10		4		Save
3676	Douglas-fir		10		4		Save
3677	Douglas-fir		8		4		Save
3678	Douglas-fir		10		4		Save
3679	Douglas-fir		12		4		Save
3680	Douglas-fir		12		4		Save
3681	Douglas-fir		14		4		Save
3682	Douglas-fir		14		4		Save
3683	Douglas-fir		8		4		Save
3684	Douglas-fir		16		4		Save
3685	Douglas-fir		10		4		Remove
3686	Douglas-fir		16		4		Remove
3687	Douglas-fir		6		4		Save
3688	Douglas-fir		12		4		Save
3689	Douglas-fir		12		4		Save

Svy. Point	Species	#	DBH	C-Rad (ft)	Land Type	Significant	Prescription
3690	Douglas-fir		12		4		Save
3691	Douglas-fir		6		4		Save
3692	Douglas-fir		10		4		Save
3693	Douglas-fir		8		4		Save
3694	Douglas-fir		10		4		Save
3695	Douglas-fir		12		4		Save
3696	Douglas-fir		14		4		Save
3697	Douglas-fir		8		4		Save
3709	bigleaf maple		40				Save
3710	bigleaf maple	5	5X12 - 20		4		Save
3711	red alder		12		4		Save
3712	red alder		12		4		Save
3715	western redcedar		6		4		Save
3716	red alder		10		4		Save
3717	red alder		6		4		Save
3718	red alder		10		4		Save
3719	bigleaf maple	12	12X6 - 12		4		Save
3720	red alder		12		4		Save
3721	red alder		10		4		Save
3722	red alder		8		4		Save
3723	red alder		14		4		Save
3724	red alder		12		4		Save
3725	red alder		12		4		Save
3726	bigleaf maple	3	3X24 - 30		4		Save
3728	red alder	2	2X14 - 16		4		Save
3729	bigleaf maple		16		4		Save
3730	red alder		12		4		Save
3732	red alder		10		4		Save

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
(PLANNED UNIT DEVELOPMENT)
WEST LINN, OREGON



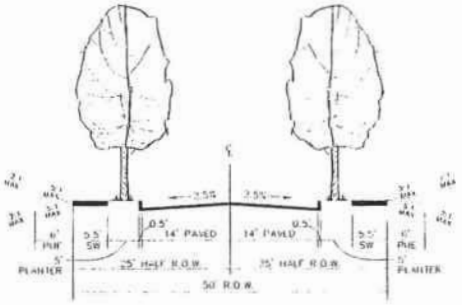
VICINITY MAP

N.T.S.

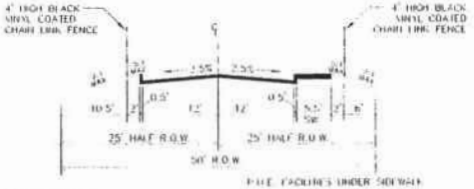
BENCH MARK
ODOT Benchmark M631
Elevation: 167.09
Location: I-205 NE Corner of a Northbound structure of Woodbine Road

SHEET INDEX

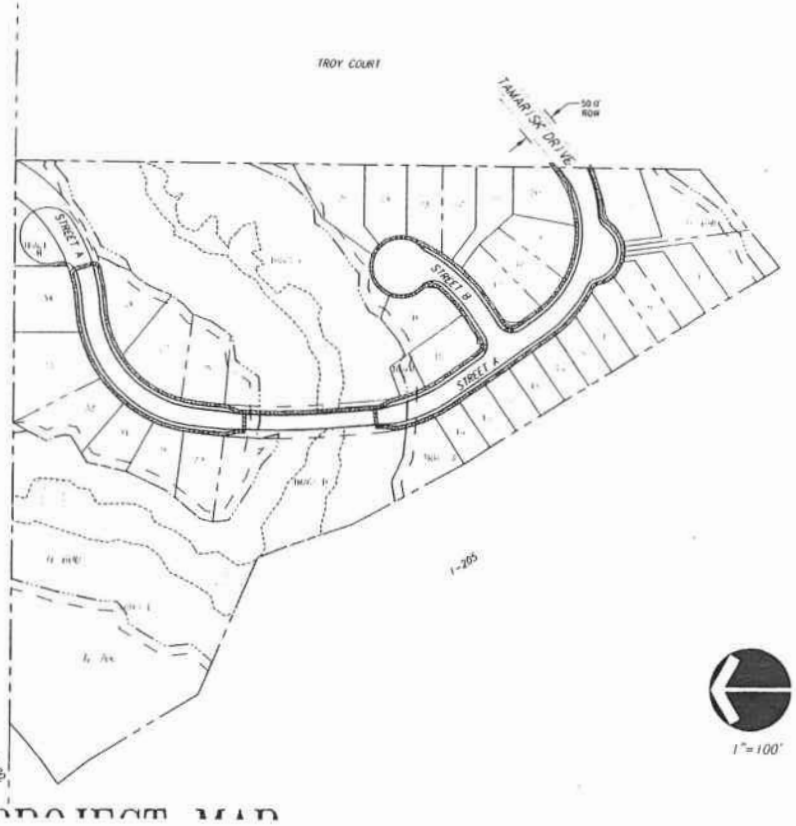
EX01 COVER SHEET
EX02 VICINITY TRANSPORTATION NETWORK MAP
EX03 EXISTING CONDITIONS MAP
EX03A EXISTING CONDITIONS MAP (with Land Type designation)
EX04 EXISTING SLOPE ANALYSIS & DRAINAGE MAP
EX05 TENTATIVE SUBDIVISION PLAT
EX05A TENTATIVE SITE PLAN
EX06 TREE PRESERVATION PLAN (symbols)
EX06A TREE PRESERVATION PLAN (point numbers)
EX06B TREE PRESERVATION PLAN (symbols and type)
EX07 TENTATIVE GRADING & EROSION CONTROL PLAN TENTATIVE
EX08 TENTATIVE UTILITY PLAN
EX09 STREET A -TAMARISK DR.- PROFILE
EX10 STREET B PROFILE, SITE CROSS SECTIONS
EX11 STREET TREE PLAN, WETLAND MITIGATION PLAN, NOTES
EX11A SWALE AND DETENTION POND PLANTING PLAN, DETAILS
EX12 AERIAL MAP



TYPICAL LOCAL ROAD SECTION
STREET A: STA. 11+82 to 16+58, STA. 19+13 to 23+46
STREET B: STA. 30+00 to 31+47
NOT TO SCALE



DRAINAGE CROSSING SECTION
STREET A: STA. 16+80 to 18+92
NOT TO SCALE



PROJECT MAP
1"=100'

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OWNER
Name/Contact: Edwin L Fritchie/
Gloria Fritchie Trustee
Address: 21929 S. Clear Creek Road
Estacada, OR 97023

APPLICANT/DEVELOPER
Name: 550 Investments, LLC
Contact: Tony Marnella
Address: PO BOX 1988
Lake Oswego, OR 97035
Phone: (503) 638-2569

PLANNER
Name: Otak Incorporated
Contact: Brad Kilby, AICP
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

ENGINEER
Name: Otak Incorporated
Contact: Mike Peebles, PE
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

SITE INFORMATION
Tax Map: 21E34A in Clackamas County, Oregon
Tax Lot: 600, 690, and 700
Area: 15.35 Acres

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

PLANNING RESUBMITTAL 7/17/06

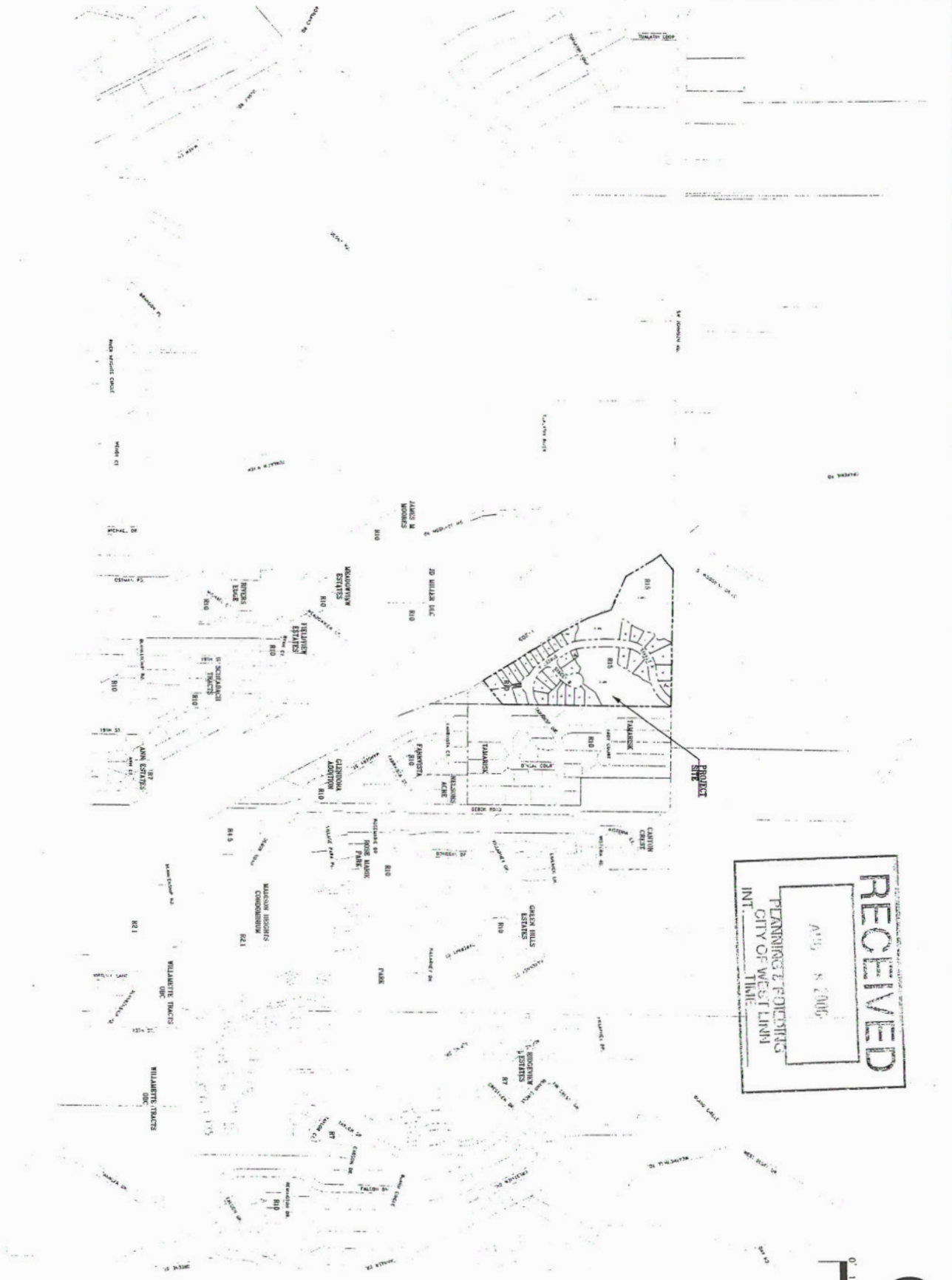
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
COVER SHEET

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 09/29
Project No. Drawing No.
EX01
Exhibit No.

A-35

A-36



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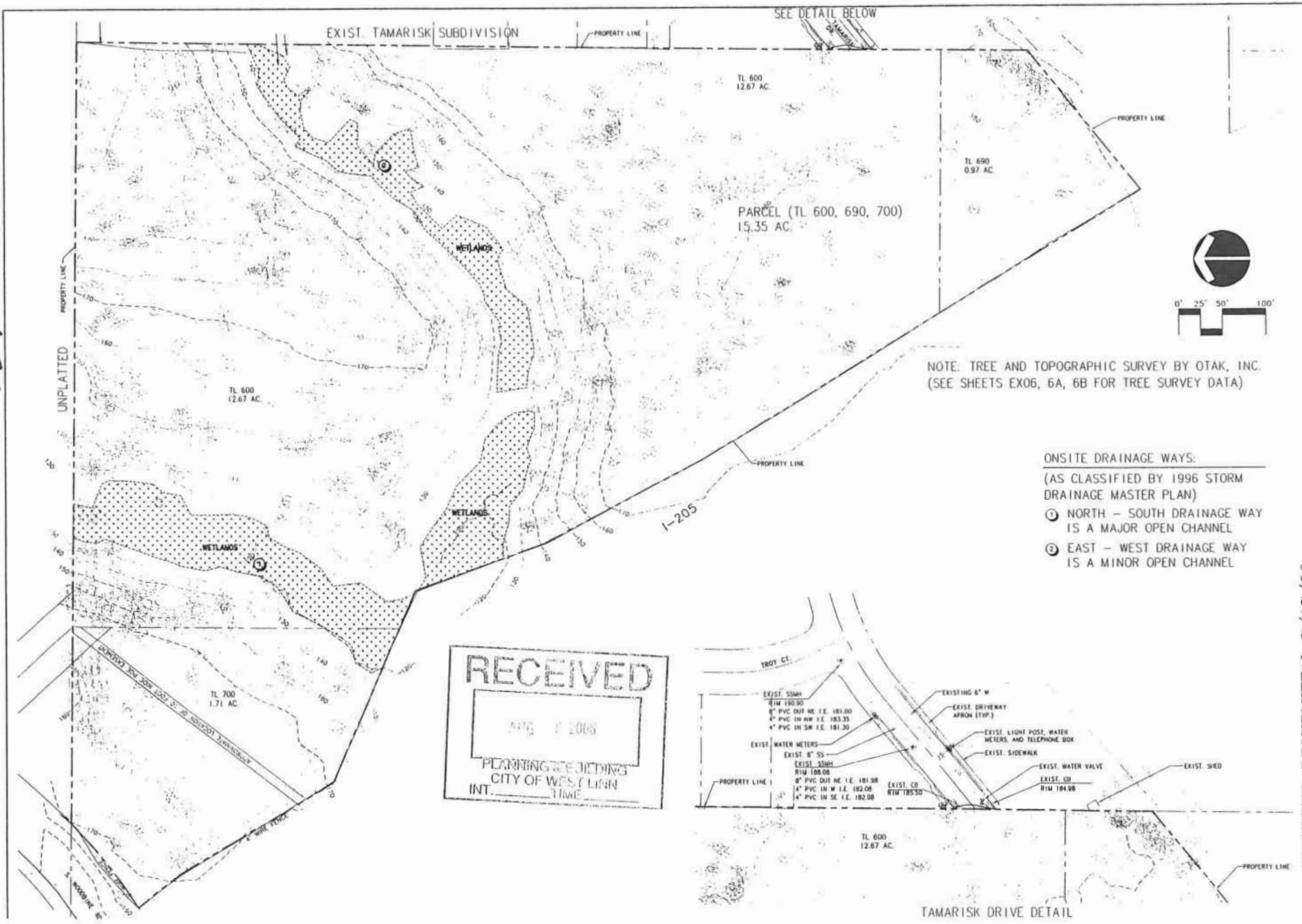
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
VICINITY TRANSPORTATION NETWORK MAP

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

EX02



A-37

550 Investments, LLC
PO BOX 1968
Lake Oswego, OR 97035

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP

otak
Otak, Inc.

13456
Project No.

EX03
Exhibit No.

LEGEND

HATCH	LAND TYPE	AREA (AC)
	TYPE I SLOPES>35%	3.54
	TYPE II WETLANDS, SLOPES 25-35%	2.42
	TYPE III SLOPES 15-25%	1.79
	TYPE IV SLOPES 0-15%	7.59
	TOTAL	15.35

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP
WITH LAND TYPE DESIGNATION

550 Investments, LLC
PO BOX 5986
Lake Oswego, OR 97035

otak
Incorporated

13458
Project No. Date

EX03

A-38

LEGEND

DRAINAGE ARROW

SLOPE ANALYSIS LEGEND

HATCH	RANGE BEG. (%)	RANGE END (%)	AREA (AC)
	0.00	5.00	3.82
	5.00	15.00	4.72
	15.00	25.00	1.89
	25.00	35.00	1.27
	35.00	50.00	1.49
	50.00	100.00	2.15
		TOTAL	15.35

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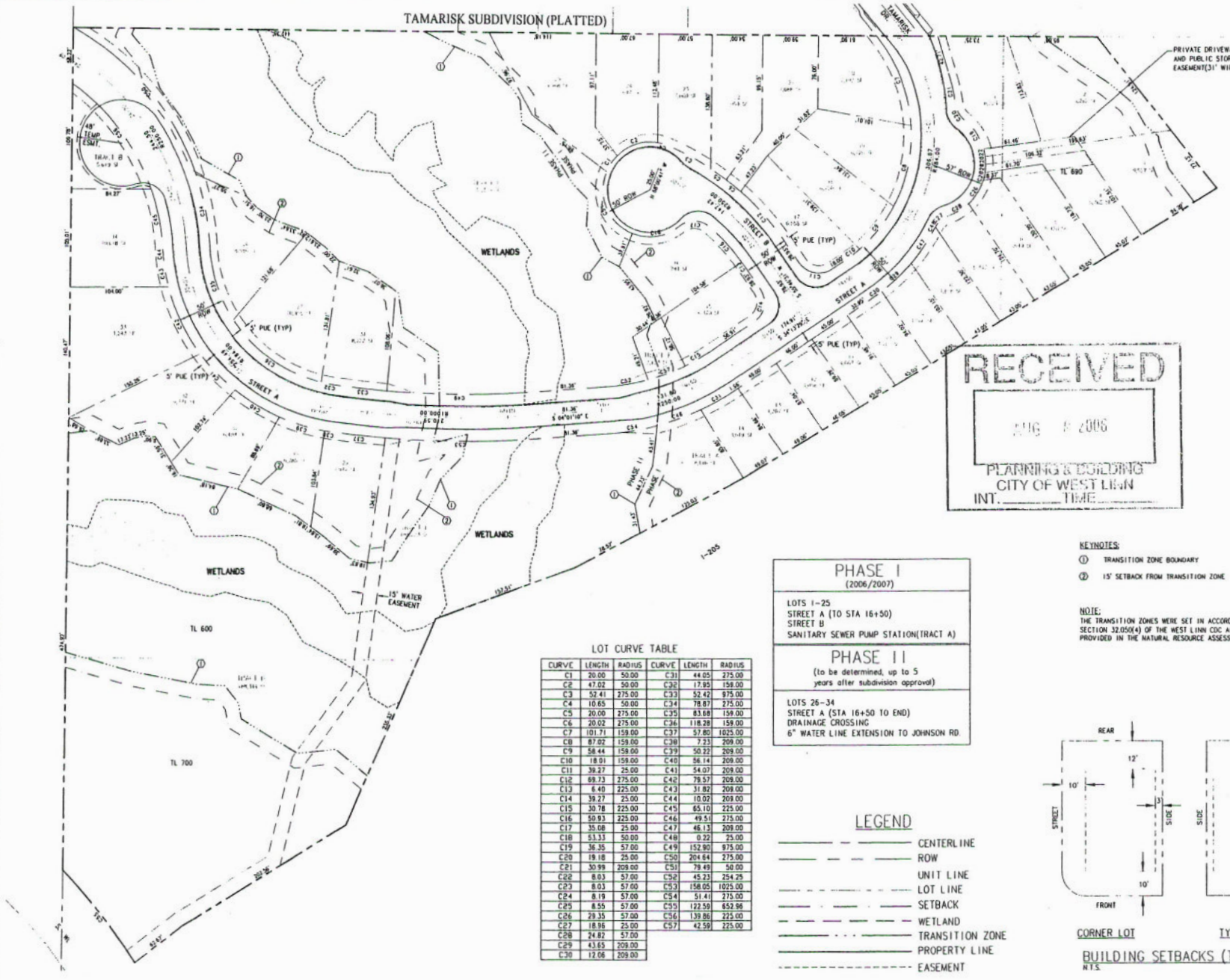
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
EXISTING SLOPE ANALYSIS & DRAINAGE MAP

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone (503) 635-3618
FAX (503) 635-5395
Internet www.otak.com

13456
Project No. Drawing No.
EX04

550 Investments, LLC
PO BOX 988
Lake Oswego, OR 97035



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0' 25' 50' 100'

PHASE I
(2006/2007)

LOTS 1-25
STREET A (TO STA 16+50)
STREET B
SANITARY SEWER PUMP STATION(TRACT A)

PHASE II
(to be determined, up to 5 years after subdivision approval)

LOTS 26-34
STREET A (STA 16+50 TO END)
DRAINAGE CROSSING
6" WATER LINE EXTENSION TO JOHNSON RD.

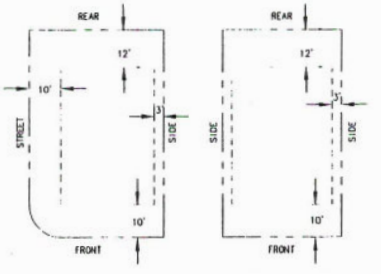
KEYNOTES:
① TRANSITION ZONE BOUNDARY
② 15' SETBACK FROM TRANSITION ZONE

NOTE:
THE TRANSITION ZONES WERE SET IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 32.050(4) OF THE WEST LINN CDC AND THE SITE SPECIFIC INFORMATION PROVIDED IN THE NATURAL RESOURCE ASSESSMENT PREPARED BY THE SWCA.

LOT CURVE TABLE

CURVE	LENGTH	RADIUS	CURVE	LENGTH	RADIUS
C1	20.00	50.00	C31	44.05	275.00
C2	47.02	50.00	C32	17.95	159.00
C3	52.41	275.00	C33	52.42	975.00
C4	10.65	50.00	C34	78.87	275.00
C5	20.00	275.00	C35	83.68	159.00
C6	20.02	275.00	C36	118.28	159.00
C7	101.71	159.00	C37	57.80	1025.00
C8	87.02	159.00	C38	7.23	209.00
C9	58.44	159.00	C39	50.22	209.00
C10	18.01	159.00	C40	56.14	209.00
C11	39.27	25.00	C41	54.07	209.00
C12	69.73	275.00	C42	79.57	209.00
C13	6.40	225.00	C43	31.82	209.00
C14	39.27	25.00	C44	10.02	209.00
C15	30.78	225.00	C45	65.10	225.00
C16	50.93	225.00	C46	49.51	275.00
C17	35.08	25.00	C47	46.13	209.00
C18	53.33	50.00	C48	0.22	25.00
C19	36.35	57.00	C49	152.90	975.00
C20	19.18	25.00	C50	204.64	275.00
C21	30.99	209.00	C51	79.49	50.00
C22	8.03	57.00	C52	45.23	254.25
C23	8.03	57.00	C53	158.05	1025.00
C24	8.19	57.00	C54	51.41	275.00
C25	8.55	57.00	C55	122.59	852.96
C26	29.35	57.00	C56	139.86	225.00
C27	18.96	25.00	C57	42.59	225.00
C28	24.82	57.00			
C29	43.65	209.00			
C30	12.06	209.00			

LEGEND
- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT



BUILDING SETBACKS (TYPICAL)
N.T.S.

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

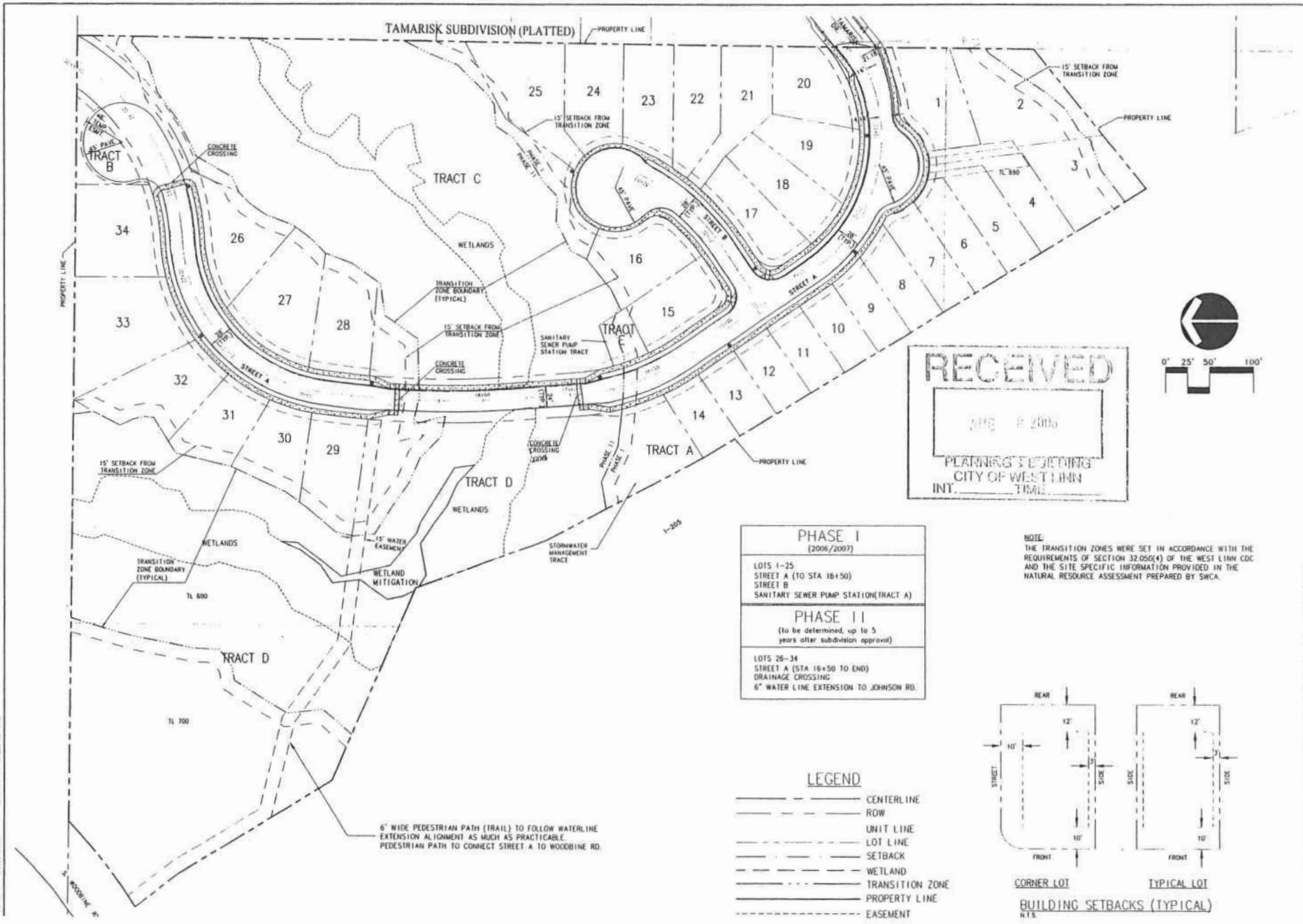
PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE SUBDIVISION PLAT

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone (503) 635
FAX (503) 635
Internet www.otak.com

13458
Project No. Datum

EX05
Exhibit No.



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0' 25' 50' 100'

PHASE I (2006/2007)
LOTS 1-25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 5 years after subdivision approval)
LOTS 26-34 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:
THE TRANSITION ZONES WERE SET IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 32.050(4) OF THE WEST LINN CDC AND THE SITE SPECIFIC INFORMATION PROVIDED IN THE NATURAL RESOURCE ASSESSMENT PREPARED BY SWCA.

LEGEND
- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

6' WIDE PEDESTRIAN PATH (TRAIL) TO FOLLOW WATERLINE EXTENSION ALIGNMENT AS MUCH AS PRACTICABLE. PEDESTRIAN PATH TO CONNECT STREET A TO WOODBINE RD.

BUILDING SETBACKS (TYPICAL)
N.T.S.

550 Investments, LLC
PO BOX 988
Lake Oswego, OR 97035

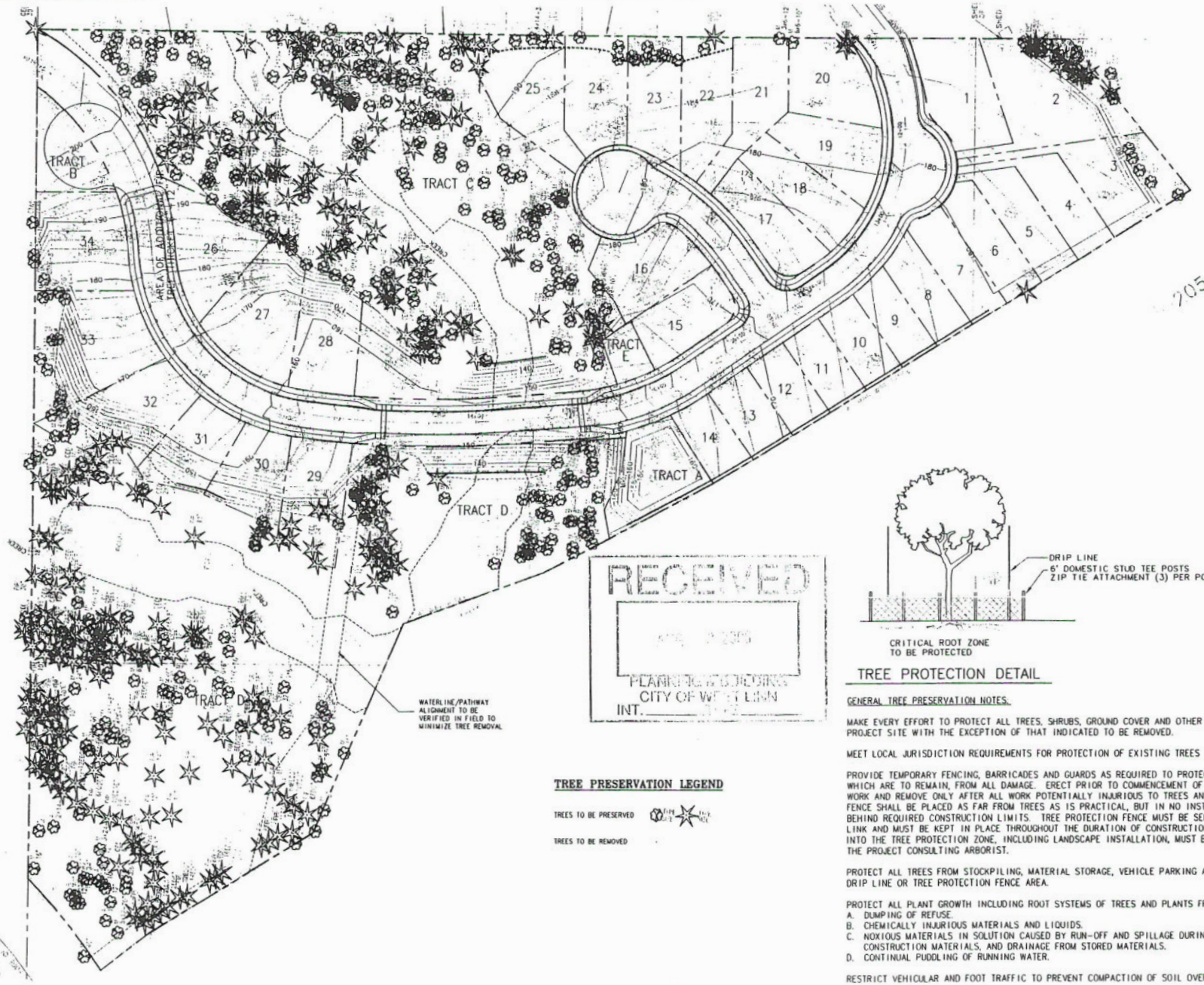
PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE SITE PLAN

otak
Incorporated

1345B
Project No. Drawing No.
EX05A
Exhibit No.

A-41



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INT.

TREE PRESERVATION LEGEND

TREES TO BE PRESERVED

TREES TO BE REMOVED

TREE PROTECTION DETAIL

GENERAL TREE PRESERVATION NOTES:

MAKE EVERY EFFORT TO PROTECT ALL TREES, SHRUBS, GROUND COVER AND OTHER VEGETATION EXISTING ON THE PROJECT SITE WITH THE EXCEPTION OF THAT INDICATED TO BE REMOVED.

MEET LOCAL JURISDICTION REQUIREMENTS FOR PROTECTION OF EXISTING TREES AND VEGETATION.

PROVIDE TEMPORARY FENCING, BARRICADES AND GUARDS AS REQUIRED TO PROTECT TREES AND OTHER PLANTS, WHICH ARE TO REMAIN, FROM ALL DAMAGE. ERECT PRIOR TO COMMENCEMENT OF CLEARING AND DEMOLITION WORK AND REMOVE ONLY AFTER ALL WORK POTENTIALLY INJURIOUS TO TREES AND OTHER PLANTS IS COMPLETE. FENCE SHALL BE PLACED AS FAR FROM TREES AS IS PRACTICAL, BUT IN NO INSTANCE CLOSER THAN ONE FOOT BEHIND REQUIRED CONSTRUCTION LIMITS. TREE PROTECTION FENCE MUST BE SEMI-PERMANENT SIX-FOOT CHAIN LINK AND MUST BE KEPT IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION. ANY NECESSARY INTRUSION INTO THE TREE PROTECTION ZONE, INCLUDING LANDSCAPE INSTALLATION, MUST BE APPROVED AND DIRECTED BY THE PROJECT CONSULTING ARBORIST.

PROTECT ALL TREES FROM STOCKPILING, MATERIAL STORAGE, VEHICLE PARKING AND DRIVING WITHIN THE TREE DRIP LINE OR TREE PROTECTION FENCE AREA.

PROTECT ALL PLANT GROWTH INCLUDING ROOT SYSTEMS OF TREES AND PLANTS FROM:
A. DUMPING OF REFUSE.
B. CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS.
C. NOXIOUS MATERIALS IN SOLUTION CAUSED BY RUN-OFF AND SPILLAGE DURING MIXING AND PLACEMENT OF CONSTRUCTION MATERIALS, AND DRAINAGE FROM STORED MATERIALS.
D. CONTINUAL PUDDLING OF RUNNING WATER.

RESTRICT VEHICULAR AND FOOT TRAFFIC TO PREVENT COMPACTION OF SOIL OVER ROOT SYSTEM

PLANNING RESUBMITTAL 7/17/06

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

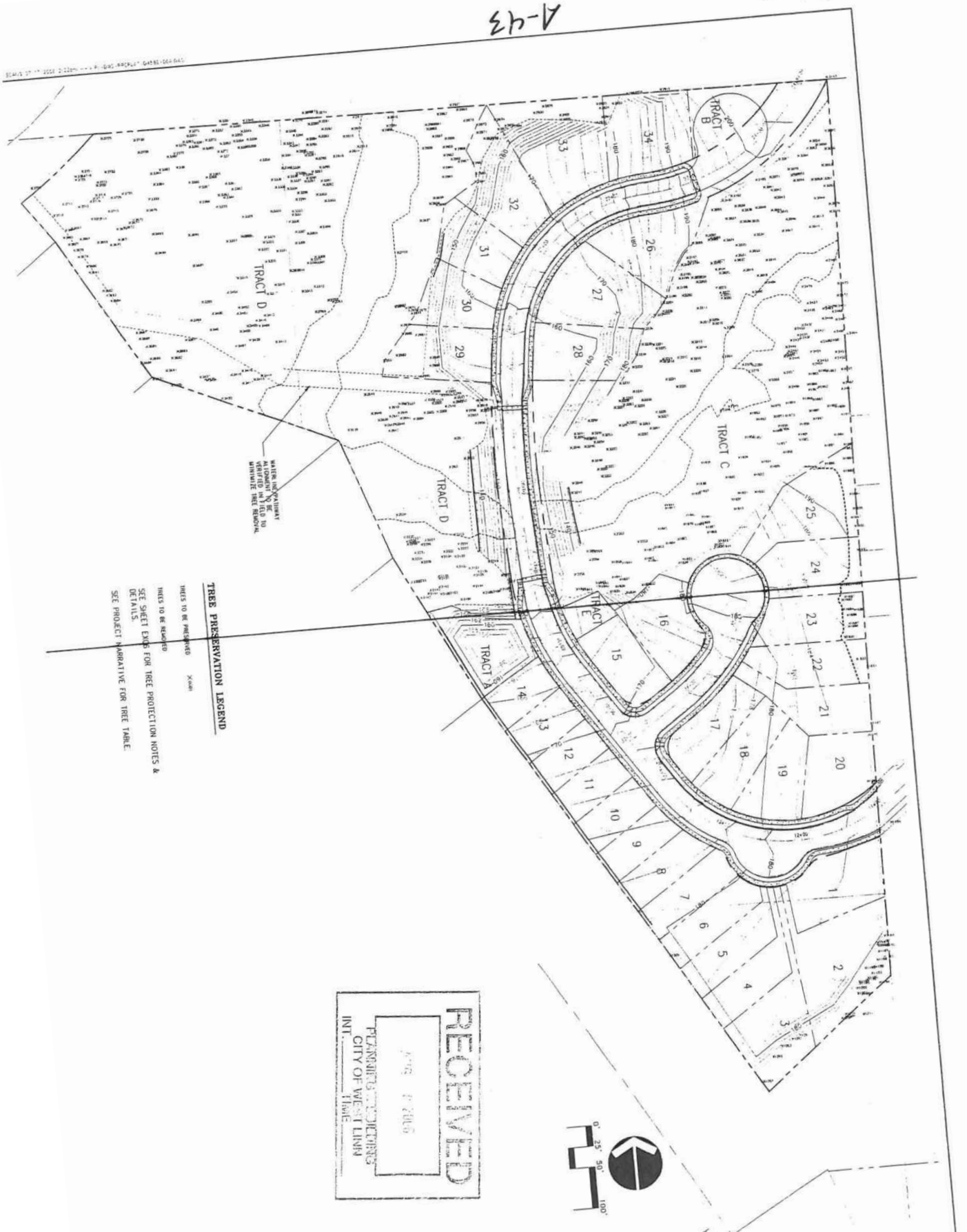
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN(SYMBOLS)

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 970
Phone: (503)
FAX: (503)
Internet: www.o

13458
Project No. Drgn
EXOE
Control No.

A-42

A-43



PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

TREE PRESERVATION PLAN (POINT NUMBERS)

550 Investments, LLC

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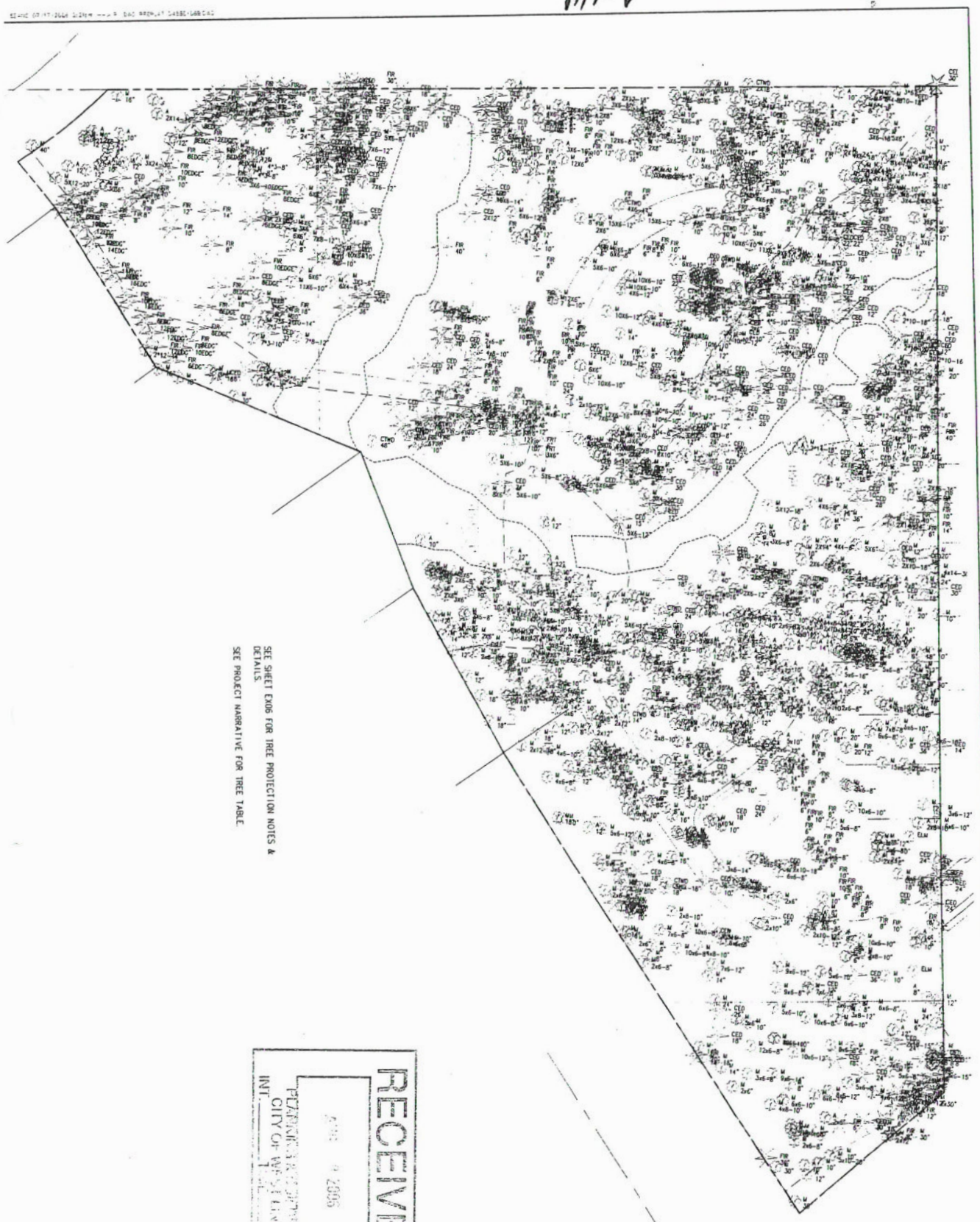
EX06A

A-4.4



SEE SHEET EX06 FOR TREE PROTECTION NOTES & DETAILS.
SEE PROJECT NARRATIVE FOR TREE TABLE.

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0' 25' 50' 100'

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TREE SURVEY PLAN (SYMBOLS/SIZE/TYPE)

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TREE PRESERVATION LEGEND

SIGNIFICANT TREES TO BE PRESERVED

SIGNIFICANT TREES TO BE REMOVED

SEE SHEET EX06 FOR TREE PROTECTION NOTES & DETAILS.

SEE PROJECT NARRATIVE FOR TREE TABLE.

HATCH	LAND TYPE	AREA (AC)
NOT SHOWN	TYPE I SLOPES>35%	3.54
	TYPE II WETLANDS, SLOPES 25-35%	2.42
	TYPE III SLOPES 15-25%	1.79
	TYPE IV SLOPES 0-15%	7.59
	TOTAL	15.35

AREA TYPE III AND IV SAVED = 22663 SF

AREA IN ROW REMOVED = 13643 SF

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

TREE PRESERVATION PLAN (CITY SIGNIFICANT TREES)

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Lake Oswego, OR 97035

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EX06D

550 Investments, LLC
PO BOX 1988

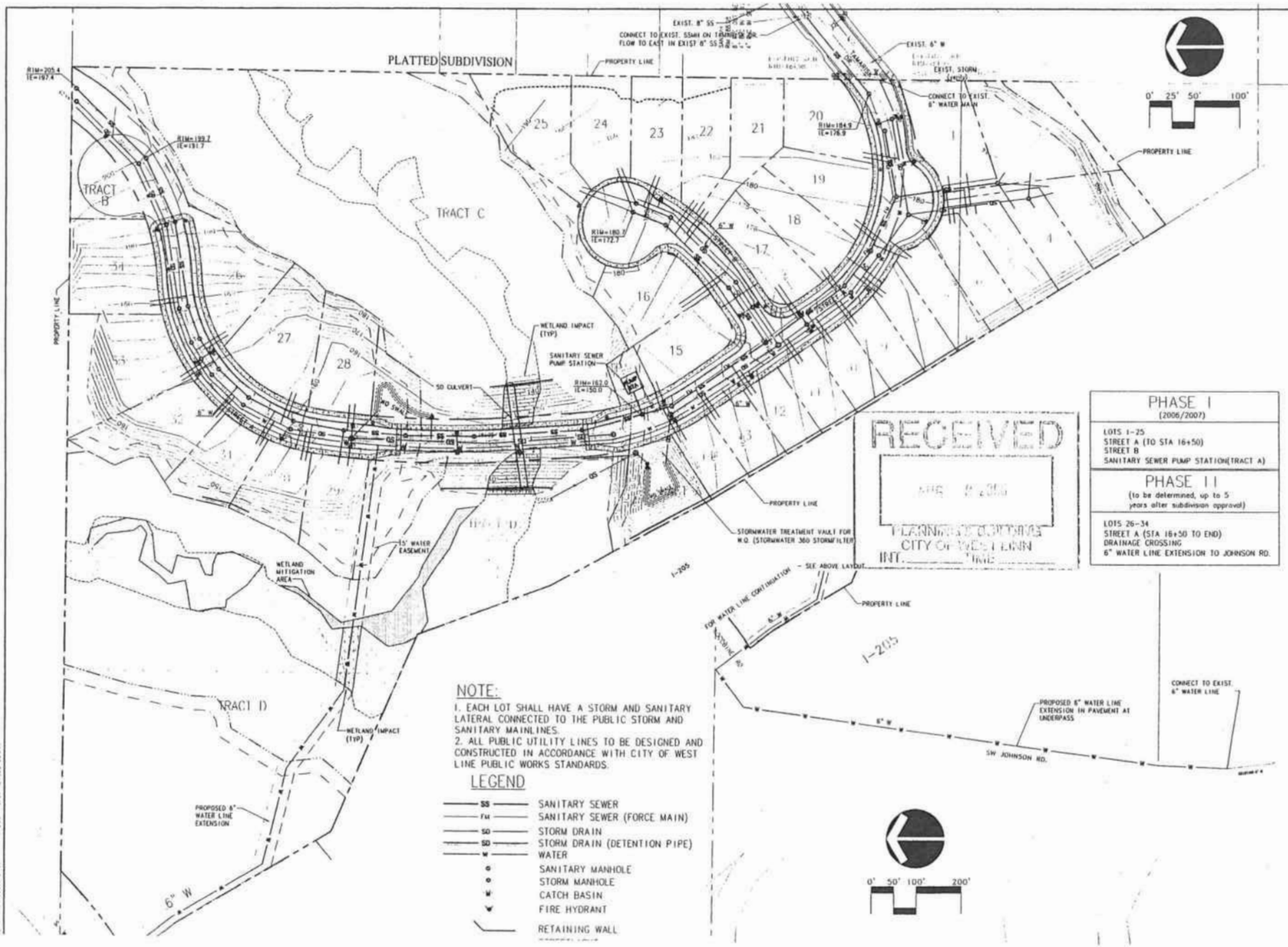
PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE GRADING & EROSION CONTROL PLAN

13458
Project No.

EX0



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CITY OF WEST LINN
INT. TIME

PHASE I (2006/2007)
LOTS 1-25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 5 years after subdivision approval)
LOTS 26-34 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:
1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- SD — STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL

550 Investments, LLC
PO BOX 998
Lake Oswego, OR 97035

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

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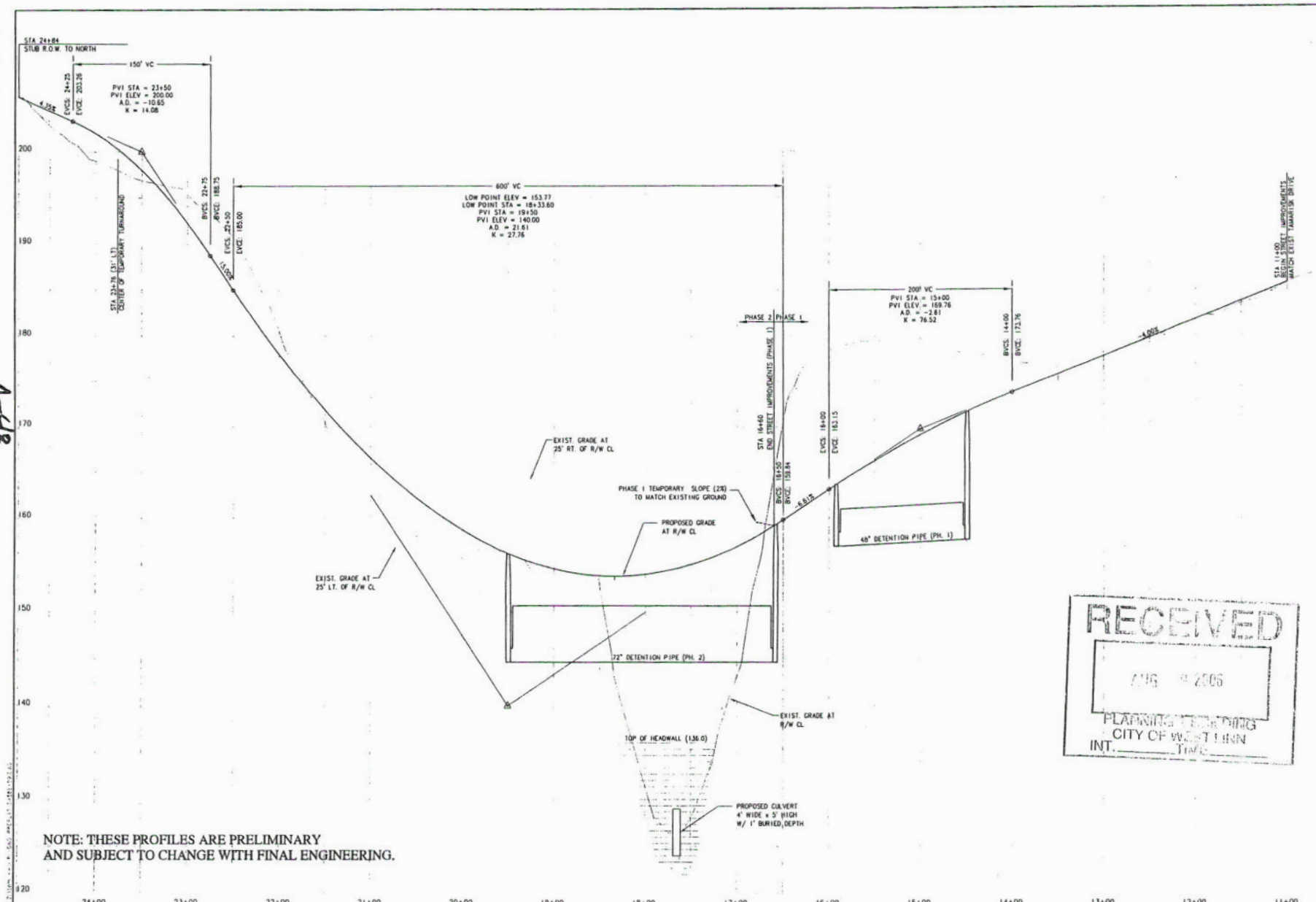
Project No.

EX08
Drawing No.

A-47



NOTE: THESE PROFILES ARE PRELIMINARY
AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.

STREET A (TAMARISK DR.) STA. 10+00 TO STA. 23+00

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A-48

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
STREET A (TAMARISK DR.) PROFILE

550 Investments, LLC
PO BOX 888
Lake Oswego, OR 97035

otak
Incorporated

13458
Project No. Drawing No.

EX09
Exhibit No.

A-49

STREET B STA. 30+00 TO STA. 35+32.50
SCALE: 1"=50' H
SCALE: 1"=5' V

NOTE: THESE PROFILES ARE PRELIMINARY AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.

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550 Investments, LLC
PO BOX 1868
Lake Oswego, OR 97035

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
STREET B PROFILE
SITE CROSS SECTIONS

otak
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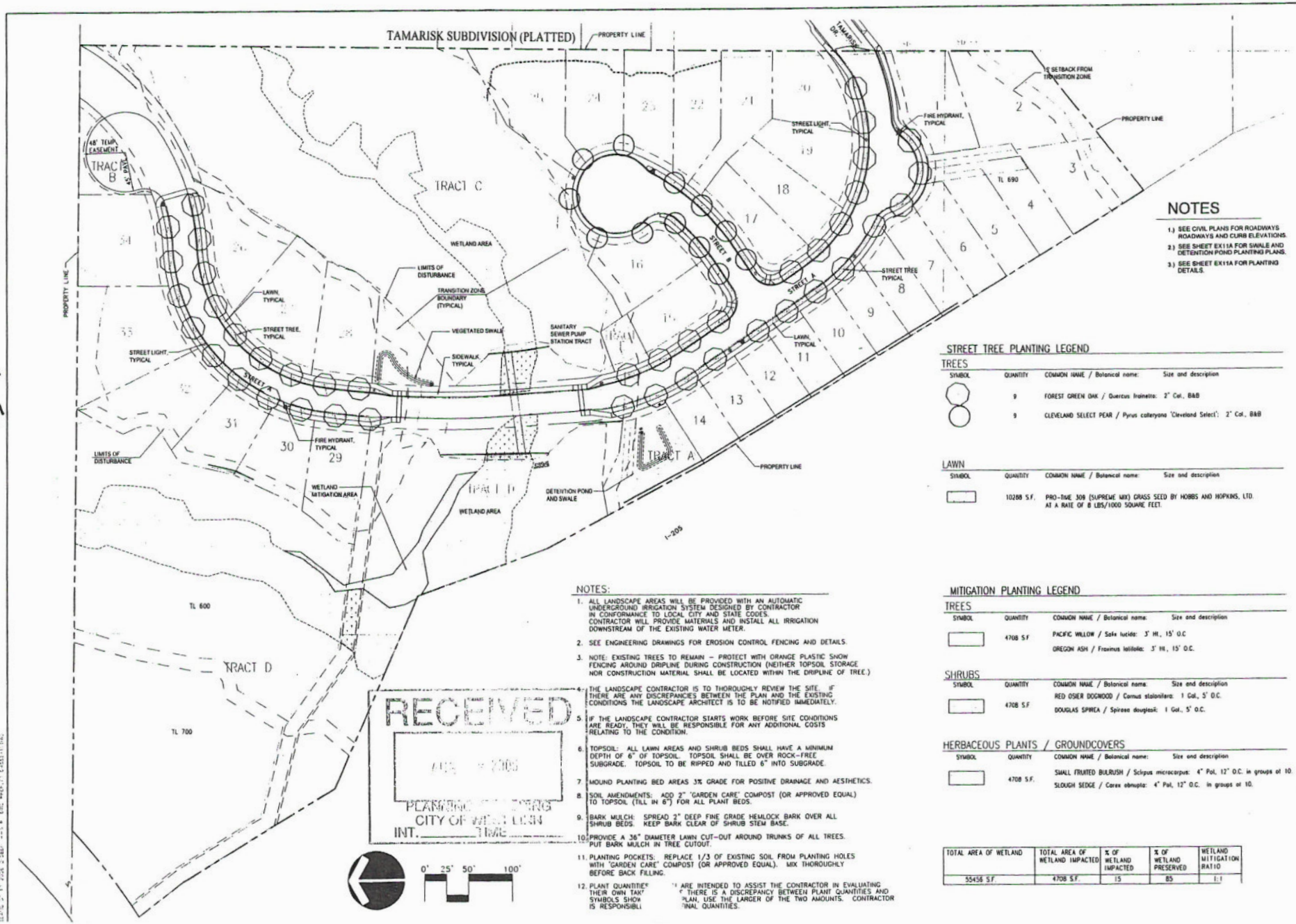
12458
EX10



NOTES

1) SEE CIVIL PLANS FOR ROADWAYS ROADWAYS AND CURB ELEVATIONS.
2) SEE SHEET EX11A FOR SWALE AND DETENTION POND PLANTING PLANS.
3) SEE SHEET EX11A FOR PLANTING DETAILS.

STREET TREE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	9	FOREST GREEN OAK / Quercus frainetto:	2" Cal., B&B
	9	CLEVELAND SELECT PEAR / Pyrus calleryana 'Cleveland Select':	2" Cal., B&B

LAWN

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	10288 S.F.	PRO-TIME 309 (SUPREME MIX) GRASS SEED BY HOBBS AND HOPKINS, LTD. AT A RATE OF 8 LBS/1000 SQUARE FEET.	

MITIGATION PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	PACIFIC WILLOW / Salix lucida:	3' Ht., 15' O.C.
		OREGON ASH / Fraxinus latifolia:	3' Ht., 15' O.C.

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	RED OSIER DOGWOOD / Cornus stolonifera:	1 Gal., 5' O.C.
		DOUGLAS SPIREA / Spiraea douglasii:	1 Gal., 5' O.C.

HERBACEOUS PLANTS / GROUNDCOVERS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" Pot, 12" O.C. in groups of 10.
		SLOUGH SEDGE / Carex obnupta:	4" Pot, 12" O.C. in groups of 10.

TOTAL AREA OF WETLAND	TOTAL AREA OF WETLAND IMPACTED	% OF WETLAND IMPACTED	% OF WETLAND PRESERVED	WETLAND MITIGATION RATIO
55456 S.F.	4708 S.F.	15	85	1:1

NOTES:

1. ALL LANDSCAPE AREAS WILL BE PROVIDED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM DESIGNED BY CONTRACTOR IN CONFORMANCE TO LOCAL CITY AND STATE CODES. CONTRACTOR WILL PROVIDE MATERIALS AND INSTALL ALL IRRIGATION DOWNSTREAM OF THE EXISTING WATER METER.
2. SEE ENGINEERING DRAWINGS FOR EROSION CONTROL FENCING AND DETAILS.
3. NOTE: EXISTING TREES TO REMAIN – PROTECT WITH ORANGE PLASTIC SNOW FENCING AROUND DRIPLINE DURING CONSTRUCTION (NEITHER TOPSOIL STORAGE NOR CONSTRUCTION MATERIAL SHALL BE LOCATED WITHIN THE DRIPLINE OF TREE.)
4. THE LANDSCAPE CONTRACTOR IS TO THOROUGHLY REVIEW THE SITE. IF THERE ARE ANY DISCREPANCIES BETWEEN THE PLAN AND THE EXISTING CONDITIONS THE LANDSCAPE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY.
5. IF THE LANDSCAPE CONTRACTOR STARTS WORK BEFORE SITE CONDITIONS ARE READY, THEY WILL BE RESPONSIBLE FOR ANY ADDITIONAL COSTS RELATING TO THE CONDITION.
6. TOPSOIL: ALL LAWN AREAS AND SHRUB BEDS SHALL HAVE A MINIMUN DEPTH OF 6" OF TOPSOIL. TOPSOIL SHALL BE OVER ROCK-FREE SUBGRADE. TOPSOIL TO BE RIPPED AND TILLED 6" INTO SUBGRADE.
7. MOUND PLANTING BED AREAS 3% GRADE FOR POSITIVE DRAINAGE AND AESTHETICS.
8. SOIL AMENDMENTS: ADD 2" 'GARDEN CARE' COMPOST (OR APPROVED EQUAL) TO TOPSOIL (TILL IN 6") FOR ALL PLANT BEDS.
9. BARK MULCH: SPREAD 2" DEEP FINE GRADE HEMLOCK BARK OVER ALL SHRUB BEDS. KEEP BARK CLEAR OF SHRUB STEM BASE.
10. PROVIDE A 36" DIAMETER LAWN CUT-OUT AROUND TRUNKS OF ALL TREES. PUT BARK MULCH IN TREE CUTOUT.
11. PLANTING POCKETS: REPLACE 1/3 OF EXISTING SOIL FROM PLANTING HOLES WITH 'GARDEN CARE' COMPOST (OR APPROVED EQUAL). MIX THOROUGHLY BEFORE BACK FILLING.
12. PLANT QUANTITIES [illegible] ARE INTENDED TO ASSIST THE CONTRACTOR IN EVALUATING THEIR OWN TAKE-[illegible] IF THERE IS A DISCREPANCY BETWEEN PLANT QUANTITIES AND SYMBOLS SHOWN ON THE PLAN, USE THE LARGER OF THE TWO AMOUNTS. CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES.

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CITY OF WEST LINN
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0' 25' 50' 100'

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

STREET TREE PLAN,

550 Investments, LLC
PO BOX 888

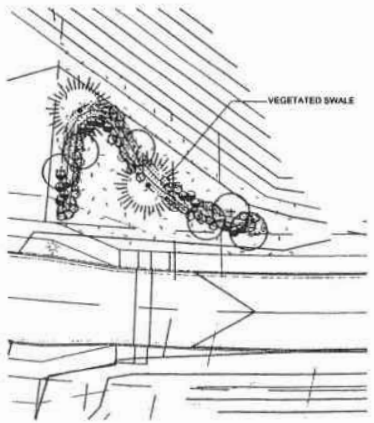
Inverpers

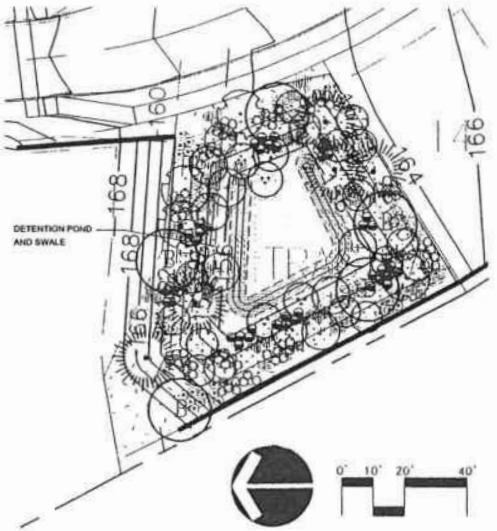
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: (503) 635-3618
FAX: (503) 635-3351
Internet: WWW.OTAINC.COM

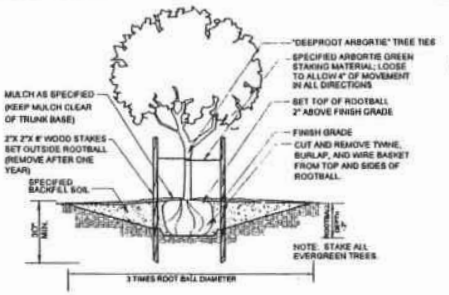
13458
Project No.

EX1

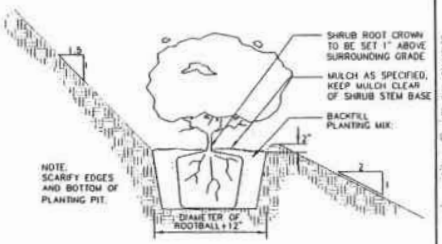
A-50



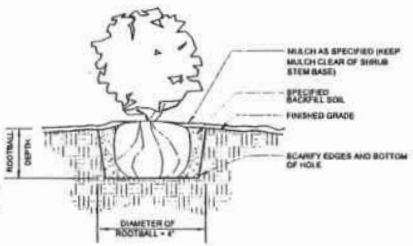




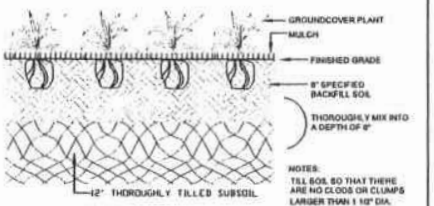
TREE STAKING DETAIL — 1 / P3.4



SECTION – PLANTING ON SLOPE — 6 / L5.02



SHRUB PLANTING DETAIL — 3 / P3.4



GROUNDCOVER PLANTING DETAIL — 2 / P3.4

VEGETATED SWALE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	9	DOUGLAS FIR / Pseudotsuga menziesii:	6' HT.
	9	OREGON ASH / Fraxinus latifolia:	1 1/2" Cal., B&B
	8	RED ALDER / Alnus rubra :	1 1/2" Cal., B&B
TOTAL	26	644 S.F. X .01= 6 REQUIRED TREES	

LARGE SHRUBS / SMALL TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	15	OCEANSPRAY / Holodiscus discolor:	3 Gal., 4'-5' O.C.
	16	MOCK ORANGE / Philadelphis lewesii:	3 Gal., 4'-5' O.C.
TOTAL	31	644 S.F X .04= 26 REQUIRED SHRUBS	

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	16	REDTWIG DOGWOOD / Cornus sericea:	1 Gal., 4'-5' O.C.
	15	RED FLOWERING CURRENT/ Ribes sanguineum:	1 Gal., 4'-5' O.C.
	17	NOOTKA ROSE / Rosa nutkana:	1 Gal., 4'-5' O.C.
TOTAL	48	644 S.F X .06= 39 REQUIRED SHRUBS	

HERBACEOUS PLANTS / GRASS SEED

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	76	SLOUGH SEDGE / Carex obnupta:	4" POT, 12" O.C.
	81	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" POT, 12" O.C.
	77	CREEPING SPIKE RUSH / Eleocharis palustris:	4" POT, 12" O.C.
TOTAL	234	203 S.F X 1 (1 PER S.F. @ 12" O.C.=234)	

"LOWGROW" SEED MIX: 120 LB PER ACRE — 429 S.F. (.0098 ACRES)

DWARF TALL FESCUE / FESTUCA ARUNDINACEA	40%
PR8820 DWARF PERENNIAL RYEGRASS / LOLIUM PERENNE 'PR8820'	30%
CREEPING RED FESCUE / FESTUCA RUBRA	25%
HIGHLAND COLONIAL BENTGRASS / AGROSTIS TENUIS 'HIGHLAND'	05%

"UPLAND" SEED MIX: 20 LB PER ACRE — 2438 S.F. (0.0559 ACRES)

CALIFORNIA BROME / Bromus carinatus	20%
BLUE WILDRYE / Elymus glaucus	20%
NATIVE RED FESCUE / Festuca rubra v. rubra	50%
LARGE LEAF LUPINE / Lupinus polyphyllus	10%

VEGETATED DETENTION POND AND SWALE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	5	DOUGLAS FIR / Pseudotsuga menziesii:	6' HT.
	7	OREGON ASH / Fraxinus latifolia:	1 1/2" Cal., B&B
	6	RED ALDER / Alnus rubra :	1 1/2" Cal., B&B
	5	BIGLEAF MAPLE / Acer macrophyllum:	5' HT.
	4	PACIFIC DOGWOOD / Cornus nuttallii:	3' HT.
TOTAL	27	7507 S.F / 300 S.F. X 1 TREE= 25 REQUIRED TREES	

LARGE SHRUBS / SMALL TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	17	VINE MAPLE / Acer circinatum:	3 Gal.T
	16	SCOULER'S WILLOW / Salix scouleriana:	3' HT.
	84	OCEANSPRAY / Holodiscus discolor:	3 Gal., 4'-5' O.C.
	38	MOCK ORANGE / Philadelphis lewesii:	3 Gal., 4'-5' O.C.
TOTAL	135	7507 S.F / 300 S.F X 4 SHRUBS= 100 REQUIRED SHRUBS	

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	40	REDTWIG DOGWOOD / Cornus sericea:	1 Gal., 4'-5' O.C.
	40	RED FLOWERING CURRENT/ Ribes sanguineum:	1 Gal., 4'-5' O.C.
	49	NOOTKA ROSE / Rosa nutkana:	1 Gal., 4'-5' O.C.
	32	COMMON SNOWBERRY / Symphoricarpus albus:	1 Gal., 4'-5' O.C.
	40	OREGON GRAPE / Mahonia aquifolium:	1 Gal., 4'-5' O.C.
	15	PACIFIC NINEBARK / Physocarpus capitolus:	1 Gal., 4'-5' O.C.
TOTAL	216	7507 S.F / 300 S.F X 8 SHRUBS= 150 REQUIRED SHRUBS	

HERBACEOUS PLANTS / GRASS SEED

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	244	SLOUGH SEDGE / Carex obnupta:	4" POT, 12" O.C.
	276	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" POT, 12" O.C.
	238	CREEPING SPIKE RUSH / Eleocharis palustris:	4" POT, 12" O.C.
TOTAL	758	659 S.F X 1 (1 PER S.F. @ 12" O.C.=758)	

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GRASS SEED MIX (BY HOBBS & HOPKINS LTD.)

"WET/MOIST" AREA 4" PLUGS AT 12" O.C. — 1728 S.F. (.039 ACRES)

DEWEY SEDGE / Carex deweyana	20%
SLOUGH SEDGE / Carex obnupta	35%
COMMON SPIKERUSH / Eleocharis palustris	10%
SOFT RUSH / Juncus effusis	10%
SMALL FRUITED BULRUSH / Scirpus microcarpus	25%

"LOWGROW" SEED MIX: 120 LB PER ACRE — 2898 S.F. (.066 ACRES)

DWARF TALL FESCUE / FESTUCA ARUNDINACEA	40%
PR8820 DWARF PERENNIAL RYEGRASS / LOLIUM PERENNE 'PR8820'	30%
CREEPING RED FESCUE / FESTUCA RUBRA	25%
HIGHLAND COLONIAL BENTGRASS / AGROSTIS TENUIS 'HIGHLAND'	05%

"UPLAND" SEED MIX: 20 LB PER ACRE — 2222 S.F. (.051 ACRES)

CALIFORNIA BROME / Bromus carinatus	20%
BLUE WILDRYE / Elymus glaucus	20%
NATIVE RED FESCUE / Festuca rubra v. rubra	50%
LARGE LEAF LUPINE / Lupinus polyphyllus	10%

NOTES

1) SEE CIVIL PLANS FOR ROADWAYS ROADWAYS AND CURB ELEVATIONS
2) SEE SHEET EX11 FOR STREET TREE PLANTING PLAN
3) SEE SHEET EX11 FOR WETLAND MITIGATION PLAN.
4) SEE SHEET EX11 FOR GENERAL PLANTING NOTES.

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
SWALE AND DETENTION POND PLANTING PLAN, PLANTING DETAILS

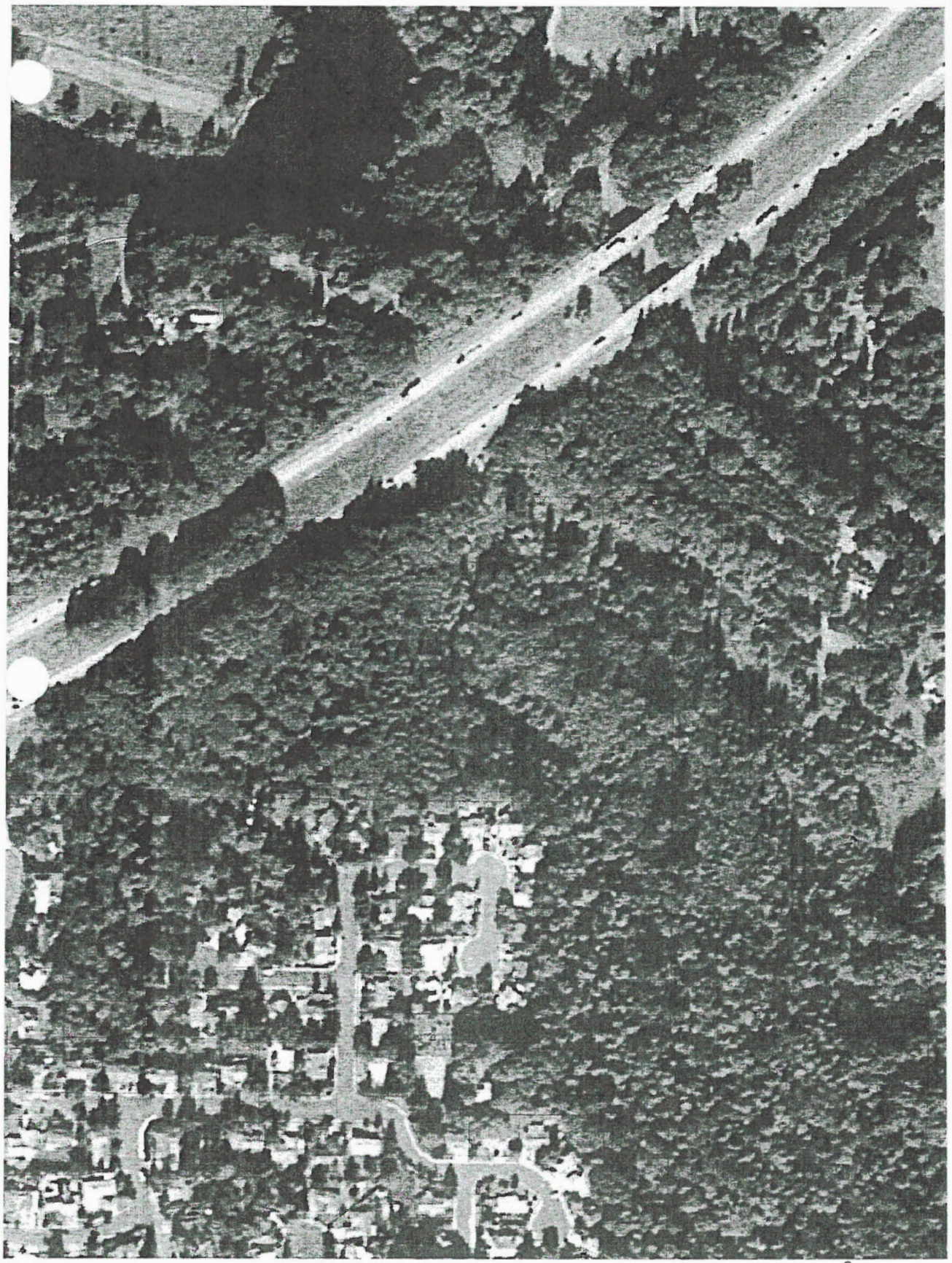
550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

otak
Incorporated
17355 SW Boones Ferry R
Lake Oswego, OR 97035-5
Phone: (503) 635-3
FAX: (503) 635-5
Portland 503.287.0

13458 — Project No.
EX11A — Drawing / Sheet No.

A-51

A-52



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CITY OF WEST LINN
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PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
AERIAL MAP

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

0' 50' 100' 200'

NO.	DATE	BY	REVISION COMMENTS

EX1.

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

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INT. TIME

July 20, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Peter:

I am writing in response to your earlier indication that West Linn staff would be recommending denial of the Tamarisk application to the Planning Commission. As you already know, we asked that the hearing be postponed to allow the design team time to review your issues and modify the application in an effort to change your recommendation. I have been unable to reach you over the past week and a half, so with this letter, I am providing a modified proposal for 34 lots as opposed to 35.

First, I would like to let you know that although the application was originally filed on behalf of Stearns/Marnella Communities, the partnership that made up that company has since dissolved, and the property is now in the control of Tony Marnella. Tony's company is "550 Investments LLC." Therefore, the proposal is now filed on behalf of "550 Investments LLC."

From your letter, it appears that there are three primary concerns with this application. If I understand you correctly, you are concerned with the amount of significant trees being removed from the type III and IV lands, comments made by GeoPacific Engineering Inc. in their report dated December 14, 2006, and with four lots within the development not meeting West Linn Community Development Code Section 24.130.

With regard to tree retention, we have reviewed your original comments and made adjustments to the grading within proposed Lots 20 through 25 in an attempt to save additional trees. The applicant has indicated that where trees can be saved in the process of construction, they will be. While we realize the value in preserving trees in new development, we often err on the side of caution in preliminary design in order to meet the engineering challenges of providing adequate access and utilities that function properly. In short, we do not want to tell you that we will be saving trees that

A-53

creativity, integrity, and skill • strengthening our communities • performing exciting work • serving our clients

we will be unable to save during actual construction, but if we are working within the site, and find that we will be able to save more trees, we will. It adds value to each one of the lots. Unfortunately, few locations in western Oregon have the benefit of a flat site to work with. With these challenges in mind, it falls upon the designers and engineers to preserve as many trees as possible while ensuring that all other aspects of the development function properly. As a result of the modified proposal, more trees will be preserved along the back and side property lines of Lots 20 through 25; unfortunately, the 25 feet you request in your staff report would not provide a large enough building envelope for construction on these lots.

As you stated in your staff report, it has been extremely difficult to get a timely response from the City Arborist as to what constitutes a significant tree, and the last bit of information that we obtained from him was a list of 117 trees that he wanted physically tagged. We tagged the trees, and never heard back. While there are no clear and objective standards to follow, and his designation of the trees he chose arbitrary, we have made every attempt to save as many trees on this site as possible. Of the 117 trees that he listed, 1 is located on a neighboring parcel, 20 are being removed to construct the public rights-of-way, and 59 are being removed to accommodate construction of the water quality facility and the proposed lots. Of the 117 trees asked to be tagged by Mike Perkins, we are saving 33 or 28 percent on non type III and IV lands. I am providing you with an exhibit that identifies the 117 trees Mike asked to be tagged, and the preliminary lot layout to demonstrate where the trees fall within the proposed development. The trees you are asking to be protected on proposed Lots 4, 6, 7, 8, and 11 cannot be saved due to the amount of grading that needs to occur in that area. I urge you to reconsider your position on these trees. The 20 percent retention is not mandated, and the design of this development does preserve the majority of natural physical features that are inherent to the site.

The second concern that you raised pertains to the provision in CDC Section 24.130. According to your report, "when over 50% of a lot comprises slopes in the 25-35% slope range, then the lot must be twice the size of the lots in the underlying zone. Since the underlying zone is R-15, lots such as 27, 28, 33, and 34 must be 30,000 square feet in size." In reviewing all of the lots within the development, only proposed Lots 33 and 34 met the threshold. To mitigate for that circumstance, we eliminated Lot 35 and made Lots 33 and 34 larger in size. The lots no longer have 50 percent of their lot areas comprised of slopes over 25 percent. In reviewing slope areas on Lots 27 and 28, it was determined that as proposed, the lots did not exceed the 50 percent threshold.

The third concern you raised was the geotechnical report provided by Jim Imbrie of GeoPacific Engineering Inc., and some of the concerns raised in his initial report. It should be noted that the original report was written and responded to by the proposed design without being modified. As a result, we met with Jim and asked that he review the proposed changes, modified plan, and submit a

revised report that responds specifically to the currently proposed design. Mr. Imbrie's report is provided as an attachment to this letter, and he is available to discuss the report should you have additional concerns. In my most recent conversation with you, you mentioned that your concern was that the report stated that six or seven lots within the development are prone to creep and shallow sliding. I mentioned this concern to Mr. Imbrie, and he stated that creep and shallow sliding is common on the majority of sloped sites in Oregon, and they raise the concern to ensure that a geotechnical engineer reviews the design and construction of the foundations in these areas to minimize the likelihood that creeping or sliding would occur. He added that shallow sliding is often times mitigated by grading. I have asked Mr. Imbrie to appear at any future hearings on this matter to explain the report.

In summary, the proposal has been revised by modifying the grading for additional tree protection, one additional lot has been eliminated to meet CDC Section 24.130, and the geotechnical issues raised in your report have been reviewed and responded to by the revised geotechnical report. In reviewing the original narrative and your report, it appears that your original findings would still be applicable with the exception of those pertaining to the three issues discussed in this letter.

I am providing you with three copies of a modified proposal with the amended tree removal/save spreadsheet, a revised geotechnical report, and a revised plan set for your review. Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

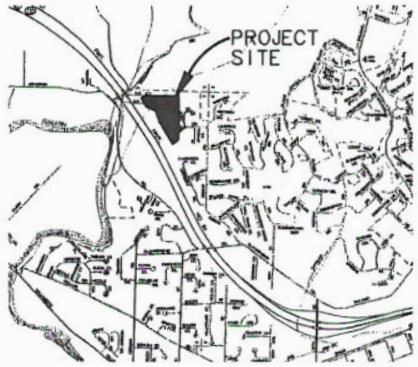
Brad Kilby

Brad Kilby, AICP

BK:sjs
Enclosures: Revised Plan Set (3 copies)
Amended Tree Removal/Save Spreadsheet (3 Copies)
Revised Geotechnical Report (3 Copies)

A-55

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
(PLANNED UNIT DEVELOPMENT)
WEST LINN, OREGON



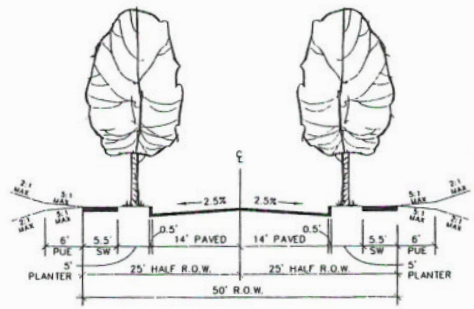
VICINITY MAP

N.T.S.

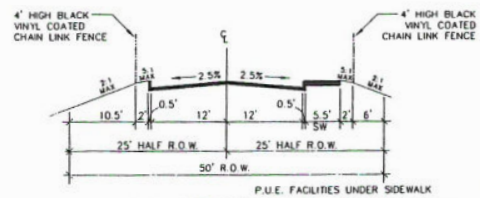
BENCH MARK
ODOT Benchmark M631
Elevation: 167.09
Location: I-205 NE Corner of a Northbound structure of Woodbine Road

SHEET INDEX

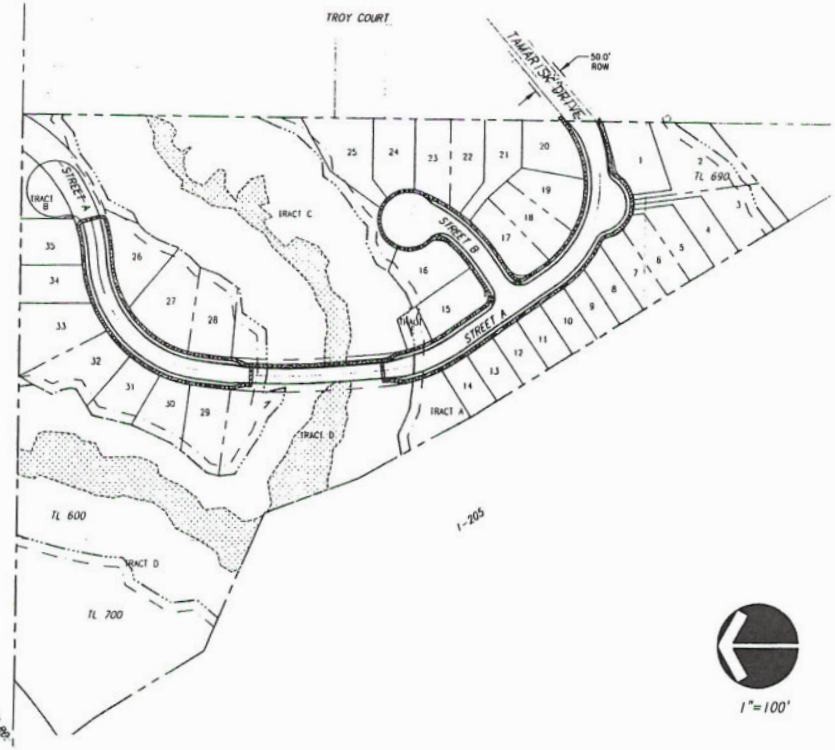
EX01 COVER SHEET
EX02 VICINITY TRANSPORTATION NETWORK MAP
EX03 EXISTING CONDITIONS MAP
EX03A EXISTING CONDITIONS MAP (with Land Type designation)
EX04 EXISTING SLOPE ANALYSIS & DRAINAGE MAP
EX05 TENTATIVE SUBDIVISION PLAT
EX05A TENTATIVE SITE PLAN
EX06 TREE PRESERVATION PLAN (symbols)
EX06A TREE PRESERVATION PLAN (point numbers)
EX06B TREE PRESERVATION PLAN (symbols and type)
EX07 TENTATIVE GRADING & EROSION CONTROL PLAN TENTATIVE
EX08 TENTATIVE UTILITY PLAN
EX09 STREET A -TAMARISK DR.- PROFILE
EX10 STREET B PROFILE, SITE CROSS SECTIONS
EX11 STREET TREE PLAN, WETLAND MITIGATION PLAN, NOTES
EX11A SWALE AND DETENTION POND PLANTING PLAN, DETAILS
EX12 AERIAL MAP



TYPICAL LOCAL ROAD SECTION
STREET A: STA. 11+82 to 16+58, STA. 19+13 to 23+46
STREET B: STA. 30+00 to 31+47
NOT TO SCALE



DRAINAGE CROSSING SECTION
STREET A: STA. 16+80 to 18+92
NOT TO SCALE



1"=100'

RESUBMITTAL 5/5/06

OWNER
Name/Contact: Edwin L Fritchie/ Gloria Fritchie Trustee
Address: 21929 S. Clear Creek Road Estacada, OR 97023

APPLICANT/DEVELOPER
Name: Stearns Marnella Communities, LLC
Contact: Nick Stearns or Tony Marnella
Address: 18318 SE Abernethy Lane Milwaukie, OR 97267
Phone: (503) 654-6642

PLANNER
Name: Otak Incorporated
Contact: Brad Kilby, AICP
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd. Lake Oswego, Oregon 97035

ENGINEER
Name: Otak Incorporated
Contact: Mike Peebles, PE
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd. Lake Oswego, Oregon 97035

SITE INFORMATION
Tax Map: 21E34A in Clackamas County, Oregon
Tax Lot: 600, 690, and 700
Area: 15.35 Acres

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
COVER SHEET

Stearns Marnella

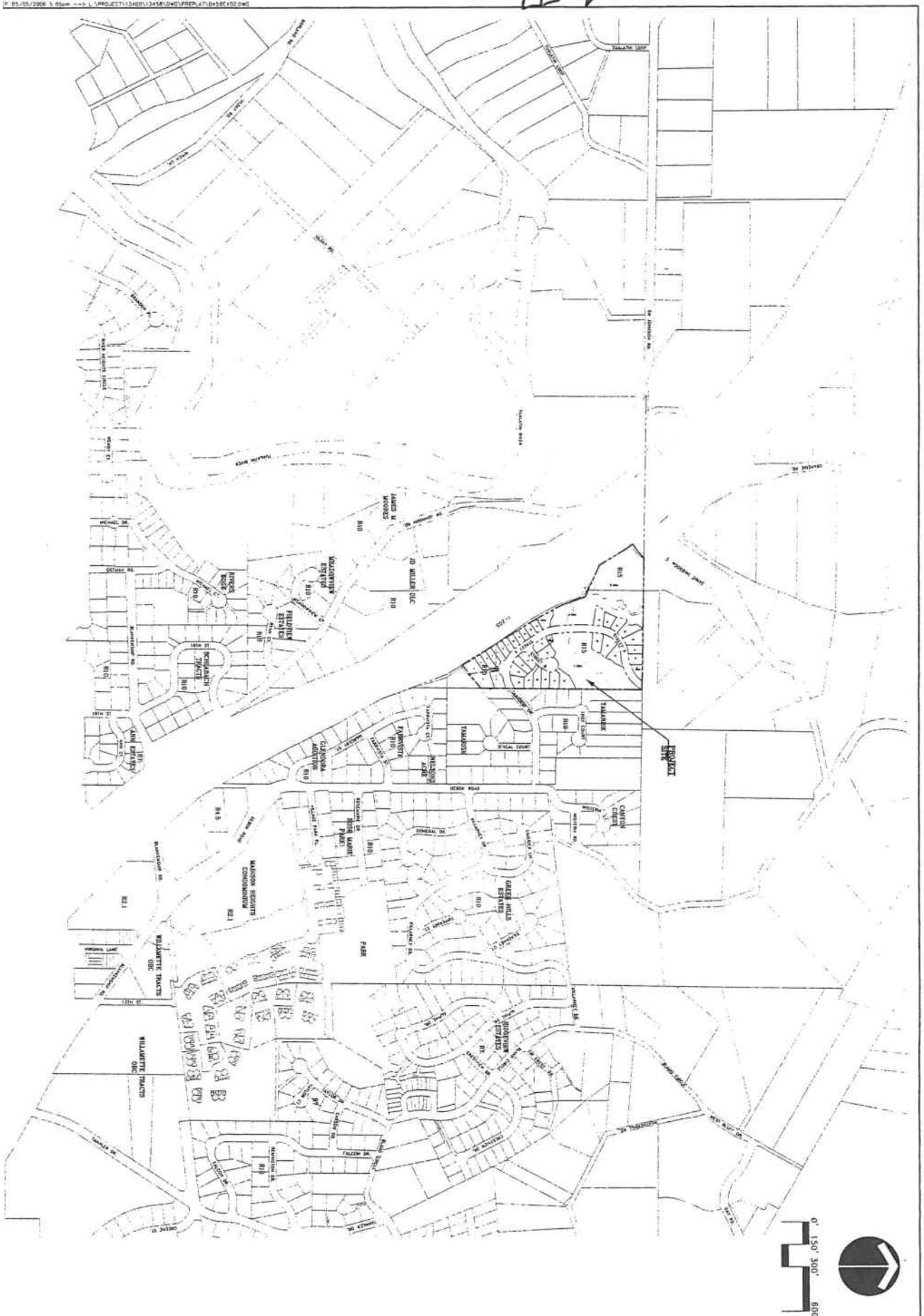
otak Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 Project No.

EXC Exhibit No.

A-5C

LS-A



PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
VICINITY TRANSPORTATION NETWORK MAP

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS
Design	Drawn	Checked	Date	Initial Issue Date

Project No. 13458 | Drawing No. EX02 | Exhibit No.

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP

Stearns Marnella Communities

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 D45
Project No. Drawing No.

EX0
Exhibit No.

A-58

A-59

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP
WITH LAND TYPE DESIGNATION

Stearns Marnella Communities

otak Incorporated

EX03A

LEGEND

DRAINAGE ARROW

SLOPE ANALYSIS LEGEND

HATCH	RANGE BEG. (%)	RANGE END (%)	AREA (AC)
	0.00	5.00	3.82
	5.00	15.00	4.72
	15.00	25.00	1.89
	25.00	35.00	1.27
	35.00	50.00	1.49
	50.00	100.00	2.15
		TOTAL	15.35

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

EXISTING SLOPE ANALYSIS & DRAINAGE MAP

Stearns Marnella Communities

otak Incorporated

17355 SW Boones Ferry
Lake Oswego, OR 9703
Phone: (503) 63
FAX: (503) 63
Internet: WWW.OT

13458 D458
Project No. Drawi

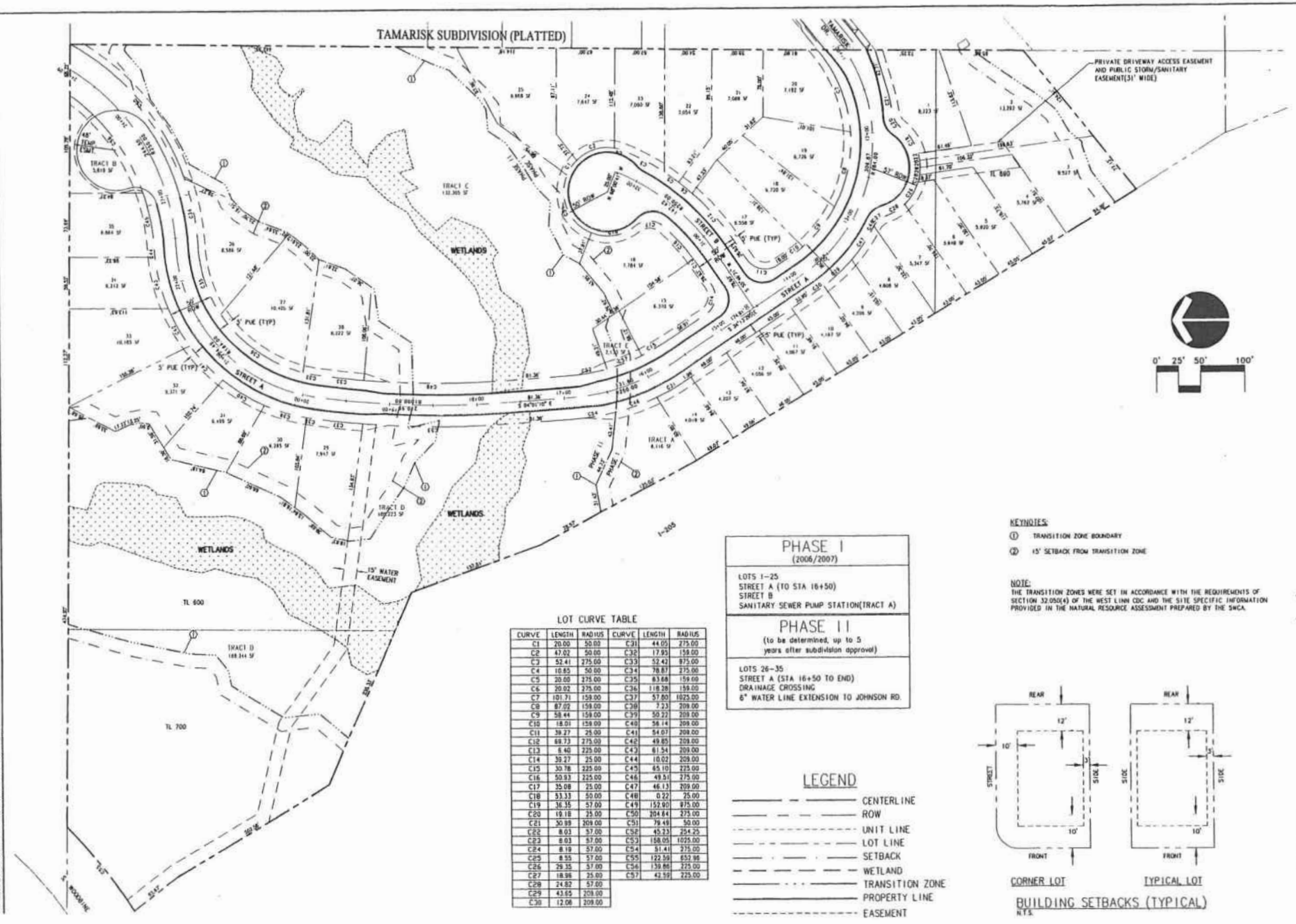
EX04
Exhibit No.

Copyright 2005

NO | DATE | BY | REVISION COMMENTS

Design | Drawn | Checked | Date

A-60



PHASE I (2006/2007)
LOTS 1–25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 5 years after subdivision approval)
LOTS 26–35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

LOT CURVE TABLE

CURVE	LENGTH	RADIUS	CURVE	LENGTH	RADIUS
C1	20.00	50.00	C31	44.05	275.00
C2	47.02	50.00	C32	17.93	159.00
C3	52.41	275.00	C33	52.42	875.00
C4	10.85	50.00	C34	78.87	275.00
C5	20.00	275.00	C35	63.68	159.00
C6	20.02	275.00	C36	118.28	159.00
C7	101.71	159.00	C37	57.80	1025.00
C8	87.02	159.00	C38	2.23	209.00
C9	58.44	159.00	C39	50.22	209.00
C10	18.01	159.00	C40	56.14	209.00
C11	39.27	25.00	C41	54.07	209.00
C12	69.73	275.00	C42	49.85	209.00
C13	6.40	225.00	C43	81.54	209.00
C14	39.27	25.00	C44	10.02	209.00
C15	30.78	225.00	C45	65.10	225.00
C16	50.93	225.00	C46	49.51	275.00
C17	35.08	25.00	C47	46.13	209.00
C18	53.33	50.00	C48	0.22	25.00
C19	36.35	57.00	C49	152.90	875.00
C20	19.18	25.00	C50	304.84	275.00
C21	30.89	209.00	C51	79.48	50.00
C22	8.03	57.00	C52	45.23	254.25
C23	8.03	57.00	C53	158.05	1025.00
C24	8.19	57.00	C54	51.41	275.00
C25	8.55	57.00	C55	122.56	652.96
C26	29.35	57.00	C56	139.86	225.00
C27	18.96	25.00	C57	42.59	225.00
C28	24.82	57.00			
C29	43.65	209.00			
C30	12.08	209.00			

LEGEND

- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

KEYNOTES:

① TRANSITION ZONE BOUNDARY

② 15' SETBACK FROM TRANSITION ZONE

NOTE:
THE TRANSITION ZONES WERE SET IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 32.050(4) OF THE WEST LINN CDC AND THE SITE SPECIFIC INFORMATION PROVIDED IN THE NATURAL RESOURCE ASSESSMENT PREPARED BY THE SWCA.

BUILDING SETBACKS (TYPICAL)
N.T.S.

NO. | DATE | BY | REVISION COMMENTS

Steams Marnella Communities

PLANNING RESUBMITTAL 5/5/06

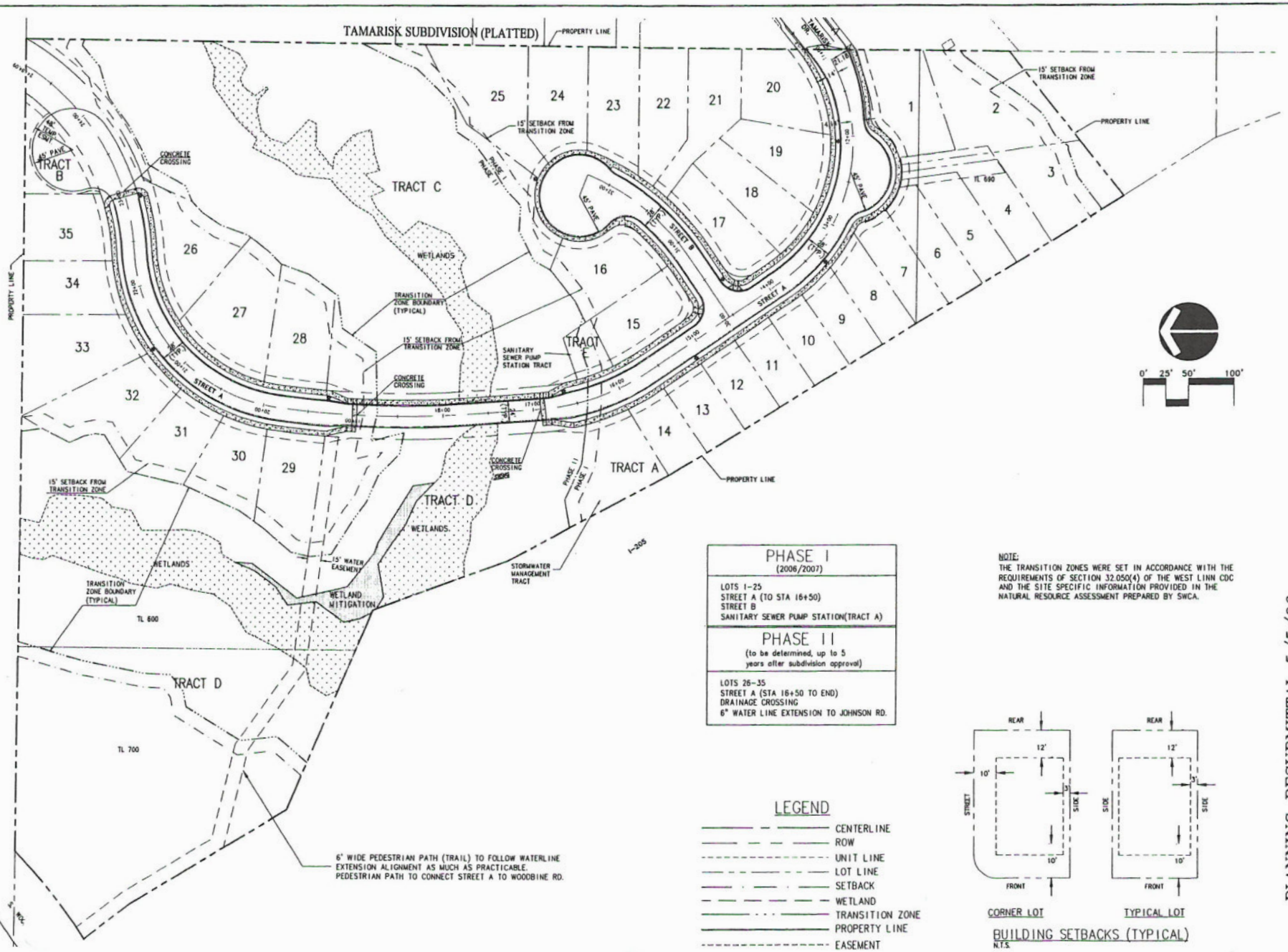
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE SUBDIVISION PLAT

otak
Incorporated
17355 SW Boones Ferry Rd
Lake Oswego, OR 97035-5
Phone: (503) 635-3
FAX: (503) 635-5
Internet: WWW.Otak.C

13458 045BE
Project No. Drawing No.

EX05
Exhibit No.

A-6



PHASE I (2006/2007)
LOTS 1-25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 5 years after subdivision approval)
LOTS 26-35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:
THE TRANSITION ZONES WERE SET IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 32.050(4) OF THE WEST LINN CDC AND THE SITE SPECIFIC INFORMATION PROVIDED IN THE NATURAL RESOURCE ASSESSMENT PREPARED BY SWCA.

LEGEND
- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

6' WIDE PEDESTRIAN PATH (TRAIL) TO FOLLOW WATERLINE EXTENSION ALIGNMENT AS MUCH AS PRACTICABLE. PEDESTRIAN PATH TO CONNECT STREET A TO WOODBINE RD.

BUILDING SETBACKS (TYPICAL)
N.T.S.

NO. | DATE | BY | REVISION COMMENTS

Stearns Manella Communities

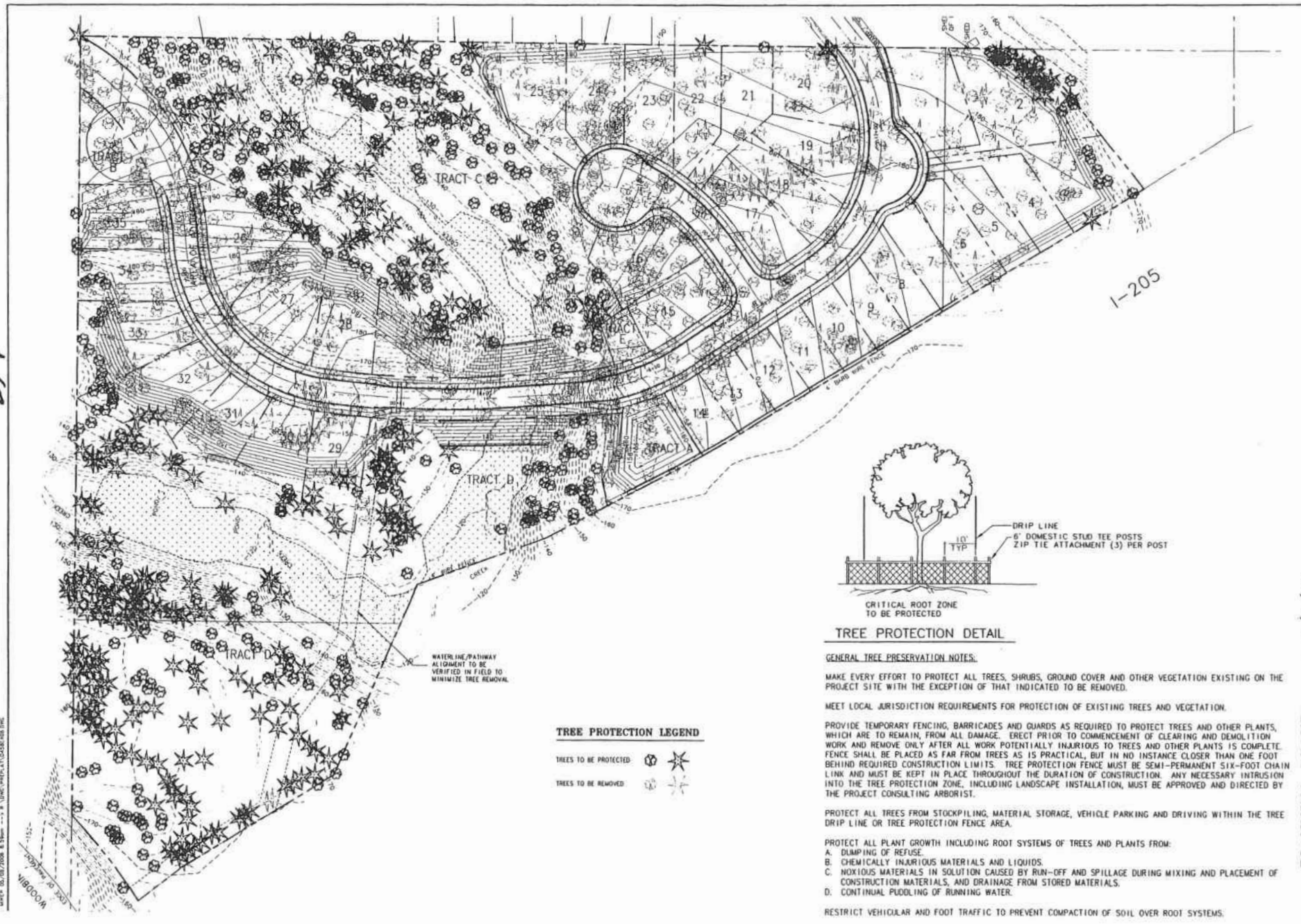
PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE SITE PLAN

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone: (503) 635
FAX: (503) 635
Internet: WWW.Otak

13458 0458E
Project No. Drawing No.
EX05A
Exhibit No.

A-62



TREE PROTECTION DETAIL

TREE PROTECTION LEGEND

TREES TO BE PROTECTED

TREES TO BE REMOVED

GENERAL TREE PRESERVATION NOTES:

MAKE EVERY EFFORT TO PROTECT ALL TREES, SHRUBS, GROUND COVER AND OTHER VEGETATION EXISTING ON THE PROJECT SITE WITH THE EXCEPTION OF THAT INDICATED TO BE REMOVED.

MEET LOCAL JURISDICTION REQUIREMENTS FOR PROTECTION OF EXISTING TREES AND VEGETATION.

PROVIDE TEMPORARY FENCING, BARRICADES AND GUARDS AS REQUIRED TO PROTECT TREES AND OTHER PLANTS, WHICH ARE TO REMAIN, FROM ALL DAMAGE. ERECT PRIOR TO COMMENCEMENT OF CLEARING AND DEMOLITION WORK AND REMOVE ONLY AFTER ALL WORK POTENTIALLY INJURIOUS TO TREES AND OTHER PLANTS IS COMPLETE. FENCE SHALL BE PLACED AS FAR FROM TREES AS IS PRACTICAL, BUT IN NO INSTANCE CLOSER THAN ONE FOOT BEHIND REQUIRED CONSTRUCTION LIMITS. TREE PROTECTION FENCE MUST BE SEMI-PERMANENT SIX-FOOT CHAIN LINK AND MUST BE KEPT IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION. ANY NECESSARY INTRUSION INTO THE TREE PROTECTION ZONE, INCLUDING LANDSCAPE INSTALLATION, MUST BE APPROVED AND DIRECTED BY THE PROJECT CONSULTING ARBORIST.

PROTECT ALL TREES FROM STOCKPILING, MATERIAL STORAGE, VEHICLE PARKING AND DRIVING WITHIN THE TREE DRIP LINE OR TREE PROTECTION FENCE AREA.

PROTECT ALL PLANT GROWTH INCLUDING ROOT SYSTEMS OF TREES AND PLANTS FROM:

A. DUMPING OF REFUSE.
B. CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS.
C. NOXIOUS MATERIALS IN SOLUTION CAUSED BY RUN-OFF AND SPILLAGE DURING MIXING AND PLACEMENT OF CONSTRUCTION MATERIALS, AND DRAINAGE FROM STORED MATERIALS.
D. CONTINUAL PUDDLING OF RUNNING WATER.

RESTRICT VEHICULAR AND FOOT TRAFFIC TO PREVENT COMPACTION OF SOIL OVER ROOT SYSTEMS.

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN(SYMBOLS)

Steams Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

otak Incorporated

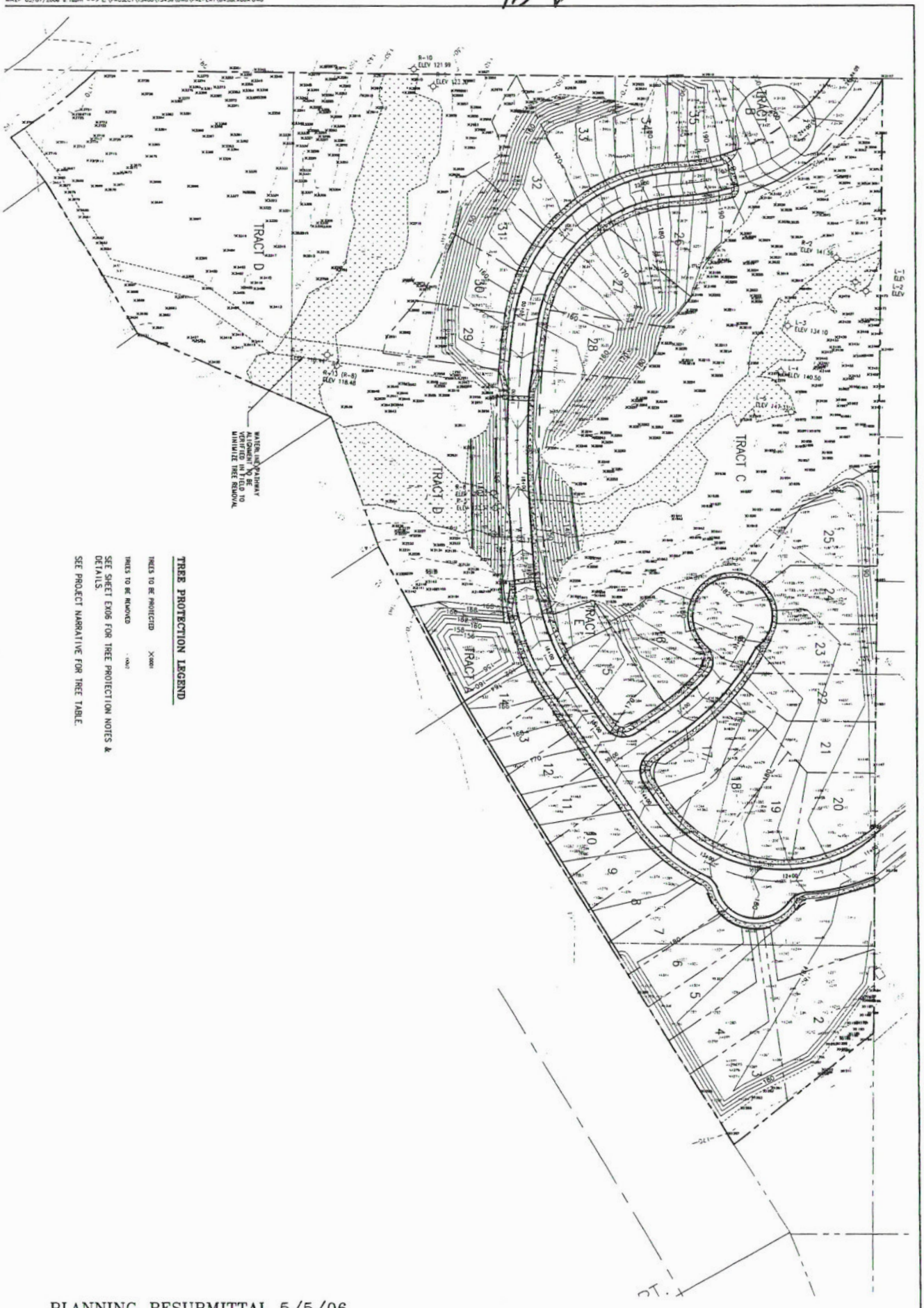
17355 SW Boones Ferry Rd
Lake Oswego, OR 97035-501
Phone: (503) 635-381
FAX: (503) 635-518
Internet: WWW.Otak.COM

13458 D458EX0
Project No. Drawing No.

EX06
Exhibit No.

69-D

A-64



PLANNING RESUBMITTAL 5/5/06

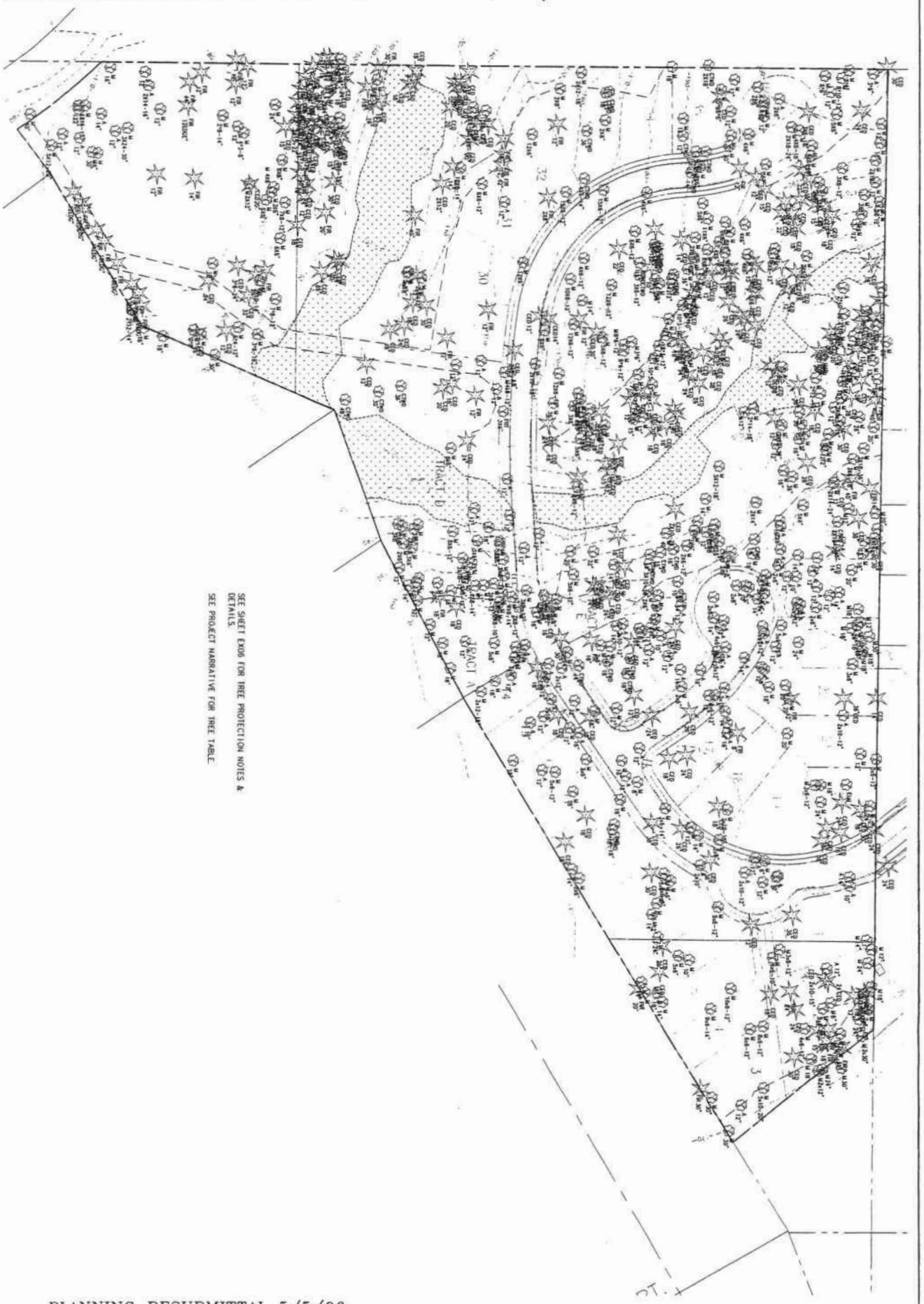
TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN (POINT NUMBERS)

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

A-65



PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TREE SURVEY PLAN (SYMBOLS/SIZE/TYPE)

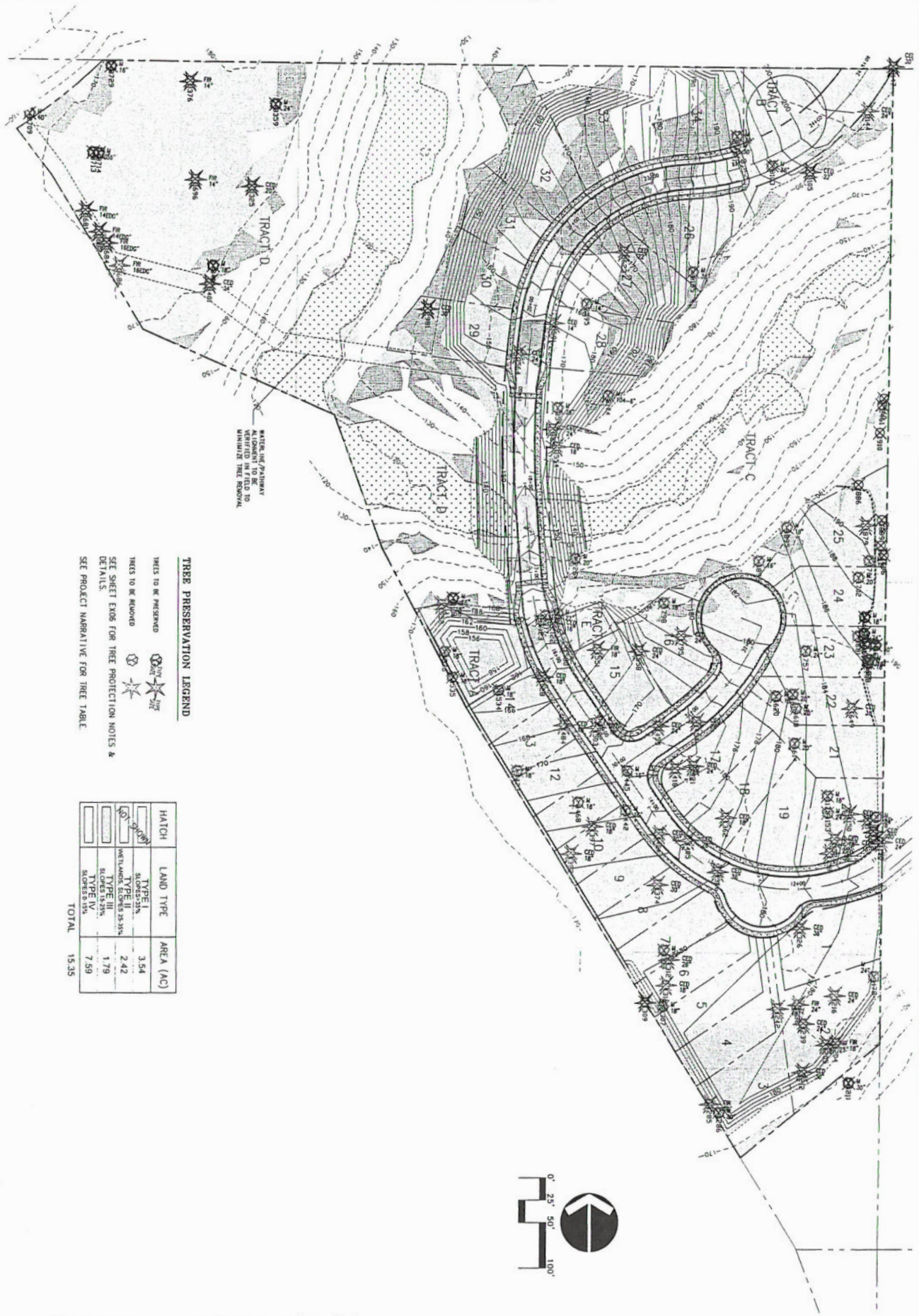
Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Design | Drawn | Checked | Date | Revised Issue Date

EX06B

99-17



TREE PRESERVATION LEGEND

TREES TO BE PRESERVED

TREES TO BE REMOVED

SEE SHEET EX06 FOR TREE PROTECTION NOTES & DETAILS.

SEE PROJECT NARRATIVE FOR TREE TABLE.

HATCH	LAND TYPE	AREA (AC)
	TYPE I SLOPES <25%	3.54
	TYPE II WETLANDS, SLOPES 25-35%	2.42
	TYPE III SLOPES 15-25%	1.79
	TYPE IV SLOPES 0-15%	7.59
TOTAL		15.35

PLANNING RESUBMITTAL 7/17/06

TAMARISK PROPERTY

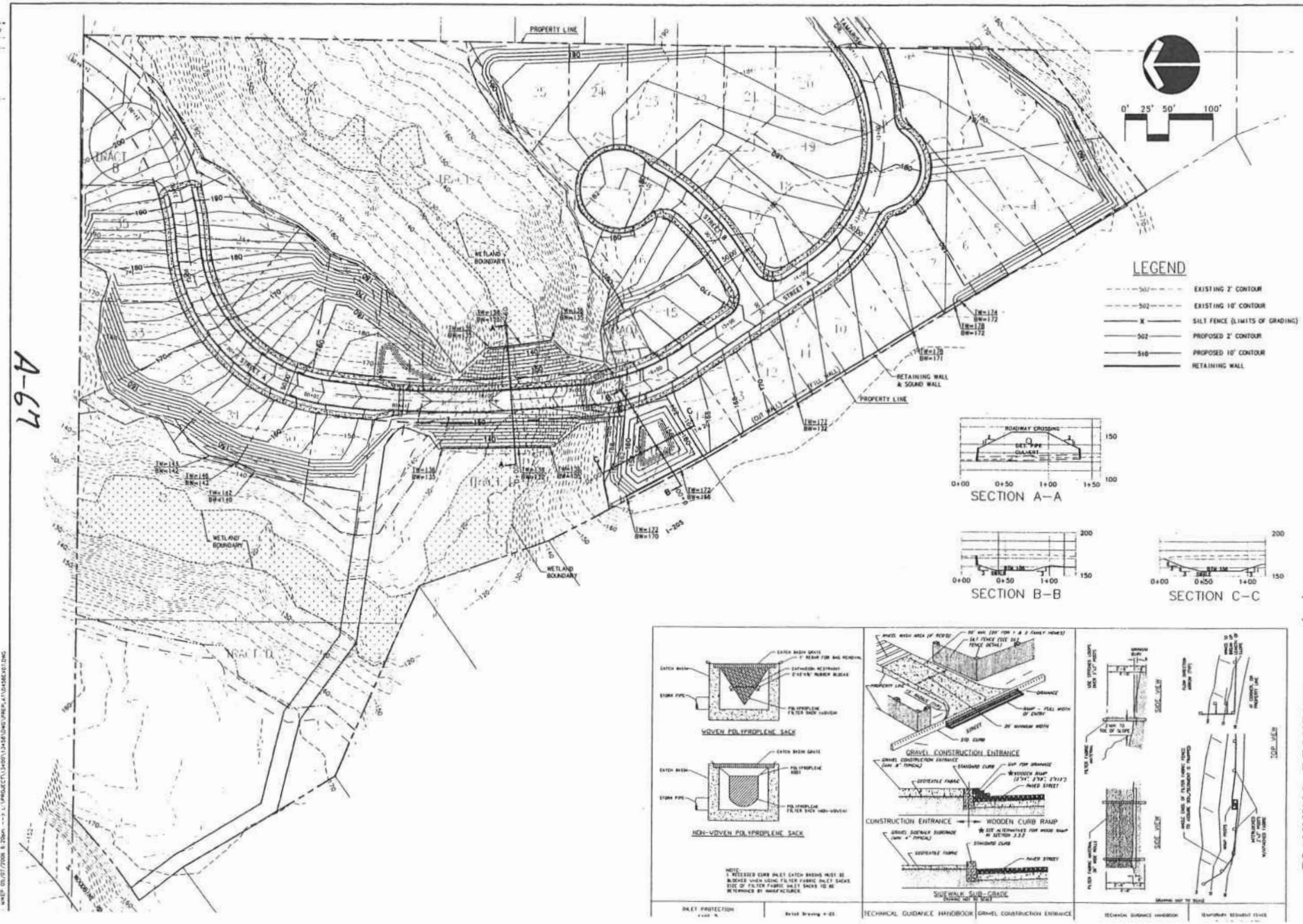
TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN (CITY TAGGED TREES)

550 Investments, LLC
PO BOX 1988
Lake Oswego, OR 97035

NO	DATE	BY	REVISION COMMENTS

Exhibit No. EX06

Project No. 13458 045



A-67

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE GRADING & EROSION CONTROL PLAN

Stearns Marnella Communities

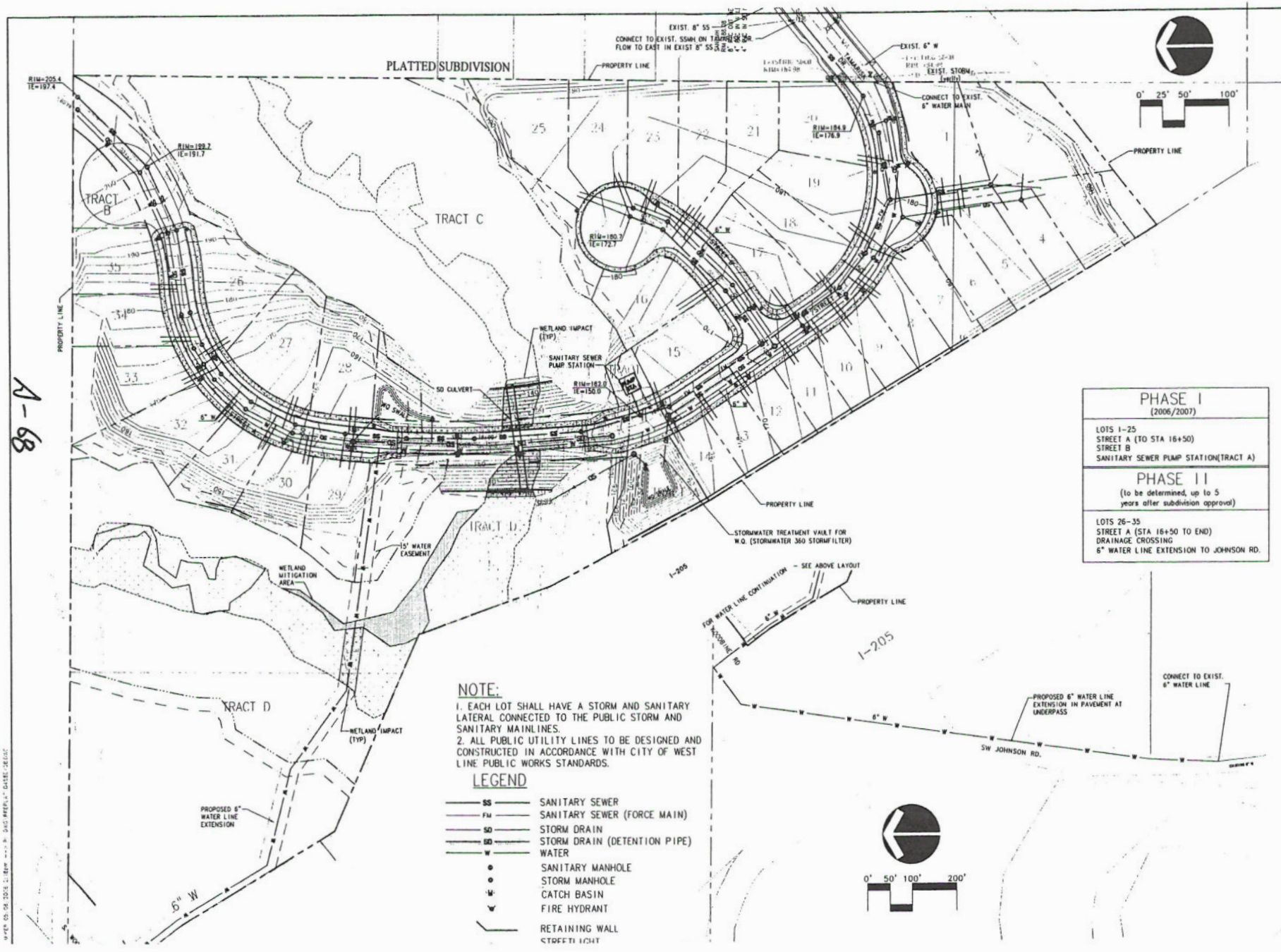
otak Incorporated

13458 D458EX0

Project No. Drawing No.

EX07

Exhibit No.



PHASE I (2006/2007)
LOTS 1-25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 5 years after subdivision approval)
LOTS 26-35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:

1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- SD — STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL
- STREETLIGHT

A-68

PLANNING RESUBMITTAL 5/5/06

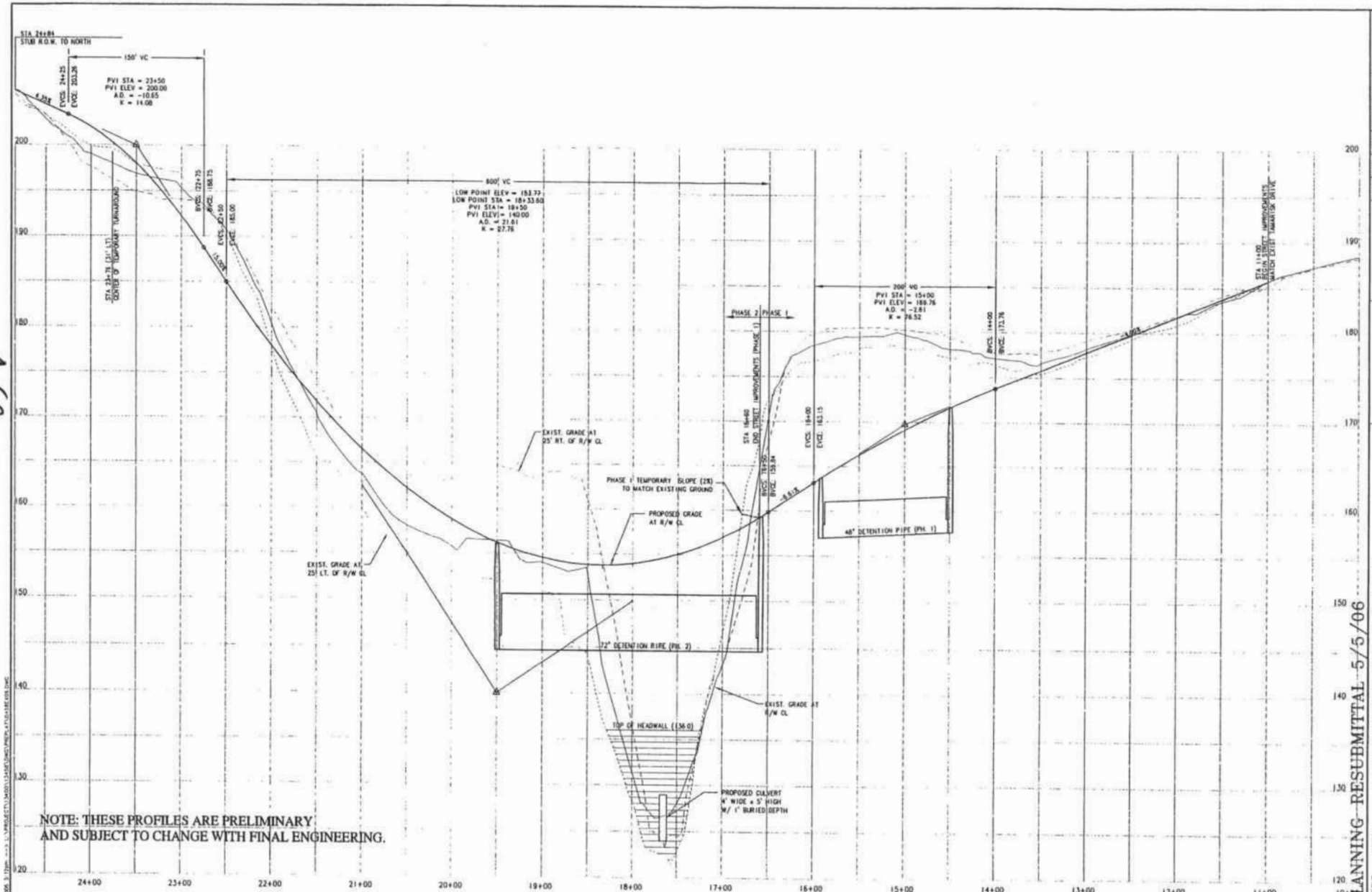
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

Stearns Marnella Communities

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone: (503) 635
FAX: (503) 635
Internet: www.otak

13458
Project No.

EX08



NOTE: THESE PROFILES ARE PRELIMINARY
AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.

STREET A (TAMARISK DR.) STA. 10+00 TO STA. 23+00

A-69

NO | DATE | BY | REVISION COMMENTS

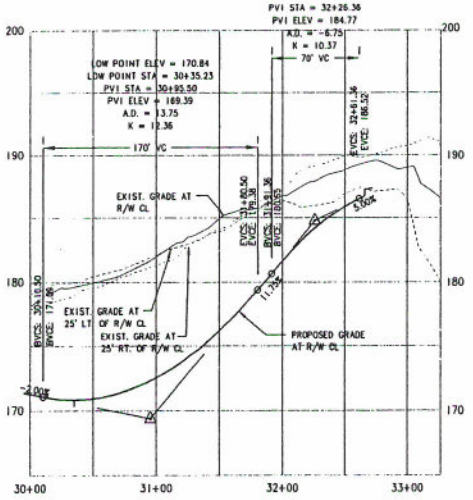
Stearns Marnella Communities

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
STREET A (TAMARISK DR.) PROFILE

otak
Incorporated
17355 SW Boones Ferry R
Lake Oswego, OR 97035-5
Phone: (503) 635-3
Fax: (503) 635-5
Internet: WWW.Otak.C

13458 D458EX
Project No. Drawing N
EX09



STREET B STA. 30+00 TO STA. 35+32.50
SCALE: 1"=50' H
SCALE: 1"=5' V

NOTE: THESE PROFILES ARE PRELIMINARY AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.

NO.	DATE	BY	REVISION COMMENTS

Stearns Marnella Communities

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
STREET B PROFILE
SITE CROSS SECTIONS

otak Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035-
Phone: (503) 635-
FAX: (503) 635-
Internet: WWW.Otak.

13458 D458E
Project No. Drawing
EX10
Exhibit No.

N-16

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REF. UNIT
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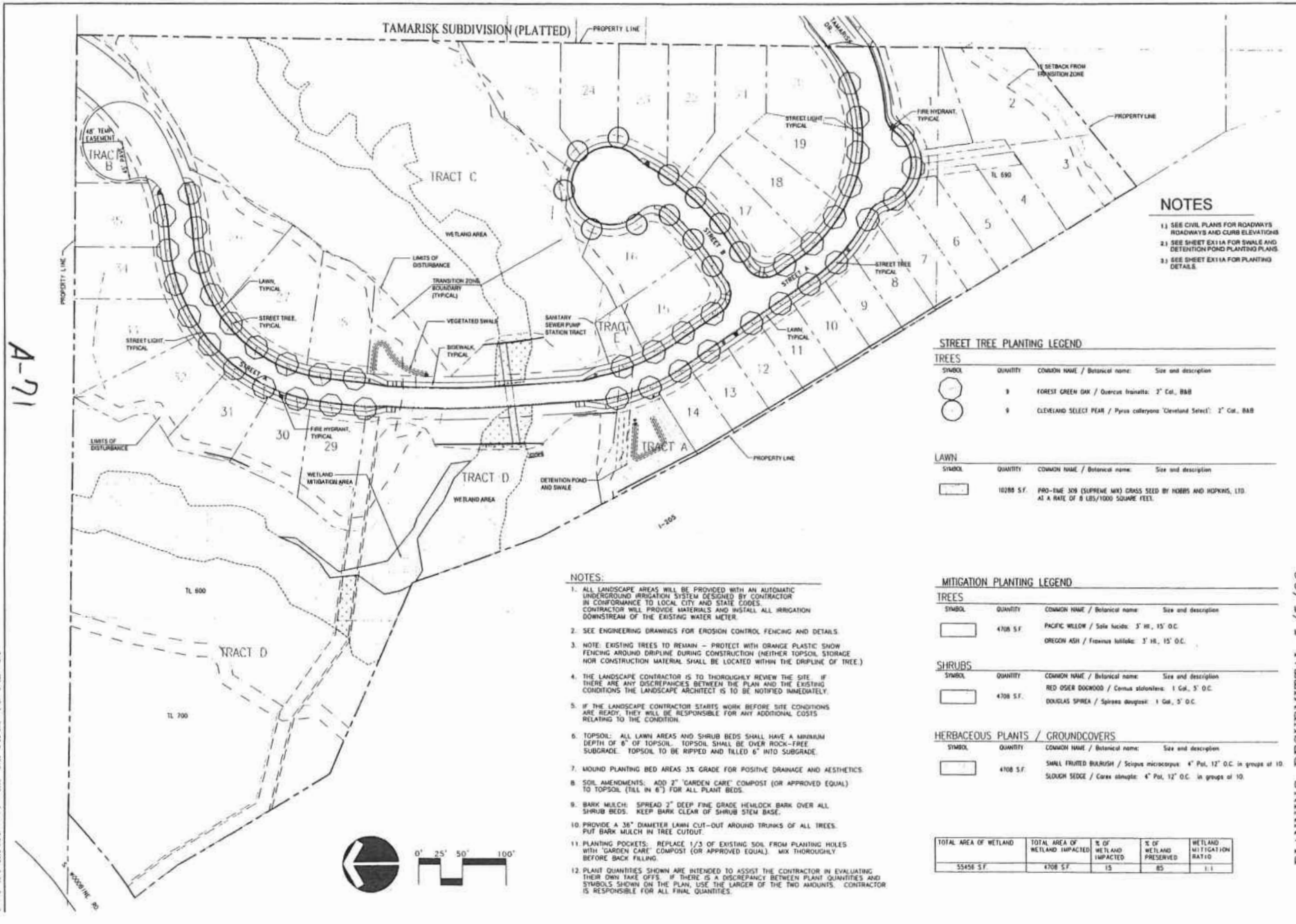
resized
158X001
158X002



NOTES

1. SEE CIVIL PLANS FOR ROADWAYS ROADWAYS AND CURB ELEVATIONS
2. SEE SHEET EX11A FOR SWALE AND DETENTION POND PLANTING PLANS.
3. SEE SHEET EX11A FOR PLANTING DETAILS.

STREET TREE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	9	FOREST GREEN OAK / Quercus frainetto:	2" Cal., B&B
	9	CLEVELAND SELECT PEAR / Pyrus calleryana 'Cleveland Select':	2" Cal., B&B

LAWN

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	10288 S.F.	PRO-TIME 309 (SUPREME MIX) GRASS SEED BY HOBBS AND HOPKINS, LTD. AT A RATE OF 8 LBS/1000 SQUARE FEET.	

NOTES:

1. ALL LANDSCAPE AREAS WILL BE PROVIDED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM DESIGNED BY CONTRACTOR IN CONFORMANCE TO LOCAL CITY AND STATE CODES. CONTRACTOR WILL PROVIDE MATERIALS AND INSTALL ALL IRRIGATION DOWNSTREAM OF THE EXISTING WATER METER.
2. SEE ENGINEERING DRAWINGS FOR EROSION CONTROL FENCING AND DETAILS.
3. NOTE: EXISTING TREES TO REMAIN – PROTECT WITH ORANGE PLASTIC SNOW FENCING AROUND DRIPLINE DURING CONSTRUCTION (NEITHER TOPSOIL STORAGE NOR CONSTRUCTION MATERIAL SHALL BE LOCATED WITHIN THE DRIPLINE OF TREE.)
4. THE LANDSCAPE CONTRACTOR IS TO THOROUGHLY REVIEW THE SITE. IF THERE ARE ANY DISCREPANCIES BETWEEN THE PLAN AND THE EXISTING CONDITIONS THE LANDSCAPE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY.
5. IF THE LANDSCAPE CONTRACTOR STARTS WORK BEFORE SITE CONDITIONS ARE READY, THEY WILL BE RESPONSIBLE FOR ANY ADDITIONAL COSTS RELATING TO THE CONDITION.
6. TOPSOIL: ALL LAWN AREAS AND SHRUB BEDS SHALL HAVE A MINIMUM DEPTH OF 6" OF TOPSOIL. TOPSOIL SHALL BE OVER ROCK-FREE SUBGRADE. TOPSOIL TO BE RIPPED AND TILLED 6" INTO SUBGRADE.
7. MOUND PLANTING BED AREAS 3% GRADE FOR POSITIVE DRAINAGE AND AESTHETICS.
8. SOIL AMENDMENTS: ADD 2" 'GARDEN CARE' COMPOST (OR APPROVED EQUAL) TO TOPSOIL (TILL IN 6") FOR ALL PLANT BEDS.
9. BARK MULCH: SPREAD 2" DEEP FINE GRADE HEMLOCK BARK OVER ALL SHRUB BEDS. KEEP BARK CLEAR OF SHRUB STEM BASE.
10. PROVIDE A 36" DIAMETER LAWN CUT-OUT AROUND TRUNKS OF ALL TREES. PUT BARK MULCH IN TREE CUTOUT.
11. PLANTING POCKETS: REPLACE 1/3 OF EXISTING SOIL FROM PLANTING HOLES WITH 'GARDEN CARE' COMPOST (OR APPROVED EQUAL). MIX THOROUGHLY BEFORE BACK FILLING.
12. PLANT QUANTITIES SHOWN ARE INTENDED TO ASSIST THE CONTRACTOR IN EVALUATING THEIR OWN TAKE OFFS. IF THERE IS A DISCREPANCY BETWEEN PLANT QUANTITIES AND SYMBOLS SHOWN ON THE PLAN, USE THE LARGER OF THE TWO AMOUNTS. CONTRACTOR IS RESPONSIBLE FOR ALL FINAL QUANTITIES.

0' 25' 50' 100'

MITIGATION PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	PACIFIC WILLOW / Salix lucida:	3' Ht., 15' O.C.
		OREGON ASH / Fraxinus latifolia:	3' Ht., 15' O.C.

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	RED OSIER DOGWOOD / Cornus stolonifera:	1 Gal., 5' O.C.
		DOUGLAS SPIREA / Spiraea douglasii:	1 Gal., 5' O.C.

HERBACEOUS PLANTS / GROUNDCOVERS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	4708 S.F.	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" Pot, 12" O.C. in groups of 10
		SLOUGH SEDGE / Carex obnupta:	4" Pot, 12" O.C. in groups of 10

TOTAL AREA OF WETLAND	TOTAL AREA OF WETLAND IMPACTED	% OF WETLAND IMPACTED	% OF WETLAND PRESERVED	WETLAND MITIGATION RATIO
55456 S.F.	4708 S.F.	15	85	1:1

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

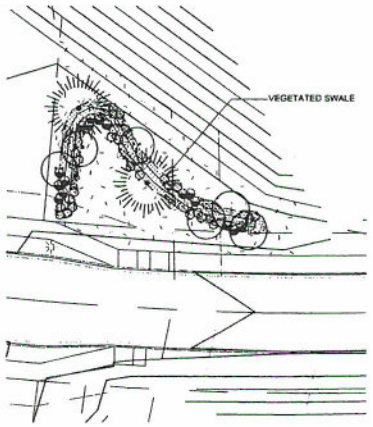
TENTATIVE SUBDIVISION PLAN
STREET TREE PLAN,
WETLAND MITIGATION PLAN
GENERAL PLANTING NOTES

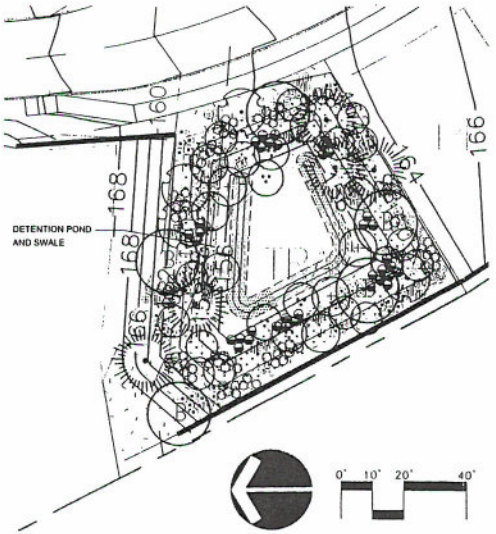
Stearns Marnella Communities

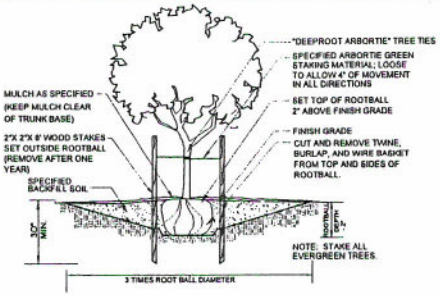
otak
Incorporated

13458
Project No. Drawing No.
EX11

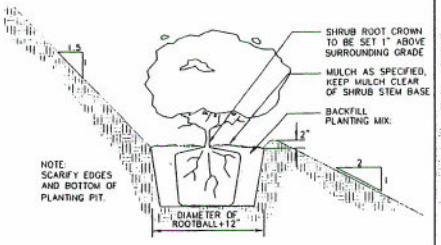
A-91



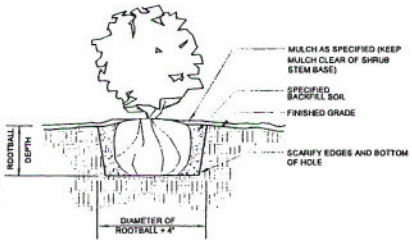




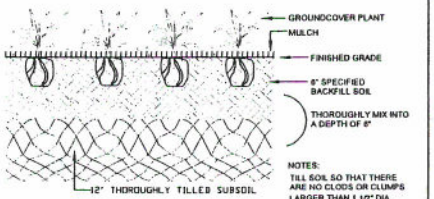
TREE STAKING DETAIL — 1 / P3.4



SECTION - PLANTING ON SLOPE — 6 / L5.02



SHRUB PLANTING DETAIL — 3 / P3.4



GROUNDCOVER PLANTING DETAIL — 2 / P3.4

VEGETATED SWALE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	9	DOUGLAS FIR / Pseudotsuga menziesii:	6' Ht.
	9	OREGON ASH / Fraxinus latifolia:	1 1/2" Cal., B&B
	8	RED ALDER / Alnus rubra :	1 1/2" Cal., B&B
TOTAL	26	644 S.F. X .01= 6 REQUIRED TREES	

LARGE SHRUBS / SMALL TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	15	OCEANSPRAY / Holodiscus discolor:	3 Gal., 4'-5' O.C.
	16	MOCK ORANGE / Philadelphis lewesii:	3 Gal., 4'-5' O.C.
TOTAL	31	644 S.F. X .04= 26 REQUIRED SHRUBS	

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	16	REDTWIG DOGWOOD / Cornus sericea:	1 Gal., 4'-5' O.C.
	15	RED FLOWERING CURRENT/ Ribes sanguineum:	1 Gal., 4'-5' O.C.
	17	NOOTKA ROSE / Rosa nutkana:	1 Gal., 4'-5' O.C.
TOTAL	48	644 S.F. X .06= 39 REQUIRED SHRUBS	

HERBACEOUS PLANTS / GRASS SEED

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	76	SLOUGH SEDGE / Carex obnupta:	4" POT, 12" O.C.
	81	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" POT, 12" O.C.
	77	CREEPING SPIKE RUSH / Eleocharis palustris:	4" POT, 12" O.C.
TOTAL	234	203 S.F X 1 (1 PER S.F. @ 12" O.C.=234)	

"LOWGROW" SEED MIX: 120 LB PER ACRE — 429 S.F. (.0098 ACRES)

DWARF TALL FESCUE / FESTUCA ARUNDINACEA	40%
PR8820 DWARF PERENNIAL RYEGRASS / LOLIUM PERENNE 'PR8820'	30%
CREEPING RED FESCUE / FESTUCA RUBRA	25%
HIGHLAND COLONIAL BENTGRASS / AGROSTIS TENUIS 'HIGHLAND'	05%

"UPLAND" SEED MIX: 20 LB PER ACRE — 2438 S.F. (0.0559 ACRES)

CALIFORNIA BROME / Bromus carinatus	20%
BLUE WILDRYE / Elymus glaucus	20%
NATIVE RED FESCUE / Festuca rubra v. rubra	50%
LARGE LEAF LUPINE / Lupinus polyphyllus	10%

VEGETATED DETENTION POND AND SWALE PLANTING LEGEND

TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	5	DOUGLAS FIR / Pseudotsuga menziesii:	6' Ht.
	7	OREGON ASH / Fraxinus latifolia:	1 1/2" Cal., B&B
	6	RED ALDER / Alnus rubra	1 1/2" Cal., B&B
	5	BIGLEAF MAPLE / Acer macrophyllum:	3' Ht.
	4	PACIFIC DOGWOOD / Cornus nuttallii:	3' Ht.
TOTAL	27	7507 S.F / 300 S.F. X 1 TREE= 25 REQUIRED TREES	

LARGE SHRUBS / SMALL TREES

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	17	VINE MAPLE / Acer circinatum:	3 Gal.?
	16	SCOULER'S WILLOW / Salix scouleriana:	3' Ht.
	64	OCEANSPRAY / Holodiscus discolor:	3 Gal., 4'-5' O.C.
	38	MOCK ORANGE / Philadelphis lewesii:	3 Gal., 4'-5' O.C.
TOTAL	135	7507 S.F / 300 S.F X 4 SHRUBS= 100 REQUIRED SHRUBS	

SHRUBS

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	40	REDTWIG DOGWOOD / Cornus sericea:	1 Gal., 4'-5' O.C.
	40	RED FLOWERING CURRENT/ Ribes sanguineum:	1 Gal., 4'-5' O.C.
	49	NOOTKA ROSE / Rosa nutkana:	1 Gal., 4'-5' O.C.
	32	COMMON SNOWBERRY / Symphoricarpus albus:	1 Gal., 4'-5' O.C.
	40	OREGON GRAPE / Mahonia aquifolium:	1 Gal., 4'-5' O.C.
	15	PACIFIC NINEBARK / Physocarpus capitatus:	1 Gal., 4'-5' O.C.
TOTAL	216	7507 S.F / 300 S.F X 6 SHRUBS= 150 REQUIRED SHRUBS	

HERBACEOUS PLANTS / GRASS SEED

SYMBOL	QUANTITY	COMMON NAME / Botanical name:	Size and description
	244	SLOUGH SEDGE / Carex obnupta:	4" POT, 12" O.C.
	276	SMALL FRUITED BULRUSH / Scirpus microcarpus:	4" POT, 12" O.C.
	238	CREEPING SPIKE RUSH / Eleocharis palustris:	?" O.C.
TOTAL	758	659 S.F X 1 (1 PER S.F. @ 12" O.C.	

GRASS SEED MIX (BY HOBBS & HOPKINS LTD.)

"WET/MOIST" AREA 4" PLUGS AT 12" O.C. — 1728 S.F. (.039 ACRES)

DEWEY SEDGE / Carex deweyana	20%
SLOUGH SEDGE / Carex obnupta	35%
COMMON SPIKERUSH / Eleocharis palustris	10%
SOFT RUSH / Juncus effusis	10%
SMALL FRUITED BULRUSH / Scirpus microcarpus	25%

"LOWGROW" SEED MIX: 120 LB PER ACRE — 2898 S.F. (.066 ACRES)

DWARF TALL FESCUE / FESTUCA ARUNDINACEA	40%
PR8820 DWARF PERENNIAL RYEGRASS / LOLIUM PERENNE 'PR8820'	30%
CREEPING RED FESCUE / FESTUCA RUBRA	25%
HIGHLAND COLONIAL BENTGRASS / AGROSTIS TENUIS 'HIGHLAND'	05%

"UPLAND" SEED MIX: 20 LB PER ACRE — 2222 S.F. (.051 ACRES)

CALIFORNIA BROME / Bromus carinatus	20%
BLUE WILDRYE / Elymus glaucus	20%
NATIVE RED FESCUE / Festuca rubra v. rubra	50%
LARGE LEAF LUPINE / Lupinus polyphyllus	10%

NOTES

1.) SEE CIVIL PLANS FOR ROADWAYS ROADWAYS AND CURB ELEVATIONS.
2.) SEE SHEET EX11 FOR STREET TREE PLANTING PLAN.
3.) SEE SHEET EX11 FOR WETLAND MITIGATION PLAN.
4.) SEE SHEET EX11 FOR GENERAL PLANTING NOTES.

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
SWALE AND DETENTION POND PLANTING PLAN,
PLANTING DETAILS

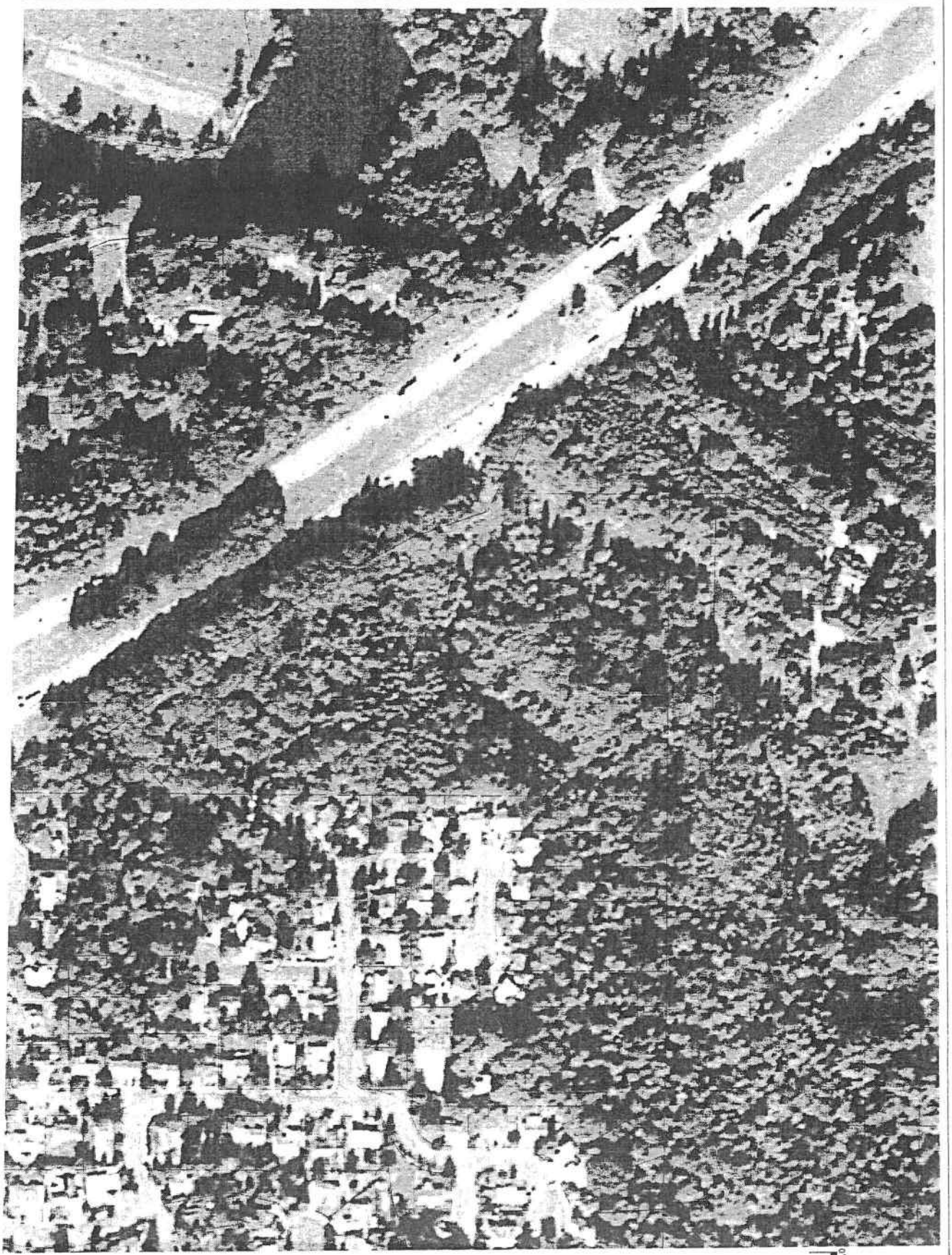
Stearns Marnella Communities

otak Incorporated
17355 SW Boones Ferry
Lake Oswego, Or 97035
Phone (503) 635-
FAX (503) 635-
Internet www.otak.com

13458
Project No. Drawing No.
EX11A

A-72

A-73



0' 50' 100' 200'

PLANNING RESUBMITTAL 5/5/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

AERIAL MAP

Stearns Marnella

Communities

NO	DATE	BY	REVISION COMMENTS

EX12

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

July 17, 2006

Project No. 05-9541

Stearns Marnella Construction LLC
18318 SE Abernathy Lane
Milwaukie, Oregon 97267

Attention: Tony Marnella
CC: OTAK

GEOTECHNICAL INVESTIGATION
TAMARISK DEVELOPMENT
WEST LINN, OREGON

This report presents our geotechnical engineering report based on 12 exploratory test pits that were excavated at select locations on the above-referenced property. Logs of the test pits and borings are presented in Appendix A. Their locations are shown on a project plan. The purpose of this report is to present the subsurface information and our preliminary geotechnical interpretation to aid in assessment of the potential impacts of these conditions on site development and to assist in project planning and preliminary budgeting.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The approximately 15-acre site is located northwest of the West Linn 10th Street exit off the East Portland 205 Freeway. The proposed development is accessed from the west terminus of Tamarisk Drive. The site is shaped like a right triangle with an irregular longer side bordering the north side of Freeway 205 for a distance of about 1,400 feet. A 100 to 200 foot wide buffer zone separates the freeway from the portion of the site to be developed. The 90 degree angle of the triangle is located in the extreme northeast portion of the site, about 900 feet from the freeway. The site is wooded with a mix of Douglas fir, cedar, alder, and maple. The topography in the southern portion of the site is gentle with grades of between 2 and 8 percent. The northeastern portion of the site has some ridge top grades ranging between 16 and 24 percent, with a very limited area of 10 percent grade. The northern site area is dissected by an "U"-shaped drainage that is deeply incised between 40 and 60 feet and has side slopes averaging between about 62 and 42 percent grade. These steep slopes are characterized by trees with locally severe trunk warping as a result of creep, and benching as a result of soil slumping; however, no deep-seated landslides have been observed on the site. Based on our twelve, widely spaced, exploratory test pits to a maximum depth of 10 feet, the site soils consist of tan micaceous silt that underlies the entire site throughout the exposed topographic section between elevations of 130 and 200 feet. No significant rock was found in any of the test pits.

7312 SW Durham Road
Portland, Oregon 97224

A-74

Tel (503) 598-8445
Fax (503) 598-8705

Project No. 05-9541
Tamarisk Development

The currently proposed plan for development includes 34 lots for single-family homes and associated improvements; including about 1,800 lineal feet of a new main-street extension with two cul-de-sacs. A water quality facility and two large retaining walls are proposed. The wall designs are not a part of this report.

SITE GEOLOGY

Based on our initial site reconnaissance and test pit exploration, the site is underlain by at least 70 feet of flood deposits consisting of tan silt deposited some 13,000 years ago during the last of the Catastrophic Flood event, which inundated the Portland and Willamette Valley areas to an elevation of about 400 feet. The flood deposits found thorough the site consists of micaceous silt with occasional traces of fine sand and clay and no significant rock. The silt is overlain by brown clayey silt colluvial soil and topsoil that generally ranged in thickness between 4 to 6 feet. The silt below 4 to 6 feet depth is stiff to very stiff and contains little groundwater, often becoming dry in test pits below depths of 9 to 10 feet.

SUBSURFACE EXPLORATIONS

The subject site was explored on December 12, 2005 by excavating 12 widely-spaced test pits to depths ranging between 7 and 10 feet. The subsurface conditions and material types observed on the subject site are summarized below.

Topsoil

Topsoil consisted primarily of 6 to 9 inches of gray-brown to light brown silt with traces of clay and fine sand. Fine organic debris was generally limited to the initial 4 to 5 inches. The near-surface soils, including topsoil, were hard and dry at the time of our exploration as a result of desiccation.

Colluvial Soils

Typical colluvial soil at this site generally consists of brown silt with some clay and brown clayey silt. This soil was typically soft and moist at the date of our exploration. These soils are prone to downslope creep and shallow sliding in the upper 4 to 6 feet of slopes steeper than 30 percent.

Catastrophic Flood Deposits

The catastrophic flood deposit at the consisted of light brown to tan micaceous silt with some to traces of clay and occasionally very fine sand. This soil was typically stiff to very stiff and moist to damp, or dry at depth.

Soil Moisture and Groundwater

At the time of out site investigation during mid-December, the near-surface soils of the site were generally moist in the upper 5 to 6 feet but lost moisture with increased depth so that it was not uncommon for the silt soil to be dry and powdery at depths of 9 to 10 feet. No groundwater was encountered in any of the exploratory test pits.

Project No. 05-9541
Tamarisk Development

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed residential development is geotechnically feasible provided our recommendations are followed during final design and construction. The proposed lots are outside of any areas of soil creep or shallow sliding. Spread foundations are expected to be appropriate for construction of the single-family homes. The upper 4 to 6 feet of the site soils are relatively soft and easily disturbed.

The potential for encountering rock of any size during both shallow and deep site excavations and grading is very low. The potential for encountering shallow or deep groundwater is very low with the exception of in or adjacent to wetland areas. Stripping of topsoil is expected to be minimal, less than 6 to 9 inches in most areas, however large root removal should be expected in the upper two feet of cuts.

The existing topography shows little signs of slope instability with the exception of the steep side slopes within the incised creek drainages. Deformed tree trunks and pistol-butt root masses are evidence of rapid creep on the steep slopes above drainages. Benching on these same slopes give clear evidence of shallow soil slumping; however, no deep-seated landslides appear to have occurred during the recent past. Downslope creep and shallow sliding appears to be limited to the upper 4 to 6 feet on slopes steeper than 30 percent. Tree clearing on steep slopes is not recommended because trees maintain stable slopes and remove excess moisture.

Soil erosion on steep slopes, once initiated, appears to progress rapidly in the fine silt soil, forming V-shaped side channels and gullies. The site slopes and soil types are such that the site will be susceptible to erosion and likely slow to grow vegetation after grading. Stripped surface soils should be saved for redistribution over the site. Erosion prevention will require careful planning and protection on fill and cut slopes during earthwork projects. Due to the very fine nature of the site soils, piping along buried drains and utilities could be an issue if groundwater is encountered.

Slope Stability and Setbacks

The steep slopes in the drainages that bisect the property have up to a 42 to 62 percent grade and is densely vegetated with tall Douglas fir trees and under story native plants. Dense vegetation, combined with moderate-strength flood deposted silt soils reduces the likelihood for deep seated landslides; however some small slumping and continued soil creep is likely to occur. The potential for shallow sliding and continued soil creep can be reduced by preventing uncontrolled runoff over the slope and by not allowing placement of fill on or near these slopes. Houses closer than 20 feet horizontal from the top of natural slopes steeper than 40 percent will require further geotechnical review and recommendations. Outside of the drainages, no other areas of potential shallow slope instability were noted at the site.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Inorganic debris should be removed from the site. Organic materials from clearing should be removed from the site or placed as landscape fill in areas not planned for structures. Organic-rich topsoil should be stripped from construction areas of the site or where engineered fill is to be placed. The estimated depth of removal due to organic soils is estimated to be about 9 inches; however, root removal in treed areas is likely to be up to 2 feet. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should be stockpiled only in

designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Once stripping of a particular area is approved, the area must be proofrolled and additional removals performed as necessary. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. We anticipate that the upper 1 foot after stripping may need to be tilled, moisture conditioned and recompacted over a large portion of the site. Where large trees are present, over-excavation and root-picking will be required. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition or over-excavated and replaced with engineered fill, as described below. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill and Grading

All grading for the proposed development should be performed as engineered grading in accordance with Appendix J of the Oregon Structural Specialty Code, (OSSC) with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by AASHTO T99 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Wet Weather Earthwork

The on-site soils are moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;

- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Bales of straw and/or geotextile silt fences and temporary storm water conveyance and storage systems should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

Excavating Conditions and Utility Trenches

We anticipate that on-site soils can be excavated using conventional heavy equipment such as scrapers and trackhoes. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Heath Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing shallow native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. Saturated soils and perched groundwater may be encountered in utility trenches during the wet season.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density obtained by Standard Proctor ASTM D698 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Typical Pavement Design

For design purposes, we used an estimated resilient modulus of 6,000 for compacted native soil. Table 1 presents our recommended minimum pavement section for dry weather construction. This design was formulated using the Crushed Base Equivalent method, a traffic index of 4.0, and is in general accordance with flexible pavement design methods prescribed by AASHTO for light-duty pavement with a design life of 20 years.

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Table 1 - Recommended Minimum Dry-Weather Pavement Section

Material Layer	Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	24 in.	95% of Standard Proctor ASTM T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw bales and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Anticipated Foundations

The subject site is suitable for shallow foundations bearing on competent native soil and/or engineered fill. Foundation design, construction, and setback requirements should conform to the 2000 Oregon One and Two Family Dwelling Specialty Code. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 18 inches below exterior grade. Based on our test pits, adequate bearing soils were generally encountered at a depth of about 4 feet. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story homes. Minimum reinforcement consisting of two, horizontal, No. 4 bars in the footing and one in the stem wall is recommended for footings founded on

medium stiff to stiff soils. Reinforcement is suggested for foundations founded on very stiff to hard native soils or engineered fill.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, native soil and/or engineered fill. A maximum chimney and column load of 30 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.45, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for construction incorporating raised wood floors and conventional spread footing foundations. If buildings will incorporate basements or slab-on-grade foundations, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Drainage

The site is sloping and well drained. Any retaining wall or perimeter footing drains should consist of 3-inch diameter, perforated, plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining sand and gravel or 1 ½"-3/4" drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. Water collected from the footing drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the foundation drains in order to reduce the potential for clogging. The footing drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building. Footing drains are recommended to prevent detrimental effects of groundwater on retaining walls and foundations, and should not be expected to eliminate all potential sources of water entering a crawlspace or basement. An adequate grade to a low point outlet drain in the crawlspace is required by code. Slabs-on-grade in living spaces should be minimized, where possible.

Seismic Design

Structures should be designed to resist earthquake loading in accordance with the methodology described in section 1615 of the State of Oregon 2004 Structural Specialty Code (OSSC) Amendments to the 2003 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 second period spectral response may be determined from map Figures 1615(1) and 1615(2) of the State of Oregon 2004 Structural Specialty Code (OSSC) or the 2003 National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council. We recommend Site Class D be used for design per the OSSC, Table 1615.1.1. Using this information, the structural engineer can select the

Project No. 05-9541
Tamarisk Development

appropriate site coefficient values (F_a and F_v) from Tables 1615.1.2(1) and 1615.1.2(2) of the 2003 IBC to determine the maximum considered earthquake spectral response acceleration for design of the project.

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The native stiff fine-grained silt soils with some clay encountered in the test pits are not considered highly susceptible to damaging liquefaction.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER
14743
OREGON
JAN. 23, 1990
JAMES D. IMBRIE
Exp 6-30-07

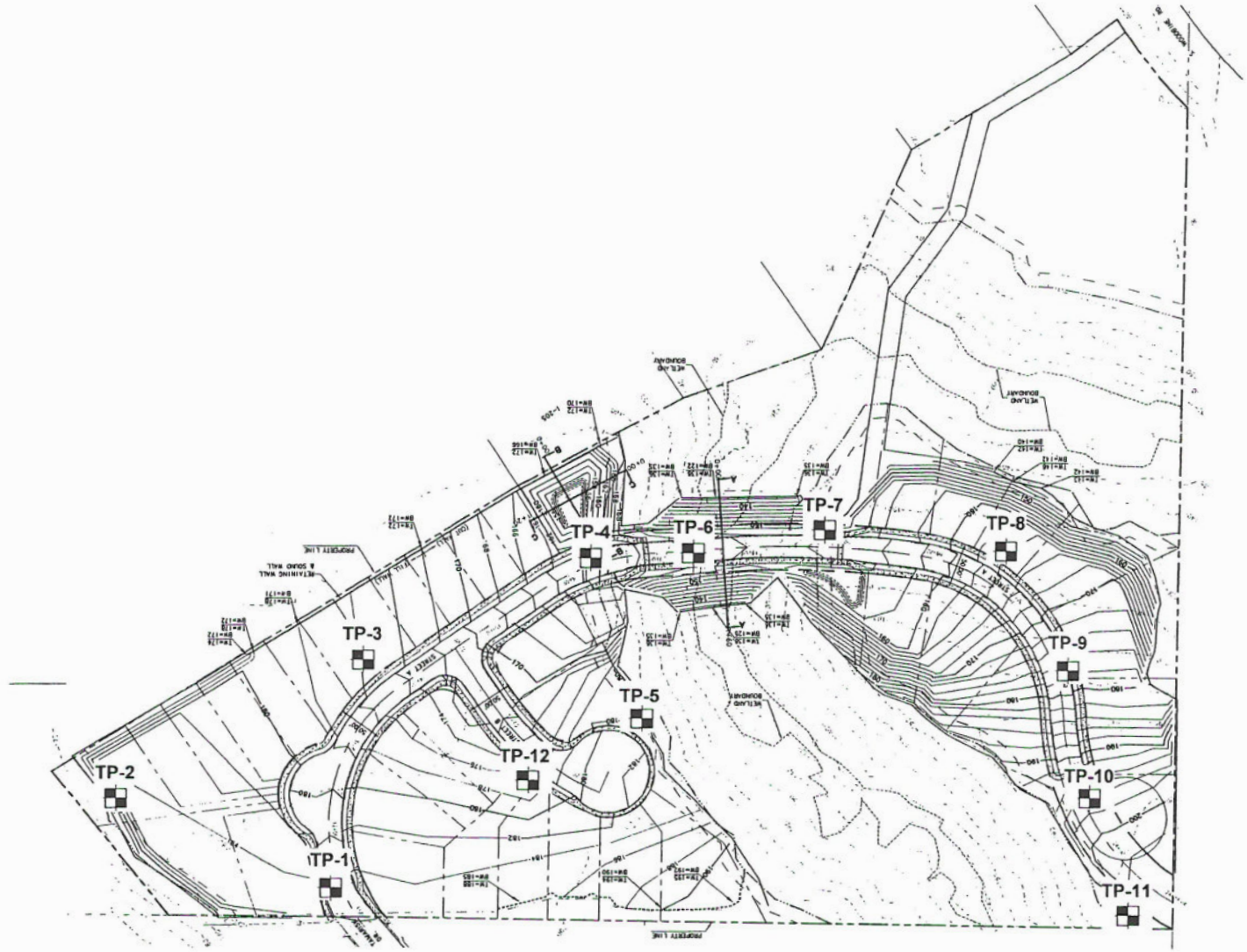
JEP

James E. Pyne
Registered Geologist

James D. Imbrie, P.E.
Principal Geotechnical Engineer

Attachments:
Figure 1 – Site and Exploration Plan
Appendix A - Test Pit Logs
Appendix B - Checklist of Recommended Geotechnical Testing and Observation

SITE AND EXPLORATION PLAN



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GeoPacific Engineering, Inc. 7312 SW Durham Road Portland, Oregon 97224 Tel: 503.598.8445 Fax: 503.598.8705	Legend TP-1 Test Pit Designation and Approximate Location	Date: 07/17/06 Drawn by: EJK	Project: Tamarisk Property West Linn, Oregon Project No. 05-9541	FIGURE 1

APPENDIX A

LOGS OF EXPLORATORY TEST PITS

Project No. 05-9541
Tamarisk Development

APPENDIX B

CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
3	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
4	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
5	Street Subgrade Compaction (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
6	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
7	AC Compaction (91% (bottom lift) / 92% (top lift) of Rice)	During paving, tested every 200 lineal feet	Soil Technician	
8	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	

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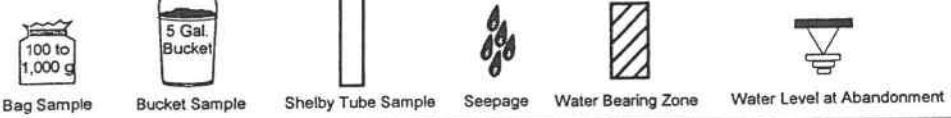
GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-1

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown organic silt, some clay, abundant roots, soft, moist (12" Topsoil - ML).
1	~~0.75~~ 1.5					Brown clayey silt, soft, moist (Colluvial Soil - ML).
2	~~1.5~~ 1.5					Rust brown clayey silt, micaceous. soft, moist (Colluvial Soil - ML).
3	1.5					Below 3.5' with some fine fragments of weathered basalt, stiff to very stiff, moist (Colluvial Soil - ML).
	3.5					
4	4.5					
5						Light tan silt with some clay, micaceous, stiff, less moist than above. (Catastrophic Flood deposits - ML).
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND



Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. **TP- 2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, fine organic debris, roots, soft, moist (8" Topsoil - ML).
1	2.25					Brown clayey silt, medium stiff to soft, moist (Colluvial Soil - ML).
	1.5					
2	1.75					
	2.25					Rust-brown silt with some clay, stiff, moist (Colluvial Soil - ML).
3	2.0					
	2.0					
4	2.5					
5						Light brown to tan silt, trace to some clay in zones, porous, very fine root fibers throughout, dry and powdery at depth (Catastrophic Flood deposit - ML).
6						
7						
8						
9						
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. **TP- 3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, abundant roots, fine organic debris, soft, moist (11" Topsoil - ML).
1	1.5					Brown silt with some clay, some charcoal inclusions, medium stiff, moist (Colluvial Soil - ML).
	1.5					
2	1.75					
	2.5					At 2.5 feet, zone of black charcoal fragments, some fine, highly weatherred basalt fragments (Colluvial Soil - ML)., stiff below 3 feet.
3	3.5					
	3.0					
4	3.5					
	3.5					Rust-brown silt with traces of clay and fine sand. stiff, moist (Catastrophic Flood deposit - ML).
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

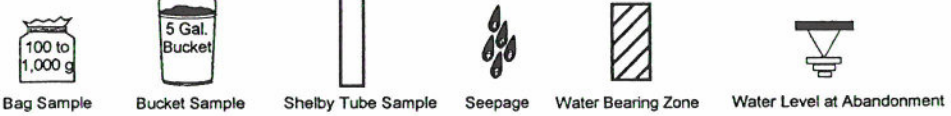
Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-4

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, trace of clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Brown clayey silt, medium stiff, moist (Colluvial Soil - ML).
	1.25					
2	2.0					
	1.75					
3	2.0					Brown silt with some clay , medium stiff to stiff, moist (Colluvial Soil - ML).
	1.75					
4	2.0					
	2.0					
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood Deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND



Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-5

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Mottled light gray, rust, and brown clayey silt, medium stiff, moist (Disturbed soil located in old dozer trail (Fill - ML).
	1.5					
2	1.5					
	~~2.5~~					
3	2.0					Brown silt with some clay; stiff, moist (Colluvial Soil or Disturbed Soil - ML).
	2.0					
4	~~2.5~~					
	3.0					Light tan silt, trace of clay, micaceous, stiff damp (Catastrophic Flood deposit - ML).
5	3.25					
6						
7						Test pit terminated at 7 feet, No Groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-6

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Brown clayey silt with charcoal fragments, soft to stiff (Disturbed soil in old dozer trail - ML).
	2.0					
2	3.25					
	3.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					
	2.75					
4	2.5					Light brown to tan silt, some clay, micaceous, stiff to very stiff (Catastrophic Flood deposit - ML).
	4.0					
5	3.75					
	4.5					
6	4.5					
7						Test pit terminated at 7 feet, No groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-7

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Dark brown silt with fine organic debris, abundant roots, soft, moist (18" Topsoil - ML).
	0.5					
2	0.75					Brown clayey silt, moist, soft (Colluvial Soil - ML).
	0.75					
3	0.5					Light tan silt with some clay, soft, very moist (Catastrophic Flood deposit - ML).
	1.25					
4	1.5					
	1.5					
5						Light tan silt, micaceous, some clay, medium stiff, moist (Catastrophic Flood deposit - ML).
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-8

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris and roots, soft, moist (11" Topsoil - ML).
1	1.25					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	1.0					
2	0.75					
	1.0					Brown and light rust mottled clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	2.5					
4	3.5					Light tan micaceous silt, lightly iron-stained in near-horizontal patterns, stiff, damp (Catastrophic Flood deposit - ML).
	3.0					
5						
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-9

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Dark gray-brown organic silt, soft, moist (local area of disturbed topsoil - ML).
	0.5					
2	0.5					Rust brown silt with some sand and clay, soft, moist (Colluvial Soil - ML).
	1.0					
3	1.25					
	1.0					Light brown clayey silt, soft, moist (Colluvial Soil - ML).
4	3.0					
	3.5					Light tan micaceous silt with some clay, some light rust mottling, stiff, moist (Catastrophic Flood deposit - ML).
5						
6						
7						Tan micaceous silt with a trace of clay, some light rust mottling, stiff, damp (Catastrophic Flood deposit - ML).
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-10

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay and fine organic debris, soft, moist (9" Topsoil - ML).
1	1.0 1.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	1.25 2.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	3.5 3.75					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
4	2.75 3.75					Light tan silt, micaceous, very stiff, wet to damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-11

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Brown silt, some clay, soft, moist (7" Topsoil - ML).
1	0.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	1.5					
2	1.0					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	0.5					
3	2.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	4.0					
4						Brown silt with a trace of clay, micaceous, stiff , moist (Catastrophic Flood deposit - ML).
5						
6						Light tan micaceous silt, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-12

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, organic, roots, soft, moist (9" Topsoil - ML).
1	3.5					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	0.75					
2	2.5					Brown silt with some fine sand, trace of clay , stiff, moist (Colluvial Soil - ML).
	2.75					
3	1.0					Brown silt with some clay, medium stiff, moist (Colluvial Soil - ML).
	1.5					
4	3.5					
	4.5					Light rust-brown silt with some clay, stiff, moist (Catastrophic Flood deposit - ML).
5						
						Light tan micaceous silt, stiff, moist to damp (Catastrophic Flood deposit - ML).
6						
7						
8						
						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

CITY ARBORIST'S
INVENTORY OF SIGNIFICANT TREES
ARE CIRCLED ○

- SIGNIFICANT TREE CANDIDATES BASED ON SIZE HIGHLIGHTED IN YELLOW
- FIELD NOTES IN RED
- FINAL SIGNIFICANT TREES CIRCLED IN BLACK
- ONLY TREES ON BUILDABLE LANDS WERE INSPECTED, ALL OTHERS ON NON-BUILDABLE LANDS REQUIRED TO SAVE AS PER CDC

5-11-06

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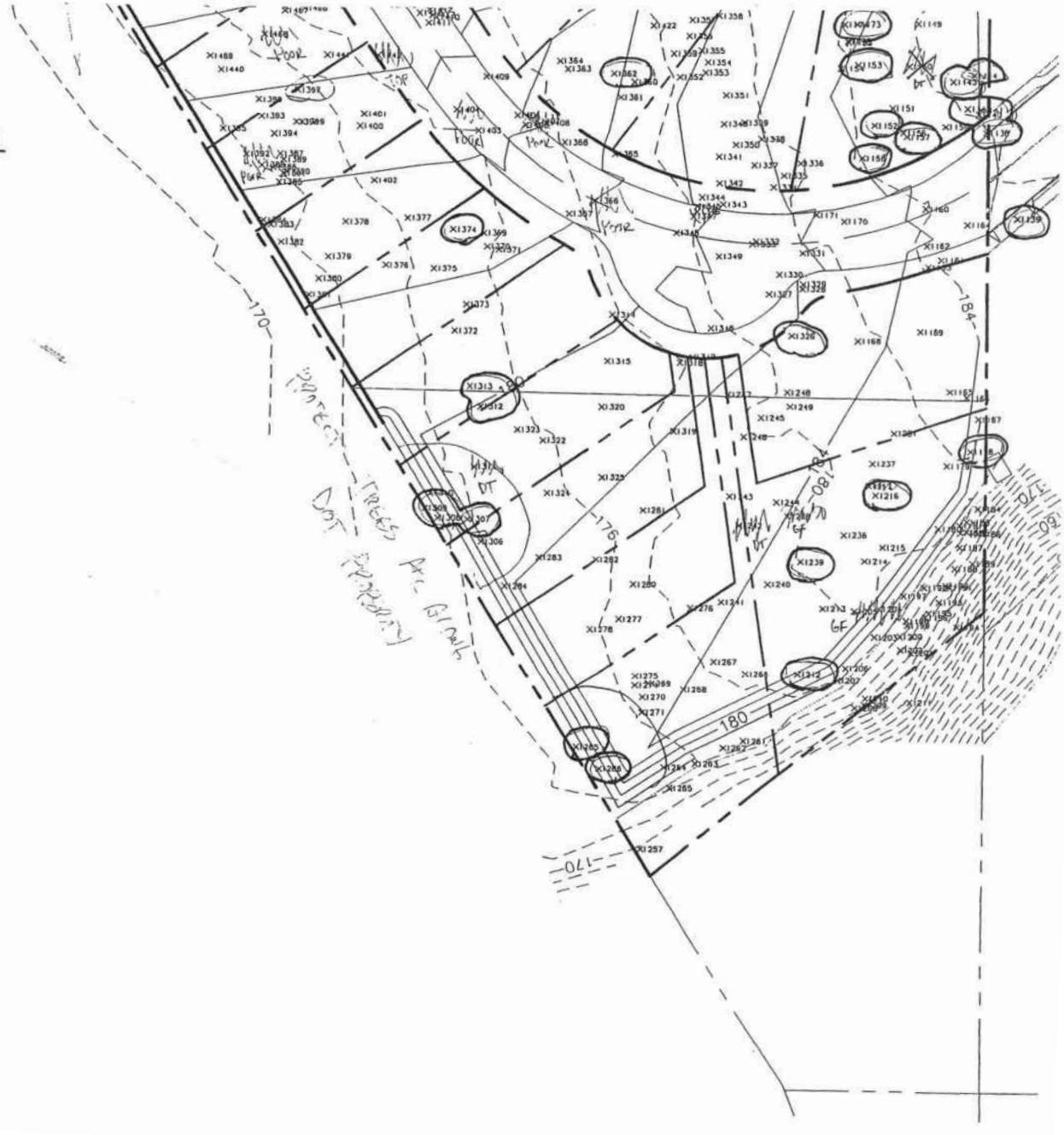

PROTECT TREES ALL ALONG DOT PROPERTY

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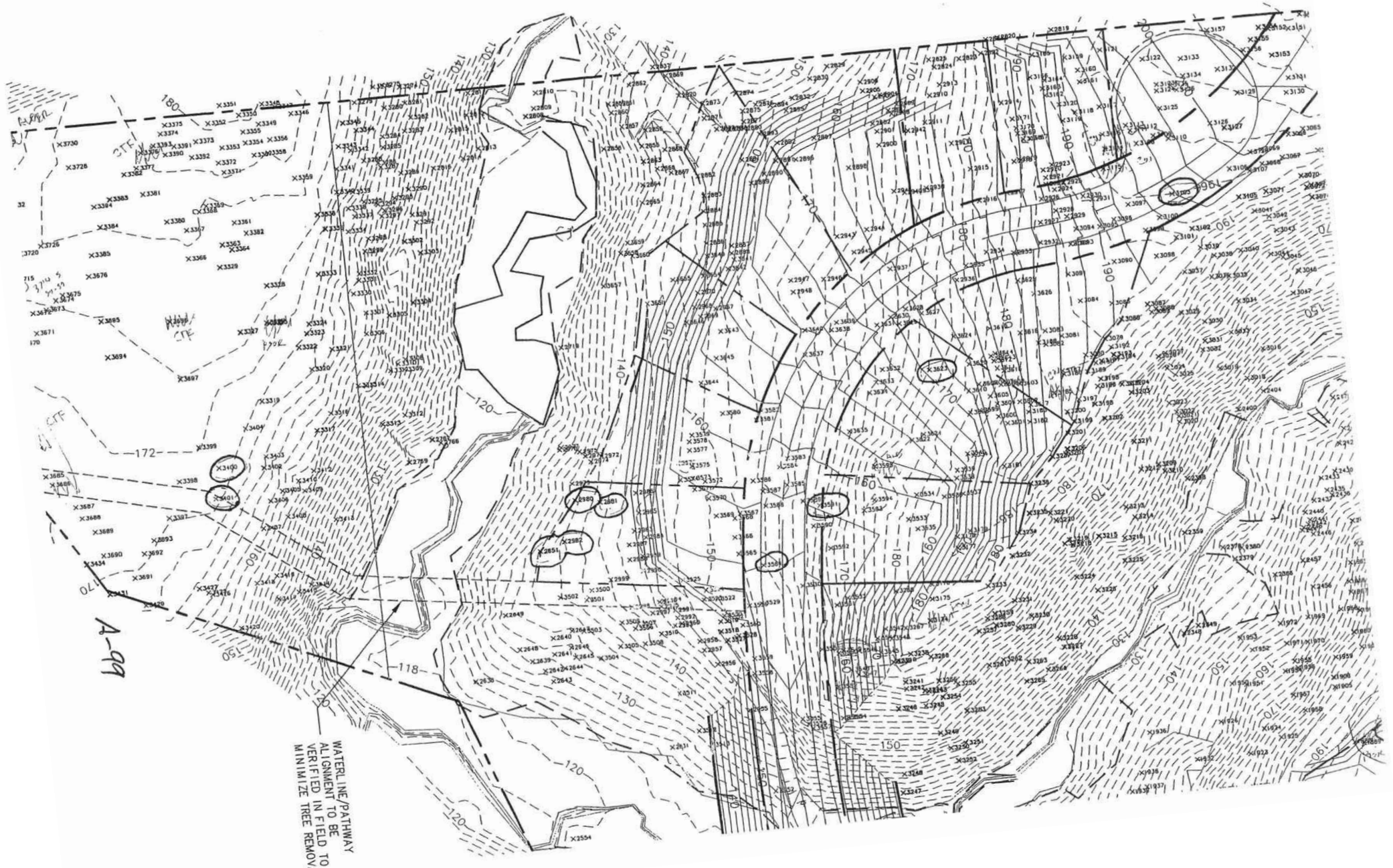
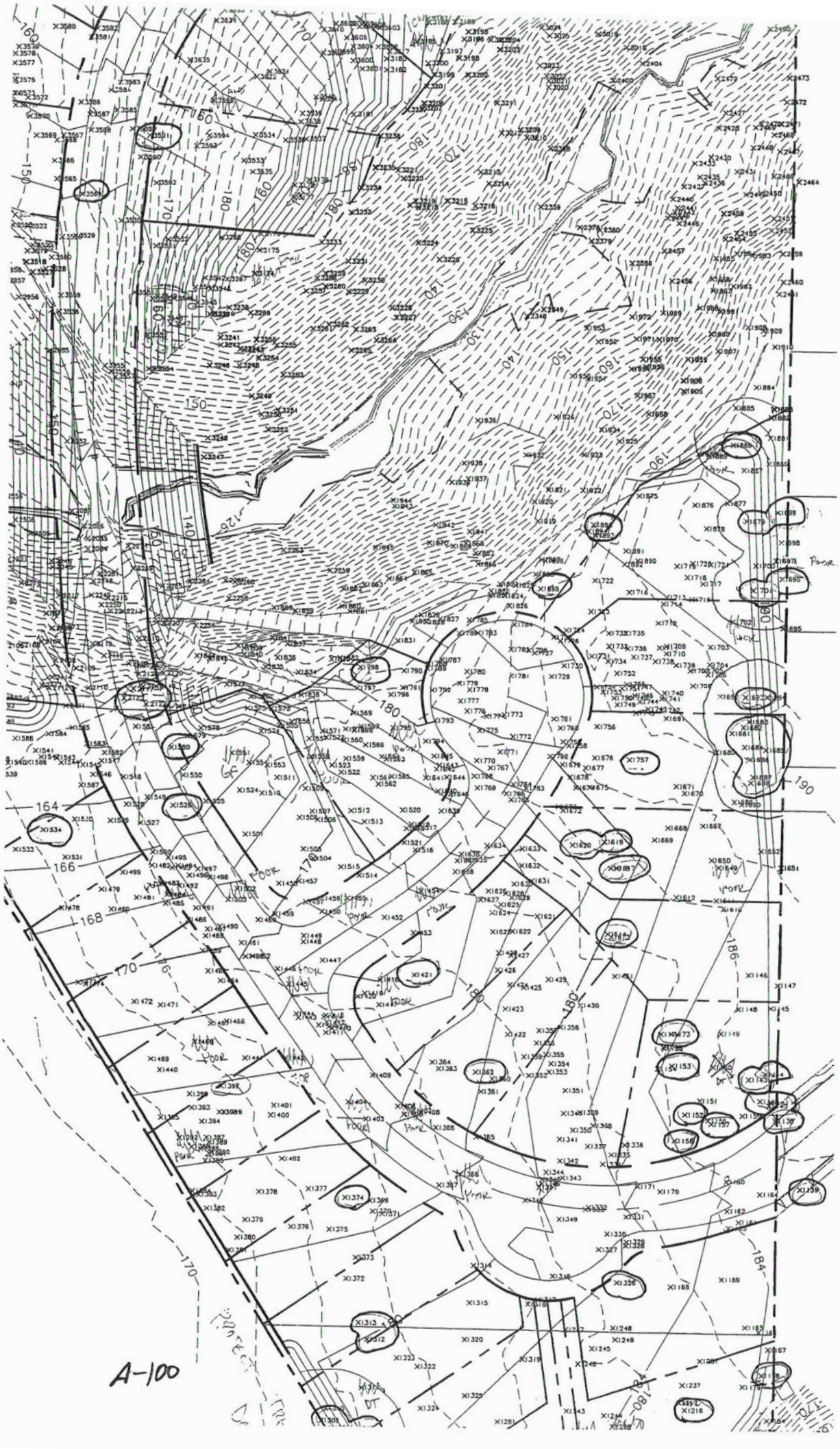

A-99
WATERLINE/PATHWAY
ALIGNMENT TO BE
VERIFIED IN FIELD TO
MINIMIZE TREE REMOVA


A-100

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Received June 1, 2006

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(503) 205-2311 direct line

June 1, 2006

Mr. Peter Spir
Planner
City of West Linn
22500 Salamo Road, #1000
West Linn, Oregon 97068

Subject: Tamarisk Subdivision (SUB-05-06)

Dear Peter:

Attached is the applicant's response to the city's request for additional information concerning the Tamarisk Subdivision. As you know, we have been working with you to get this application deemed complete for some time now. In that regard, I am hereby notifying you pursuant to ORS 227.179(2)(b) that no other information will be provided. Accordingly, this application is hereby "deemed complete" under the provisions of that statute, on the date you receive this letter and the attached information. The 120-day statutory period for final action on this application will commence on that date. Thank you for your cooperation on this matter. If you have any questions, please feel free to contact me.

Very truly yours,

Phillip E. Grillo

A-101

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

May 26, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Email of May 22, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your email regarding the incompleteness of the Tamarisk Subdivision dated May 22, 2006. I am responding to each item individually below.

Planning Comment Responses

According to your telephone message on May 24, 2006, there are no outstanding planning issues.

Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 33.050

1. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

   Response: Access to the control manhole structure at the pond will be provided through a paved portion of the planter strip and back of sidewalk. Access to the pond bottom and water quality swales will be down a 4H:1V slope at the east side of the pond (no vehicular access,

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only lawn equipment access). Access to the walk-in and Phase 2 water quality swale is from the back of sidewalk (no vehicular access, only walk-in and lawn equipment access). Access to the oversized detention pipe will be from the paved street surface.

Section 85.150 and 85.200

2. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.*

   Response: As with our last response, a request for variance was added to our planning application after our first completeness review letter. This is ***not*** a completeness item, rather it is an application that has been filed for review concurrent with the Planned Unit Development application.

3. *85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision.* ***Show a sewer stub at the north end of the sanitary sewer.***

   Response: The extension of the sanitary sewer line to the north property limit was shown on the revised "Planning Resubmittal 5/5/2006." This item was previously addressed.

4. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

   Response: The preliminary storm drainage report has been revised to show the amount of required and proposed stormwater detention for the proposed development. It is illustrated in Table 4, and again in the hydrographs at the back of the report.

Section 85.160

5. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

   Response: A stamp and signature has been added to the Tentative Subdivision Plat (EX05), Tentative Grading Plan (EX07), and Tentative Utility Plan (EX08). Section 85.160 only requires that the tentative subdivision plan be signed by a registered civil engineer. It does not require that all plans be signed by a registered civil engineer. The project engineer for this

proposal has signed the three plans listed above. All other plans deal with existing onsite conditions over which the project engineer has no control over.

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

6. *Show proposed curb cuts for driveways at each lot.*

   Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

7. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

   Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

8. *The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verity that this street section is acceptable.*

   Response: This proposed street section was reviewed with City staff at the pre-application meeting and included as a design proposal as part of our Planned Unit Development (PUD) application. This item will be evaluated by City staff during their review of the application. This should not be considered a completeness item.

9. *In accordance with Section 32.050-9, vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the site to be in an unhealthy or disturbed state.*

   Response: The applicant has read and understands the provisions of the Community Development Code and will make the required improvements as necessary.

The information cited above is supported by the previous documentation provided in the narrative, previous resubmittal information, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby

Brad Kilby, AICP

BK:sjs
Enclosure: Revised Stormwater Report (3 copies)

Memorandum

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

To: Mike Peebles, PE

From: Terry Soltz, EIT

Copies: File

Date: May 26, 2006

Subject: Tamarisk Property

Project No.: 13458

Introduction

The following is a preliminary stormwater management plan for the proposed Tamarisk Development. Otak conducted a site visit on October 10, 2005. A downstream analysis of the one-quarter mile reach of Fritchie Creek downstream of the proposed development is attached in Appendix C.

The proposed site is 15.5 acres and is located within the City of West Linn, Oregon at the end of Tamarisk Drive. The site is bounded to the east by Interstate 205 (I-205). The site includes tax lots 00600, 00690, and 00700. Under proposed conditions, stormwater runoff from the developed site will be collected and conveyed by a series of catch basins and pipes to detention and water quality facilities, then to an outfall which will discharge into Fritchie Creek. A base map of the proposed site is included as Figure 1.

Floodplain

The entire site is designated as Zone C according to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) for Clackamas County, Oregon, Panel 135 (August 4, 1987). The Zone C designation is defined as an area of minimal flooding.

Soil Survey

There were three soil types identified on the property according to the NRCS Soil Survey of Clackamas County, Oregon (1982). As summarized in Table 1, site soils are in Hydrologic Group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure.

Table 1
Soil Types

Soil Name	SCS Symbol	Hydrologic Group
Woodburn Silt Loam	91B	C
Cascade Silt Loam	13C	C
Xerochrept/Haploxerolls	92F	n/a

Existing Storm Sewer

According to GIS maps viewed on the official website for the City of West Linn, existing stormwater and sanitary sewer lines extend to the end of Tamarisk Drive, but none are currently located on the Tamarisk property. There have been no documented complaints of drainage issues or flooding issues reported by neighboring developments or property owners, according to the City of West Linn.

Hydrology

The property was divided at the creek into south and north sections for the purpose of stormwater analysis and management. Runoff was calculated for existing and proposed conditions using Hydraflow Hydrographs 2004 software by Intelli*SOLVE*. Under existing conditions, the site was assumed to be completely wooded. For proposed conditions, separate hydrographs were calculated for pervious and impervious areas, then combined and subsequently routed through simulated detention facilities. Results are shown in Table 2, below, and a detailed summary is included in Appendix A.

Table 2
Predicted Peak Runoff Rates

Proposed Basin	Area (ac)	Peak Runoff Rates (cfs)			
		WQ	2-yr	10-yr	25-yr
South Impervious	2.40	0.384	1.305	1.881	2.168
South Pervious	2.49	0.020	0.590	1.109	1.383
South TOTAL	4.89	0.386	1.891	2.982	3.541
North Impervious	1.46	0.234	0.794	1.145	1.319
North Pervious	1.52	0.012	0.402	0.745	0.925
North TOTAL	2.98	0.236	1.193	1.884	2.238

Water Quantity

The proposed project area comprises less than five percent of the total Fritchie Creek drainage basin area, and is located approximately 1,560 feet upstream from the confluence of Fritchie Creek and the Tualatin River. The City of West Linn, however, requires that all new development detain water to match existing flows for the 2-, 10-, and 25-year, 24-hour design storm events. For this purpose, a combination pond and pipe storage system is proposed for the southern portion (Phase 1), and a detention pipe is proposed for the northern portion (Phase 2). These facilities reduce the predicted discharge rates so that they do not exceed current rates, as shown in Table 3. Modeling also determined the required storage volumes indicated in Table 4. These values are taken from the runoff tables included in Appendix A.

For the southern section, a five-foot deep pond with a footprint of approximately 4,000 square feet will be placed inline and at the same elevation as a 275-foot long 4-foot diameter detention pipe for a combined storage of 19,600 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with an orifice and a double-cut rectangular notch. The riser will have a 2-inch

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diameter orifice at the outlet elevation with a rim 4.9 feet above. The notch will be 1.2 feet wide to a depth of 0.2 feet from the rim, and 0.6 feet wide to a depth of 0.6 feet.

Storage for the north side will consist of a 350-foot long 6-foot diameter pipe with a capacity of 9,900 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with two orifices and a rectangular notch. The riser will have a rim 5.85 feet above its outlet, with a 1.7-inch diameter orifice at the outlet elevation and a 3.8-inch diameter orifice with an invert elevation 4.8 feet above. The notch will be 1 foot wide to a depth of 0.25 feet from the rim.

Table 3
Comparison of Existing and Predicted Flows

Condition	Peak Runoff Rates (cfs)		
	2-yr	10-yr	25-yr
South Existing	0.225	0.832	1.200
South Predicted (w/ detention)	0.212	0.674	1.096
North Existing	0.163	0.575	0.829
North Existing (w/ detention)	0.162	0.544	0.781

Table 4
Required and Available Storage

Basin	Required Storage (25-yr Event, cf)	Available Storage (cf)
South (Phase I)	18,877	19,600
North (Phase II)	9,632	9,900

Water Quality

The City of West Linn refers to the Bureau of Environmental Services (BES) stormwater manual for water quality requirements. Due to the low infiltration rates expected for the site, flow-through vegetated swales will be used for treatment. These swales were sized according to the presumptive approach, and spreadsheet calculations are included in Appendix B. The swale that treats the south side runoff will be graded into the bottom of the detention pond. It will be at least 117 feet long, with a minimum depth of 0.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.8 percent, and a base width of 4 feet.

For the north side, a flow splitter will direct low flows to the swale and will bypass higher flows to the detention pipe. Outflows from the swale will also be conveyed to the detention pipe. The swale for the north side needs to be at least 117 feet long, with a minimum depth of 1.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.9 percent, and a base width of 2 feet. This depth allows the 25-year predicted outflow from the splitter to pass through the swale with at least one foot of freeboard remaining. The flow splitter will consist of a 60-inch diameter manhole with a 6-inch outlet at its base that leads to the swale, and a 12-inch bypass with its invert 0.35 feet higher than the primary invert. Freeboard calculations for the swale and stage-discharge table for the flow splitter are included in Appendix B.

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Stormwater Outfall

Stormwater runoff will discharge to Fritchie Creek through a rip-rap outfall (southern basin) and a connection to the proposed culvert (northern basin). The proposed culvert will be designed to safely convey upstream flows and the stormwater flows discharged from the project site. This design will allow energy from the stormwater discharge to be dissipated within the culvert, and minimize erosion in Fritchie Creek. An in-pond weir designed to safely pass the 100-year flow will be constructed as the emergency overflow structure, and will discharge overland to Fritche Creek downstream of the proposed culvert crossing.

Appendix A –
Runoff Computations

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.004	6	1440	38	----	------	------	SOUTH_EXT
2	SBUH Runoff	0.384	6	480	5,463	----	------	------	SOUTH_IMP
3	SBUH Runoff	0.020	6	1020	1,079	----	------	------	SOUTH_PER
4	Combine	0.386	6	480	6,541	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.081	6	924	6,518	4	157.71	2,053	Det. Pond
7	SBUH Runoff	0.002	6	1440	23	----	------	------	NORTH_EXT
8	SBUH Runoff	0.234	6	480	3,323	----	------	------	NORTH_IMP
9	SBUH Runoff	0.012	6	1014	658	----	------	------	NORTH_PER
10	Combine	0.236	6	480	3,982	8, 9	------	------	NORTH_TOT
11	Reservoir	0.063	6	624	3,961	10	0.81	803	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.221	6	492	9,131	---	-----	-----	SOUTH_EXT
2	SBUH Runoff	1.305	6	474	18,917	---	-----	-----	SOUTH_IMP
3	SBUH Runoff	0.590	6	480	10,506	---	-----	-----	SOUTH_PER
4	Combine	1.891	6	480	29,422	2, 3	-----	-----	SOUTH_TOT
5	Reservoir	0.212	6	1404	29,399	4	161.29	16,534	Det. Pond
7	SBUH Runoff	0.163	6	486	5,564	---	-----	-----	NORTH_EXT
8	SBUH Runoff	0.794	6	474	11,508	---	-----	-----	NORTH_IMP
9	SBUH Runoff	0.402	6	480	6,413	---	-----	-----	NORTH_PER
10	Combine	1.193	6	480	17,921	8, 9	-----	-----	NORTH_TOT
11	Reservoir	0.159	6	1206	17,900	10	4.57	8,085	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.817	6	486	19,755	----	------	------	SOUTH_EXT
2	SBUH Runoff	1.881	6	474	27,589	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.109	6	480	18,169	----	------	------	SOUTH_PER
4	Combine	2.982	6	480	45,758	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.674	6	660	45,735	4	161.67	18,185	Det. Pond
7	SBUH Runoff	0.575	6	480	12,039	----	------	------	NORTH_EXT
8	SBUH Runoff	1.145	6	474	16,783	----	------	------	NORTH_IMP
9	SBUH Runoff	0.745	6	480	11,091	----	------	------	NORTH_PER
10	Combine	1.884	6	480	27,874	8, 9	------	------	NORTH_TOT
11	Reservoir	0.548	6	558	27,854	10	5.07	8,915	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	1.178	6	486	25,847	----	------	------	SOUTH_EXT
2	SBUH Runoff	2.168	6	474	31,933	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.383	6	480	22,198	----	------	------	SOUTH_PER
4	Combine	3.541	6	480	54,131	2, 3	------	------	SOUTH_TOT
5	Reservoir	1.096	6	558	54,108	4	161.83	18,877	Det. Pond
7	SBUH Runoff	0.829	6	480	15,751	----	------	------	NORTH_EXT
8	SBUH Runoff	1.319	6	474	19,426	----	------	------	NORTH_IMP
9	SBUH Runoff	0.925	6	480	13,551	----	------	------	NORTH_PER
10	Combine	2.238	6	480	32,976	8, 9	------	------	NORTH_TOT
11	Reservoir	0.826	6	534	32,956	10	5.63	9,632	N_STORAGE

Appendix B –
Water Quality Computations

SOUTH SWALE
WQ Flow

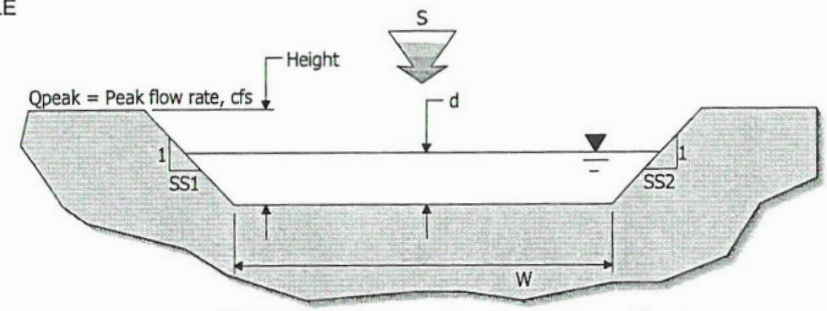


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	4	feet
Lengthwise Slope	S	0.008	feet/foot
Peak Flow Rate	Qpeak	0.386	cfs
Swale Height	Height	0.3333	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.96	inches
Cross-sectional Area	A	1.75	sf
Wetted Perimeter	WP	6.72	feet
Hydraulic Radius	R	0.26	feet
Computed Peak Flow Rate	Qpkcalc	0.38	cfs
Computed Peak Velocity	Vpkcalc	0.22	ft/sec
Computed Length	**L**	**117**	**feet**

NORTH SWALE
WQ Flow

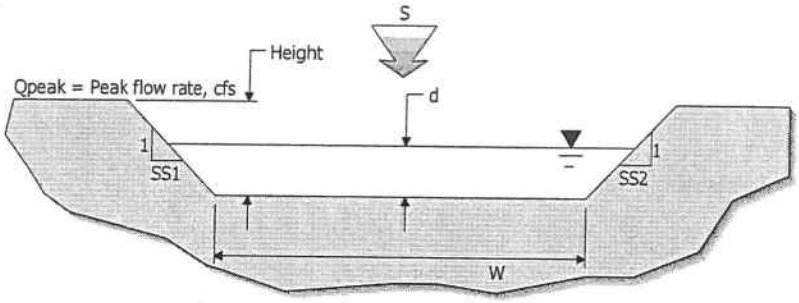


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	2	feet
Lengthwise Slope	S	0.009	feet/foot
Peak Flow Rate	Qpeak	0.236	cfs
Swale Height	Height	1.66667	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.94	inches
Cross-sectional Area	A	1.09	sf
Wetted Perimeter	WP	4.71	feet
Hydraulic Radius	R	0.23	feet
Computed Peak Flow Rate	Qpkcalc	0.23	cfs
Computed Peak Velocity	Vpkcalc	0.21	ft/sec
Computed Length	**L**	**115**	**feet**

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, May 9 2006, 1:45 PM

Pond No. 1 - North Basin Splitter

Pond Data

Bottom LxW = 4.4 x 4.4 ft Side slope = 0.0:1 Bottom elev. = 0.00 ft Depth = 1.60 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	0.00	20	0	0
0.08	0.08	20	2	2
0.16	0.16	20	2	3
0.24	0.24	20	2	5
0.32	0.32	20	2	6
0.40	0.40	20	2	8
0.48	0.48	20	2	9
0.56	0.56	20	2	11
0.64	0.64	20	2	13
0.72	0.72	20	2	14
0.80	0.80	20	2	16
0.88	0.88	20	2	17
0.96	0.96	20	2	19
1.04	1.04	20	2	20
1.12	1.12	20	2	22
1.20	1.20	20	2	24
1.28	1.28	20	2	25
1.36	1.36	20	2	27
1.44	1.44	20	2	28
1.52	1.52	20	2	30
1.60	1.60	20	2	31

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	12.00	0.00	0.00
Span (in)	= 6.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 0.00	0.35	0.00	0.00
Length (ft)	= 20.00	20.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	0.00	0.00	0.00	---	---	---	---	---	---	---	0.00
0.08	2	0.08	0.02	0.00	---	---	---	---	---	---	---	0.02
0.16	3	0.16	0.07	0.00	---	---	---	---	---	---	---	0.07
0.24	5	0.24	0.13	0.00	---	---	---	---	---	---	---	0.13
0.32	6	0.32	0.20	0.00	---	---	---	---	---	---	---	0.20
0.40	8	0.40	0.26	0.01	---	---	---	---	---	---	---	0.27
0.48	9	0.48	0.29	0.07	---	---	---	---	---	---	---	0.37
0.56	11	0.56	0.36	0.18	---	---	---	---	---	---	---	0.54
0.64	13	0.64	0.44	0.30	---	---	---	---	---	---	---	0.74
0.72	14	0.72	0.51	0.44	---	---	---	---	---	---	---	0.95
0.80	16	0.80	0.57	0.59	---	---	---	---	---	---	---	1.16
0.88	17	0.88	0.62	0.74	---	---	---	---	---	---	---	1.37
0.96	19	0.96	0.67	0.89	---	---	---	---	---	---	---	1.57
1.04	20	1.04	0.72	1.04	---	---	---	---	---	---	---	1.76
1.12	22	1.12	0.76	1.17	---	---	---	---	---	---	---	1.94
1.20	24	1.20	0.81	1.28	---	---	---	---	---	---	---	2.09
1.28	25	1.28	0.85	1.36	---	---	---	---	---	---	---	2.21
1.36	27	1.36	0.88	1.44	---	---	---	---	---	---	---	2.32
1.44	28	1.44	0.92	1.89	---	---	---	---	---	---	---	2.81
1.52	30	1.52	0.95	2.25	---	---	---	---	---	---	---	3.20
1.60	31	1.60	0.99	2.56	---	---	---	---	---	---	---	3.55

WQ 0.24

25 2.14

A-118

Appendix C –
Down Stream Analysis

Down Stream Analysis

Introduction

There are four drainage basins on the Tamarisk Property, referred to as Basins A, B, C, and D. See Figure A. Basin A is a 0.26-acre area that drains to an unnamed stream that is located off-site to the north. Basin B is a 4.36-acre area that drains to Fritchie Creek, the stream crossing the northern portion of the property. Basin C is an 8.27-acre area drained by an unnamed tributary of Fritchie Creek that traverses the middle portion of the property. Basin D is a 3.12-acre area that drains south to an unnamed stream located off-site. The basin locations, culverts, and other structures mentioned in this analysis are shown on the map in Figure A., following this report.

Review of Downstream System

Basin A

Basin A is located at the northwest corner of the project site and drains north toward an unnamed tributary that flows near the intersection of Johnson and Wisteria Roads, and contributes to the Tualatin River. At 0.26 acres, this basin is a small portion of the Tamarisk site and it is situated along the relatively flat portion of the ridge top. This portion of the site is not expected to generate flow rates significant enough to affect the receiving drainage channel.

Basin B

The 4.36-acres of Basin B drain directly to Fritchie Creek. Fritchie Creek enters the Tamarisk Property at the northern boundary and exits the property through a 48-inch culvert (B-3) under I-205. The Fritchie Creek channel meanders through a moderately flat, large floodplain. The adjacent slopes to the floodplain range from 37 percent on the north side of the stream to 35 percent on the south side.

Fill, which appears to be a future road crossing, has been placed across Fritchie Creek approximately 300 feet upstream of the Tamarisk Property boundary. A 36-inch Corrugated Metal Pipe (CMP) culvert (B-1) was installed to convey stream flows through this fill.

A defined channel has been recently excavated Downstream of Culvert B-1 in the Fritchie Creek floodplain. This channel conveys outflows from Culvert B-1 downstream to another fill placement and culvert crossing (B-2). It is unknown if this channel is a re-alignment or mitigation resulting from the construction of Culvert B-1 in Fritchie Creek. Large woody debris and excavated fill were placed along the newly excavated channel.

Table A.1
Structures along Fritchie Creek

Structure	Type	Dimensions
B-1 (off-site)	Single Barrel CMP Culvert	36-inch diameter
B-2 (off-site)	Triple Barrel CPP Culvert	15-inch diameter /barrel
B-3	Single Barrel CMP Culvert	48-inch diameter

Table A.1 *(Continued)*
Structures along Fritchie Creek

Structure	Type	Dimensions
B-4 (off-site)	Single Barrel CMP Culvert	48-inch diameter
B-5 (off-site)	Trapezoidal Box Culvert	10-foot width

Culvert B-2 is located approximately 240 feet downstream of Culvert B-1. Culvert-crossing B-2 consists of three, 15-inch corrugated plastic pipes placed under fill that also appears to be a future road crossing providing access to the Tamarisk project site. These culverts convey flows from the upstream excavated channel, under the placed fill, and discharge into the wetland.

During the field visit at the inlet for Culvert B-2, only one of the pipes was conveying flows. The two other pipes are higher and were dry. Examination of the culvert outlets revealed that the submerged pipe had significant amounts of sedimentation within the pipe. It appeared that the two exposed pipes will properly convey water only under high flow conditions. An analysis may be necessary to determine conveyance capacity of this culvert design.

The section of Fritchie Creek from Culvert B-2 downstream to Culvert B-3 is primarily wetland. There are small trees and ground vegetation along the banks with no apparent sign of erosion. The 40-foot section of Fritchie Creek upstream of Culvert B-3 has experienced erosion that has widened parts of the channel bottom to approximately ten feet. There was also significant aggradation of soil materials immediately upstream of Culvert B-3, where Fritchie Creek converges with the unnamed tributary from Basin C.

Approximately 700 feet downstream from Culvert B-3, there is a 48-inch CMP culvert (B-4) under a driveway entrance located on Johnson Road. Approximately 60 feet downstream from Culvert B-4 is Culvert B-5, which is a ten-foot wide trapezoidal box culvert passing under Johnson Road. This culvert is embedded and appears to be a stream simulation design. Culverts B-4 and B-5 appeared to be recently improved and well maintained.

Basin C

Basin C is the 8.5-acre central portion of the Tamarisk Property that is drained by an unnamed tributary to Fritchie Creek. The side slopes adjacent to the channel range from 40 percent to 45 percent and are vegetated with medium-sized trees, but sparse ground cover. The stream channel itself is thickly vegetated with blackberry and hard-stemmed species. The channel has an average longitudinal slope of 4.8 percent and flows from the eastern boundary of the site to a fill structure (C-1) designed as a road crossing. This structure has a 15-inch CMP culvert to convey the stream-flow. There did not appear to be any significant erosion upstream or downstream of Culvert C-1. This culvert is located approximately 250 feet upstream of the confluence with Fritchie Creek. The last 30 feet of the channel upstream from the Fritchie Creek confluence has experienced severe widening and aggradation of fine sediments. The confluence with Fritchie Creek is eight feet upstream of the inlet to the 48-inch culvert under I-205 (B-3).

Table A.2 Structure within Basin C		
Structure	Type	Dimensions
C-1	Single Barrel CMP Culvert	15-inch diameter

Basin D

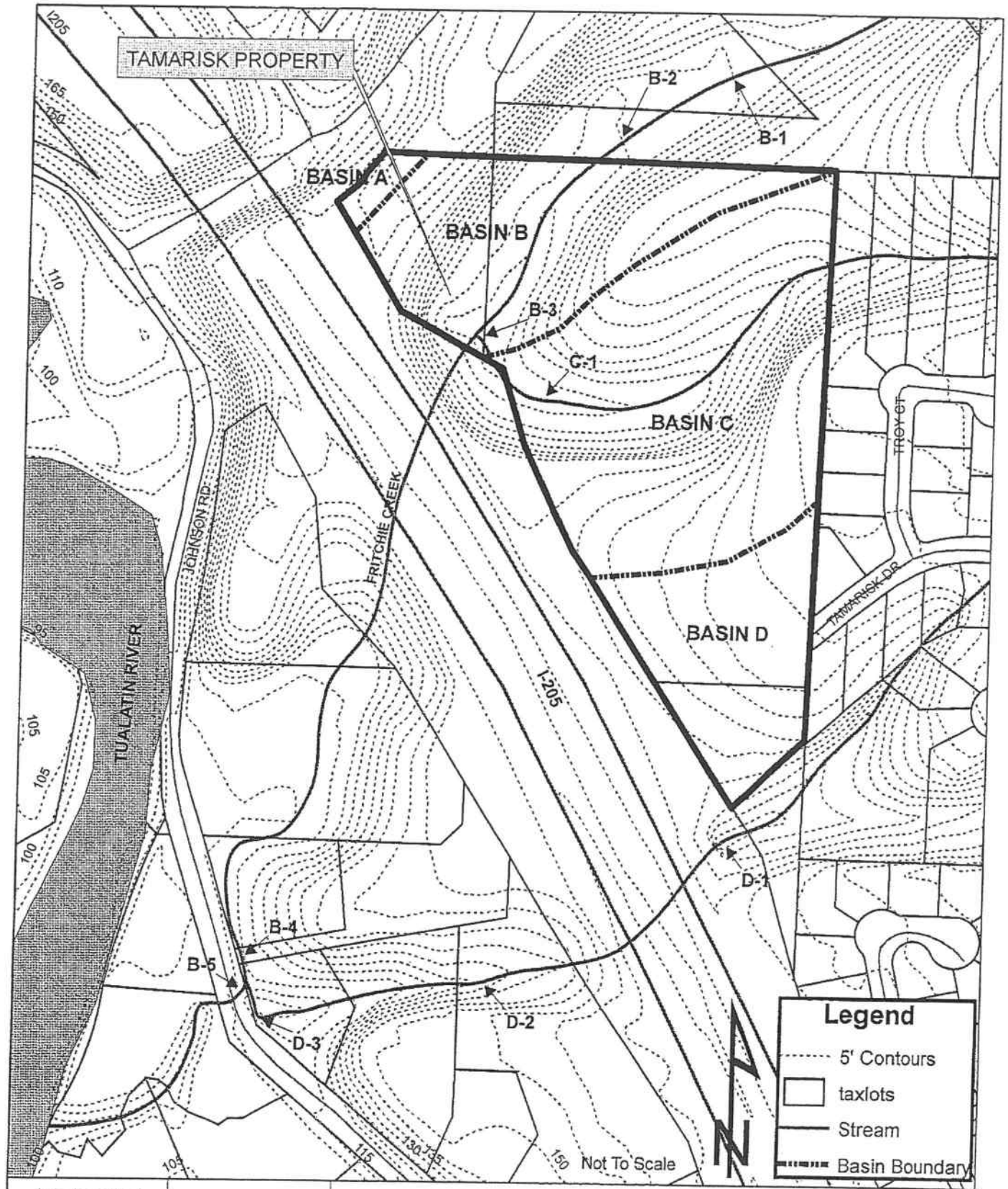
The off-site stream to the south of the Tamarisk Property that receives runoff from Basin D has side slopes of approximately 15 percent, and a longitudinal slope of approximately 3.8 percent. The upland slopes are well forested and have good ground cover with no evidence of erosion; however, the stream channel is incised and has heavily eroded banks. This unnamed stream is conveyed under I-205 through a 30-inch CMP culvert (D-1). There was little aggradation of eroded material near the inlet of Culvert D-1; therefore, the eroded channel material is apparently transported downstream.

Culvert D-1 discharges into a heavily vegetated detention facility (D-2) that has thick splays of aggraded soil material fanning out from the stream channel, causing the channel to migrate laterally within the facility. There is a 24-inch diameter riser that serves as the outlet structure from facility D-2, which is located approximately 200 feet downstream from the Culvert D-1 outlet. The outlet of the detention facility discharges to the natural channel and flows another 600 feet to Johnson Road. At Johnson Road the stream enters an 18-inch roadside culvert (D-3), then is conveyed 120 feet and discharges to Fritchie Creek at the inlet of the Johnson Road culvert (B-5). From this confluence, the combined streamflow enters the ten-foot wide trapezoidal box culvert (B-5), which is a cobble-stone-lined stream simulation culvert that flows under Johnson Road.

Table A.3 Structures Downstream of Basin D		
Structure	Type	Dimensions
D-1 (off-site)	Single Barrel CMP Culvert	30-inch diameter
D-2 (off-site)	CMP Flow Control Riser	24-inch diameter
D-3 (off-site)	Single Barrel Roadside Culvert	18-inch diameter

Conclusion

The relief across the Tamarisk Property varies greatly between the relatively flat ridge tops to the steep terrain adjacent to the stream channels. All drainage from Basins B, C, and D are transported under I-205 through two separate ODOT culverts, Culverts B-3 and D-1. The streams then converge at the inlet of the Johnson Road culvert (B-5). The channel downstream of Culvert B-5 has exposed scour surfaces that appear to be actively eroding the right outer bank. There is also under-cutting that appears to be undermining the root systems of large trees on the right outer bank. A photographic journal is also available but not included with this report.



otak

Otak, Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: 503.635.3618
Fax: 503.635.5395

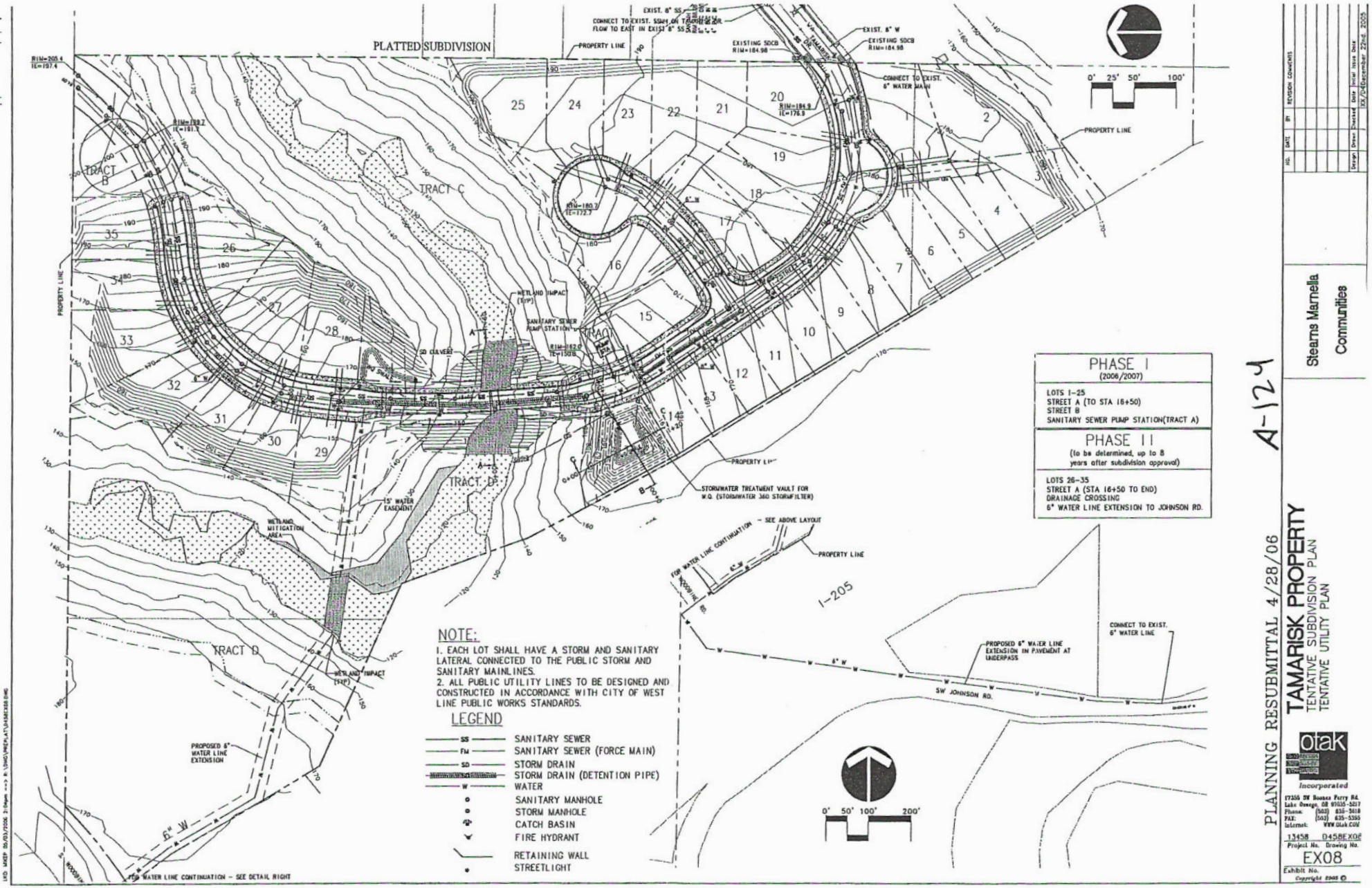
TAMARISK PROPERTY

Location State

Figure A: Downstream Analysis

Date: 10/11/2005
Drawn: AJS Checked:
Project No.: 13458
File No.:
Sheet No.:

A-123



PHASE I (2006/2007)
LOTS 1-25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 8 years after subdivision approval)
LOTS 26-35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:

1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL
- STREETLIGHT

PLANNING RESUBMITTAL 4/28/06

A-129

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS
Design:	Drawn:	Checked:	Date: Initial Issue Date:
			XX/04/December 22nd, 2005

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 D458EX08
Project No. Drawing No.

EX08
Exhibit No.

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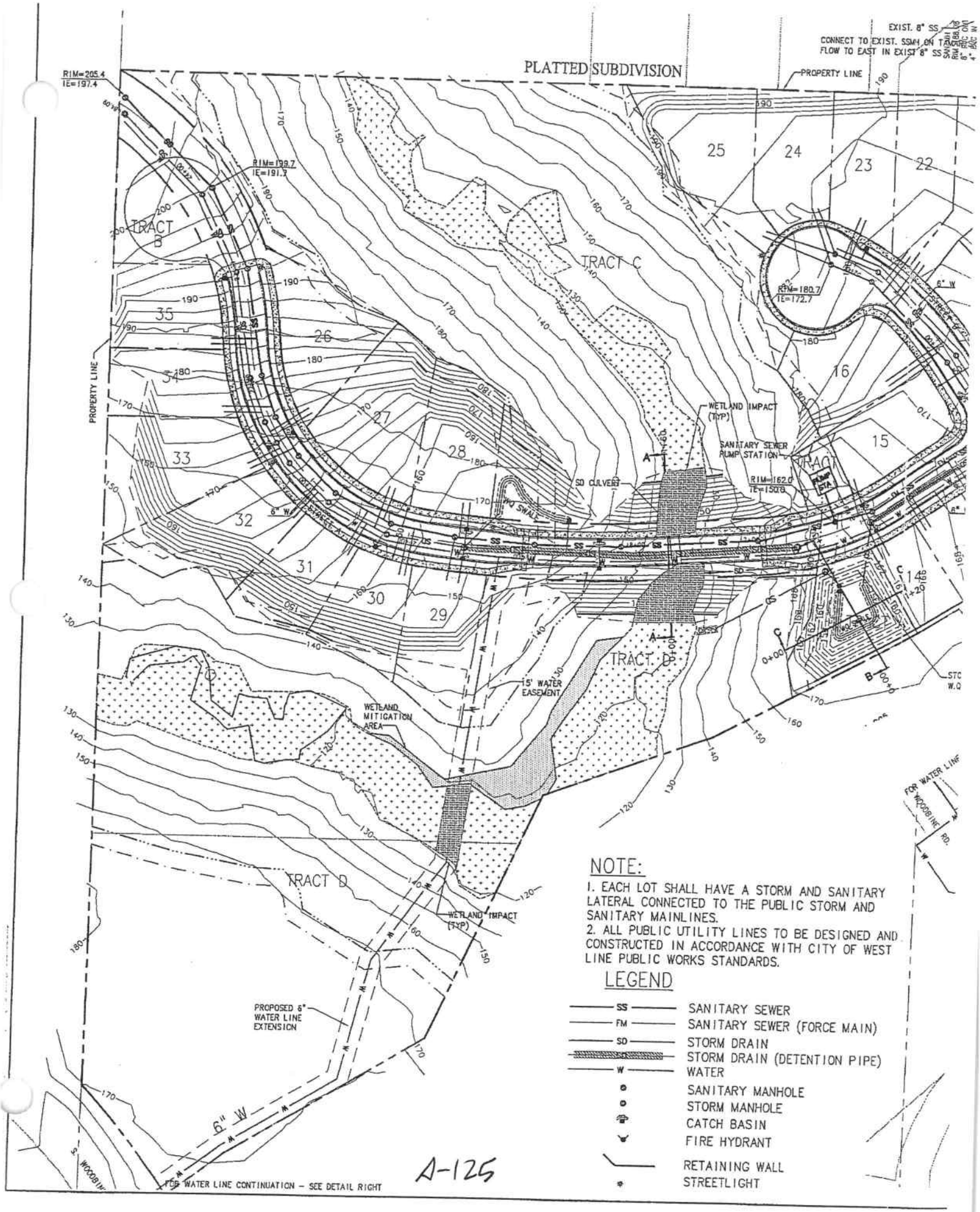
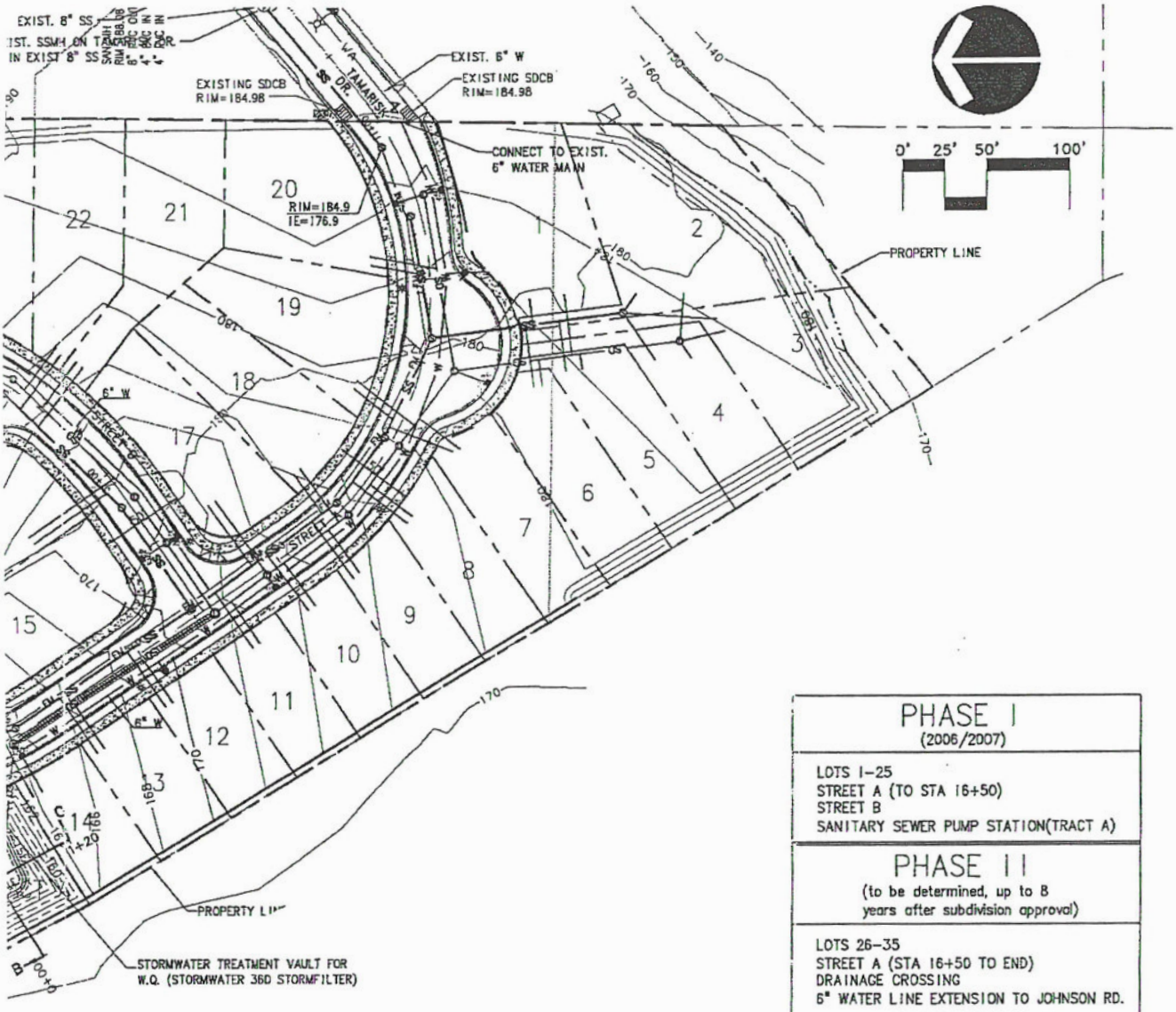

PLATTED SUBDIVISION
PROPERTY LINE
EXIST. 8" SS
CONNECT TO EXIST. SSMH ON TRACT B
FLOW TO EAST IN EXIST 8" SS
RIM=205.4
IE=197.4
RIM=199.7
IE=191.9
TRACT B
TRACT C
TRACT D
RIM=180.7
IE=172.7
WETLAND IMPACT (TYP)
SANITARY SEWER PUMP STATION
RIM=162.0
IE=150.8
SD CULVERT
WQ SWALE
15' WATER EASEMENT
WETLAND MITIGATION AREA
PROPOSED 6" WATER LINE EXTENSION
6" W
FOR WATER LINE CONTINUATION – SEE DETAIL RIGHT
FOR WATER LINE
WOODBINE RD.
NOTE:
1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.
LEGEND
SS SANITARY SEWER
FM SANITARY SEWER (FORCE MAIN)
SD STORM DRAIN
STORM DRAIN (DETENTION PIPE)
W WATER
SANITARY MANHOLE
STORM MANHOLE
CATCH BASIN
FIRE HYDRANT
RETAINING WALL
STREETLIGHT
A-125



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LOTS 1–25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
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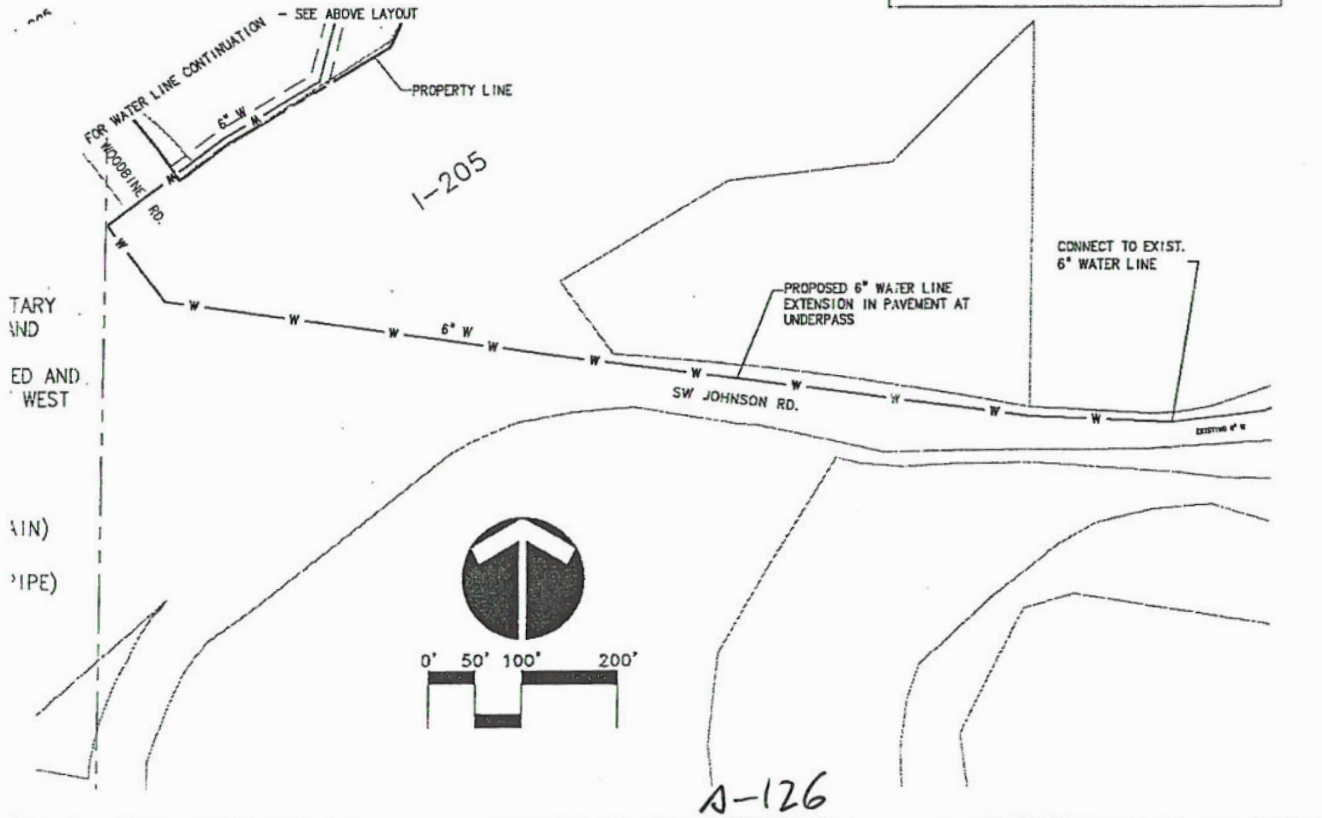
LOTS 26–35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.



A-126

NO.	DATE	BY	REVISION COMMENTS

Stearns Marnella Communities

PLANNING RESUBMITAL 4/28/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

otak Incorporated
17355 SW Boones Ferry
Lake Oswego,
Phone:
FAX:
Internet: www.otak

13458 D458E
Project No. Drawing

EX08
Exhibit No.

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otak

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

Staff completeness review of re-submittal

May 9, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Letter of March 20, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your letter of incompleteness dated March 20, 2006. I am responding to each item individually and providing you with three copies of the updated exhibit sheets EX01 through EX11A for this submittal.

Planning Comment Responses

85.160(E)(5) *Map and identify all trees per 55.100(B)(2). The City Arborist needs the type and size of the tree shown on the tree inventory map.*

Response: A detailed listing of tree type and sizes has been provided to the City Arborist under a separate submittal. City Arborist has requested field tagging of a select list of trees (117 trees total). This work will be completed by the applicant starting the week of April 17, 2006. I assume that sufficient tree information has been provided to date to meet the completeness requirements. Please let me know if this is not the case. Due to the requirement for the added stormwater areas, the additional trees have to be removed. A revised arborist report is provided with this letter. ✓

85.200(J)(9) *No tree inventory per 55.100(B)(2)*

Response: An additional exhibit EX06B has been added to the plan set which shows tree type/size and symbols. This is the same information provided to the City Arborist under a separate submittal. ✓

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Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. *32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state.* ***The applicant shall verify with the City and determine whether such improvements are required.***

   Response: It is our understanding that this requirement will be evaluated during the land use approval process and should not be considered a completeness item.

Section 33.030

2. *33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070. Stormwater detention is required, and as such, a detailed plating plan is required.*

   Response: A topographic map consistent with the requested information is provide on Exhibits 3A, 7, 11, and 11A.

Section 33.040

3. *33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC. Stormwater detention is required, and as such, the detention facilities shall be vegetated in accordance with City requirements.*

   Response: A landscape planting plan for the detention pond area (Phase I) has been added to Exhibit EX07.

Section 33.050

4. *33.050 B2 – Provide a cross-section of the proposed stormwater facilities.*

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Response: A cross-section of the proposed detention pond area (Phase I) has been added to Exhibit EX07.

5. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

Response: Stormwater facility access notes have been added to Exhibit EX08.

Section 85.150 and 85.200

6. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.*

Response: A request for variance was added to our planning application after our first completeness review letter.

7. *85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street. Verify with the City that sidewalks on only one side of the street will be acceptable.*

Response: The proposed sidewalk configuration was discussed with City staff as a design option to minimize the cross-section and impact to wetland area across the drainage crossing. This design option should be evaluated by staff with our application and not be considered a completeness item.

8. *85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Provide a Mitigation Plan in accordance with Section 30.110.*

Response: The sanitary sewer crosses the wetlands and the drainage ways at the same location as the roadway crossing. The impacts are governed by the roadway crossing, so the mitigation plan is based on the roadway crossing.

9. *85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision.* ***Show a sewer stub at the north end of the sanitary sewer.***

Response: The extension of a public sanitary sewer to the north end of Street A was shown on our planning resubmittal dated February 6, 2006 (plan set dated February 3, 2006).

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10. *85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.*

    Response: The preliminary storm drainage report and plan exhibits have been updated to show proposed stormwater detention and water quality.

11. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

    Response: The preliminary storm drainage report and plan exhibits have been updated to show proposed stormwater detention and water quality, and is included with this submittal.

Section 85.160

12. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

    Response: A stamp and signature has been added to the Tentative Subdivision Plat (EX05), Tentative Grading Plan (EX07), and Tentative Utility Plan (EX08).

13. *85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown. Verify with the City Planner that "Street A" and "Street B" are approved street names.*

    Response: Street names for preliminary design and construction documents shall be designated as Street A and Street B. Final street names will be determined prior to final plat approval. This is in line with past practices at the City of West Linn.

14. *85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property. This applies to all utilities, not just water mains.*

    Response: Size and locations to existing utilities at the west end of Tamarisk Drive are shown or noted on Exhibit EX08. No existing utilities are shown for Woodbine Road or SW Johnson Road except the schematic water line tie-in point. Final design documents will detail existing utilities in this area if needed to design utility extensions.

Section 85.170

15. *85.170 A4 – On Sheet EX05, indicate when each phase will occur. Show the anticipated dates during which each phase will occur.*

Response: Proposed development dates have been added to Exhibit EX05. It is anticipated that Phase I construction will occur in the summer/fall of 2006. The schedule for Phase II is dependent on the completion of Phase I and favorable market conditions for development. An expiration date for completing the subdivision phases will be included in the conditions of approval of the subdivision in accordance with CDC Section 85.110. We propose the final expiration date for the subdivision to be five (5) years after the subdivision approval.

16. *85.170 F3 –Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system. This information is not shown for all lots.*

Response: Storm drain laterals are shown for all lots on Exhibit EX08. Size and type of material are to be based on City of West Linn Public Works Standards and will be shown with final design/construction documents.

17. *85.170 F4 – The detention facilities should include a vegetation plan for the facility.*

Response: A landscape planting plan for the detention pond area (Phase I) has been added to the plan set (Sheet EX13).

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

18. *Show proposed curb cuts for driveways at each lot.*

Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

19. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

20. *The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verity that this street section is acceptable.*

Response: This proposed street section was reviewed with City staff at the pre-application meeting and included as a design proposal as part of our Planned Unit Development (PUD) application. This item will be evaluated by City staff during their review of the application. This should not be considered a completeness item.

Peter, as we discussed on the telephone, I am providing 3 copies of this letter, the revised plans, and 3 copies of the revised density calculations. The areas did not change that drastically due to the fact that we were already disturbing the areas for the pump station tract. The information cited above is supported by the documentation provided in the narrative, previous resubmittal information, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosure: Updated Exhibit Sheets EX01 – EX11A (3 copies)
Revised Arborist Report (3 copies)
Revised stormwater report (3 copies)

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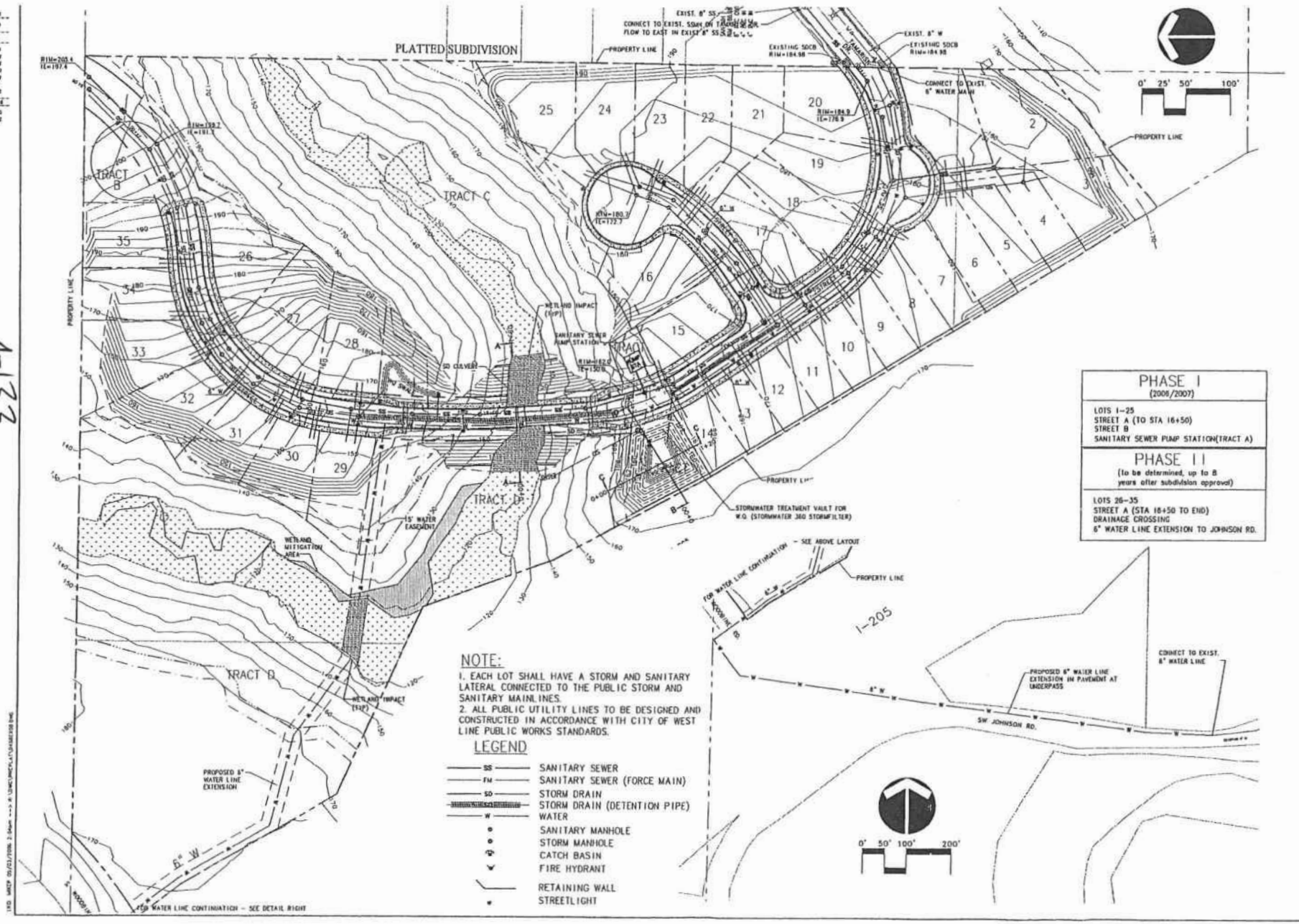

PHASE I (2006/2007)
LOTS 1–25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II (to be determined, up to 8 years after subdivision approval)
LOTS 26–35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 8" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:

1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL
- STREETLIGHT

PLANNING RESUBMITTAL 4/28/06

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

Steams Marnella Communities

NO.	DATE	BY	REVISION COMMENTS
Design: Dotson	Drawn: Shankland	Date: Initial Issue Date	XX/XX/December 22nd, 2005

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 D458EX08
Project No. Drawing No.
EX08
Exhibit No.
Copyright 2006 ©

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Walter H. Knapp
Silviculture & Urban Forestry

May 9, 2006

TAMARISK PRELIMINARY ARBORIST REPORT

Site Description

The proposed Tamarisk development in West Linn, Oregon, is a heavily forested site with a wide range of native tree species (table 1). Most of the site had been logged within the last 25 years. Only the steep slopes, inaccessible areas, and lower-value trees were retained and represent an older, larger, and more diverse ecosystem.

Bigleaf maple is the most common species, representing 44% of the tree inventory. Red alder, with 21% of the trees, is also common. The conifers – western redcedar and Douglas-fir – account for a total of 30%. These four species – maple, alder, cedar, and fir – total 95% of the trees.

The forest conditions in the uplands (type 3 and type 4 areas) are in the stem exclusion phase of stand development, where the trees are competing with each other. As the trees grow larger, those that dominate will choke out the smaller competitors, which will eventually die. In many cases, species with fast juvenile growth, such as alder and maple, are overtopped by conifers with long-term sustained growth. In addition, alder is relatively short lived, and will begin to gradually die out after 40-60 years.

A listing of surveyed trees on the site and immediately adjacent areas is included in the tree inventory enclosed with this report.

Table 1. Species distribution, Tamarisk site.

Common Name	*Botanical Name*	# Trees	Percent
Bigleaf maple	*Acer macrophyllum*	679	44%
Red alder	*Alnus rubra*	320	21%
Western redcedar	*Thuja plicata*	236	15%
Douglas-fir	*Pseudotsuga menziesii*	236	15%
Black cottonwood	*Populus trichocarpa*	55	4%
Hawthorn	*Crataegus sp.*	10	1%
Fruit	*Malus sp.*	5	0.3%
American elm	*Ulmus americana*	3	0.2%
Madrone	*Arbutus menziesii*	2	0.1%
Holly	*Ilex sp.*	1	0.1%
Grand Total		1547	100%

No stand-level insect or disease conditions were identified during site reconnaissance. In addition, individual trees with stem decay or structural defects were not prevalent. However, a

7615 SW Dunsmuir Lane, Beaverton, OR 97007
Phone: (503) 646-4349 Fax: (503) 265-8117

more detailed examination to identify trees with hazardous conditions near frequent use areas will be needed after site development. For example, defective trees or those vulnerable to windthrow will only need to be removed if they would impact a portion of the developed site.

Few if any trees in the upland areas meet the criteria of City of West Linn for classification as "significant." The City Arborist has been given the authority to designate significant trees and groves. To date, there have been no significant trees identified on type 3 and 4 lands.

Much of the lesser vegetation, the shrubs, forbs, grasses, and other plants, are representative of native species. In the uplands, this includes sword fern, Oregon grape, salal, hazel, and other common understory plants. Although there are areas of intrusion from invasive species, such as Himalayan blackberry and English ivy, the native vegetation is predominant in the uplands.

Land Type and Propose Prescriptions

Within the uplands, 145 trees will be removed on type 3 lands, and 662 will be removed on type 4 lands to provide for construction of site improvements, homes, and other infrastructure (table 2). Only 52 of the 391 trees on type 1 lands will be cut. On type 2 lands, 56 of the 98 trees on the site will be removed.

Table 2. Tree retention and removal by land type, Tamarisk Property.

Land Type	Prescription	Total
Offsite	Save	18
Type 1	Remove	52
	Save	391
Type 1 Total		443
Type 2	Remove	56
	Save	42
Type 2 Total		98
Type 3	Remove	145
	Save	35
Type 3 Total		180
Type 4	Remove	662
	Save	146
Type 4 Total		808
Grand Total		1547

Many of the protected trees on type 1 and 2 lands are conifers – Douglas-firs and western redcedars – in good to excellent condition, and growing in locations where they will provide long-term visual amenities and wildlife habitat to the site. No off-site trees are planned for removal unless designated due to construction of approved utilities or transportation access.

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PRELIMINARY TREE PROTECTION REQUIREMENTS

The protection measures listed in this report are preliminary. Prior to site development, the following protection requirements will need to be more specific, including an on-site location of tree protection areas by the project arborist:

1. **Tree Protection Area.** The project arborist shall designate the Tree Protection Zone (TPZ). Where feasible, the TPZ shall be established at the dripline of the tree or grove as a minimum. If infrastructure (roads, sidewalks, and utilities) must be installed closer to the tree(s), the TPZ may be established within the dripline area if the project arborist determines that the tree(s) will not be unduly damaged. The protection area is designated on construction drawings.
2. **Protection Fencing.** All trees to be retained shall be protected by orange construction fencing installed prior to construction. Protection fencing shall be secured to steel posts placed no further than 10 feet apart and shall be installed at the edge of the TPZ.
3. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
4. **Excavation – TPZ.** Excavation with the TPZ shall be avoided if alternatives are available. If excavation within the TPZ in unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches. All construction within the TPZ shall be under the on-site technical supervision of the project arborist.
5. **Tree Protection Inspection.** The project arborist shall monitor construction activities and progress, and provide written reports at regular intervals.
7. **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the remaining trees.

Walter H. Knapp
Certified Forester, SAF 406
Certified Arborist, ISA PN-0497

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Count of Prescription		
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	Save	35
Type 3 Total		180
Type 4	Remove	662
	Save	146
Type 4 Total		808
Grand Total		1547

Memorandum

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

To: Mike Peebles, PE

From: Terry Soltz, EIT

Copies: File

Date: May 9, 2006

Subject: Tamarisk Property

Project No.: 13458

Introduction

The following is a preliminary stormwater management plan for the proposed Tamarisk Development. Otak conducted a site visit on October 10, 2005. A downstream analysis of the one-quarter mile reach of Fritchie Creek downstream of the proposed development is attached in Appendix C.

The proposed site is 15.5 acres and is located within the City of West Linn, Oregon at the end of Tamarisk Drive. The site is bounded to the east by Interstate 205 (I-205). The site includes tax lots 00600, 00690, and 00700. Under proposed conditions, stormwater runoff from the developed site will be collected and conveyed by a series of catch basins and pipes to detention and water quality facilities, then to an outfall which will discharge into Fritchie Creek. A base map of the proposed site is included as Figure 1.

Floodplain

The entire site is designated as Zone C according to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) for Clackamas County, Oregon, Panel 135 (August 4, 1987). The Zone C designation is defined as an area of minimal flooding.

Soil Survey

There were three soil types identified on the property according to the NRCS Soil Survey of Clackamas County, Oregon (1982). As summarized in Table 1, site soils are in Hydrologic Group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure.

Table 1:
Soil Types

Soil Name	SCS Symbol	Hydrologic Group
Woodburn Silt Loam	91B	C
Cascade Silt Loam	13C	C
Xerochrept/Haploxerolls	92F	n/a

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Existing Storm Sewer

According to GIS maps viewed on the official website for the City of West Linn, existing storm-water and sanitary sewer lines extend to the end of Tamarisk Drive, but none are currently located on the Tamarisk property. There have been no documented complaints of drainage issues or flooding issues reported by neighboring developments or property owners, according to the City of West Linn.

Hydrology

The property was divided at the creek into south and north sections for the purpose of stormwater analysis and management. Runoff was calculated for existing and proposed conditions using Hydraflow Hydrographs 2004 software by Intelli*SOLVE*. Under existing conditions, the site was assumed to be completely wooded. For proposed conditions, separate hydrographs were calculated for pervious and impervious areas, then combined and subsequently routed through simulated detention facilities. Results are shown in Table 2, below, and a detailed summary is included in Appendix A.

Table 2:
Predicted Peak Runoff Rates

Proposed Basin	Area (ac)	Peak Runoff Rates (cfs)			
		WQ	2-yr	10-yr	25-yr
South Impervious	2.40	0.384	1.305	1.881	2.168
South Pervious	2.49	0.020	0.590	1.109	1.383
South TOTAL	4.89	0.386	1.891	2.982	3.541
North Impervious	1.46	0.234	0.794	1.145	1.319
North Pervious	1.52	0.012	0.402	0.745	0.925
North TOTAL	2.98	0.236	1.193	1.884	2.238

Water Quantity

The proposed project area comprises less than five percent of the total Fritchie Creek drainage basin area, and is located approximately 1,560 feet upstream from the confluence of Fritchie Creek and the Tualatin River. The City of West Linn, however, requires that all new development detain water to match existing flows for the 2-, 10-, and 25-year, 24-hour design storm events. For this purpose, a combination pond and pipe storage system is proposed for the southern portion (Phase 1), and a detention pipe is proposed for the northern portion (Phase 2). These facilities reduce the predicted discharge rates so that they do not exceed current rates, as shown in Table 3.

For the southern section, a five-foot deep pond with a footprint of approximately 4,000 square feet will be placed inline and at the same elevation as a 275-foot long four-foot diameter detention pipe for a combined storage of 19,600 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with an orifice and a double-cut rectangular notch. The riser will have a two-inch diameter orifice at the outlet elevation with a rim 4.9 feet above. The notch will be 1.2 feet wide to a depth of 0.2 feet from the rim, and 0.6 feet wide to a depth of 0.6 feet.

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Storage for the north side will consist of a 350-foot long six-foot diameter pipe with a capacity of 9,900 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with two orifices and a rectangular notch. The riser will have a rim 5.85 feet above its outlet, with a 1.7-inch diameter orifice at the outlet elevation and a 3.8-inch diameter orifice with an invert elevation 4.8 feet above. The notch will be one foot wide to a depth of 0.25 feet from the rim.

Table 3:
Comparison of Existing and Predicted Flows

Condition	Peak Runoff Rates (cfs)		
	2-yr	10-yr	25-yr
South Existing	0.225	0.832	1.200
South Predicted (w/ detention)	0.212	0.674	1.096
North Existing	0.163	0.575	0.829
North Existing (w/ detention)	0.162	0.544	0.781

Water Quality

The City of West Linn refers to the Bureau of Environmental Services (BES) stormwater manual for water quality requirements. Due to the low infiltration rates expected for the site, flow-through vegetated swales will be used for treatment. These swales were sized according to the presumptive approach, and spreadsheet calculations are included in Appendix B. The swale that treats the south side runoff will be graded into the bottom of the detention pond. It will be at least 117 feet long, with a minimum depth of 0.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.8 percent, and a base width of four feet.

For the north side, a flow splitter will direct low flows to the swale and will bypass higher flows to the detention pipe. Outflows from the swale will also be conveyed to the detention pipe. The swale for the north side needs to be at least 117 feet long, with a minimum depth of 1.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.9 percent, and a base width of two feet. This depth allows the 25-year predicted outflow from the splitter to pass through the swale with at least one foot of freeboard remaining. The flow splitter will consist of a 60-inch diameter manhole with a six-inch outlet at its base that leads to the swale, and a 12-inch bypass with its invert 0.35 feet higher than the primary invert. Freeboard calculations for the swale and stage-discharge table for the flow splitter are included in Appendix B.

Stormwater Outfall

Stormwater runoff will discharge to Fritchie Creek through a rip-rap outfall (southern basin) and a connection to the proposed culvert (northern basin). The proposed culvert will be designed to safely convey upstream flows and the stormwater flows discharged from the project site. This design will allow energy from the stormwater discharge to be dissipated within the culvert, and minimize erosion in Fritchie Creek. An in-pond weir designed to safely pass the 100-year flow will be constructed as the emergency overflow structure, and will discharge overland to Fritche Creek downstream of the proposed culvert crossing.

Appendix A –
Runoff Computations

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.004	6	1440	38	—	—	—	SOUTH_EXT
2	SBUH Runoff	0.384	6	480	5,463	—	—	—	SOUTH_IMP
3	SBUH Runoff	0.020	6	1020	1,079	—	—	—	SOUTH_PER
4	Combine	0.386	6	480	6,541	2, 3	—	—	SOUTH_TOT
5	Reservoir	0.081	6	924	6,518	4	157.71	2,053	Det. Pond
7	SBUH Runoff	0.002	6	1440	23	—	—	—	NORTH_EXT
8	SBUH Runoff	0.234	6	480	3,323	—	—	—	NORTH_IMP
9	SBUH Runoff	0.012	6	1014	658	—	—	—	NORTH_PER
10	Combine	0.236	6	480	3,982	8, 9	—	—	NORTH_TOT
11	Reservoir	0.063	6	624	3,961	10	0.81	803	N_STORAGE

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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.221	6	492	9,131	—	———	———	SOUTH_EXT
2	SBUH Runoff	1.305	6	474	18,917	—	———	———	SOUTH_IMP
3	SBUH Runoff	0.590	6	480	10,506	—	———	———	SOUTH_PER
4	Combine	1.891	6	480	29,422	2, 3	———	———	SOUTH_TOT
5	Reservoir	0.212	6	1404	29,399	4	161.29	16,534	Det. Pond
7	SBUH Runoff	0.163	6	486	5,564	—	———	———	NORTH_EXT
8	SBUH Runoff	0.794	6	474	11,508	—	———	———	NORTH_IMP
9	SBUH Runoff	0.402	6	480	6,413	—	———	———	NORTH_PER
10	Combine	1.193	6	480	17,921	8, 9	———	———	NORTH_TOT
11	Reservoir	0.159	6	1206	17,900	10	4.57	8,085	N_STORAGE

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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.817	6	486	19,755	—	—	—	SOUTH_EXT
2	SBUH Runoff	1.881	6	474	27,589	—	—	—	SOUTH_IMP
3	SBUH Runoff	1.109	6	480	18,169	—	—	—	SOUTH_PER
4	Combine	2.982	6	480	45,758	2, 3	—	—	SOUTH_TOT
5	Reservoir	0.674	6	660	45,735	4	161.67	18,185	Det. Pond
7	SBUH Runoff	0.575	6	480	12,039	—	—	—	NORTH_EXT
8	SBUH Runoff	1.145	6	474	16,783	—	—	—	NORTH_IMP
9	SBUH Runoff	0.745	6	480	11,091	—	—	—	NORTH_PER
10	Combine	1.884	6	480	27,874	8, 9	—	—	NORTH_TOT
11	Reservoir	0.548	6	558	27,854	10	5.07	8,915	N_STORAGE

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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	1.178	6	486	25,847	—	—	—	SOUTH_EXT
2	SBUH Runoff	2.168	6	474	31,933	—	—	—	SOUTH_IMP
3	SBUH Runoff	1.383	6	480	22,198	—	—	—	SOUTH_PER
4	Combine	3.541	6	480	54,131	2, 3	—	—	SOUTH_TOT
5	Reservoir	1.096	6	558	54,108	4	161.83	18,877	Det. Pond
7	SBUH Runoff	0.829	6	480	15,751	—	—	—	NORTH_EXT
8	SBUH Runoff	1.319	6	474	19,426	—	—	—	NORTH_IMP
9	SBUH Runoff	0.925	6	480	13,551	—	—	—	NORTH_PER
10	Combine	2.238	6	480	32,976	8, 9	—	—	NORTH_TOT
11	Reservoir	0.826	6	534	32,956	10	5.63	9,632	N_STORAGE

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Appendix B –
Water Quality Computations

SOUTH SWALE
WQ Flow

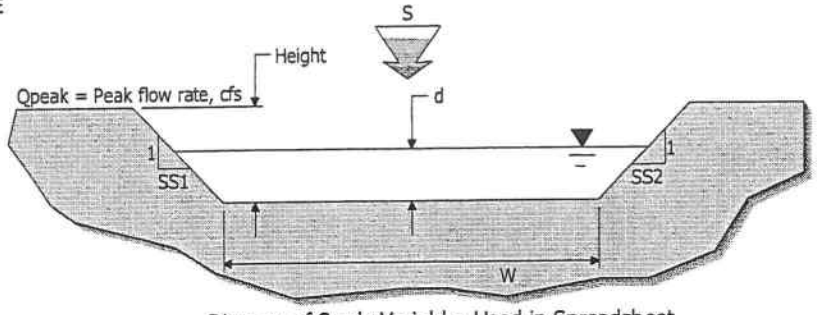


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	4	feet
Lengthwise Slope	S	0.008	feet/foot
Peak Flow Rate	Qpeak	0.386	cfs
Swale Height	Height	0.3333	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.96	inches
Cross-sectional Area	A	1.75	sf
Wetted Perimeter	WP	6.72	feet
Hydraulic Radius	R	0.26	feet
Computed Peak Flow Rate	Qpkcalc	0.38	cfs
Computed Peak Velocity	Vpkcalc	0.22	ft/sec
Computed Length	**L**	**117**	**feet**

NORTH SWALE
WQ Flow

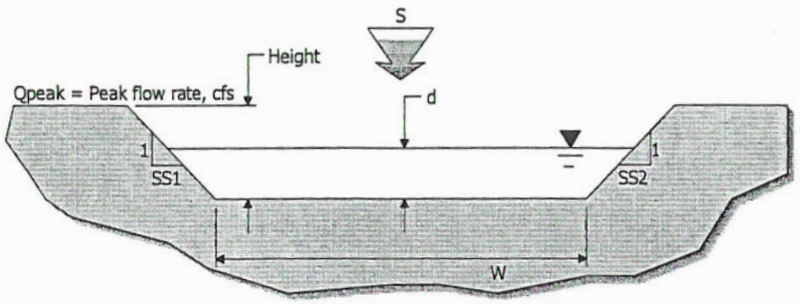


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	2	feet
Lengthwise Slope	S	0.009	feet/foot
Peak Flow Rate	Qpeak	0.236	cfs
Swale Height	Height	1.66667	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.94	inches
Cross-sectional Area	A	1.09	sf
Wetted Perimeter	WP	4.71	feet
Hydraulic Radius	R	0.23	feet
Computed Peak Flow Rate	Qpkcalc	0.23	cfs
Computed Peak Velocity	Vpkcalc	0.21	ft/sec
Computed Length	**L**	**115**	**feet**

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, May 9 2006, 1:45 PM

Pond No. 1 - North Basin Splitter

Pond Data

Bottom LxW = 4.4 x 4.4 ft Side slope = 0.0:1 Bottom elev. = 0.00 ft Depth = 1.60 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	0.00	20	0	0
0.08	0.08	20	2	2
0.16	0.16	20	2	3
0.24	0.24	20	2	5
0.32	0.32	20	2	6
0.40	0.40	20	2	8
0.48	0.48	20	2	9
0.56	0.56	20	2	11
0.64	0.64	20	2	13
0.72	0.72	20	2	14
0.80	0.80	20	2	16
0.88	0.88	20	2	17
0.96	0.96	20	2	19
1.04	1.04	20	2	20
1.12	1.12	20	2	22
1.20	1.20	20	2	24
1.28	1.28	20	2	25
1.36	1.36	20	2	27
1.44	1.44	20	2	28
1.52	1.52	20	2	30
1.60	1.60	20	2	31

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	12.00	0.00	0.00
Span (in)	= 6.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 0.00	0.35	0.00	0.00
Length (ft)	= 20.00	20.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs	
0.00	0	0.00	0.00	0.00	---	---	---	---	---	---	---	0.00	
0.08	2	0.08	0.02	0.00	---	---	---	---	---	---	---	0.02	
0.16	3	0.16	0.07	0.00	---	---	---	---	---	---	---	0.07	
0.24	5	0.24	0.13	0.00	---	---	---	---	---	---	---	0.13	
0.32	6	0.32	0.20	0.00	---	---	---	---	---	---	---	0.20	WQ 0.24
0.40	8	0.40	0.26	0.01	---	---	---	---	---	---	---	0.27	
0.48	9	0.48	0.29	0.07	---	---	---	---	---	---	---	0.37	
0.56	11	0.56	0.36	0.18	---	---	---	---	---	---	---	0.54	
0.64	13	0.64	0.44	0.30	---	---	---	---	---	---	---	0.74	
0.72	14	0.72	0.51	0.44	---	---	---	---	---	---	---	0.95	
0.80	16	0.80	0.57	0.59	---	---	---	---	---	---	---	1.16	
0.88	17	0.88	0.62	0.74	---	---	---	---	---	---	---	1.37	
0.96	19	0.96	0.67	0.89	---	---	---	---	---	---	---	1.57	
1.04	20	1.04	0.72	1.04	---	---	---	---	---	---	---	1.76	
1.12	22	1.12	0.76	1.17	---	---	---	---	---	---	---	1.94	
1.20	24	1.20	0.81	1.28	---	---	---	---	---	---	---	2.09	
1.28	25	1.28	0.85	1.36	---	---	---	---	---	---	---	2.21	25-yr 2.24
1.36	27	1.36	0.88	1.44	---	---	---	---	---	---	---	2.32	
1.44	28	1.44	0.92	1.89	---	---	---	---	---	---	---	2.81	
1.52	30	1.52	0.95	2.25	---	---	---	---	---	---	---	3.20	
1.60	31	1.60	0.99	2.56	---	---	---	---	---	---	---	3.55	

Appendix C –
Down Stream Analysis

Down Stream Analysis

Introduction

There are four drainage basins on the Tamarisk Property, referred to as Basins A, B, C, and D. See Figure A. Basin A is a 0.26-acre area that drains to an unnamed stream that is located off-site to the north. Basin B is a 4.36-acre area that drains to Fritchie Creek, the stream crossing the northern portion of the property. Basin C is an 8.27-acre area drained by an unnamed tributary of Fritchie Creek that traverses the middle portion of the property. Basin D is a 3.12-acre area that drains south to an unnamed stream located off-site. The basin locations, culverts, and other structures mentioned in this analysis are shown on the map in Figure A., following this report.

Review of Downstream System

Basin A

Basin A is located at the northwest corner of the project site and drains north toward an unnamed tributary that flows near the intersection of Johnson and Wisteria Roads, and contributes to the Tualatin River. At 0.26 acres, this basin is a small portion of the Tamarisk site and it is situated along the relatively flat portion of the ridge top. This portion of the site is not expected to generate flow rates significant enough to affect the receiving drainage channel.

Basin B

The 4.36-acres of Basin B drain directly to Fritchie Creek. Fritchie Creek enters the Tamarisk Property at the northern boundary and exits the property through a 48-inch culvert (B-3) under I-205. The Fritchie Creek channel meanders through a moderately flat, large floodplain. The adjacent slopes to the floodplain range from 37 percent on the north side of the stream to 35 percent on the south side.

Fill, which appears to be a future road crossing, has been placed across Fritchie Creek approximately 300 feet upstream of the Tamarisk Property boundary. A 36-inch Corrugated Metal Pipe (CMP) culvert (B-1) was installed to convey stream flows through this fill.

A defined channel has been recently excavated Downstream of Culvert B-1 in the Fritchie Creek floodplain. This channel conveys outflows from Culvert B-1 downstream to another fill placement and culvert crossing (B-2). It is unknown if this channel is a re-alignment or mitigation resulting from the construction of Culvert B-1 in Fritchie Creek. Large woody debris and excavated fill were placed along the newly excavated channel.

Table A.1
Structures along Fritchie Creek

Structure	Type	Dimensions
B-1 (off-site)	Single Barrel CMP Culvert	36-inch diameter
B-2 (off-site)	Triple Barrel CPP Culvert	15-inch diameter / barrel
B-3	Single Barrel CMP Culvert	48-inch diameter

Table A.1 *(Continued)*
Structures along Fritchie Creek

Structure	Type	Dimensions
B-4 (off-site)	Single Barrel CMP Culvert	48-inch diameter
B-5 (off-site)	Trapezoidal Box Culvert	10-foot width

Culvert B-2 is located approximately 240 feet downstream of Culvert B-1. Culvert-crossing B-2 consists of three, 15-inch corrugated plastic pipes placed under fill that also appears to be a future road crossing providing access to the Tamarisk project site. These culverts convey flows from the upstream excavated channel, under the placed fill, and discharge into the wetland.

During the field visit at the inlet for Culvert B-2, only one of the pipes was conveying flows. The two other pipes are higher and were dry. Examination of the culvert outlets revealed that the submerged pipe had significant amounts of sedimentation within the pipe. It appeared that the two exposed pipes will properly convey water only under high flow conditions. An analysis may be necessary to determine conveyance capacity of this culvert design.

The section of Fritchie Creek from Culvert B-2 downstream to Culvert B-3 is primarily wetland. There are small trees and ground vegetation along the banks with no apparent sign of erosion. The 40-foot section of Fritchie Creek upstream of Culvert B-3 has experienced erosion that has widened parts of the channel bottom to approximately ten feet. There was also significant aggradation of soil materials immediately upstream of Culvert B-3, where Fritchie Creek converges with the unnamed tributary from Basin C.

Approximately 700 feet downstream from Culvert B-3, there is a 48-inch CMP culvert (B-4) under a driveway entrance located on Johnson Road. Approximately 60 feet downstream from Culvert B-4 is Culvert B-5, which is a ten-foot wide trapezoidal box culvert passing under Johnson Road. This culvert is embedded and appears to be a stream simulation design. Culverts B-4 and B-5 appeared to be recently improved and well maintained.

Basin C

Basin C is the 8.5-acre central portion of the Tamarisk Property that is drained by an unnamed tributary to Fritchie Creek. The side slopes adjacent to the channel range from 40 percent to 45 percent and are vegetated with medium-sized trees, but sparse ground cover. The stream channel itself is thickly vegetated with blackberry and hard-stemmed species. The channel has an average longitudinal slope of 4.8 percent and flows from the eastern boundary of the site to a fill structure (C-1) designed as a road crossing. This structure has a 15-inch CMP culvert to convey the stream-flow. There did not appear to be any significant erosion upstream or downstream of Culvert C-1. This culvert is located approximately 250 feet upstream of the confluence with Fritchie Creek. The last 30 feet of the channel upstream from the Fritchie Creek confluence has experienced severe widening and aggradation of fine sediments. The confluence with Fritchie Creek is eight feet upstream of the inlet to the 48-inch culvert under I-205 (B-3).

Table A.2 Structure within Basin C		
Structure	Type	Dimensions
C-1	Single Barrel CMP Culvert	15-inch diameter

Basin D

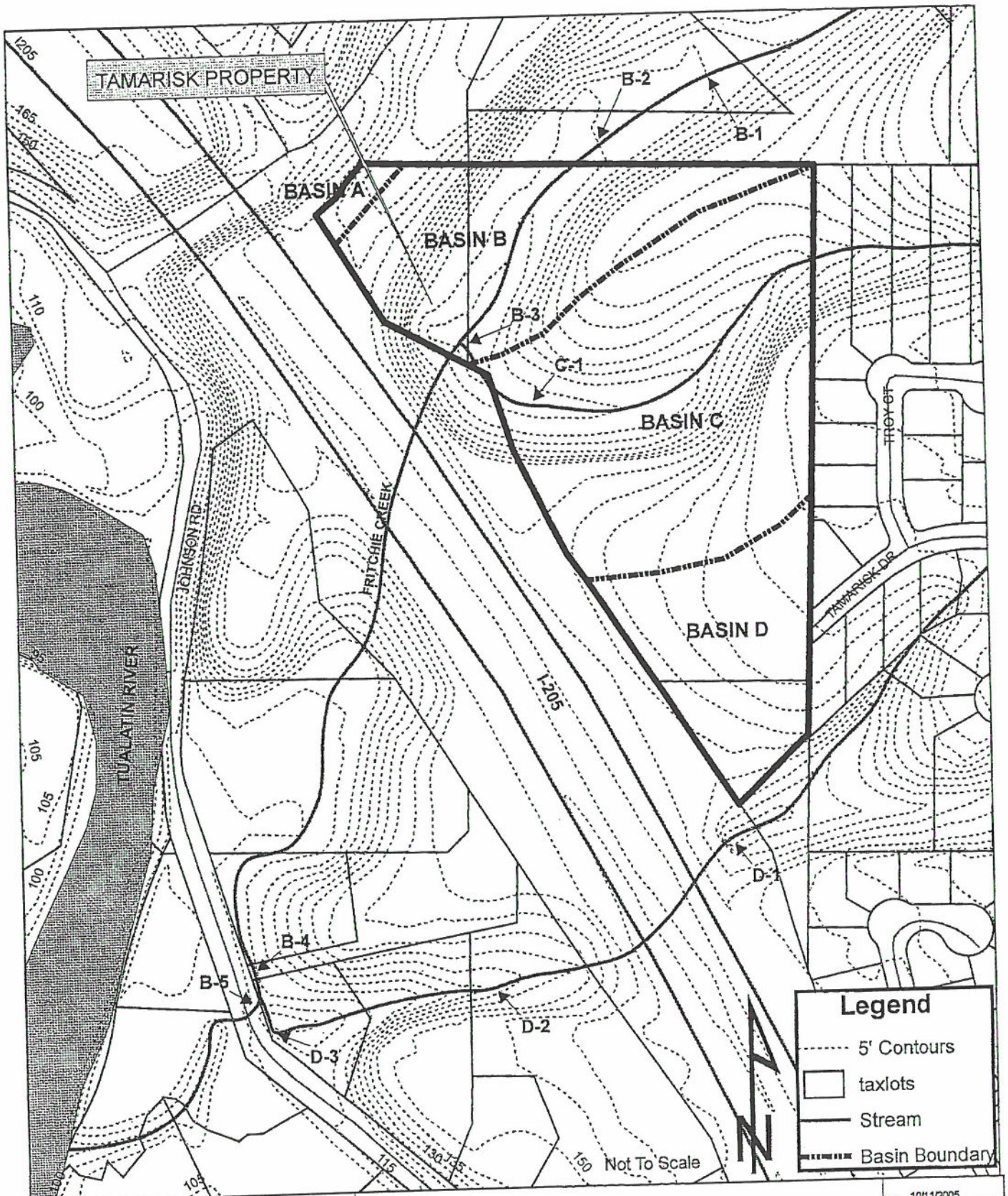
The off-site stream to the south of the Tamarisk Property that receives runoff from Basin D has side slopes of approximately 15 percent, and a longitudinal slope of approximately 3.8 percent. The upland slopes are well forested and have good ground cover with no evidence of erosion; however, the stream channel is incised and has heavily eroded banks. This unnamed stream is conveyed under I-205 through a 30-inch CMP culvert (D-1). There was little aggradation of eroded material near the inlet of Culvert D-1; therefore, the eroded channel material is apparently transported downstream.

Culvert D-1 discharges into a heavily vegetated detention facility (D-2) that has thick splays of aggraded soil material fanning out from the stream channel, causing the channel to migrate laterally within the facility. There is a 24-inch diameter riser that serves as the outlet structure from facility D-2, which is located approximately 200 feet downstream from the Culvert D-1 outlet. The outlet of the detention facility discharges to the natural channel and flows another 600 feet to Johnson Road. At Johnson Road the stream enters an 18-inch roadside culvert (D-3), then is conveyed 120 feet and discharges to Fritchie Creek at the inlet of the Johnson Road culvert (B-5). From this confluence, the combined streamflow enters the ten-foot wide trapezoidal box culvert (B-5), which is a cobble-stone-lined stream simulation culvert that flows under Johnson Road.

Table A.3 Structures Downstream of Basin D		
Structure	Type	Dimensions
D-1 (off-site)	Single Barrel CMP Culvert	30-inch diameter
D-2 (off-site)	CMP Flow Control Riser	24-inch diameter
D-3 (off-site)	Single Barrel Roadside Culvert	18-inch diameter

Conclusion

The relief across the Tamarisk Property varies greatly between the relatively flat ridge tops to the steep terrain adjacent to the stream channels. All drainage from Basins B, C, and D are transported under I-205 through two separate ODOT culverts, Culverts B-3 and D-1. The streams then converge at the inlet of the Johnson Road culvert (B-5). The channel downstream of Culvert B-5 has exposed scour surfaces that appear to be actively eroding the right outer bank. There is also under-cutting that appears to be undermining the root systems of large trees on the right outer bank. A photographic journal is also available but not included with this report.



otak

Otak, Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: 503.635.3618
Fax: 503.635.5395

TAMARISK PROPERTY

Location State

Figure A: Downstream Analysis

Date: 10/11/2005
Drawn: AJS Checked:
Project No.: 13458
File No.:
Sheet No.:

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
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February 6, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Letter of January 30, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your letter of incompleteness dated January 30, 2006. I am responding to each item individually and providing you with three copies of the materials, including updated exhibit sheets EX01 through EX12.

Planning Comment Responses

85.160(E)(9) *Show map uses on adjoining properties.*

Response: An aerial photograph of the surrounding properties is provided with this submittal as Exhibit 12. As indicated in the previous narrative, the surrounding properties are a mixture of urban residential, rural residential, and vacant uses. In visiting the site, and looking at the aerial, all of the surrounding properties appear to have homes located on them with a few exceptions, including I-205. Those exception areas appear to be drainageways, large rural lots, and I-205.

85.160(E)(5) *Map and identify all trees per 55.100(B)(2) so that the City arborist can make a determination as to which ones are significant. Only then can the applicant prepare an analysis of how much of the site's non-type I and II lands are being set aside to protect the trees and the protected dripline areas (expressed in square feet and as percentage of total non-type I and II lands)*

Response: A detailed analysis of the trees is provided in this submittal by way of the *Tamarisk Preliminary Arborist Report* from Arborist, Walt Knapp. The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

A-155

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85.160(F)(2) *Provide geotech report. We have already received one letter of concern from the public re: stability of site.*

Response: A preliminary geotechnical report assessing the stability of the soils on the proposed development has been prepared by Jim Imbrie, a registered Geotechnical Engineer in the State of Oregon, and is provided with this submittal as Appendix 2.

85.200(J)(9) *No tree inventory per 55.100(B)(2)*

Response: An inventory and analysis of the trees onsite is provided in Walt Knapp's *Tamarisk Preliminary Arborist Report.* The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

75.000 *The applicant may still wish to consider a variance for the street length and number of lots served. Ordinarily this would not be an issue since a stub out is provided. However, that stub out is into unincorporated lands, which raises concerns because there is no short to middle range likelihood that the road will actually go through.*

Response: A variance is being requested with a narrative attached as Appendix 3 to this letter.

Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. *32.050 1 – The 1996 Storm Drainage Master Plan shall be used as the basis for determining the existence of drainage ways. There appear to be two natural drainage ways on the Site. The north-south drainage way appears to be classified in the Storm Drainage Master Plan as a major open channel. The east-west drainage way appears to be classified in the Storm Drainage Master Plan as a minor open channel. Both drainage ways shall be identified on the tentative plans.*

   Response: Drainageways have been noted on the plan set (Sheet EX03).

2. *32.050 4 – Identify the wetlands and transition zone on Sheet EX05. Transition zones shall be in accordance with the requirements of Section 32.050-4 of the CDC.*

Response: The wetlands and transition zones are delineated on Sheet EX05. The transition zones were set in accordance with the requirements of Section 32.050(4) of the West Linn CDC and the site specific information provided in the Natural Resource Assessment prepared by SWCA.

3. *32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state. The applicant shall verify with the City and determine whether such improvements are required.*

Response: As indicated on page 23 of the narrative provided with the original application, the drainageways onsite have been delineated and surveyed. According to the report from SWCA, there is no indication that the drainageway is in an unhealthy state. If it is determined by the review authority to be unhealthy or disturbed, the applicant will comply with all necessary measures to ensure that the drainageway remains in a healthy state. The determination of the condition of the natural drainageways shall be verified by the City during review of the land use application.

Section 33.030

4. *33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070.*

Response: A tentative site plan (Sheet EX05A) has been added to the plan set in addition to the Tentative Subdivision Plat (Sheet EX05). A topographic survey is shown on the Existing Conditions Map (Sheet EX03). The preliminary water quality facility is proposed to be accommodated through an underground vault, which would not require a detailed planting plan. If it is determined by City staff that a vault system cannot be approved, then a detailed section and planting plan will be provided for a revised swale system.

Section 33.040

5. *33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC.*

Response: In accordance with Appendix 3, the Preliminary Stormwater Analysis, it was determined that no stormwater detention facilities would be proposed for the development and that water quality would be accommodated through a vault system. If it is subsequently

found by City staff that a vault system cannot be approved, then a detailed section and planting plan will be provided for a revised swale system in final design.

Section 33.050

6. *33.050 B2 – Provide a cross-section of the proposed stormwater facilities.*

Response: The proposed stormwater management facility located in Tract A will be a Stormwater360 StormFilter vault (in accordance with City of Portland BES SWMM approved devices). In order to treat the water quality volume, the stormwater vault will require approximately 10 cartridges. The structure will be below ground with access from the proposed pump station access road. No cross section is shown for this facility since it is an underground structure.

7. *33.050 B4 – Indicate locations of all trees measuring 6 inches in diameter at breast height or higher and a description of the existing vegetation species.*

Response: Existing trees are shown by symbol (Sheet EX06) and by survey point number (Sheet EX06A). A table of tree size/type is located in the appendix of the application as a reference to Sheet EX06A. Please see Appendix 1 to this letter.

8. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

Response: The proposed stormwater management facility located in Tract A will be a structural storm vault (in accordance with City of Portland SWMM approved devices). The structure will be below ground with a 15-foot-wide, all-weather, paved access from the proposed pump station access road. No maintenance vehicle access is provided to the bottom of the drainageway.

Section 85.150 and 85.200

9. *85.150 A3 – Provide a narrative explaining all aspects of land division per Section 85.200.*

Response: The applicable approval criteria in Section 85.200 of the West Linn CDC are discussed in the original narrative for the proposed subdivision beginning on page 45.

10. *85.200 A3 – The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. In addition, the proposed local road section identified on Sheet EX01 indicates a 5-foot planter strip. In accordance with the Sidewalk Width table provided on page 85-23 of the CDC, 6-foot planter strips are*

required for residential developments. The additional 1 foot of planter strip on either side of the street would result in a right-of-way width of 52 feet, which corresponds to Option E on the table on page 85-22 of the CDC. The applicant should consult with the City to determine the required street section.

Response: According to the traffic analysis completed by Dunn Traffic, and included as Appendix 1 to the original narrative, the development, if developed with 40 lots, could be expected to generate 383 average daily trips. Subsequent to Mr. Dunn's report, the application was revised so that only 35 lots were proposed. Utilizing 9.575 average daily trips, the proposed development could be expected to generate approximately 336 average daily trips. Figure 3-15 of the West Linn Transportation System Plan allows for a 28-foot local residential street with parking on both sides within a 50-foot right-of-way for local streets that accommodate less than 1,000 vehicle trips per day. It is for this reason that these road sections were proposed with this application. A 50-foot right-of-way width was originally discussed with the City engineer at the pre-application meeting.

11. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet.*

Response: There is only one true cul-de-sac (Street B) in the proposed development with a length of 265 feet from the centerline of the intersecting right-of-way to the back of curb. There is a long stub street within the development that according to staff in the pre-application meeting would not require a variance. Subsequently, we have discussed this further with staff, and at their direction, are applying for a variance to vary the standard if proposed Street "A" is viewed as a cul-de-sac. That variance request is provided as Appendix 3 to this letter.

12. *85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street.*

Response: According to the West Linn CDC Section 32.030, the City engineer has the flexibility to vary the street standards to minimize impacts to the drainageway. According to City staff, this has been a widely accepted practice in West Linn when streets are proposed across drainageways. The proposed section was discussed with City staff at the pre-application conference. A concrete street crossing is proposed at each end of the drainageway crossing.

13. *85.200 E3 – There is a substantial amount of fill proposed where Street A crosses the drainage way/ wetland. If areas are to be graded with more than any 4-foot cut or fill, compliance with Section 85.170(C) is required.*

Section 85.170 C1 requires that information on the character of the soil be provided. This information should be provided in the form of a geotechnical report.

Response: Section 85.170(C) requires, "(1) If areas are to be graded, a plan showing the location of cuts, fill and retaining wall, and information on the character of soil shall be provided. The grading plan shall show proposed and existing contours at intervals per Section 85.160(E)(2), and (2) the grading plan shall demonstrate that the proposed grading to accommodate roadway standards and create appropriate building sites, is the minimum amount necessary." A preliminary grading plan showing the location of cuts, fills, and retaining walls was submitted in plan sheet EX07 to the original submittal. A preliminary geotechnical report prepared by GeoPacific Engineering is included as Appendix 2 to this letter of the application. The geotechnical information speaks to the characters of the soils onsite. The amount of proposed grading is necessary to construct the proposed road.

14. *85.200 F1 – Provide detailed information on the two proposed connections to existing water systems.*

Response: In accordance with discussions with the City and utility design requirements outlined in the pre-application meeting, the City will require a looped system to improve fire flows and overall public water system performance. The connection at the existing Tamarisk Drive street end will be a 6-inch tie-in to the existing line. Phase 1 (25 lots) will be served by this dead-end water line. Phase 2 will require the extension of the 6-inch stubbed line to be extended to the west through the I-5 underpass and connected to the existing 6-inch public water line stub in SW Johnson Road. These connections will be installed in accordance with City standards.

15. *85.200 F2 – On Sheet EX08, indicate the size(s) of all water lines serving the development.*

Response: Existing and proposed water line sizes have been added to Exhibit 08. All proposed water lines are 6-inch diameter.

16. *85.200 F5 – Provide a written statement, signed by the City Engineer, that water service can be made available to the Site by construction of onsite and offsite improvements and that such water service has sufficient volume and pressure to serve the proposed development's domestic and fire flows.*

Response: A formal request via email for this information has been requested of the City engineer; however, staff has indicated that the information is provided in the pre-application notes provided as Appendix 5 to the original submittal. The information is provided from Dennis Wright in the Water and Sewer section of his memo to the West Linn Planning Division.

17. *85.200 G1 and G2 – Sheet EX08 must show how the sanitary sewer system is gravity efficient. Invert elevations shall be provided to demonstrate this. In addition, provide detailed information on the proposed connection to the existing sewer in Tamarisk Drive.*

Response: Preliminary sanitary sewer invert elevations at the uphill end of each line and at the manhole to the pump station have been added to Sheet EX08 and are provided with this letter. Minimum slope for the 8-inch public sewer will be 0.004 ft/ft. The proposed connection to the existing manhole in Tamarisk Drive will be designed/constructed in accordance with City standards.

18. *85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.*

Response: The sanitary sewer line will cross the wetland/drainageway at the proposed roadway crossing. Mitigation will be provided for the roadway improvements. No additional disturbance is proposed beyond the limits of the roadway improvement for installation of the sanitary sewer line.

19. *85.200 G7 – Sanitary sewer shall be extended or stubbed out to the next developable subdivision. Show a sewer stub at the north end of the sanitary sewer system. Is the pump station being designed to accommodate further development north of this project?*

Response: The sanitary sewer line is shown extending to the north property line. The pump station design will consider the overall future development basin for sizing of the pumps. The pump station may be designed for anticipated development flows, with the ability to upsize pumps in the future to provide additional capacity for future development north of the property.

20. *85.200 G9 – Provide a written statement, signed by the City Engineer, that existing sanitary sewers have sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.*

Response: A formal request via email for this information has been requested of the City engineer; however, staff has indicated that the information is provided in the pre-application notes provided as Appendix 5 to the original submittal. The information is provided from Dennis Wright in the Water and Sewer section of his memo to the West Linn Planning Division.

21. *85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.*

Response: No stormwater detention is proposed for the Tamarisk Development. Stormwater treatment will be provided with the use of a Stormwater360 StormFilter Vault.

22. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

Response: Due to the site location at the downstream end of the Fritchie Creek drainage basin near the Tualatin River, and the project's small contribution to Fritchie Creek, no detention is proposed for this project. Based on observations documented in the downstream analysis, Fritchie Creek is expected to be able to convey future flows. If deficiencies are identified during design, the project will either remove obstructions in Fritchie Creek or provide stormwater detention.

The total Fritchie Creek drainage basin was delineated using the Oregon Water Resources Department's web-based auto delineation tool and is approximately 332 acres. The total proposed project area is approximately 15.5 acres. Therefore, the project area comprises less than 5 percent of the total Fritchie Creek drainage basin area and should not significantly increase the intensity of runoff downstream.

The project site is located in the lower portion of the Fritchie Creek drainage that is approximately 1,560 feet upstream from the confluence with the Tualatin River. An energy dissipator will be incorporated into the proposed culvert crossing to minimize the discharge velocity of stormwater runoff at the outfall. Water quality treatment will be provided with the use of a Stormwater360 StormFilter Vault.

23. *85.200 H3 – Plans shall demonstrate how stormwater drainage will be collected from all impervious surfaces, including roof drains. Stormwater drainage connections shall be provided to each dwelling unit/ lot.*

Response: A note was added to the plans stating that all lots shall have storm lateral pipe to connect to the public storm drain system in the public street. Roof drains and lot area drains shall be connected to the public storm system in the street wherever possible. Some lots may require foundation drains to be discharged to the back yards into a trench drain for disposal into the drainage.

24. *85.200 I – All subdivisions shall establish, at a minimum, 5-foot utility easements on front and rear lot lines. The location, width, and purpose of all easements shall be identified on the Tentative Plan.*

Response: A 5-foot public utility easement has been added to the front lot lines of all lots in the subdivision (Sheet EX05).

25. *85.200 J4 – Indicate locations of proposed street lights on the Tentative Plan.*

Response: The preliminary locations of proposed street lights have been added to Sheet EX05A and EX08. These locations will have to be verified with City staff in final design and construction.

Section 85.160

26. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

Response: A stamp and signature has been added to the Tentative Plat (Sheet EX05).

27. *85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown.*

Response: Street names for preliminary design and construction documents shall be designated as Street A and Street B. Final street names will be determined prior to final plat approval. This is in line with past practices at the City of West Linn.

28. *85.160 D4 – Provide a tie to the City's coordinate system.*

Response: The location of the proposed land division is shown on the project map and vicinity map on Sheet EX01. The site information is noted as Tax Map 21E34A, tax lots 600, 690, and 700. A tie to the City coordinate system will be provided with the final design and final plat. Project surveyors tied into the City Benchmark listed below for the topographic survey.

"City of West Linn Bench Mark "B" is 93.5' east and 17.0' south of the edge of pavement from 4-way intersection of Rosemont/Santa Anita. 3" cap on pipe with yellow water works lid elevation = 667.22."

29. *85.160 E1 – On Sheet EX05, provide the widths of all existing or platted streets within 50 feet of, or adjacent to, the tract, together with easements and other important features such as section lines, donation land claim corners, section corners, City boundary lines, and monuments.*

Response: Additional information has been added to the Project Map on Sheet EX05.

30. *85.160 E5 – Isolated trees (6 inches in diameter at 5 feet above grade) should be identified by size, type, and location on the Tentative Plan.*

Response: An inventory and analysis of the trees onsite is provided in Walt Knapp's *Tamarisk Preliminary Arborist Report.* The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

31. *85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property.*

Response: Additional information has been added to Sheet EX08.

32. *85.160 F6 – Sheet EX11 shall include a tree planting schedule approved by the Parks Department.*

Response: A street tree plan is shown on Sheet EX11. The specific type and size of tree is typically provided during final construction. As proposed, a street tree that is available on the local market and approved by the City arborist will be selected for planting.

33. *85.160 F7 – Indicate any land area to be dedicated to the City or placed in common ownership.*

Response: Only the public streets are proposed to be dedicated to the City at this time. The narrative indicates that all areas outside of the proposed lots will either be dedicated to the City, or placed in protective easements to be owned in common by residents of the proposed development.

34. *85.160 F8 – On Sheet EX05, show the phase boundaries in the plan view. On Sheet EX08, show how the utilities are being phased.*

Response: The phase boundary is labeled at the south transition zone boundary and denoted as Phase I and Phase II. A table on Sheet EX05 outlines the phasing limits. This table has also been added to Sheet EX08.

Section 85.170

35. *85.170 A4 – On Sheet EX05, indicate when each phase will occur.*

Response: It is anticipated that the Phase I construction will occur in the summer/fall of 2006. The schedule for Phase II is dependent on the completion of Phase 1 and favorable market conditions for development. An expiration date for completing the subdivision phases will be included in the conditions of approval of the subdivision in accordance with CDC section 85.110.

36. *85.170 B1 –On Sheet EX10, the "K" value indicated for the Street B vertical curve is too low. According to American Association of State Highway Transportation Officials (AASHTO) guidelines, a sag curve with design speed of 25 miles per hour (mph) corresponds to a "K"value of 26.*

Response: The vertical curve shown on Street B is for a proposed stop-controlled intersection (stop sign on Street B prior to entering Street A). It is assumed the design speeds for the stop-controlled intersection will be below 25 mph. A proposed minimum K-value of 12 will provide the comfort design for the west end of Street B and not impact stopping sight distance.

37. *85.170 E2 – Provide depths of the sanitary sewers at the manholes and show how each lot would be sewered.*

Response: Preliminary sanitary sewer invert elevations at the uphill end of each line and at the manhole to the pump station have been added to Sheet EX08. Minimum slope for the 8-inch public sewer will be 0.004 ft/ft. The proposed connection to the existing manhole in Tamarisk Drive will be designed/constructed in accordance with City standards. Preliminary sanitary lateral locations are shown on the Tentative Utility Plan (Sheet EX08). Final locations/depths of laterals will be determined at final design based on final lot grading and lot design.

38. *85.170 E6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.*

Response: The sanitary sewer line will cross the wetland/drainageway at the proposed roadway crossing. Mitigation will be provided for the roadway improvements in accordance with DSL and USACOE requirements. No additional disturbance is proposed beyond the limits of the roadway improvement for installation of the sanitary sewer line. The code specifically allows these types of disturbances as long as they are mitigated. The most likely scenario for mitigation would be enhancement of the drainageway.

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39. *85.170 F3 – Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system.*

Response: Preliminary storm lateral locations are shown on the Tentative Utility Plan (Sheet EX08). Final locations/depths of laterals will be determined at final design based on final lot grading and lot design. Storm drain material will meet City of West Linn standard specifications.

40. *85.170 F4 – The detention facilities should include a vegetation plan for the facility.*

Response: No stormwater detention facilities are proposed for the development.

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

41. *Show proposed curb cuts for driveways at each lot.*

Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

42. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

43. *On Sheet EX01, show the typical cross-slope on the street sections.*

Response: A typical cross slope has been added to the street cross section on Sheet EX01.

44. *During the pre-application conference, it was decided that the applicant will need to provide a tree survey of all significant trees on the Site and comply with the provisions of CDC 55.100(B)(2). This does not appear to have been included with the application.*

Response: A detailed analysis of the trees is provided in this submittal by way of the *Tamarisk Preliminary Arborist Report* from Arborist, Walt Knapp. The report coincides with the data

provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

The information cited above is supported largely by the documentation provided in the narrative, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosures: Appendix 1, Arborist Report
Appendix 2, Geotechnical Report
Appendix 3, Variance Request
Revised Exhibits

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Appendix 1—Arborist Report

Walter H. Knapp
Silviculture & Urban Forestry

February 2, 2006

TAMARISK PRELIMINARY ARBORIST REPORT

Site Description

The proposed Tamarisk development in West Linn, Oregon, is a heavily forested site with a wide range of native tree species (table 1). Most of the site had been logged within the last 25 years. Only the steep slopes, inaccessible areas, and lower-value trees were retained and represent an older, larger, and more diverse ecosystem.

Bigleaf maple is the most common species, representing 44% of the tree inventory. Red alder, with 21% of the trees, is also common. The conifers – western redcedar and Douglas-fir – account for a total of 30%. These four species – maple, alder, cedar, and fir – total 95% of the trees.

The forest conditions in the uplands (type 3 and type 4 areas) are in the stem exclusion phase of stand development, where the trees are competing with each other. As the trees grow larger, those that dominate will choke out the smaller competitors, which will eventually die. In many cases, species with fast juvenile growth, such as alder and maple, are overtopped by conifers with long-term sustained growth. In addition, alder is relatively short lived, and will begin to gradually die out after 40-60 years.

A listing of surveyed trees on the site and immediately adjacent areas is included in the tree inventory enclosed with this report.

Table 1. Species distribution, Tamarisk site.

Common Name	*Botanical Name*	# Trees	Percent
Maple	*Acer macrophyllum*	679	44%
Alder	*Alnus rubra*	320	21%
Cedar	*Thuja plicata*	236	15%
Fir	*Pseudotsuga menziesii*	236	15%
Cottonwood	*Populus trichocarpa*	55	4%
Hawthorne	*Crataegus sp.*	10	1%
Fruit	*Malus sp.*	5	0.3%
Elm	*Ulmus americana*	3	0.2%
Madrona	*Arbutus menziesii*	2	0.1%
Holly	*Ilex sp.*	1	0.1%
Grand Total		1547	100%

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7615 SW Dunsmuir Lane, Beaverton, OR 97007
Phone: (503) 646-4349 Fax: (503) 265-8117

No stand-level insect or disease conditions were identified during site reconnaissance. In addition, individual trees with stem decay or structural defects were not prevalent. However, a more detailed examination to identify trees with hazardous conditions near frequent use areas will be needed after site development. For example, defective trees or those vulnerable to windthrow will only need to be removed if they would impact a portion of the developed site.

Few if any trees in the upland areas meet the criteria of City of West Linn for classification as "significant." The City Arborist has been given the authority to designate significant trees and groves. To date, there have been no significant trees identified on type 3 and 4 lands.

Much of the lesser vegetation, the shrubs, forbs, grasses, and other plants, are representative of native species. In the uplands, this includes sword fern, Oregon grape, salal, hazel, and other common understory plants. Although there are areas of intrusion from invasive species, such as Himalayan blackberry and English ivy, the native vegetation is predominant in the uplands.

Land Type and Propose Prescriptions

Within the uplands, 77% of the trees will be removed on type 3 lands, and 80% will be removed on type 4 lands to provide for construction of site improvements, homes, and other infrastructure (table 2). Only 12% of the trees will be cut on type 1 lands and 45% on type 2 lands. Many of the protected trees on type 1 and 2 lands are conifers – Douglas-firs and western redcedars – in good to excellent condition, and growing in locations where they will provide long-term visual amenities and wildlife habitat to the site.

Table 2. Tree retention and removal by land type, Tamarisk Property, West Linn, OR

Land Type	Save	%	Remove	%	Total	Total %
offsite	18	100%	0	0%	18	100%
Type 1	383	88%	50	12%	433	100%
Type 2	58	55%	48	45%	106	100%
Type 3	42	23%	140	77%	182	100%
Type 4	159	20%	649	80%	808	100%
Total	660	43%	887	57%	1547	100%

No off-site trees are planned for removal unless designated due to construction of approved utilities or transportation access.

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PRELIMINARY TREE PROTECTION REQUIREMENTS

The protection measures listed in this report are preliminary. Prior to site development, the following protection requirements will need to be more specific, including an on-site location of tree protection areas by the project arborist:

1. **Tree Protection Area.** The project arborist shall designate the Tree Protection Zone (TPZ). Where feasible, the TPZ shall be established at the dripline of the tree or grove as a minimum. If infrastructure (roads, sidewalks, and utilities) must be installed closer to the tree(s), the TPZ may be established within the dripline area if the project arborist determines that the tree(s) will not be unduly damaged. The protection area is designated on construction drawings.
2. **Protection Fencing.** All trees to be retained shall be protected by orange construction fencing installed prior to construction. Protection fencing shall be secured to steel posts placed no further than 10 feet apart and shall be installed at the edge of the TPZ.
3. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
4. **Excavation – TPZ.** Excavation with the TPZ shall be avoided if alternatives are available. If excavation within the TPZ in unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches. All construction within the TPZ shall be under the on-site technical supervision of the project arborist.
5. **Tree Protection Inspection.** The project arborist shall monitor construction activities and progress, and provide written reports at regular intervals.
7. **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the remaining trees.

Walter H. Knapp
Certified Forester, SAF 406
Certified Arborist, ISA PN-0497

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7615 SW Dunsmuir Lane, Beaverton, OR 97007
Phone: (503) 646-4349 Fax: (503) 265-8117

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1138	Cedar	24				Type 4	Remove
1139	Cedar	24				offsite	Save
1140	Cedar	10				Type 4	Save
1141	Cedar	8				Type 4	Save
1142	Cedar	30				Type 4	Remove
1143	Cedar	18				Type 4	Remove
1144	Maple	24				Type 4	Remove
1145	Maple	9x6	-	10		Type 4	Remove
1146	Maple	12				Type 4	Remove
1147	Maple	3x6	-	12		Type 4	Save
1148	Alder	2x8	-	10		Type 4	Remove
1149	Elm	2x8				Type 4	Remove
1150	Cedar	24				Type 4	Remove
1151	Maple	8x6	-	8		Type 4	Remove
1152	Cedar	18				Type 4	Remove
1153	Maple	24				Type 4	Remove
1154	Maple	2x6	-	8		Type 4	Remove
1155	Maple	5x6	-	10		Type 4	Remove
1156	Cedar	10				Type 4	Remove
1157	Cedar	16				Type 4	Remove
1158	Cedar	36				Type 4	Remove
1159	Maple	8				Type 4	Remove
1160	Fir	6				Type 4	Remove
1161	Alder	6				Type 4	Remove
1162	Alder	14				Type 4	Remove
1163	Alder	10				Type 4	Remove
1164	Alder	8				Type 4	Remove
1165	Alder	8				Type 4	Remove
1166	Maple	14				Type 4	Remove
1167	Maple	12				Type 4	Remove
1168	Maple	10				Type 4	Remove
1169	Elm	8				Type 4	Remove
1170	Fir	10				Type 4	Remove
1171	Fir	8				Type 4	Remove
1173	Maple	18				Type 4	Remove
1174	Maple	3x6	-	12		Type 4	Remove
1175	Maple	5x6	-	8		Type 4	Remove
1178	Maple	24				Type 4	Remove
1179	Maple	6				Type 4	Remove
1180	Fir	12				Type 4	Remove
1181	Maple	27				Type 1	Save
1182	Maple	18				Type 1	Save
1183	Cedar	12001				Type 1	Save
1184	Maple	18				Type 1	Save
1185	Fir	8				Type 1	Save
1186	Fir	8				Type 1	Save
1187	Maple	2x6				Type 1	Save
1188	Fir	8				Type 1	Save
1189	Maple	2x6	-	15		Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1190	Fir	8				Type 1	Save
1191	Maple	24				Type 1	Save
1192	Fir	10				Type 1	Save
1193	Fir	8				Type 1	Save
1194	Maple	2x30				Type 1	Save
1195	Fir	6				Type 1	Save
1196	Fir	6				Type 1	Save
1197	Maple	6				Type 4	Remove
1198	Maple	2x10	-	12		Type 1	Save
1199	Fir	8				Type 1	Save
1200	Fir	6				Type 1	Save
1201	Fir	12				Type 1	Save
1202	Maple	18				Type 1	Save
1203	Fir	18				Type 1	Save
1204	Fir	18				Type 4	Remove
1205	Fir	15				Type 4	Remove
1206	Fir	6				Type 1	Remove
1207	Maple	18				Type 1	Save
1208	Maple	2x12				Type 1	Save
1209	Maple	24				Type 1	Save
1210	Fir	8				Type 1	Save
1211	Maple	30				offsite	Save
1212	Cedar	30				Type 4	Remove
1213	Maple	4x6	-	12		Type 4	Remove
1214	Maple	5x6	-	8		Type 4	Remove
1215	Maple	6				Type 4	Remove
1216	Cedar	24				Type 4	Remove
1217	Cedar	2x10	-	15		Type 4	Remove
1236	Maple	7x6	-	10		Type 4	Remove
1237	Alder	12				Type 4	Remove
1238	Fir	24				Type 4	Remove
1239	Cedar	24				Type 4	Remove
1240	Maple	5x6	-	8		Type 4	Remove
1241	Maple	8x6	-	12		Type 4	Remove
1242	Cedar	18				Type 4	Remove
1243	Maple	8x6	-	8		Type 4	Remove
1244	Maple	6				Type 4	Remove
1245	Maple	3x8	-	12		Type 4	Remove
1246	Maple	6x6	-	10		Type 4	Remove
1247	Maple	2x6	-	8		Type 4	Remove
1248	Maple	8				Type 4	Remove
1249	Maple	8				Type 4	Remove
1251	Maple	6x6	-	8		Type 4	Remove
1257	Maple	30				Type 1	Save
1261	Maple	10				Type 4	Save
1262	Maple	5x10	-	20		Type 4	Save
1263	Maple	10				Type 4	Save
1264	Alder	10				Type 4	Remove
1265	Alder	12				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1266	Fir	6				Type 4	Remove
1267	Alder	2x6				Type 4	Remove
1268	Maple	8				Type 4	Remove
1269	Maple	6x6	-	10		Type 4	Remove
1270	Maple	6				Type 4	Remove
1271	Maple	2x6	-	8		Type 4	Remove
1274	Maple	2x8	-	10		Type 4	Remove
1275	Maple	8				Type 4	Remove
1276	Maple	6x6	-	12		Type 4	Remove
1277	Maple	6x6	-	10		Type 4	Remove
1278	Maple	4x8	-	10		Type 4	Remove
1280	Maple	8				Type 4	Remove
1281	Maple	10x6	-	12		Type 4	Remove
1282	Maple	9x6	-	14		Type 4	Remove
1283	Maple	3x6	-	8		Type 4	Remove
1284	Maple	2x6				Type 4	Remove
1285	Fir	30				Type 4	Save
1286	Maple	30				Type 4	Remove
1306	Maple	14				Type 4	Remove
1307	Maple	18				Type 4	Remove
1308	Maple	14				Type 4	Remove
1309	Fir	20				offsite	Save
1310	Maple	14				Type 4	Remove
1311	Cedar	18				Type 4	Remove
1312	Cedar	26				Type 4	Remove
1313	Maple	24				Type 4	Remove
1314	Maple	9x6	-	12		Type 4	Remove
1315	Maple	9x6	-	8		Type 4	Remove
1316	Alder	5x6	-	10		Type 4	Remove
1317	Cedar	12				Type 4	Remove
1318	Maple	7x6	-	8		Type 4	Remove
1319	Maple	10x6	-	8		Type 4	Remove
1320	Maple	5x6	-	10		Type 4	Remove
1321	Maple	8x6	-	10		Type 4	Remove
1322	Maple	10				Type 4	Remove
1323	Maple	5x6				Type 4	Remove
1324	Maple	12x6	-	8		Type 4	Remove
1325	Maple	10x6	-	10		Type 4	Remove
1326	Cedar	36				Type 4	Remove
1327	Maple	6				Type 4	Remove
1328	Maple	6				Type 4	Remove
1329	Maple	2x8	-	10		Type 4	Remove
1330	Maple	6				Type 4	Remove
1331	Maple	10x6	-	10		Type 4	Remove
1332	Alder	12				Type 4	Remove
1333	Alder	8				Type 4	Remove
1334	Fir	8				Type 4	Remove
1335	Fir	8				Type 4	Remove
1336	Alder	8				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1337	Fir	8				Type 4	Remove
1338	Fir	10				Type 4	Remove
1339	Fir	8				Type 4	Remove
1340	Fir	10				Type 4	Remove
1341	Maple	10				Type 4	Remove
1342	Maple	6				Type 4	Remove
1343	Maple	6				Type 4	Remove
1344	Alder	12				Type 4	Remove
1345	Alder	10				Type 4	Remove
1346	Alder	6				Type 4	Remove
1347	Alder	3x6	-	8		Type 4	Remove
1348	Alder	2x10	-	12		Type 4	Remove
1349	Maple	12				Type 4	Remove
1350	Fir	6				Type 4	Remove
1351	Fir	10				Type 4	Remove
1352	Fir	6				Type 4	Remove
1353	Fir	6				Type 4	Remove
1354	Alder	8				Type 4	Remove
1355	Fir	2x6	-	8		Type 4	Remove
1356	Alder	6				Type 4	Remove
1357	Fir	6				Type 4	Remove
1358	Fir	8				Type 4	Remove
1359	Fir	8				Type 4	Remove
1360	Maple	2x10	-	18		Type 4	Remove
1361	Maple	6x6	-	8		Type 4	Remove
1362	Cedar	18				Type 4	Remove
1363	Maple	5x6	-	8		Type 4	Remove
1364	Maple	8x6	-	8		Type 4	Remove
1365	Maple	2x6				Type 4	Remove
1366	Cedar	36				Type 4	Remove
1367	Alder	2x10				Type 4	Remove
1368	Maple	14				Type 4	Remove
1369	Maple	5x6	-	10		Type 4	Remove
1370	Maple	8x6	-	8		Type 4	Remove
1371	Maple	6x6				Type 4	Remove
1372	Maple	14				Type 4	Remove
1373	Maple	7x6	-	12		Type 4	Remove
1374	Cedar	30				Type 4	Remove
1375	Maple	4x8	-	10		Type 4	Remove
1376	Maple	10x6	-	8		Type 4	Remove
1377	Maple	10x6	-	8		Type 4	Remove
1378	Maple	7x6	-	8		Type 4	Remove
1379	Maple	6				Type 4	Remove
1380	Maple	8				Type 4	Remove
1381	Maple	2x6	-	8		Type 4	Remove
1382	Maple	2x6				Type 4	Remove
1383	Maple	6				Type 4	Remove
1384	Maple	14				Type 4	Remove
1385	Hawthorne	10				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1386	Hawthorne	10				Type 4	Remove
1387	Hawthorne	8				Type 4	Remove
1388	Hawthorne	6				Type 4	Remove
1389	Hawthorne	6				Type 4	Remove
1390	Hawthorne	8				Type 4	Remove
1391	Hawthorne	6				Type 4	Remove
1392	Cedar	18				Type 4	Remove
1393	Hawthorne	8				Type 4	Remove
1394	Hawthorne	6				Type 4	Remove
1395	Maple	2x6	-	8		Type 4	Remove
1396	Hawthorne	10				Type 4	Remove
1397	Cedar	18				Type 4	Remove
1398	Maple	8				Type 4	Remove
1399	Maple	10				Type 4	Remove
1400	Cottonwood	18				Type 4	Remove
1401	Cottonwood	3x14	-	18		Type 4	Remove
1402	Maple	2x8	-	10		Type 4	Remove
1403	Alder	10				Type 4	Remove
1404	Cedar	30				Type 4	Remove
1405	Cedar	26				Type 4	Remove
1406	Maple	6x6	-	8		Type 4	Remove
1407	Maple	4x6	-	8		Type 4	Remove
1408	Maple	12				Type 4	Remove
1409	Maple	3x6	-	14		Type 4	Remove
1410	Maple	6				Type 4	Remove
1411	Maple	10				Type 4	Remove
1412	Maple	6				Type 4	Remove
1413	Maple	6				Type 4	Remove
1414	Maple	8				Type 4	Remove
1415	Maple	8				Type 4	Remove
1416	Maple	8				Type 4	Remove
1417	Maple	10				Type 4	Remove
1418	Cedar	18				Type 4	Remove
1419	Maple	10				Type 4	Remove
1420	Maple	8				Type 4	Remove
1421	Cedar	24				Type 4	Remove
1422	Fir	10				Type 4	Remove
1423	Fir	6				Type 4	Remove
1424	Fir	8				Type 4	Remove
1425	Fir	10				Type 4	Remove
1426	Fir	6				Type 4	Remove
1427	Fir	10				Type 4	Remove
1428	Fir	8				Type 4	Remove
1429	Fir	8				Type 4	Remove
1430	Maple	5x6	-	8		Type 4	Remove
1431	Maple	10x6	-	10		Type 4	Remove
1440	Maple	3x6	-	8		Type 4	Remove
1441	Maple	4x6	-	8		Type 4	Remove
1442	Maple	16				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1443	Alder	8				Type 4	Remove
1444	Alder	12				Type 4	Remove
1445	Maple	16				Type 4	Remove
1446	Maple	8				Type 4	Remove
1447	Alder	12				Type 4	Remove
1448	Alder	2x8	-	10		Type 4	Remove
1449	Alder	8				Type 4	Remove
1450	Maple	6x6	-	8		Type 4	Remove
1451	Maple	2x6	-	8		Type 4	Remove
1452	Maple	2x6	-	8		Type 4	Remove
1453	Maple	10				Type 4	Remove
1454	Cedar	28				Type 4	Remove
1455	Cedar	24				Type 4	Remove
1456	Maple	6x6	-	8		Type 4	Remove
1457	Maple	6				Type 4	Remove
1458	Maple	12				Type 4	Remove
1459	Fir	6				Type 4	Remove
1460	Maple	6				Type 4	Remove
1461	Fir	6				Type 4	Remove
1462	Maple	6				Type 4	Remove
1463	Maple	8				Type 4	Remove
1464	Maple	3x6				Type 4	Remove
1465	Maple	9x6	-	10		Type 4	Remove
1466	Maple	8				Type 4	Remove
1467	Alder	10				Type 4	Remove
1468	Maple	18				Type 4	Remove
1469	Maple	6x6	-	8		Type 4	Remove
1471	Maple	5x6	-	12		Type 4	Remove
1472	Alder	12				Type 4	Remove
1473	Maple	18				Type 4	Remove
1474	Maple	10				Type 4	Remove
1478	Maple	4x6	-	8		Type 4	Remove
1479	Maple	5x6	-	10		Type 4	Remove
1480	Alder	12				Type 4	Remove
1481	Alder	12				Type 4	Remove
1482	Alder	2x10				Type 4	Remove
1483	Alder	10				Type 4	Remove
1484	Cedar	18				Type 4	Remove
1485	Maple	10				Type 4	Remove
1486	Maple	12				Type 4	Remove
1487	Alder	16				Type 4	Remove
1488	Alder	8				Type 4	Remove
1489	Alder	8				Type 4	Remove
1490	Alder	8				Type 4	Remove
1491	Maple	8				Type 4	Remove
1492	Alder	6				Type 4	Remove
1493	Alder	10				Type 4	Remove
1494	Alder	10				Type 4	Remove
1495	Alder	8				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1496	Alder	6				Type 4	Remove
1497	Alder	12				Type 4	Remove
1498	Alder	6				Type 4	Remove
1499	Maple	3x6	-	8		Type 4	Remove
1500	Alder	6				Type 4	Remove
1501	Alder	2x8	-	10		Type 4	Remove
1502	Maple	18				Type 4	Remove
1503	Cedar	18				Type 4	Remove
1504	Cedar	12				Type 4	Remove
1505	Maple	6				Type 4	Remove
1506	Maple	8				Type 4	Remove
1507	Alder	6				Type 4	Remove
1508	Cottonwood	18				Type 4	Remove
1509	Cottonwood	18				Type 4	Remove
1510	Cottonwood	18				Type 4	Remove
1511	Maple	6x6	-	8		Type 4	Remove
1512	Maple	12x6	-	8		Type 4	Remove
1513	Maple	2x6	-	8		Type 4	Remove
1514	Maple	5x6	-	8		Type 4	Remove
1515	Alder	8				Type 4	Remove
1516	Maple	3x6	-	8		Type 4	Remove
1517	Maple	6				Type 4	Remove
1518	Maple	8				Type 4	Remove
1519	Maple	8				Type 4	Remove
1520	Alder	14				Type 4	Remove
1521	Maple	2x6				Type 4	Remove
1522	Alder	12				Type 4	Remove
1523	Alder	10				Type 4	Remove
1524	Alder	8				Type 4	Remove
1525	Cottonwood	14				Type 4	Remove
1526	Alder	2x12				Type 4	Remove
1527	Alder	2x12				Type 4	Remove
1528	Cedar	18				Type 4	Remove
1529	Maple	8				Type 4	Remove
1530	Alder	12				Type 4	Remove
1531	Maple	4x6	-	10		Type 4	Remove
1533	Maple	2x12	-	18		Type 4	Remove
1534	Maple	18				Type 4	Remove
1535	Maple	18				Type 4	Remove
1536	Maple	18				Type 4	Remove
1537	Alder	12				Type 4	Remove
1538	Alder	8				Type 4	Remove
1539	Alder	10				Type 4	Remove
1540	Alder	8				Type 4	Remove
1541	Alder	8				Type 4	Remove
1542	Maple	5x6				Type 4	Remove
1543	Alder	10				Type 4	Remove
1544	Alder	6				Type 4	Remove
1545	Alder	14				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1546	Alder	14				Type 4	Remove
1547	Alder	12				Type 4	Remove
1548	Maple	10				Type 4	Remove
1549	Alder	2x8				Type 4	Remove
1550	Maple	14				Type 4	Remove
1551	Fir	18				Type 4	Remove
1552	Fir	18				Type 3	Save
1553	Maple	5x6				Type 4	Remove
1554	Maple	2x6				Type 4	Remove
1555	Alder	14				Type 4	Remove
1556	Alder	2x10	-	12		Type 4	Remove
1557	Alder	8				Type 4	Remove
1558	Cedar	24				Type 4	Remove
1559	Alder	10				Type 4	Remove
1560	Alder	10				Type 4	Remove
1561	Alder	3x6	-	8		Type 4	Remove
1562	Alder	12				Type 4	Remove
1563	Alder	14				Type 4	Remove
1564	Alder	6				Type 4	Remove
1565	Alder	6				Type 4	Remove
1566	Alder	10				Type 4	Remove
1567	Alder	8				Type 4	Remove
1568	Alder	8				Type 4	Remove
1569	Maple	2x6				Type 3	Remove
1570	Alder	12				Type 4	Remove
1571	Alder	10				Type 4	Remove
1572	Alder	14				Type 4	Remove
1573	Maple	8				Type 3	Remove
1574	Alder	6				Type 4	Remove
1575	Maple	2x6	-	8		Type 3	Remove
1576	Maple	5x6	-	8		Type 2	Remove
1577	Maple	7x6	-	8		Type 2	Save
1578	Alder	8				Type 4	Remove
1579	Alder	10				Type 4	Remove
1580	Cedar	30				Type 4	Remove
1581	Maple	4x6	-	8		Type 3	Remove
1582	Alder	8				Type 4	Remove
1583	Alder	4x6	-	8		Type 4	Remove
1584	Alder	2x6	-	10		Type 4	Remove
1585	Maple	2x6	-	10		Type 4	Remove
1586	Alder	8				Type 4	Remove
1587	Maple	3x6				Type 4	Remove
1588	Alder	6				Type 4	Remove
1589	Maple	8				Type 4	Remove
1590	Maple	6x6	-	10		Type 4	Remove
1591	Maple	8				Type 3	Save
1592	Elm	10				Type 3	Save
1593	Alder	6				Type 4	Remove
1594	Cedar	18				Type 3	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1595	Maple	12				Type 4	Save
1596	Maple	2x8	-	10		Type 3	Save
1610	Alder	6				Type 4	Remove
1611	Alder	2x10	-	12		Type 4	Remove
1612	Maple	15x6	-	10		Type 4	Remove
1613	Maple	2x6	-	8		Type 4	Remove
1614	Maple	20				Type 4	Remove
1617	Fir	12				Type 4	Remove
1618	Maple	20				Type 4	Remove
1619	Maple	20				Type 4	Remove
1620	Maple	18				Type 4	Remove
1621	Fir	8				Type 4	Remove
1622	Fir	8				Type 4	Remove
1623	Alder	16				Type 4	Remove
1624	Alder	14				Type 4	Remove
1625	Fir	6				Type 4	Remove
1626	Alder	14				Type 4	Remove
1627	Alder	10				Type 4	Remove
1628	Alder	6				Type 4	Remove
1629	Alder	8				Type 4	Remove
1630	Alder	8				Type 4	Remove
1631	Fir	8				Type 4	Remove
1632	Fir	8				Type 4	Remove
1633	Fir	6				Type 4	Remove
1634	Alder	5x10				Type 4	Remove
1635	Alder	2x6	-	12		Type 4	Remove
1636	Alder	8				Type 4	Remove
1637	Alder	12				Type 4	Remove
1638	Alder	8				Type 4	Remove
1639	Alder	12				Type 4	Remove
1640	Alder	8				Type 4	Remove
1641	Alder	10				Type 4	Remove
1642	Alder	6				Type 4	Remove
1643	Alder	8				Type 4	Remove
1644	Alder	10				Type 4	Remove
1645	Alder	10				Type 4	Remove
1646	Alder	10				Type 4	Remove
1649	Cedar	36				Type 4	Remove
1650	Maple	8				Type 4	Remove
1651	Cedar	14				Type 4	Save
1652	Maple	8x6	-	10		Type 4	Remove
1667	Maple	5x6	-	10		Type 4	Remove
1668	Maple	7x6	-	8		Type 4	Remove
1669	Maple	6x6	-	8		Type 4	Remove
1670	Maple	4x6	-	8		Type 4	Remove
1671	Maple	4x6	-	10		Type 4	Remove
1672	Alder	18				Type 4	Remove
1673	Alder	12				Type 4	Remove
1674	Alder	10				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1675	Alder	2x6	-	8		Type 4	Remove
1676	Alder	10				Type 4	Remove
1677	Alder	12				Type 4	Remove
1678	Alder	10				Type 4	Remove
1679	Alder	8				Type 4	Remove
1680	Maple	2x6	-	8		Type 4	Remove
1681	Maple	18				Type 4	Remove
1682	Maple	24				Type 4	Remove
1683	Maple	12				Type 4	Remove
1684	Maple	18				Type 4	Remove
1685	Maple	30				Type 4	Remove
1686	Maple	14				Type 4	Remove
1687	Maple	18				Type 4	Remove
1688	Maple	18				Type 4	Remove
1689	Maple	3x6				Type 4	Remove
1690	Alder	8				Type 4	Remove
1691	Maple	5x6	-	8		Type 4	Remove
1692	Maple	6				Type 4	Remove
1693	Maple	18				Type 4	Remove
1694	Maple	10				Type 4	Remove
1695	Maple	10				Type 4	Save
1696	Cedar	30				Type 4	Remove
1697	Maple	24				Type 4	Remove
1698	Maple	4x14	-	30		Type 4	Remove
1699	Maple	20				Type 4	Remove
1700	Maple	12				Type 4	Remove
1701	Maple	18				Type 4	Remove
1702	Maple	20				Type 4	Remove
1703	Maple	10				Type 4	Remove
1704	Alder	14				Type 4	Remove
1705	Alder	10				Type 4	Remove
1706	Alder	6				Type 4	Remove
1707	Alder	12				Type 4	Remove
1708	Alder	6				Type 4	Remove
1709	Alder	10				Type 4	Remove
1710	Alder	12				Type 4	Remove
1711	Alder	10				Type 4	Remove
1712	Alder	12				Type 4	Remove
1713	Alder	14				Type 4	Remove
1714	Alder	6				Type 4	Remove
1715	Alder	10				Type 4	Remove
1716	Alder	14				Type 4	Remove
1717	Cedar	14				Type 4	Remove
1718	Alder	6				Type 4	Remove
1719	Alder	10				Type 4	Remove
1720	Alder	6				Type 4	Remove
1721	Alder	2x8				Type 4	Remove
1722	Alder	14				Type 3	Remove
1723	Maple	2x6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1724	Maple	4x8	-	14		Type 4	Remove
1725	Alder	8				Type 4	Remove
1726	Alder	2x10	-	14		Type 4	Remove
1727	Alder	12				Type 4	Remove
1728	Alder	10				Type 4	Remove
1729	Alder	14				Type 4	Remove
1730	Alder	14				Type 4	Remove
1731	Alder	10				Type 4	Remove
1732	Alder	10				Type 4	Remove
1733	Alder	12				Type 4	Remove
1734	Alder	6				Type 4	Remove
1735	Alder	10				Type 4	Remove
1736	Alder	8				Type 4	Remove
1737	Alder	8				Type 4	Remove
1738	Alder	10				Type 4	Remove
1739	Alder	6				Type 4	Remove
1740	Maple	2x6				Type 4	Remove
1741	Maple	6				Type 4	Remove
1742	Maple	8				Type 4	Remove
1743	Alder	8				Type 4	Remove
1744	Alder	10				Type 4	Remove
1745	Alder	8				Type 4	Remove
1746	Alder	10				Type 4	Remove
1747	Alder	12				Type 4	Remove
1748	Alder	12				Type 4	Remove
1749	Alder	8				Type 4	Remove
1750	Alder	6				Type 4	Remove
1751	Alder	8				Type 4	Remove
1752	Alder	8				Type 4	Remove
1753	Alder	8				Type 4	Remove
1754	Alder	6				Type 4	Remove
1755	Maple	12				Type 4	Remove
1756	Alder	5x6	-	16		Type 4	Remove
1757	Maple	24				Type 4	Remove
1758	Alder	10				Type 4	Remove
1759	Alder	2x12				Type 4	Remove
1760	Alder	14				Type 4	Remove
1761	Alder	8				Type 4	Remove
1762	Alder	8				Type 4	Remove
1763	Alder	14				Type 4	Remove
1764	Alder	6				Type 4	Remove
1765	Alder	6				Type 4	Remove
1766	Alder	8				Type 4	Remove
1767	Alder	14				Type 4	Remove
1768	Alder	12				Type 4	Remove
1769	Alder	3x12				Type 4	Remove
1770	Alder	8				Type 4	Remove
1771	Alder	6				Type 4	Remove
1772	Alder	6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1773	Alder	10				Type 4	Remove
1774	Alder	12				Type 4	Remove
1775	Alder	4x6	-	14		Type 4	Remove
1776	Alder	14				Type 4	Remove
1777	Alder	8				Type 4	Remove
1778	Alder	8				Type 4	Remove
1779	Alder	6				Type 4	Remove
1780	Alder	2x8				Type 4	Remove
1781	Alder	6				Type 4	Remove
1782	Alder	2x8				Type 4	Remove
1783	Alder	2x6	-	8		Type 3	Remove
1784	Alder	10				Type 3	Remove
1785	Alder	8				Type 3	Remove
1786	Alder	10				Type 3	Remove
1787	Alder	6				Type 3	Remove
1788	Alder	8				Type 3	Remove
1789	Alder	6				Type 3	Remove
1790	Alder	14				Type 3	Remove
1791	Alder	12				Type 3	Remove
1792	Alder	4x6	-	8		Type 3	Remove
1793	Alder	10				Type 4	Remove
1794	Alder	8				Type 4	Remove
1795	Cedar	24				Type 4	Remove
1796	Alder	8				Type 3	Remove
1797	Alder	12				Type 3	Remove
1798	Maple	18				Type 3	Remove
1821	Maple	2x8				Type 3	Remove
1822	Maple	8				Type 3	Remove
1823	Maple	4x6	-	8		Type 3	Remove
1824	Maple	8				Type 3	Remove
1825	Maple	8				Type 3	Remove
1826	Maple	8				Type 3	Remove
1827	Alder	6				Type 3	Remove
1828	Alder	6				Type 3	Remove
1829	Alder	2x6	-	8		Type 3	Remove
1830	Alder	8				Type 3	Remove
1831	Cottonwood	16				Type 3	Remove
1832	Maple	2x6				Type 3	Save
1833	Maple	3x6	-	8		Type 2	Save
1834	Maple	2x6	-	10		Type 2	Save
1835	Cedar	24				Type 2	Save
1836	Cedar	14				Type 2	Save
1837	Maple	30				Type 1	Save
1838	Alder	8				Type 2	Remove
1839	Cedar	20				Type 2	Save
1840	Maple	30				Type 2	Save
1841	Cedar	10				Type 1	Save
1842	Cedar	12				Type 1	Save
1844	Alder	8				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1845	Alder	6				Type 2	Save
1858	Cottonwood	14				Type 1	Save
1859	Cedar	24				Type 1	Save
1860	Cottonwood	3x10	-	14		Type 1	Save
1861	Alder	6				Type 1	Save
1862	Cottonwood	16				Type 1	Save
1863	Cottonwood	16				Type 1	Save
1864	Cottonwood	16				Type 1	Save
1865	Maple	2x6	-	12		Type 1	Save
1866	Cottonwood	16				Type 1	Save
1867	Cottonwood	10				Type 1	Save
1868	Cottonwood	26				Type 1	Save
1869	Cottonwood	12				Type 1	Save
1870	Maple	2x8				Type 1	Save
1872	Maple	4x6	-	10		Type 1	Save
1873	Maple	14				Type 1	Remove
1875	Maple	5x6				Type 3	Remove
1876	Cedar	6				Type 4	Remove
1877	Maple	12				Type 4	Remove
1878	Cottonwood	2x10	-	18		Type 4	Remove
1879	Cedar	38				Type 4	Remove
1880	Fir	14				Type 4	Remove
1881	Fir	10				Type 4	Remove
1882	Fir	10				Type 4	Save
1883	Fir	8				Type 4	Save
1884	Maple	2x18	-	36		Type 3	Save
1885	Maple	3x6	-	18		Type 3	Save
1886	Fir	40				Type 3	Remove
1887	Fir	6				Type 4	Remove
1888	Maple	2x14	-	24		Type 3	Remove
1889	Cedar	12				Type 3	Remove
1890	Alder	2x6	-	8		Type 4	Remove
1891	Alder	3x6	-	8		Type 3	Remove
1892	Alder	6				Type 3	Remove
1893	Alder	2x6				Type 3	Remove
1894	Alder	8				Type 3	Remove
1895	Maple	16				Type 2	Remove
1896	Cottonwood	14				Type 3	Remove
1897	Cottonwood	6				Type 3	Remove
1898	Cottonwood	10				Type 3	Remove
1899	Maple	16				Type 3	Remove
1905	Maple	12				Type 1	Save
1906	Maple	12				Type 1	Save
1907	Cedar	30				Type 1	Save
1908	Maple	26				Type 1	Save
1909	Maple	10				Type 3	Save
1910	Maple	20				Type 3	Save
1919	Alder	2x6	-	10		Type 1	Save
1920	Maple	10				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1921	Maple	2x14				Type 1	Save
1922	Maple	4x4	-	6		Type 1	Save
1923	Maple	6				Type 1	Save
1924	Maple	16				Type 1	Save
1925	Maple	36				Type 1	Save
1926	Maple	4x6	-	8		Type 1	Save
1932	Alder	8				Type 1	Save
1936	Maple	5x12	-	18		Type 1	Save
1937	Maple	3x6	-	8		Type 1	Save
1938	Maple	8				Type 1	Save
1939	Maple	14				Type 1	Save
1941	Maple	4x8	-	12		Type 1	Save
1942	Maple	3x6				Type 1	Save
1943	Cedar	8				Type 1	Save
1944	Cedar	2x10	-	24		Type 1	Save
1945	Maple	40				Type 1	Save
1950	Alder	8				Type 1	Save
1951	Maple	12				Type 1	Save
1952	Maple	2x18	-	22		Type 1	Save
1953	Cedar	12				Type 1	Save
1954	Maple	16				Type 1	Save
1955	Maple	12				Type 1	Save
1956	Maple	8				Type 1	Save
1957	Cedar	10				Type 1	Save
1958	Cedar	28				Type 1	Save
1959	Maple	12				Type 1	Save
1960	Maple	16				Type 1	Save
1961	Maple	10				Type 1	Save
1962	Cedar	28				Type 1	Save
1963	Cedar	18				Type 1	Save
1964	Maple	10				Type 1	Save
1965	Maple	18				Type 1	Save
1966	Maple	10				Type 1	Save
1967	Maple	2x6	-	14		Type 1	Save
1968	Maple	12				Type 1	Save
1969	Cedar	18				Type 1	Save
1970	Cedar	10				Type 1	Save
1971	Maple	15				Type 1	Save
1972	Maple	20				Type 1	Save
2084	Alder	8				Type 2	Remove
2085	Alder	10				Type 2	Remove
2086	Alder	10				Type 2	Remove
2087	Alder	12				Type 2	Remove
2101	Maple	12				Type 1	Save
2102	Maple	8				Type 1	Save
2103	Maple	2x6				Type 1	Save
2104	Maple	16				Type 3	Save
2105	Maple	8x8	-	14		Type 1	Save
2106	Maple	12				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2107	Maple	3x8	-	12		Type 1	Remove
2108	Maple	5x8	-	12		Type 1	Remove
2109	Maple	4x8	-	14		Type 1	Remove
2110	Maple	2x8	-	12		Type 1	Remove
2111	Maple	10				Type 3	Remove
2112	Maple	2x8	-	10		Type 3	Remove
2113	Maple	8				Type 3	Remove
2114	Maple	2x6				Type 1	Remove
2115	Maple	5x6	-	10		Type 1	Remove
2116	Maple	3x8	-	12		Type 1	Remove
2117	Maple	24				Type 1	Remove
2118	Maple	12				Type 1	Remove
2119	Maple	22				Type 1	Remove
2120	Maple	6x6	-	8		Type 1	Remove
2121	Maple	8				Type 1	Remove
2122	Cedar	16				Type 3	Remove
2123	Maple	16				Type 1	Remove
2124	Maple	2x6				Type 1	Remove
2125	Maple	2x6	-	8		Type 1	Remove
2126	Maple	8				Type 1	Remove
2127	Maple	10				Type 1	Remove
2128	Maple	2x6	-	10		Type 1	Save
2129	Maple	3x6	-	14		Type 1	Save
2130	Maple	4x6	-	10		Type 1	Save
2131	Maple	3x10	-	12		Type 1	Save
2132	Maple	10				Type 1	Save
2133	Maple	10				Type 1	Save
2134	Maple	10				Type 1	Save
2137	Maple	8				Type 1	Save
2138	Maple	3x6	-	8		Type 1	Save
2140	Maple	12				Type 1	Save
2141	Maple	12				Type 1	Save
2142	Maple	14				Type 1	Save
2143	Maple	8				Type 1	Save
2144	Maple	6x6	-	12		Type 1	Save
2207	Maple	8				Type 2	Remove
2209	Alder	10				Type 2	Remove
2210	Alder	8				Type 1	Remove
2213	Alder	8				Type 2	Remove
2214	Alder	6				Type 1	Remove
2215	Alder	6				Type 2	Remove
2217	Maple	5x8				Type 1	Remove
2219	Alder	10				Type 1	Save
2221	Maple	3x6	-	12		Type 1	Remove
2223	Maple	8				Type 1	Save
2224	Maple	3x6	-	12		Type 1	Save
2225	Maple	6				Type 1	Save
2226	Maple	2x6	-	8		Type 1	Save
2227	Maple	3x6				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2228	Maple	3x6				Type 1	Save
2229	Maple	8				Type 1	Save
2230	Maple	12				Type 1	Save
2231	Maple	2x6				Type 1	Save
2232	Maple	6				Type 1	Save
2234	Maple	3x8				Type 1	Save
2235	Maple	6				Type 1	Save
2236	Maple	3x8				Type 1	Save
2237	Maple	2x6	-	8		Type 1	Save
2238	Maple	6				Type 1	Save
2245	Maple	3x8				Type 1	Remove
2246	Maple	5x6				Type 1	Remove
2248	Maple	6				Type 2	Remove
2249	Maple	6				Type 1	Remove
2250	Maple	10				Type 1	Remove
2251	Alder	12				Type 2	Remove
2256	Maple	5x6	-	12		Type 1	Save
2258	Maple	8				Type 1	Save
2259	Maple	10				Type 1	Save
2260	Maple	22				Type 1	Save
2261	Maple	8				Type 1	Save
2263	Cedar	18				Type 1	Save
2264	Maple	20				Type 1	Remove
2265	Alder	6				Type 1	Remove
2269	Alder	10				Type 2	Remove
2274	Alder	12				Type 1	Remove
2348	Alder	12				Type 2	Save
2349	Maple	2*14	-	18		Type 1	Save
2359	Cedar	10				Type 1	Save
2378	Cedar	12				Type 1	Save
2379	Cedar	28				Type 1	Save
2380	Alder	20				Type 1	Save
2386	Cedar	36				Type 1	Save
2398	Cedar	12				Type 1	Save
2400	Cedar	12				Type 1	Save
2404	Cedar	12				Type 2	Save
2427	Cedar	10				Type 1	Save
2428	Maple	2*18	-	20		Type 1	Save
2430	Maple	14				Type 1	Save
2431	Alder	22				Type 1	Save
2433	Cedar	20				Type 1	Save
2435	Alder	18				Type 1	Save
2436	Cedar	20				Type 1	Save
2437	Maple	10				Type 1	Save
2440	Cedar	20				Type 1	Save
2441	Madrona	10				Type 1	Save
2442	Madrona	10				Type 1	Save
2445	Maple	8				Type 1	Save
2446	Maple	10				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2447	Maple	8				Type 1	Save
2448	Cedar	20				Type 1	Save
2449	Cedar	14				Type 1	Save
2450	Maple	12				Type 1	Save
2451	Maple	12				Type 1	Save
2452	Maple	8				Type 1	Save
2453	Maple	12				Type 1	Save
2454	Maple	22				Type 1	Save
2455	Cedar	16				Type 1	Save
2456	Maple	12				Type 1	Save
2457	Maple	2*12	-	14		Type 1	Save
2459	Maple	18				Type 1	Save
2460	Fir	40				Type 3	Save
2461	Fir	40				Type 3	Save
2464	Maple	20				Type 1	Save
2466	Maple	20				Type 1	Save
2467	Maple	2*10	-	16		Type 1	Save
2468	Cedar	12				Type 1	Save
2469	Cedar	14				Type 1	Save
2470	Alder	18				Type 1	Save
2471	Cedar	6				Type 1	Save
2472	Cedar	14				Type 1	Save
2473	Alder	18				Type 1	Save
2479	Alder	2*10	-	18		Type 1	Save
2490	Cedar	18				Type 2	Save
2505	Alder	18				Type 1	Remove
2508	Maple	8				Type 2	Remove
2513	Maple	10				Type 2	Save
2554	Alder	10				Type 2	Save
2556	Alder	12				Type 2	Remove
2631	Maple	8x6				Type 2	Save
2638	Cottonwood	48				Type 2	Save
2639	Cottonwood	30				Type 2	Save
2640	Fir	10				Type 3	Save
2641	Fir	10				Type 3	Save
2642	Fir	6				Type 2	Save
2643	Fir	10				Type 2	Save
2644	Fir	6				Type 2	Save
2645	Fir	8				Type 3	Save
2646	Cottonwood	36				Type 3	Save
2647	Fir	6				Type 3	Save
2648	Fir	10				Type 2	Save
2649	Cedar	12				Type 2	Save
2651	Cedar	18				Type 2	Save
2719	Fir	40				Type 1	Save
2766	Cedar	14				Type 1	Save
2767	Cedar	30				Type 1	Save
2769	Cedar	36				Type 1	Save
2808	Cedar	18				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2809	Cedar	12				Type 2	Save
2810	Cedar	18				Type 2	Save
2811	Fir	30				Type 1	Save
2812	Maple	8x6				Type 1	Save
2813	Cedar	16				Type 1	Save
2814	Cedar	16				Type 1	Save
2815	Cedar	18				Type 1	Save
2816	Maple	5x6	-	8		Type 1	Save
2819	Cottonwood	2x18				offsite	Save
2820	Maple	5x6	-	10		offsite	Save
2821	Maple	18				offsite	Save
2822	Maple	6				Type 2	Remove
2823	Maple	5x6	-	8		Type 2	Save
2824	Maple	6				Type 2	Save
2825	Maple	5x6	-	8		Type 2	Save
2829	Maple	2x12	-	18		Type 3	Save
2830	Maple	3x6	-	8		Type 3	Save
2832	Maple	2x8				Type 3	Save
2837	Alder	8				offsite	Save
2855	Maple	6x6	-	12		Type 1	Save
2856	Cedar	10				Type 1	Save
2857	Cedar	20				Type 1	Save
2858	Cedar	20				Type 1	Save
2859	Cedar	20				Type 1	Save
2860	Cedar	18				Type 1	Save
2861	Cedar	16				Type 1	Save
2862	Cedar	24				Type 1	Save
2863	Cedar	18				Type 1	Save
2864	Maple	4x6	-	12		Type 1	Save
2865	Cedar	20				Type 1	Save
2866	Cedar	12				Type 1	Save
2867	Cedar	18				Type 2	Save
2868	Maple	7x6	-	12		Type 2	Save
2869	Fruit	8				Type 3	Save
2870	Alder	6				Type 3	Save
2871	Alder	8				Type 3	Save
2872	Alder	10				Type 3	Save
2873	Maple	4x6	-	8		Type 3	Save
2874	Alder	3x6	-	10		Type 4	Save
2875	Alder	8				Type 4	Save
2876	Alder	10				Type 4	Save
2877	Alder	6				Type 3	Save
2878	Alder	6				Type 3	Save
2879	Alder	6				Type 3	Save
2880	Alder	6				Type 3	Remove
2881	Alder	3x6	-	10		Type 3	Remove
2882	Fir	8				Type 2	Save
2883	Fir	12				Type 2	Save
2884	Fir	8				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2885	Fir	12				Type 4	Remove
2886	Fir	12				Type 3	Remove
2887	Maple	3x6	-	8		Type 3	Remove
2888	Alder	8				Type 3	Remove
2889	Maple	12x6				Type 4	Remove
2890	Fir	6				Type 4	Remove
2891	Fir	10				Type 4	Remove
2892	Fir	6				Type 4	Remove
2893	Fir	6				Type 4	Remove
2894	Alder	8				Type 4	Save
2895	Alder	10				Type 4	Remove
2896	Fir	12				Type 4	Remove
2897	Maple	12x6	-	8		Type 4	Remove
2898	Cottonwood	36				Type 4	Remove
2900	Maple	2x8				Type 3	Remove
2901	Maple	6				Type 3	Remove
2902	Alder	3x8	-	10		Type 3	Remove
2903	Cottonwood	18				Type 3	Remove
2904	Cottonwood	12				Type 3	Save
2905	Alder	8				Type 3	Save
2906	Alder	8				Type 3	Save
2907	Alder	8				Type 2	Remove
2908	Alder	8				Type 2	Remove
2909	Alder	8				Type 2	Remove
2910	Maple	6x6	-	8		Type 2	Save
2911	Maple	5x6	-	10		Type 2	Remove
2912	Maple	12x6	-	10		Type 2	Remove
2913	Maple	10				Type 2	Save
2914	Maple	10x6	-	8		Type 2	Remove
2915	Maple	5x6	-	8		Type 3	Remove
2916	Maple	8x6	-	10		Type 3	Remove
2917	Alder	8				Type 3	Remove
2918	Cottonwood	8				Type 3	Remove
2919	Cottonwood	12				Type 3	Remove
2920	Cottonwood	10				Type 3	Remove
2921	Cottonwood	8				Type 3	Remove
2922	Cottonwood	12				Type 3	Remove
2923	Cottonwood	10				Type 3	Remove
2924	Cottonwood	8				Type 3	Remove
2925	Cottonwood	12				Type 3	Remove
2926	Cottonwood	14				Type 3	Remove
2927	Cottonwood	14				Type 3	Remove
2928	Maple	2x6				Type 4	Remove
2929	Maple	4x6	-	8		Type 4	Remove
2930	Cottonwood	8				Type 4	Remove
2931	Maple	3x6	-	8		Type 4	Remove
2932	Fruit	8				Type 4	Remove
2933	Maple	10x6	-	10		Type 3	Remove
2934	Maple	5x6	-	8		Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2935	Maple	4x6				Type 3	Remove
2936	Fir	10				Type 3	Remove
2937	Maple	15x6	-	12		Type 3	Remove
2938	Maple	5x6	-	8		Type 3	Remove
2939	Maple	7x6	-	8		Type 3	Remove
2940	Maple	4x6	-	8		Type 3	Remove
2941	Maple	5x6	-	10		Type 3	Remove
2942	Maple	5x6	-	10		Type 2	Remove
2943	Fir	6				Type 4	Remove
2944	Fir	6				Type 3	Remove
2945	Cottonwood	4x6	-	14		Type 3	Remove
2946	Maple	15x6	-	12		Type 3	Remove
2947	Maple	8				Type 3	Remove
2948	Fir	2x6				Type 3	Remove
2952	Alder	12				Type 2	Remove
2955	Maple	5x6	-	8		Type 1	Remove
2956	Fir	10				Type 1	Save
2957	Fir	12				Type 1	Save
2958	Alder	6				Type 4	Save
2960	Fir	10				Type 4	Save
2967	Alder	12				Type 3	Remove
2968	Fir	6				Type 3	Remove
2969	Alder	8				Type 4	Remove
2970	Fir	6				Type 3	Remove
2972	Maple	6x8	-	10		Type 3	Save
2973	Maple	2x6	-	12		Type 1	Save
2974	Maple	8x6	-	10		Type 1	Save
2975	Fir	12				Type 1	Save
2976	Maple	4x18				Type 1	Save
2977	Maple	5x8				Type 1	Save
2979	Fir	8				Type 1	Save
2980	Cedar	18				Type 2	Save
2981	Cedar	30				Type 3	Save
2982	Cedar	24				Type 2	Save
2983	Fir	6				Type 3	Remove
2984	Fir	6				Type 4	Remove
2985	Maple	4x8	-	10		Type 4	Remove
2986	Maple	2x6	-	8		Type 3	Remove
2987	Fir	8				Type 3	Save
2988	Fir	8				Type 3	Save
2989	Fir	12				Type 4	Remove
2990	Fir	10				Type 4	Remove
2991	Fir	6				Type 4	Save
2992	Alder	6				Type 4	Save
2993	Maple	8				Type 4	Save
2994	Alder	12				Type 4	Remove
2995	Alder	8				Type 4	Save
2996	Alder	8				Type 4	Remove
2997	Alder	10				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2998	Fir	8				Type 3	Save
2999	Maple	8				Type 3	Save
3009	Maple	20				Type 1	Save
3010	Maple	12				Type 1	Save
3013	Maple	3x6				Type 1	Save
3014	Maple	12				Type 1	Save
3016	Maple	2x6				Type 1	Save
3017	Cedar	36				Type 1	Save
3018	Cedar	36				Type 1	Save
3019	Cedar	36				Type 1	Save
3020	Cedar	12				Type 1	Save
3021	Cedar	6				Type 1	Save
3022	Maple	5x6	-	12		Type 1	Save
3023	Cedar	10				Type 1	Save
3024	Cedar	15				Type 1	Save
3025	Cedar	15				Type 1	Save
3026	Maple	4x6				Type 1	Save
3027	Maple	4x6	-	10		Type 1	Save
3029	Maple	5x6	-	8		Type 1	Save
3030	Cedar	6				Type 1	Save
3031	Maple	15				Type 1	Save
3032	Maple	3x6	-	12		Type 1	Save
3033	Maple	7x6	-	10		Type 1	Save
3034	Cedar	18				Type 1	Save
3035	Cedar	22				Type 1	Save
3036	Cedar	22				Type 1	Save
3037	Maple	7x6	-	8		Type 1	Save
3038	Cedar	24				Type 1	Save
3039	Maple	2x6	-	8		Type 1	Save
3040	Cedar	20				Type 1	Save
3041	Cedar	15				Type 1	Save
3042	Maple	2x8				Type 1	Save
3043	Maple	2x8				Type 1	Save
3044	Cedar	15				Type 1	Save
3045	Cedar	36				Type 1	Save
3046	Cedar	24				Type 1	Save
3047	Cedar	18				Type 1	Save
3049	Maple	3x6				Type 1	Save
3050	Maple	12				Type 1	Save
3051	Maple	6				Type 1	Save
3052	Maple	5x3	-	6		Type 1	Save
3053	Maple	2x18				Type 1	Save
3056	Maple	18				Type 1	Save
3058	Maple	5x4	-	8		Type 1	Save
3059	Maple	10				Type 4	Save
3060	Maple	12				Type 4	Save
3063	Maple	4x3	-	6		Type 4	Save
3064	Maple	3x4	-	8		Type 4	Save
3065	Maple	3x4	-	8		Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3066	Maple	8x4	-	10		Type 4	Save
3067	Maple	4x4	-	6		Type 4	Save
3068	Maple	4x4	-	8		Type 4	Remove
3069	Maple	4x4	-	6		Type 4	Remove
3070	Maple	4x4	-	10		Type 1	Save
3071	Maple	8x3	-	8		Type 1	Save
3072	Maple	3x8	-	12		Type 1	Save
3073	Maple	6				Type 1	Save
3074	Maple	3x4	-	6		Type 1	Save
3079	Maple	4x6				Type 4	Remove
3080	Maple	8x6				Type 4	Remove
3081	Maple	2x6				Type 4	Remove
3082	Cedar	10				Type 4	Remove
3083	Maple	8x6	-	10		Type 4	Remove
3084	Maple	11x6				Type 4	Remove
3085	Maple	9x6				Type 4	Remove
3086	Maple	8x6				Type 1	Save
3087	Maple	4x6				Type 1	Save
3088	Maple	10				Type 1	Save
3089	Holly	8				Type 1	Save
3090	Fir	8				Type 4	Remove
3091	Maple	5x6				Type 4	Remove
3092	Fir	8				Type 4	Remove
3093	Maple	6				Type 4	Remove
3094	Fir	6				Type 4	Remove
3095	Fir	6				Type 4	Remove
3096	Fir	6				Type 4	Remove
3097	Fir	12				Type 4	Remove
3098	Maple	7x4	-	10		Type 4	Save
3099	Maple	11x4	-	10		Type 4	Remove
3100	Cedar	12				Type 4	Remove
3101	Cedar	15				Type 4	Save
3102	Maple	5x4	-	8		Type 4	Save
3103	Maple	36				Type 4	Remove
3105	Cedar	22				Type 4	Save
3106	Maple	6x4	-	8		Type 4	Remove
3107	Maple	12				Type 4	Remove
3108	Maple	4x6				Type 4	Remove
3109	Maple	8				Type 4	Remove
3110	Fir	6				Type 4	Remove
3111	Maple	6				Type 4	Remove
3112	Maple	8				Type 4	Remove
3113	Maple	8				Type 4	Remove
3114	Maple	32				Type 4	Remove
3115	Maple	30				Type 4	Remove
3116	Maple	6				Type 4	Remove
3117	Maple	12				Type 4	Remove
3118	Maple	10				Type 4	Remove
3119	Maple	10				Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3120	Maple	6x4	-	8		Type 3	Remove
3121	Maple	12				Type 4	Remove
3122	Alder	2x8				Type 4	Remove
3123	Maple	15				Type 4	Remove
3124	Maple	12				Type 4	Remove
3125	Maple	12				Type 4	Remove
3126	Maple	2x18	-	24		Type 4	Remove
3127	Maple	4x6	-	18		Type 4	Save
3128	Maple	4x6	-	18		Type 4	Remove
3129	Cedar	3x6	-	18		Type 4	Remove
3130	Maple	5x6				Type 4	Remove
3131	Maple	6				Type 4	Remove
3132	Alder	8				Type 4	Remove
3133	Alder	8				Type 4	Remove
3134	Alder	2x6				Type 4	Remove
3135	Alder	6				Type 4	Remove
3136	Alder	6				Type 4	Remove
3143	Alder	3*6				Type 4	Save
3144	Cedar	24				Type 4	Save
3147	Cedar	30				offsite	Save
3148	Cedar	6				Type 4	Save
3149	Cedar	6				Type 4	Save
3150	Maple	3*6				Type 4	Save
3151	Maple	8*10	-	12		Type 4	Save
3152	Maple	5*4	-	8		Type 4	Save
3153	Maple	12				Type 4	Save
3154	Maple	6*6				Type 4	Save
3155	Maple	6*4	-	8		Type 4	Save
3156	Maple	8				Type 4	Remove
3157	Alder	10				Type 4	Remove
3159	Maple	14*4	-	6		Type 4	Remove
3160	Maple	10*8				Type 4	Remove
3161	Cedar	6*6				Type 4	Remove
3162	Maple	6*4	-	6		Type 3	Remove
3163	Maple	4*4	-	8		Type 3	Remove
3164	Maple	4*4	-	8		Type 3	Remove
3165	Maple	7*3	-	10		Type 2	Remove
3166	Maple	7*3	-	10		Type 2	Remove
3167	Maple	6*3	-	8		Type 3	Remove
3168	Maple	2*2	-	10		Type 3	Remove
3169	Maple	8				Type 3	Remove
3170	Maple	12				Type 3	Remove
3171	Maple	10				Type 2	Remove
3174	Maple	104	-	6		Type 2	Save
3175	Maple	10*6	-	10		Type 2	Remove
3176	Maple	10*6	-	10		Type 2	Remove
3177	Maple	8*6	-	12		Type 4	Remove
3178	Maple	8*6	-	12		Type 4	Remove
3179	Maple	3*6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3181	Maple	10*6	-	10		Type 4	Remove
3182	Maple	12				Type 4	Remove
3183	Maple	12				Type 4	Remove
3185	Maple	36				Type 4	Remove
3186	Maple	12				Type 4	Remove
3187	Maple	12				Type 4	Remove
3188	Cedar	14				Type 4	Remove
3189	Maple	8				Type 4	Remove
3190	Maple	10				Type 4	Remove
3191	Maple	8				Type 1	Save
3192	Maple	8				Type 1	Remove
3193	Maple	8				Type 1	Save
3194	Maple	12				Type 1	Save
3195	Maple	8				Type 1	Save
3196	Cedar	12				Type 1	Save
3197	Maple	8*6				Type 4	Remove
3198	Cedar	12				Type 1	Save
3199	Maple	2*12				Type 1	Save
3200	Cedar	6				Type 4	Remove
3201	Cedar	2*6				Type 1	Save
3202	Maple	4*6	-	10		Type 1	Save
3203	Cedar	14				Type 1	Save
3204	Cedar	14				Type 1	Save
3205	Cedar	12				Type 1	Save
3206	Cedar	2*10				Type 1	Save
3207	Maple	12				Type 1	Save
3209	Cedar	24				Type 1	Save
3210	Cedar	24				Type 1	Save
3211	Cedar	26				Type 1	Save
3212	Maple	8*4	-	8		Type 1	Save
3213	Cedar	28				Type 1	Save
3214	Cedar	20				Type 1	Save
3215	Cedar	28				Type 1	Save
3216	Cedar	18				Type 1	Save
3217	Cedar	14				Type 1	Save
3218	Maple	18				Type 1	Save
3219	Maple	4*6				Type 1	Save
3220	Cedar	12				Type 1	Save
3221	Cedar	16				Type 1	Save
3224	Cedar	24				Type 1	Save
3225	Cedar	28				Type 1	Save
3226	Cedar	26				Type 1	Save
3227	Cedar	42				Type 1	Save
3228	Cedar	12				Type 1	Save
3229	Cedar	26				Type 1	Save
3230	Maple	6*3	-	8		Type 1	Save
3231	Maple	10*3	-	12		Type 1	Save
3232	Maple	10*3	-	12		Type 1	Save
3233	Maple	10*3	-	12		Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3234	Maple	2*6				Type 1	Save
3235	Maple	12*3	-	12		Type 1	Save
3236	Maple	12				Type 4	Save
3237	Maple	10*3	-	12		Type 4	Save
3238	Maple	2x8	-	12		Type 2	Save
3239	Maple	2x6				Type 2	Save
3240	Maple	3x6				Type 2	Remove
3241	Cedar	18				Type 2	Save
3242	Cedar	24				Type 1	Save
3243	Cedar	20				Type 1	Save
3244	Maple	2x6				Type 1	Save
3245	Cedar	8				Type 1	Save
3246	Maple	5x6				Type 1	Save
3247	Maple	5x6	-	12		Type 1	Save
3248	Cedar	15				Type 1	Save
3249	Maple	5x4	-	10		Type 1	Save
3250	Cedar	15				Type 1	Save
3251	Cedar	15				Type 1	Save
3252	Cedar	12				Type 1	Save
3253	Cedar	30				Type 1	Save
3254	Maple	3x6	-	8		Type 1	Save
3255	Maple	10				Type 1	Save
3256	Maple	5x6				Type 1	Save
3257	Cedar	12				Type 1	Save
3258	Cedar	12				Type 1	Save
3259	Cedar	12				Type 1	Save
3260	Cedar	10				Type 1	Save
3261	Maple	15				Type 1	Save
3262	Maple	12				Type 1	Save
3263	Maple	10				Type 1	Save
3264	Cedar	18				Type 1	Save
3265	Cedar	18				Type 1	Save
3266	Cedar	2x10				Type 1	Save
3267	Maple	3x6	-	8		Type 2	Remove
3268	Maple	8x4	-	8		Type 2	Remove
3274	Maple	24				offsite	Save
3275	Cedar	12				offsite	Save
3276	Cedar	15				offsite	Save
3279	Cedar	18				Type 1	Save
3280	Cedar	18				Type 1	Save
3281	Maple	18				Type 1	Save
3282	Cedar	24				Type 1	Save
3283	Cedar	18				Type 1	Save
3284	Cedar	10				Type 1	Save
3285	Maple	2x24				Type 1	Save
3286	Cedar	12				Type 1	Save
3287	Cedar	8				Type 1	Save
3288	Maple	18				Type 1	Save
3289	Cedar	8				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3290	Maple	7x6	-	12		Type 1	Save
3291	Cedar	15				Type 1	Save
3292	Cedar	12				Type 1	Save
3293	Maple	12				Type 1	Save
3294	Cedar	20				Type 1	Save
3295	Cedar	12				Type 1	Save
3296	Cedar	30				Type 1	Save
3297	Cedar	10				Type 1	Save
3298	Cedar	18				Type 1	Save
3299	Cedar	24				Type 1	Save
3302	Cedar	15				Type 1	Save
3303	Maple	7x6	-	12		Type 1	Save
3304	Cedar	30				Type 1	Save
3305	Maple	6x6	-	8		Type 1	Save
3306	Cedar	12				Type 1	Save
3307	Cedar	24				Type 1	Save
3308	Fir	20				Type 1	Save
3309	Cedar	8				Type 1	Save
3310	Cedar	8				Type 1	Save
3311	Maple	10x6	-	10		Type 1	Save
3312	Maple	3x3	-	6		Type 1	Save
3313	Maple	6x4	-	6		Type 1	Save
3314	Maple	7x6	-	10		Type 1	Save
3315	Cedar	18				Type 1	Save
3316	Maple	6x6				Type 1	Save
3317	Maple	11x6	-	10		Type 2	Save
3319	Fir	10			Edge	Type 4	Save
3320	Maple	8				Type 2	Save
3321	Maple	7x8	-	12		Type 2	Save
3322	Maple	6x6				Type 4	Save
3323	Maple	3x6				Type 2	Save
3324	Maple	4x6				Type 4	Save
3325	Cedar	20				Type 4	Save
3326	Maple	2x12				Type 4	Save
3327	Fir	6			Edge	Type 4	Save
3328	Fir	8			Edge	Type 4	Save
3329	Alder	3x6	-	10	Edge	Type 4	Save
3330	Fir	18				Type 1	Save
3331	Fir	18				Type 1	Save
3332	Fir	10				Type 1	Save
3333	Maple	6x8				Type 4	Save
3334	Cedar	24				Type 1	Save
3335	Alder	8				Type 4	Save
3336	Cedar	15				Type 4	Save
3337	Cedar	12				Type 1	Save
3338	Cedar	24				Type 1	Save
3339	Cedar	18				Type 1	Save
3340	Cedar	2x15	-	22		Type 1	Save
3341	Cedar	22				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3342	Cedar	24				Type 1	Save
3343	Cedar	2x18				Type 1	Save
3344	Fir	24				Type 1	Save
3345	Cedar	18				Type 1	Save
3346	Fir	10				Type 4	Save
3347	Fir	10				offsite	Save
3348	Fir	10				offsite	Save
3349	Fir	10				Type 4	Save
3350	Fir	12				Type 4	Save
3351	Fir	12				offsite	Save
3352	Fir	10				Type 4	Save
3353	Fir	12				Type 4	Save
3354	Fir	8				Type 4	Save
3355	Fir	8				Type 4	Save
3356	Fir	10				Type 4	Save
3357	Fir	10				Type 4	Save
3358	Fir	6				Type 4	Save
3359	Maple	24				Type 4	Save
3361	Maple	12				Type 4	Save
3362	Maple	4*3	-	8		Type 4	Save
3363	Maple	7*3	-	8		Type 4	Save
3364	Maple	4*3	-	8		Type 4	Save
3366	Fir	4			Edge	Type 4	Save
3367	Fir	4			Edge	Type 4	Save
3368	Maple	5*6	-	10		Type 4	Save
3369	Maple	2*8	-	14		Type 4	Save
3371	Fir	10				Type 4	Save
3372	Fir	8				Type 4	Save
3373	Fir	10				Type 4	Save
3374	Fir	12				Type 4	Save
3375	Fir	10				Type 4	Save
3376	Fir	14				Type 4	Save
3377	Fir	8				Type 4	Save
3380	Fir	8			Edge	Type 4	Save
3381	Fir	12			Edge	Type 4	Save
3382	Fir	8			Edge	Type 4	Save
3383	Fir	8			Edge	Type 4	Save
3384	Fir	8			Edge	Type 4	Save
3385	Fir	10			Edge	Type 4	Save
3390	Fir	10				Type 4	Save
3391	Fir	10				Type 4	Save
3392	Fir	10				Type 4	Save
3393	Fir	10				Type 4	Save
3394	Maple	12				Type 4	Save
3397	Fir	8			Edge	Type 4	Save
3398	Fir	8			Edge	Type 4	Save
3399	Fir	8			Edge	Type 4	Save
3400	Maple	18				Type 4	Save
3401	Cedar	34				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3402	Cedar	3*6	-	24		Type 2	Save
3403	Maple	7*4	-	8		Type 2	Save
3404	Cedar	8			Edge	Type 4	Save
3405	Maple	7*3	-	10		Type 2	Save
3406	Maple	7*3	-	10		Type 2	Save
3407	Maple	7*3	-	10		Type 1	Save
3408	Cedar	32				Type 1	Save
3409	Maple	2*10	-	14		Type 1	Save
3410	Fir	20				Type 1	Save
3412	Fir	18				Type 1	Save
3413	Maple	7*8	-	12		Type 1	Save
3414	Maple	3*6	-	12		Type 1	Save
3415	Maple	10*4	-	10		Type 1	Save
3416	Maple	5*4	-	12		Type 1	Save
3417	Maple	4*4	-	8		Type 1	Save
3418	Cedar	12				Type 1	Save
3420	Maple	30				Type 2	Save
3425	Cedar	16				Type 2	Save
3426	Maple	16				Type 4	Save
3427	Maple	3*8				offsite	Save
3429	Maple	18				offsite	Save
3431	Maple	16				offsite	Save
3434	Maple	2*12	-	14		Type 3	Remove
3500	Alder	8				Type 3	Remove
3501	Fir	8				Type 3	Remove
3502	Fruit	8				Type 3	Save
3503	Fir	8				Type 2	Save
3504	Fir	8				Type 2	Save
3505	Alder	10				Type 3	Save
3506	Alder	8				Type 3	Save
3507	Fir	6				Type 2	Save
3508	Cedar	20				Type 3	Save
3509	Alder	10				Type 2	Save
3510	Cedar	18				Type 2	Save
3511	Maple	5x6	-	10		Type 2	Save
3512	Cedar	24				Type 2	Remove
3513	Maple	5x6	-	10		Type 4	Save
3518	Alder	10				Type 4	Save
3519	Alder	6				Type 4	Remove
3520	Alder	10				Type 4	Remove
3521	Alder	6				Type 4	Remove
3522	Fir	6				Type 4	Remove
3523	Fir	6				Type 4	Remove
3524	Alder	12				Type 4	Remove
3525	Fir	6				Type 4	Remove
3526	Maple	4x8	-	12		Type 4	Save
3527	Alder	6				Type 4	Save
3528	Alder	12				Type 4	Remove
3529	Alder	8					

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3530	Maple	2x10	-	12		Type 1	Remove
3531	Maple	7x6	-	8		Type 1	Remove
3532	Maple	12x6	-	16		Type 1	Remove
3533	Cedar	30				Type 2	Remove
3534	Maple	8				Type 3	Remove
3535	Maple	5x8	-	12		Type 2	Remove
3536	Fir	10				Type 4	Remove
3537	Maple	6				Type 4	Remove
3538	Fir	6				Type 3	Remove
3539	Fir	6				Type 3	Remove
3540	Maple	7x6	-	8		Type 3	Remove
3541	Maple	7x6	-	8		Type 3	Remove
3542	Maple	3x6				Type 2	Remove
3543	Maple	3x6				Type 2	Remove
3544	Maple	8				Type 2	Remove
3545	Maple	3x6				Type 2	Remove
3546	Maple	6 6	-	10		Type 1	Remove
3547	Maple	6 6	-	10		Type 1	Remove
3548	Maple	6				Type 1	Remove
3549	Maple	36				Type 1	Remove
3550	Maple	6				Type 1	Remove
3551	Maple	9x6	-	10		Type 1	Remove
3552	Cedar	24				Type 1	Remove
3553	Maple	6x6	-	8		Type 1	Remove
3554	Cedar	18				Type 1	Remove
3555	Maple	6x6	-	10		Type 1	Remove
3556	Maple	4x6				Type 1	Remove
3557	Maple	5x6	-	10		Type 1	Remove
3558	Fruit	3x6				Type 4	Remove
3559	Fruit	6				Type 4	Remove
3560	Alder	6				Type 4	Remove
3564	Cedar	24				Type 4	Remove
3565	Fir	10				Type 4	Remove
3566	Fir	8				Type 4	Remove
3567	Fir	6				Type 4	Remove
3568	Maple	2x8	-	10		Type 4	Remove
3569	Fir	6				Type 4	Remove
3570	Fir	12				Type 4	Remove
3571	Fir	8				Type 4	Remove
3572	Fir	6				Type 4	Remove
3573	Fir	8				Type 4	Remove
3574	Fir	10				Type 4	Remove
3575	Fir	6				Type 4	Remove
3576	Fir	10				Type 4	Remove
3577	Fir	10				Type 4	Remove
3578	Fir	8				Type 4	Remove
3579	Fir	6				Type 4	Remove
3580	Fir	8				Type 4	Remove
3581	Maple	7 6	-	10		Type 4	Remove

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Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3582	Maple	12x6				Type 4	Remove
3583	Maple	8				Type 4	Remove
3584	Fir	10				Type 4	Remove
3585	Maple	5x6	-	10		Type 4	Remove
3586	Fir	10				Type 4	Remove
3587	Fir	10				Type 4	Remove
3588	Fir	8				Type 4	Remove
3589	Cedar	12				Type 4	Remove
3590	Maple	6x6				Type 1	Remove
3591	Cedar	14				Type 4	Remove
3592	Maple	10x6	-	10		Type 1	Remove
3593	Maple	12x6	-	12		Type 2	Remove
3594	Fir	12				Type 2	Remove
3595	Maple	14				Type 2	Remove
3598	Cottonwood	3x6	-	12		Type 3	Remove
3599	Cottonwood	8				Type 3	Remove
3600	Cottonwood	12				Type 3	Remove
3601	Maple	2x6				Type 4	Remove
3602	Cottonwood	8				Type 4	Remove
3603	Cottonwood	6				Type 4	Remove
3604	Cottonwood	10				Type 3	Remove
3605	Fir	10				Type 3	Remove
3606	Fir	8				Type 3	Remove
3607	Fir	8				Type 3	Remove
3608	Fir	6				Type 3	Remove
3609	Fir	8				Type 3	Remove
3610	Cottonwood	14				Type 3	Remove
3611	Cottonwood	12				Type 3	Remove
3612	Cottonwood	12				Type 3	Remove
3613	Cottonwood	12				Type 3	Remove
3614	Cottonwood	6				Type 3	Remove
3615	Cottonwood	12				Type 3	Remove
3616	Cottonwood	8				Type 3	Remove
3617	Cottonwood	12				Type 4	Remove
3618	Cottonwood	8				Type 3	Remove
3619	Cedar	12				Type 3	Remove
3620	Maple	6x6	-	10		Type 3	Remove
3621	Maple	12x6	-	12		Type 3	Remove
3622	Maple	4x6	-	8		Type 2	Remove
3623	Cedar	22				Type 3	Remove
3624	Maple	6x6	-	12		Type 3	Remove
3625	Cottonwood	10				Type 3	Remove
3626	Maple	10x6	-	10		Type 4	Remove
3627	Fir	10				Type 3	Remove
3628	Fir	8				Type 3	Remove
3629	Fir	8				Type 3	Remove
3630	Fir	8				Type 3	Remove
3631	Fir	6				Type 3	Remove
3632	Maple	10x6	-	10		Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3633	Maple	10x6	-	10		Type 2	Remove
3634	Maple	4x6	-	12		Type 2	Remove
3635	Maple	10x6	-	12		Type 2	Remove
3637	Maple	5x6	-	10		Type 4	Remove
3638	Maple	6x6	-	8		Type 3	Remove
3639	Maple	6x6	-	8		Type 3	Remove
3640	Fir	6				Type 4	Remove
3641	Alder	6				Type 3	Remove
3642	Alder	8				Type 3	Remove
3643	Alder	10				Type 4	Remove
3644	Fir	6				Type 4	Remove
3645	Fir	8				Type 4	Remove
3646	Alder	8				Type 3	Remove
3649	Fir	10				Type 3	Remove
3654	Fir	6				Type 3	Remove
3655	Maple	6x6	-	12		Type 3	Remove
3656	Fir	6				Type 2	Remove
3657	Cedar	2x12				Type 1	Save
3658	Cedar	14				Type 1	Save
3659	Cedar	10				Type 1	Save
3660	Maple	10x6	-	14		Type 1	Save
3664	Fir	6				Type 4	Remove
3665	Fir	6				Type 4	Save
3666	Fir	6				Type 4	Save
3667	Fir	6				Type 4	Save
3668	Fir	8				Type 4	Save
3669	Fir	8				Type 4	Save
3670	Fir	8				Type 4	Save
3671	Fir	8				Type 4	Save
3672	Fir	8				Type 4	Save
3673	Fir	8				Type 4	Save
3674	Fir	8				Type 4	Save
3675	Fir	10				Type 4	Save
3676	Fir	10				Type 4	Save
3677	Fir	8			Edge	Type 4	Save
3678	Fir	10			Edge	Type 4	Save
3679	Fir	12			Edge	Type 4	Save
3680	Fir	12			Edge	Type 4	Save
3681	Fir	14			Edge	Type 4	Save
3682	Fir	14			Edge	Type 4	Save
3683	Fir	8			Edge	Type 4	Save
3684	Fir	16			Edge	Type 4	Save
3685	Fir	10			Edge	Type 4	Remove
3686	Fir	16			Edge	Type 4	Remove
3687	Fir	6			Edge	Type 4	Save
3688	Fir	12			Edge	Type 4	Save
3689	Fir	12			Edge	Type 4	Save
3690	Fir	12			Edge	Type 4	Save
3691	Fir	6			Edge	Type 4	Save

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Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3692	Fir	10			Edge	Type 4	Save
3693	Fir	8			Edge	Type 4	Save
3694	Fir	10				Type 4	Save
3695	Fir	12				Type 4	Save
3696	Fir	14				Type 4	Save
3697	Fir	8				Type 4	Save
3709	Maple	40				offsite	Save
3710	Maple	5x12	-	20		Type 4	Save
3711	Alder	12				Type 4	Save
3712	Alder	12				Type 4	Save
3713	Maple	30				Type 4	Save
3714	Maple	36				Type 4	Save
3715	Cedar	6				Type 4	Save
3716	Alder	10				Type 4	Save
3717	Alder	6				Type 4	Save
3718	Alder	10				Type 4	Save
3719	Maple	12x6	-	12		Type 4	Save
3720	Alder	12				Type 4	Save
3721	Alder	10				Type 4	Save
3722	Alder	8				Type 4	Save
3723	Alder	14				Type 4	Save
3724	Alder	12				Type 4	Save
3725	Alder	12				Type 4	Save
3726	Maple	3x24	-	30		Type 4	Save
3728	Alder	2x14	-	16		Type 4	Save
3729	Maple	16				Type 4	Save
3730	Alder	12				Type 4	Save
3732	Alder	10				Type 4	Save

Appendix 2—Preliminary Geotechnical Study

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

December 14, 2005

Project No. 05-9541

Stearns Marnella Construction LLC
18318 SE Abernathy Lane
Milwaukie, Oregon 97267

Attention: Tony Marnella

RE: PRELIMINARY GEOTECHNICAL FINDINGS
TAMARISK DEVELOPMENT
WEST LINN, OREGON

This report presents our preliminary geotechnical findings, interpretations, and conclusions based on 12 exploratory test pits that were excavated at select locations on the above-referenced property. Logs of the test pits and borings are presented in Appendix A. Their locations are shown on a preliminary topographic map of the site at a contour interval of 2 feet. A preliminary layout of proposed streets and lot locations is shown. These may be further refined on future site plans. The purpose of this preliminary report is to present the subsurface information and our preliminary geotechnical interpretation to aid in assessment of the potential impacts of these conditions on site development and to assist in project planning and preliminary budgeting.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The approximately 15-acre site is located northwest of the West Linn 10th Street exit off the East Portland 205 Freeway. The proposed development is accessed from the west terminus of Tamarisk Drive. The site is shaped like a right triangle with an irregular longer side bordering the north side of Freeway 205 for a distance of about 1,400 feet. A 100 to 200 foot wide buffer zone separates the freeway from the portion of the site to be developed. The 90 degree angle of the triangle is located in the extreme northeast portion of the site, about 900 feet from the freeway. The site is wooded with a mix of Douglas fir, cedar, alder, and maple. The topography in the southern portion of the site is gentle with grades of between 2 and 8 percent. The northeastern portion of the site has some ridge top grades ranging between 16 and 24 percent, with a very limited area of 10 percent grade. The northern site area is dissected by an "U"-shaped drainage that is deeply incised between 40 and 60 feet and has side slopes averaging between about 62 and 42 percent grade. These steep slopes are characterized by trees with locally severe trunk warping as a result of creep, and benching as a result of soil slumping; however, no deep-seated landslides have been observed on the site. Based on our twelve, widely spaced, exploratory test pits to a maximum depth of 10 feet, the site soils consist of tan micaceous silt that underlies the entire site throughout the exposed topographic section between elevations of 130 and 200 feet. No significant rock was found in any of the test pits.

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Tamarisk Development

The currently proposed plan for development includes 47 lots for single-family homes and associated improvements; including about 1,800 lineal feet of a new main-street extension with two cul-de-sacs. A water quality facility is not yet located.

SITE GEOLOGY

Based on our initial site reconnaissance and test pit exploration, the site is underlain by at least 70 feet of flood deposits consisting of tan silt deposited some 13,000 years ago during the last of the Catastrophic Flood event, which inundated the Portland and Willamette Valley areas to an elevation of about 400 feet. The flood deposits found thorough the site consists of micaceous silt with occasional traces of fine sand and clay and no significant rock. The silt is overlain by brown clayey silt colluvial soil and topsoil that generally ranged in thickness between 4 to 6 feet. The silt below 4 to 6 feet depth is stiff to very stiff and contains little groundwater, often becoming dry in test pits below depths of 9 to 10 feet.

SUBSURFACE EXPLORATIONS

The subject site was explored on December 12, 2005 by excavating 12 widely-spaced test pits to depths ranging between 7 and 10 feet. The subsurface conditions and material types observed on the subject site are summarized below.

Topsoil

Topsoil consisted primarily of 6 to 9 inches of gray-brown to light brown silt with traces of clay and fine sand. Fine organic debris was generally limited to the initial 4 to 5 inches. The near-surface soils, including topsoil, were hard and dry at the time of our exploration as a result of desiccation.

Colluvial Soils

Typical colluvial soil at this site generally consists of brown silt with some clay and brown clayey silt. This soil was typically soft and moist at the date of our exploration. These soils are prone to downslope creep and shallow sliding in the upper 4 to 6 feet of slopes steeper than 30 percent.

Catastrophic Flood Deposits

The catastrophic flood deposit at the consisted of light brown to tan micaceous silt with some to traces of clay and occasionally very fine sand. This soil was typically stiff to very stiff and moist to damp, or dry at depth.

Soil Moisture and Groundwater

At the time of out site investigation during mid-December, the near-surface soils of the site were generally moist in the upper 5 to 6 feet but lost moisture with increased depth so that it was not uncommon for the silt soil to be dry and powdery at depths of 9 to 10 feet. No groundwater was encountered in any of the exploratory test pits.

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Project No. 05-9541
Tamarisk Development

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Our preliminary investigation indicates that the proposed residential development is geotechnically feasible provided continued geotechnical input is obtained both in a formal geotechnical investigation report after the plans become more formalized and during development construction. Approximately 6 or 7 of the proposed lots are located on slopes that are prone to creep and shallow sliding. The plan preferably should be revised to avoid creating lots where extensive stabilization measures may be required. Spread foundations are expected to be appropriate for construction of the single-family homes on slopes less than 20 percent grade, subject to review during construction. The upper 4 to 6 feet of the site soils are relatively soft and easily disturbed.

The potential for encountering rock of any size during both shallow and deep site excavations and grading is very low, however if deep foundations are to be designed on the steeper slopes, then deep boring explorations will likely be necessary to confirm the design.

The potential for encountering shallow or deep groundwater is very low with the exception of in or adjacent to wetland areas. Stripping of topsoil is expected to be minimal, less than 6 to 9 inches in most areas, however large root removal should be expected in the upper two feet of cuts.

The existing topography shows little signs of slope instability with the exception of the steep side slopes within the incised creek drainages. Deformed tree trunks and pistol-butt root masses are evidence of rapid creep on the steep slopes above drainages. Benching on these same slopes give clear evidence of shallow soil slumping; however, no deep-seated landslides appear to have occurred during the recent past. Downslope creep and shallow sliding appears to be limited to the upper 4 to 6 feet on slopes steeper than 30 percent. Tree clearing on steep slopes is not recommended because trees maintain stable slopes and remove excess moisture.

Soil erosion on steep slopes, once initiated, appears to progress rapidly in the fine silt soil, forming V-shaped side channels and gullies. The site slopes and soil types are such that the site will be susceptible to erosion and likely slow to grow vegetation after grading. Stripped surface soils should be saved for redistribution over the site. Erosion prevention will require careful planning and protection on fill and cut slopes during earthwork projects. Due to the very fine nature of the site soils, piping along buried drains and utilities could be an issue if groundwater is encountered.

UNCERTAINTY AND LIMITATIONS

We have prepared this report for the developer and designers, for use on this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

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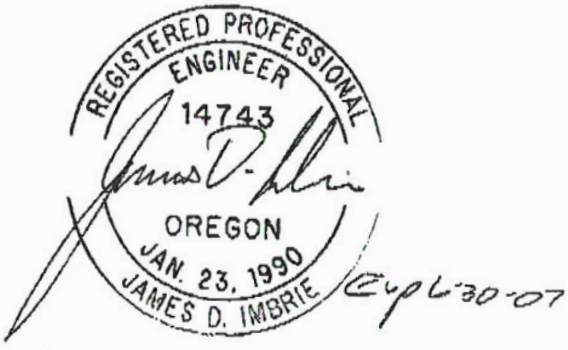
Project No. 05-9541
Tamarisk Development

We recommend that GeoPacific be retained to prepare a final investigation report and to review the plans and specifications and verify that our recommendations have been interpreted and implemented as intended. Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

Sincerely,

GEOPACIFIC ENGINEERING, INC.



James E. Pyne R.G.
Senior Geologist

James D. Imbrie, P.E., C.E.G.
Principal Geotechnical Engineer

Attachments:

Figure 1 – Site and Exploration Plan
Test Pit Logs

CC: OTAK

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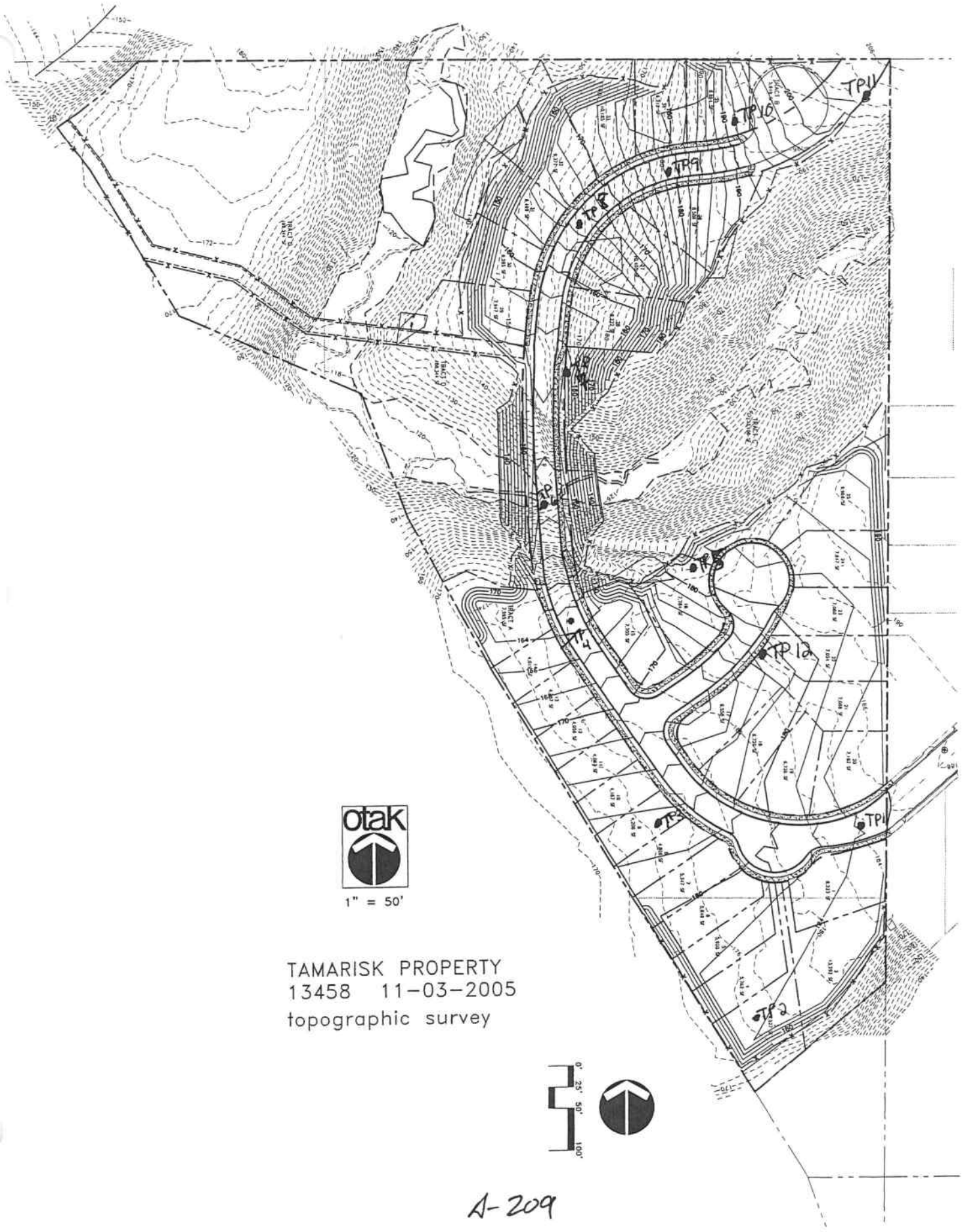

TAMARISK PROPERTY
13458 11-03-2005
topographic survey

A-209

Project No. 05-9541
Tamarisk Development

APPENDIX A

LOGS OF EXPLORATORY TEST PITS

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-1

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown organic silt, some clay, abundant roots, soft, moist (12" Topsoil - ML).
1	0.75					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	1.5					
2	1.5					
	1.5					Rust brown clayey silt, micaceous. soft, moist (Colluvial Soil - ML).
3	1.5					
	3.5					Below 3.5' with some fine fragments of weathered basalt, stiff to very stiff, moist (Colluvial Soil - ML).
4	4.5					
5						
						Light tan silt with some clay, micaceous, stiff, less moist than above. (Catastrophic Flood deposits - ML).
6						
7						
8						
9						
						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP- 2

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, fine organic debris, roots, soft, moist (8" Topsoil - ML).
1	2.25 1.5					Brown clayey silt, medium stiff to soft, moist (Colluvial Soil - ML).
2	~~1.75~~					
	2.25					Rust-brown silt with some clay, stiff, moist (Colluvial Soil - ML).
3	2.0 2.0					
4	~~2.5~~					
5						Light brown to tan silt, trace to some clay in zones, porous, very fine root fibers throughout, dry and powdery at depth (Catastrophic Flood deposit - ML).
6						
7						
8						
9						
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-212

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. **TP- 3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Dark brown silt, some clay, abundant roots, fine organic debris, soft, moist (11" Topsoil - ML).
	1.5					Brown silt with some clay, some charcoal inclusions, medium stiff, moist (Colluvial Soil - ML).
2	1.75					
	2.5					At 2.5 feet, zone of black charcoal fragments, some fine, highly weatherred basalt fragments (Colluvial Soil - ML)., stiff below 3 feet.
3	3.5					
	3.0					
4	3.5					
	3.5					Rust-brown silt with traces of clay and fine sand. stiff, moist (Catastrophic Flood deposit - ML).
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-213

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-4

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, trace of clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Brown clayey silt, medium stiff, moist (Colluvial Soil - ML).
	1.25					
2	2.0					
	~~1.75~~					
3	2.0					Brown silt with some clay , medium stiff to stiff, moist (Colluvial Soil - ML).
	1.75					
4	2.0					
	2.0					
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood Deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-214

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-5

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Mottled light gray, rust, and brown clayey silt, medium stiff, moist (Disturbed soil located in old dozer trail (Fill - ML).
	1.5					
2	1.5					
	2.5					
3	2.0					Brown silt with some clay; stiff, moist (Colluvial Soil or Disturbed Soil - ML).
	2.0					
4	2.5					
	3.0					Light tan silt, trace of clay, micaceous, stiff damp (Catastrophic Flood deposit - ML).
5	3.25					
6						
7						
						Test pit terminated at 7 feet, No Groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-6

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5 2.0					Brown clayey silt with charcoal fragments, soft to stiff (Disturbed soil in old dozer trail - ML).
2	3.25 3.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					
4	2.75 2.5 4.0					Light brown to tan silt, some clay, micaceous, stiff to very stiff (Catastrophic Flood deposit - ML).
5	3.75 4.5					
6	4.5					
7						Test pit terminated at 7 feet, No groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-7

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Dark brown silt with fine organic debris, abundant roots, soft, moist (18" Topsoil - ML).
	0.5					
2	0.75					Brown clayey silt, moist, soft (Colluvial Soil - ML).
	0.75					
3	0.5					Light tan silt with some clay, soft, very moist (Catastrophic Flood deposit - ML).
	1.25					
4	1.5					
	1.5					
5						Light tan silt, micaceous, some clay, medium stiff, moist (Catastrophic Flood deposit - ML).
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-8

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris and roots, soft, moist (11" Topsoil - ML).
1	1.25					
	1.0					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	0.75					
	1.0					
3	2.0					Brown and light rust mottled clayey silt, stiff, moist (Colluvial Soil - ML).
	2.5					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
4	3.5					
	3.0					Light tan micaceous silt, lightly iron-stained in near-horizontal patterns, stiff, damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						
9						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-21B

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-9

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Dark gray-brown organic silt, soft, moist (local area of disturbed topsoil - ML).
	0.5					
2	0.5					Rust brown silt with some sand and clay, soft, moist (Colluvial Soil - ML).
	1.0					
3	1.25					
	1.0					Light brown clayey silt, soft, moist (Colluvial Soil - ML).
4	3.0					
	3.5					Light tan micaceous silt with some clay, some light rust mottling, stiff, moist (Catastrophic Flood deposit - ML).
5						
6						
7						Tan micaceous silt with a trace of clay, some light rust mottling, stiff, damp (Catastrophic Flood deposit - ML).
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-10

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay and fine organic debris, soft, moist (9" Topsoil - ML).
1	1.0					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	1.5					
2	1.25					
	2.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	3.5					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	3.75					
4	2.75					Light tan silt, micaceous, very stiff, wet to damp (Catastrophic Flood deposit - ML).
	3.75					
5						
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-220

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-11

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Brown silt, some clay, soft, moist (7" Topsoil - ML).
1	0.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	1.5					
2	1.0					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	0.5					
3	2.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	4.0					
4						Brown silt with a trace of clay, micaceous, stiff , moist (Catastrophic Flood deposit - ML).
5						
6						Light tan micaceous silt, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-221

GeoPacific Engineering Inc
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-12

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, organic, roots, soft, moist (9" Topsoil - ML).
1	3.5					
	0.75					Brown clayey silt, soft, moist (Colluvial Soil - ML).
2	2.5					
	2.75					Brown silt with some fine sand, trace of clay , stiff, moist (Colluvial Soil - ML).
3	1.0					Brown silt with some clay, medium stiff, moist (Colluvial Soil - ML).
	1.5					
4	3.5					
	4.5					Light rust-brown silt with some clay, stiff, moist (Catastrophic Flood deposit - ML).
5						
						Light tan micaceous silt, stiff, moist to damp (Catastrophic Flood deposit - ML).
6						
7						
8						
9						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

A-222

Appendix 3—Variance Narrative

TAMARISK SUBDIVISION
VARIANCE APPLICATION

West Linn, Oregon

Request for
Variance

Prepared for
Stearns Marnella Communities

Prepared by
Otak, Incorporated

February 4, 2006
A-224

APPLICATION SUMMARY

I. REQUEST

The applicant requests approval of a variance to the cul-de-sac length of West Linn CDC Section 85.200(A)(11), which states, "Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75." In this instance, there are two trains of thought, and the applicant has been provided with varying direction by City staff.

In one instance, it would seem that under the provisions of CDC Section 85.200(A)(8), which states, "Where necessary to give access to, or permit a satisfactory future subdivision of adjoining land, streets shall be extended to the boundary of the subdivision and the resulting dead-end streets may be approved without turnarounds. (Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long)" that a variance would not be required because the street is stubbed to the property directly west of the subject site in a location that is the most appropriate location to follow the topography of the surrounding slopes.

In the second case, it could be perceived that the street acts more as a cul-de-sac because the street stubs to the Urban Growth Boundary (UGB), and any urban development that would occur on the adjacent properties would not happen in the short- or medium-term future. Nevertheless, the stub provides adjacent properties with the opportunity to be connected with City streets should the properties be brought into the UGB, be annexed into the City of West Linn, and be developed.

This variance is being requested based on the premise that the proposed street is a cul-de-sac. If it is considered as a cul-de-sac, then it would be approximately 940 feet long and serves 13 lots.

The variance would be applicable to proposed Tamarisk Subdivision, which is located at the current terminus of Tamarisk Drive in West Linn, Oregon. As proposed, the Tamarisk Subdivision is a Planned Unit Development (PUD) request for a 35-lot residential subdivision in West Linn, Oregon. The PUD approval is requested in light of the environmental constraints associated with the property.

II. SITE DESCRIPTION

Location

The site is located at the terminus of Tamarisk Drive. The property is physically described as tax lots 600, 690, and 700 of map 21E34A in Clackamas County, Oregon.

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Zoning

The West Linn Community Development Code designates .96 acre of the site R-10 (Low Density Residential) and 14.39 acres of the site R-15 (Low Density Residential). Single-family residential uses are listed as preferred uses. Both the R-10 and R-15 zones allow for single-family development as an outright permitted use. In this instance, density will be transferred from the Type I and II lands to the buildable portions of the site. Lot sizes within the proposed development will be varied to maximize density on the site.

Surrounding Land Uses

The surrounding properties are a mixture of urban residential, rural residential, and vacant uses. The properties located within the city limits and surrounding the site are all zoned residential. The properties located directly north of the site and within Clackamas County are all zoned Rural Residential Farm/Forest-5 (RRFF-5). According to Clackamas County, the RRFF-5 zone is applied to properties which have a general parcel size of five (5) acres; are affected by development; contain no serious natural hazards and the topography and soils are suitable for development; and are easily accessible to a Rural Center or incorporated city. I-205 is located directly adjacent to the western edge of the property along Parker Road.

Topography

The site has a variety of slopes, with the majority of the site containing grades ranging from approximately 5 to 25 percent. There are two large areas within the site that have slopes exceeding 25 percent. These areas will largely remain intact, with the exception of the area needed to construct streets and utilities to accommodate the proposed development. See Exhibit 4 (Existing Slope Analysis and Drainage Map).

Vegetation

The site is heavily forested with a large variety of trees. It appears as though the understory of the site has been cleared within the past several years. The majority of trees onsite are Alder, Cedar, Ash, Hawthorn, or Oak.

Wetland and Riparian Areas

There are wetlands and two large drainageways on the site. A resource assessment and wetland delineation has been conducted by Mirth Walker and Stacey Reed, Wetland Scientists with SWCA. Their report and recommendations are included with this submittal.

Existing Structures

The only structure on the property is an existing culvert that was placed in the drainage to accommodate an old logging road. The culvert will be extended and replaced to accommodate the new road as prescribed by the City of West Linn Community Development Code (CDC). There are no other known structures on the property.

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Access and Circulation

Tamarisk Road serves the site from the southeast. Tamarisk Road will continue through the site and be stubbed to the adjacent property to accommodate future development of the adjacent properties and to provide an ultimate connection of Tamarisk Road to Woodbine. A street connection through this site directly to Woodbine is not feasible due to the severity of the slopes along the area closest to Woodbine. Instead, Tamarisk Road has been realigned to follow the topography. All streets have been designed to meet the City of West Linn design standards for local streets with the exception of that portion of right-of-way that crosses the drainageway. The portion of street that crosses the drainageway is proposed to be a 24-foot paved section, with curb-tight sidewalks within a 50-foot right-of-way. All other streets are designed to be located within a 50-foot right-of-way with a 28-foot paved section, including curb and gutter, a planter strip, and sidewalk. See Exhibits 1 (Cover Sheet), 2 (Vicinity Transportation Network Map), and 5 (Tentative Subdivision Plat).

Existing Utility Locations

Water: Water to the site will be provided by an extension of a six-inch water line through the site from Tamarisk Drive, under I-205 via Woodbine Road, into an existing line on SW Johnson Street. The system will also be stubbed to the north property line for future extension.

Sanitary Sewer: Sanitary Sewer will be pumped from an onsite sewer pump that is to be constructed with the development to the existing six-inch line located within Tamarisk Drive.

Storm Drainage: Stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility, then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

III. COMPLIANCE WITH APPLICABLE APPROVAL CRITERIA

Section 75.060 of the West Linn Development Code outlines the approval criteria necessary to obtain a variance. The following is a discussion of how this proposal meets the applicable criteria.

75.060 THE APPROVAL CRITERIA

The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The approval authority shall deny the variance if any of the criteria are not met.

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Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the same zone or vicinity, and result from lot size or shape, legally existing prior to the date of this ordinance, topography, or other circumstances over which the applicant has no control.

Response: The Tamarisk site contains a significant amount of slopes in excess of 25 percent, two drainageways with associated wetlands, and is heavily tree covered. These circumstances of steep slopes and tree cover do not apply to the majority of sites in the City of West Linn, which are, for the most part, already developed. While there are steep slopes and trees in the vicinity, none of the properties within the City limits in this vicinity are of the same size facing the same constraints. The applicant has no control over these physical features. Primarily, it is the steepness of the site which constrains the developer from providing streets which are fully compliant with the Development Code standards and, thereby, leading to this variance request.

The variance is necessary for the preservation of a property right of the applicant, which is substantially the same as a right possessed by owners of other property in the same zone or vicinity.

Response: The property is the largest property within this vicinity with the low-density residential zoning classification. Other properties within the City that share this designation have the same rights as the owner of this property to develop in compliance with the standards of the CDC. In this instance, the property owner's rights to develop are affected by physical attributes of the property and is not due to any prior actions of the owner. The steep slopes, drainageways, and surrounding streets dictate the location of the street extension to this portion of the site. When other large parcels within this area were developed, they were also required to provide long cul-de-sac streets. In this instance, it is debatable as to whether or not the proposed street even constitutes a cul-de-sac since it is also able to stub out to undeveloped parcels and be extended with future development. Street extensions from stubbed streets are always dictated by the timing of the adjacent owners' willingness to develop or other circumstances that may be beyond their control.

The authorization of the variance will not be materially detrimental to the purposes and standards of this Code, will not be inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.

Response: The proposed variance will not be materially detrimental to the purposes and standards of this ordinance or to surrounding properties. The granting of the variance does not preclude the future extension of the proposed street and still provides for the orderly development of future properties that are currently not located within the UGB or City limits of the City of West Linn, but the property will someday be considered for inclusion to these boundaries and it would be shortsighted not to consider the ramifications of the decisions that are made today. There is no evidence to suggest that the proposed variance would conflict with the goals and policies of the West Linn Comprehensive Plan.

A-228

The variance request is the minimum variance, which would alleviate the exceptional and extraordinary circumstance.

Response: The hardship is not a self-imposed hardship. The variance is the minimum variance from the standard that would allow the property to be developed at densities that are consistent with the Low Density Residential districts.

The exceptional and extraordinary circumstance does not arise from the violation of this ordinance.

Response: There are no know violations of this ordinance; therefore, the hardship does not arise from any violation of the West Linn Community Development Code. In fact, it is a matter of interpretation as to whether or not the proposed variance is required at all.

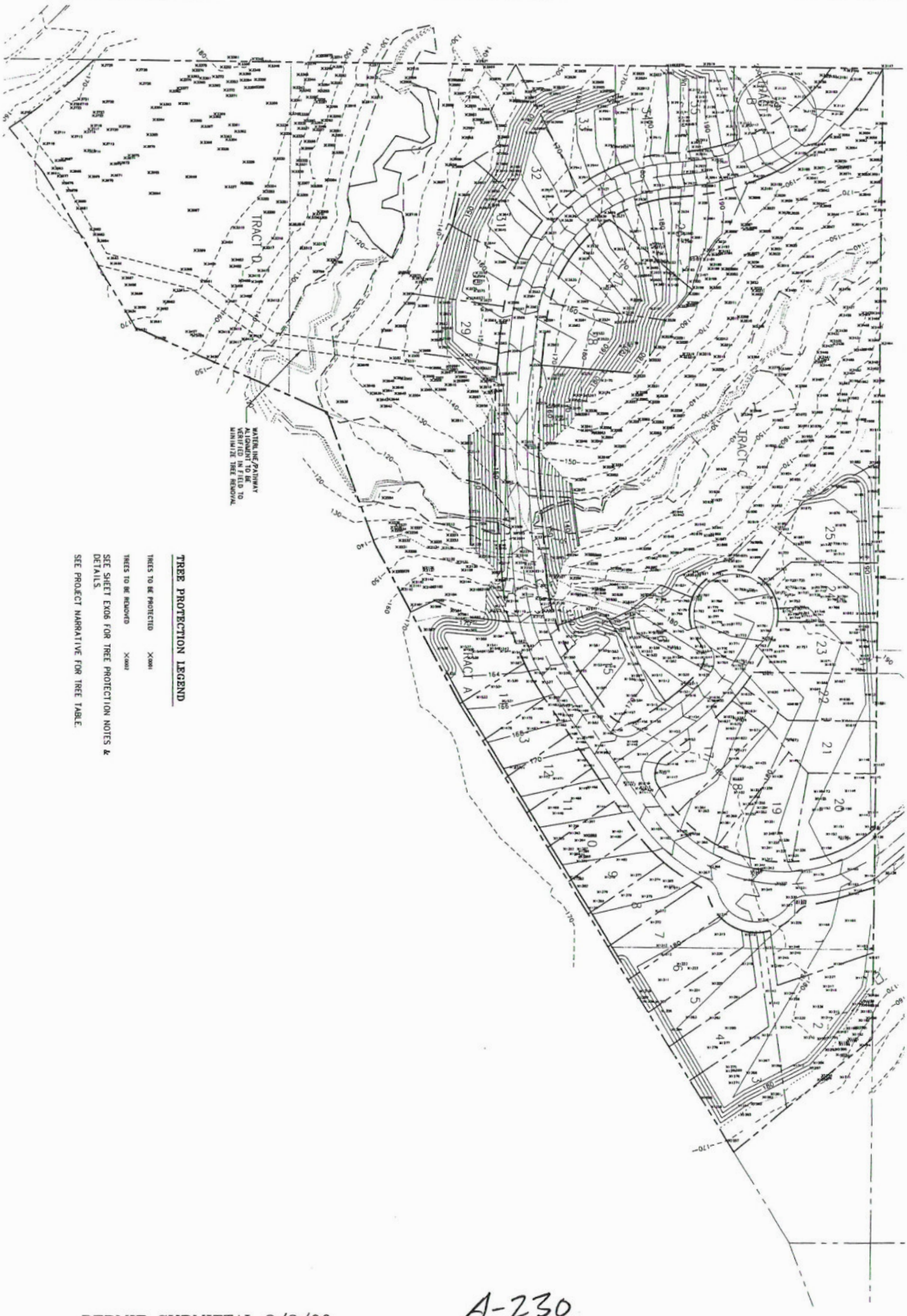
The variance will not impose physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification

Response: The proposed variance does not impose physical limitations on other properties or uses in the area and provides opportunities for future development on neighboring vacant and underdeveloped properties to be developed in accordance to the applicable standards of the underlying classification.

IV. CONCLUSION

This application narrative demonstrates that all applicable provisions of the City of West Linn have been addressed and that the applicant has met the burden of proof necessary to grant the requested variance. The applicant, therefore, respectfully requests approval of this application.

A-229



TREE PROTECTION LEGEND

TREES TO BE PROTECTED XXXX

TREES TO BE REMOVED XXXX

SEE SHEET EX06 FOR TREE PROTECTION NOTES & DETAILS.

SEE PROJECT NARRATIVE FOR TREE TABLE.

A-230

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN(POINT NUMBERS)

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

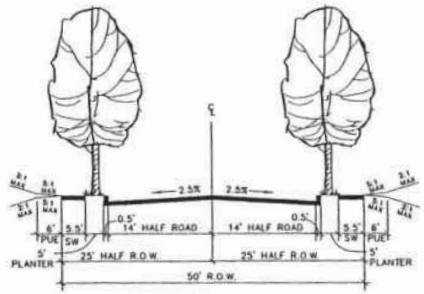
EX06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
(PLANNED UNIT DEVELOPMENT)
WEST LINN, OREGON

VICINITY MAP

N.T.S.

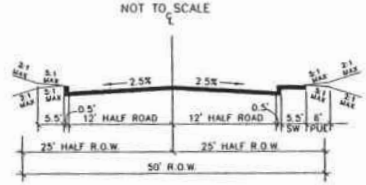
1"=100'



TYPICAL LOCAL ROAD SECTION

STREET A: STA. 11+82 to 16+58, STA. 19+13 to 23+46
STREET B: STA. 30+00 to 31+47

NOT TO SCALE



DRAINAGE CROSSING SECTION

STREET A: STA. 16+80 to 18+92

NOT TO SCALE

BENCH MARK

ODOT Benchmark M631
Elevation: 167.09
Location: I-205 NE Corner of a Northbound structure of Woodbine Road

SHEET INDEX

EX01	COVER SHEET
EX02	VICINITY TRANSPORTATION NETWORK MAP
EX03	EXISTING CONDITIONS MAP
EX03A	EXISTING CONDITIONS MAP -WITH LAND TYPE DESIGNATION
EX04	EXISTING SLOPE ANALYSIS & DRAINAGE MAP
EX05	TENTATIVE SUBDIVISION PLAT
EX05A	TENTATIVE SITE PLAN
EX06	TREE PRESERVATION PLAN
EX06A	TREE PRESERVATION PLAN
EX07	TENTATIVE GRADING & EROSION CONTROL PLAN
EX08	TENTATIVE UTILITY PLAN
EX09	STREET A -TAMARISK DR.- PROFILE
EX10	STREET A -TAMARISK DR.- AND STREET B PROFILE
EX11	STREET TREE PLAN
EX12	AERIAL MAP

A-231

OWNER

Name/Contact: Edwin L Fritchie/
Gloria Fritchie Trustee
Address: 21929 S. Clear Creek Road
Estacada, OR 97023

APPLICANT/DEVELOPER

Name: Stearns Marnella Communities, LLC
Contact: Nick Stearns or Tony Marnella
Address: 18318 SE Abernethy Lane
Milwaukie, OR 97267
Phone: (503) 654-6642

PLANNER

Name: Otak Incorporated
Contact: Brad Kilby, AICP
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

ENGINEER

Name: Otak Incorporated
Contact: Mike Peebles, PE
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

SITE INFORMATION

Tax Map: 21E34A in Clackamas County, Oregon
Tax Lot: 600, 690, and 700
Area: 15.35 Acres

PERMIT SUBMITTAL 2/3/06

Stearns Marnella Communities

TAMARISK PRELIMINARY DESIGN
TENTATIVE SUBDIVISION PLAN
COVER SHEET

17355 SW Boones
Lake Oswego, OR
Phone: (503)
FAX (503)
Internet:

13458
Project No.

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Exhibit No.

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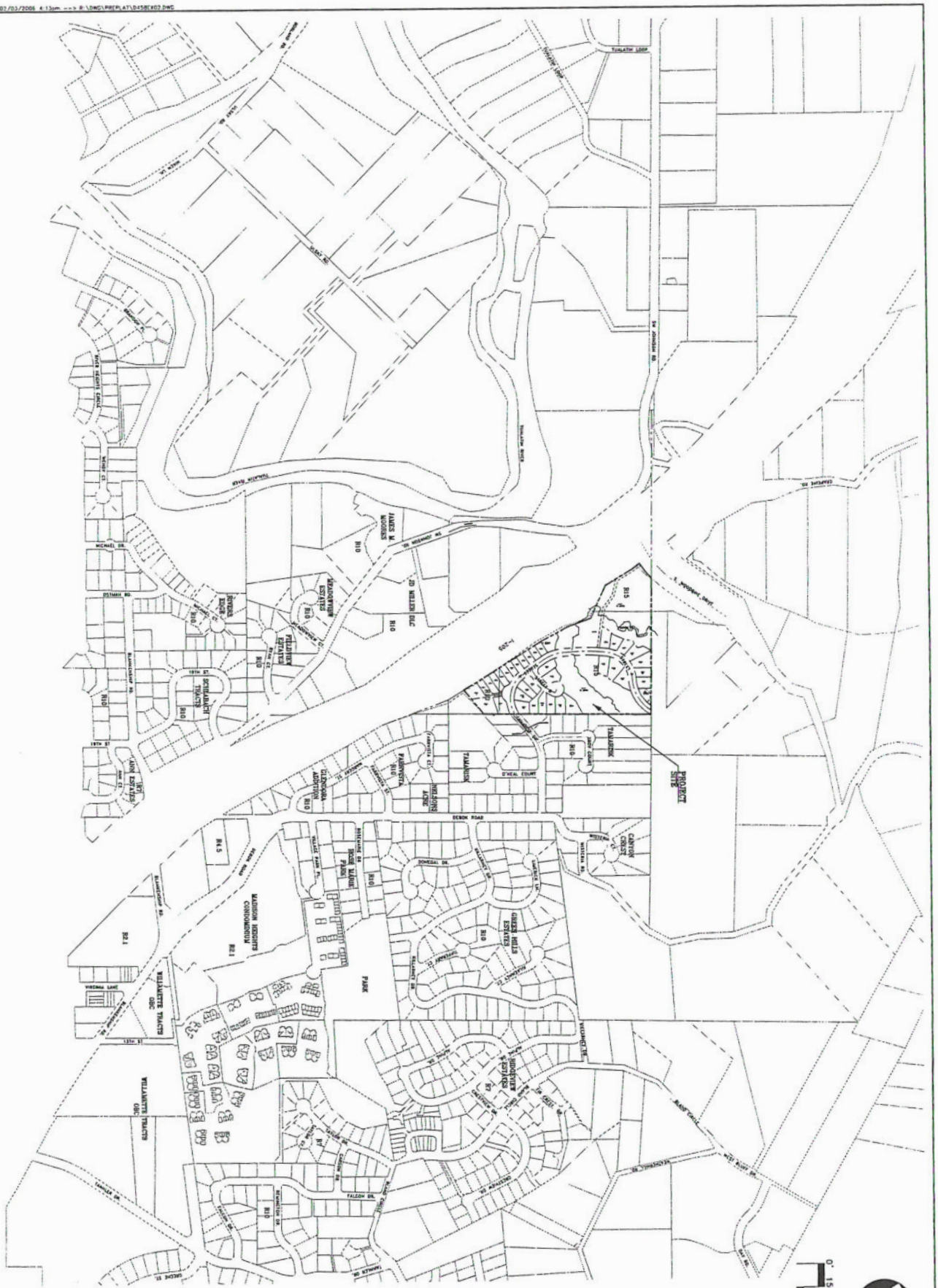


A-232

PERMIT SUBMITTAL 2/3/06

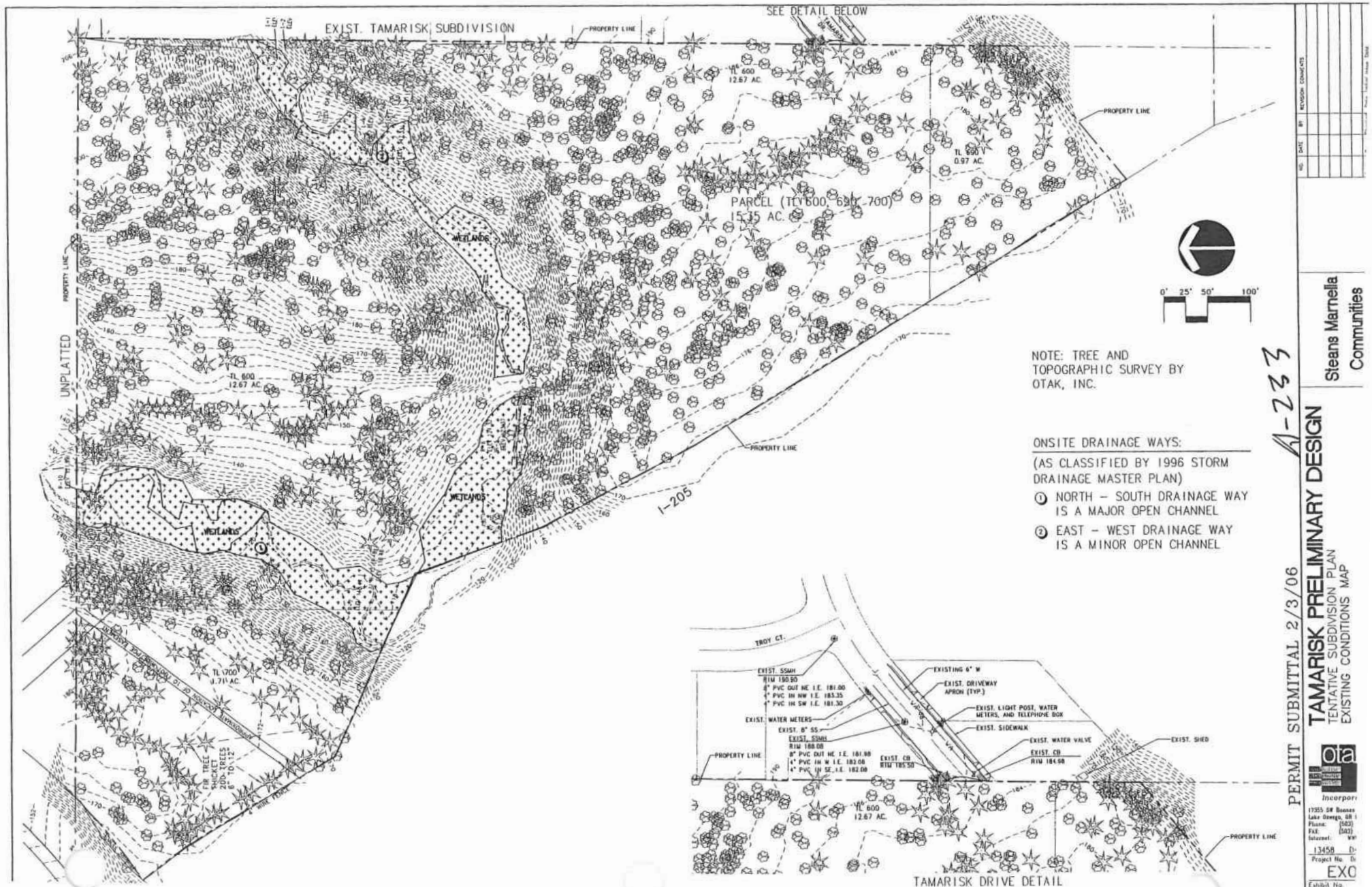
TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
VICINITY TRANSPORTATION NETWORK MAP

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Project No. 11458
Exhibit No. EX(



PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP

A-233

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Incorpor
17355 SW Boones
Lake Oswego, OR
Phone: (503)
FAX: (503)
Internet: WW

13458 D
Project No. D

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Copyright D

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UNPLATTED

PROPERTY LINE

EXIST. TAMARISK SUBDIVISION

FIR TREE THICKET 200 TREES 6" TO 12"

APPROXIMATE LOCATION OF 10' NORTHWEST PIPE EASEMENT

4 WIRE FENCE

WETLANDS

TL 700 7.71 AC.

TL 600 12.67 AC.

TL 600 0.97 AC.

PARCEL (TL 600, 690, 700) 15.35 AC.

I-205

SEE DETAIL BELOW

LEGEND		
HATCH	LAND TYPE	AREA (AC)
	TYPE I SLOPES 0-15%	3.92
	TYPE II WETLANDS SLOPES 25-35%	2.33
	TYPE III SLOPES 15-25%	1.51
	TYPE IV SLOPES 0-15%	7.59
TOTAL		15.35

NOTE: TREE AND TOPOGRAPHIC SURVEY BY OTAK, INC.

0' 25' 50' 100'

TAMARISK DRIVE DETAIL

TROY CT.

EXIST. SSMH RIM 186.90
8" PVC OUT NE I.E. 181.00
8" PVC IN NW I.E. 181.35
4" PVC IN SW I.E. 181.35

EXIST. WATER METERS

EXIST. 8" SS

EXIST. SSMH RIM 186.08
8" PVC OUT NE I.E. 181.98
4" PVC IN W I.E. 182.08
4" PVC IN S I.E. 182.08

EXIST. CB RIM 185.50

EXISTING 8" W

EXIST. DRIVEWAY APRON (TYP.)

EXIST. LIGHT POST, WATER METERS, AND TELEPHONE BOX

EXIST. SIDEWALK

EXIST. WATER VALVE

EXIST. CB RIM 184.98

EXIST. SHED

PROPERTY LINE

A-234

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Design | Drawn | Checked | Date | Initial Issue Date:

Exhibit No. EXO

Project No. 0

Copyright

PROPERTY LINE

PLATTED SUBDIVISION

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

TAMARISK DR.

LEGEND

DRAINAGE ARROW

SLOPE ANALYSIS LEGEND

HATCH	RANGE BEG. (%)	RANGE END (%)	AREA (AC)
	0.00	5.00	3.32
	5.00	15.00	4.27
	15.00	25.00	1.51
	25.00	35.00	2.33
	35.00	50.00	1.35
	50.00	100.00	2.57

0' 25' 50' 100'

A-235

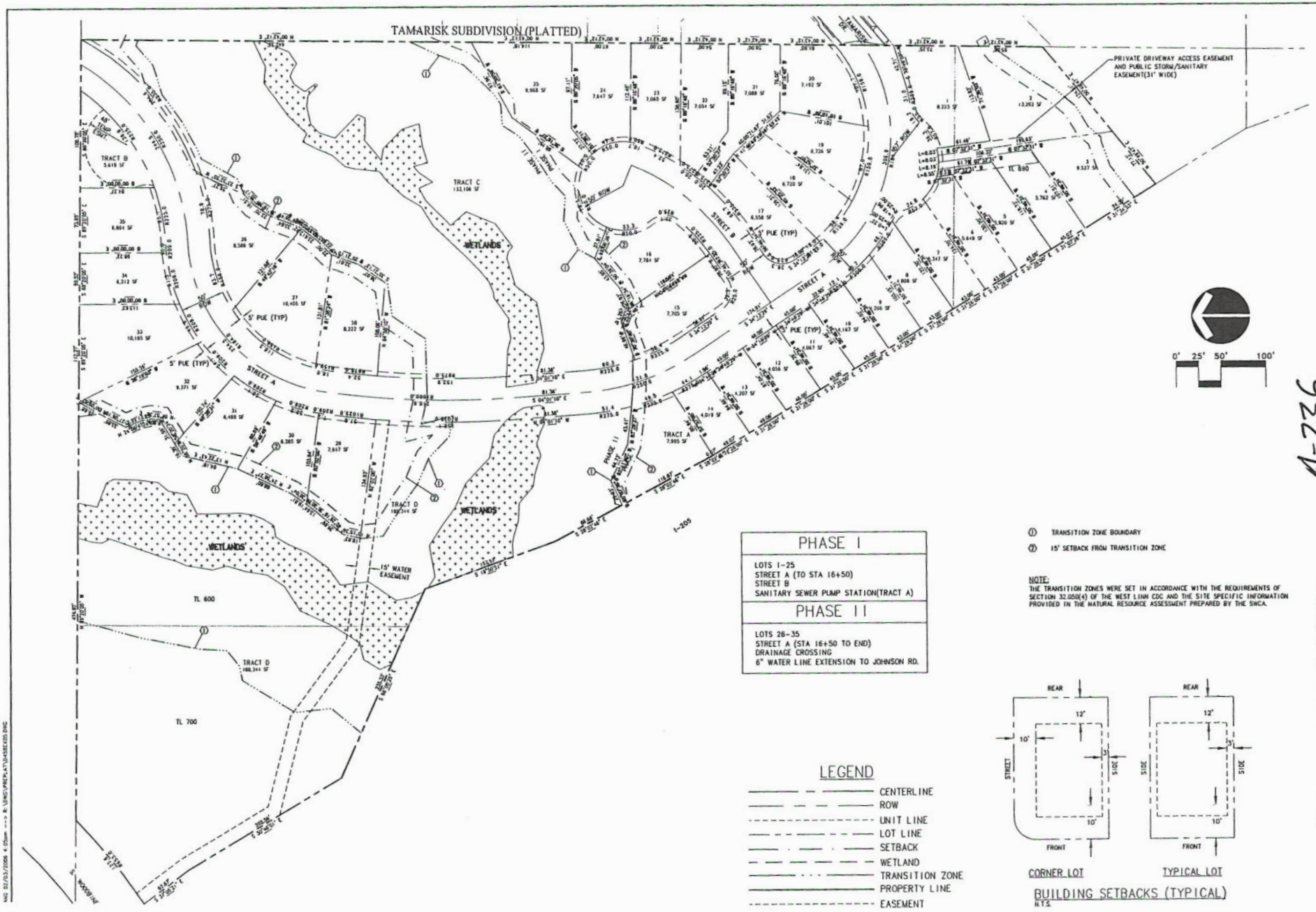
PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
EXISTING SLOPE ANALYSIS & DRAINAGE MAP

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS



A-236

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
TENTATIVE SUBDIVISION PLAT

Steans Marnella Communities

17355 SW Boone
Lake Oswego, OR
Phone: (503
FAX: (503
Internet: W

13458 D
Project No.

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Exhibit No.

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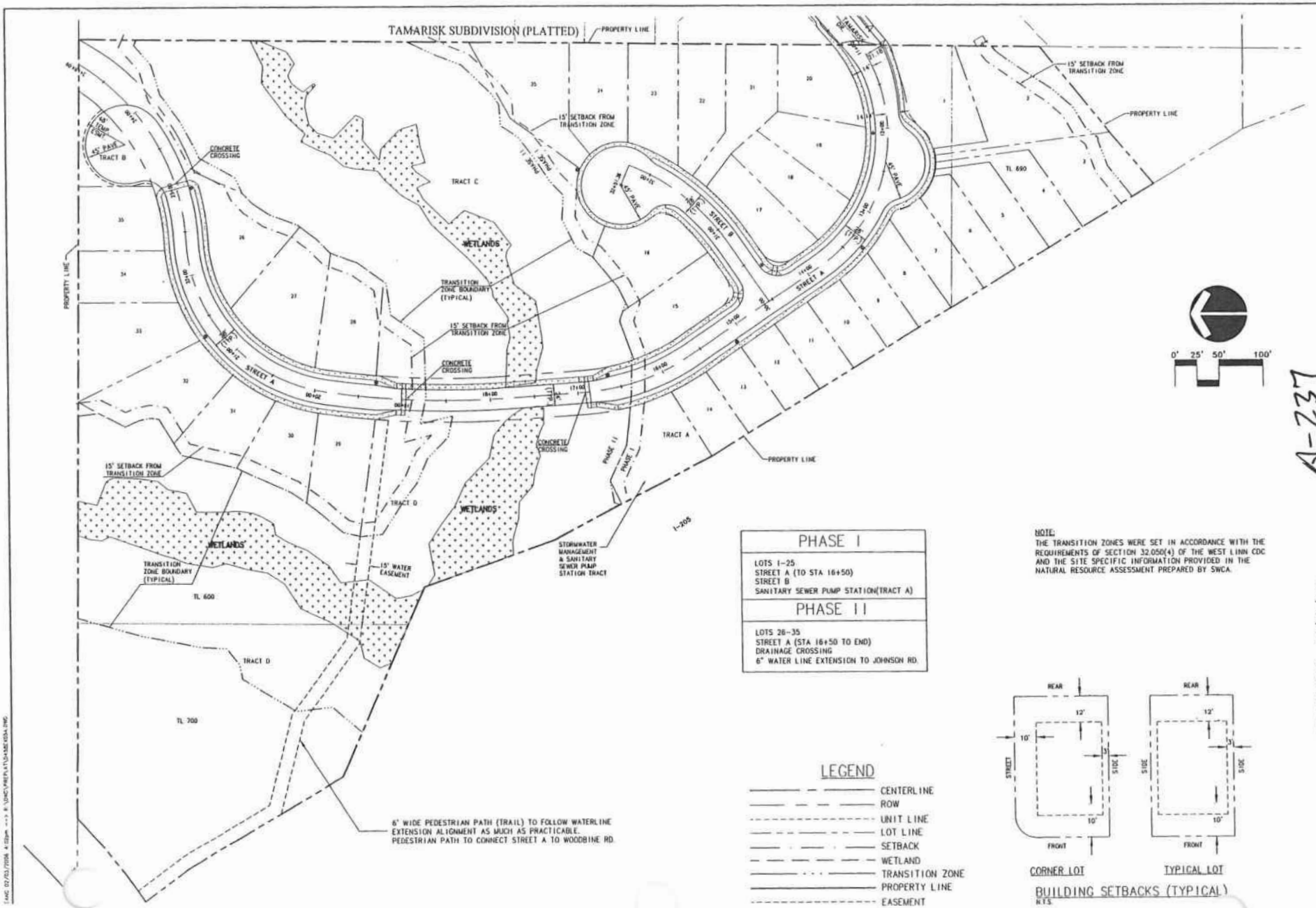

PHASE I
LOTS 1–25 STREET A (TO STA 16+50) STREET B SANITARY SEWER PUMP STATION(TRACT A)
PHASE II
LOTS 26–35 STREET A (STA 16+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:
THE TRANSITION ZONES WERE SET IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 32.050(4) OF THE WEST LINN CDC AND THE SITE SPECIFIC INFORMATION PROVIDED IN THE NATURAL RESOURCE ASSESSMENT PREPARED BY SWCA.

6' WIDE PEDESTRIAN PATH (TRAIL) TO FOLLOW WATERLINE EXTENSION ALIGNMENT AS MUCH AS PRACTICABLE. PEDESTRIAN PATH TO CONNECT STREET A TO WOODBINE RD.

LEGEND

- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

BUILDING SETBACKS (TYPICAL)
N.T.S.

A-237

PERMIT SUBMITTAL 2/3/06

Steans Marnella Communities

TAMARISK PRELIMINARY DESIGN
TENTATIVE SUBDIVISION PLAN
TENTATIVE SITE PLAN

NO. | DATE | BY | REVISION COMMENTS

Incorpor
17355 SW Boones
Lake Oswego, OR
Phone: (503)
FAX: (503)
Internet: W

13458 D4
Project No. (

EXO
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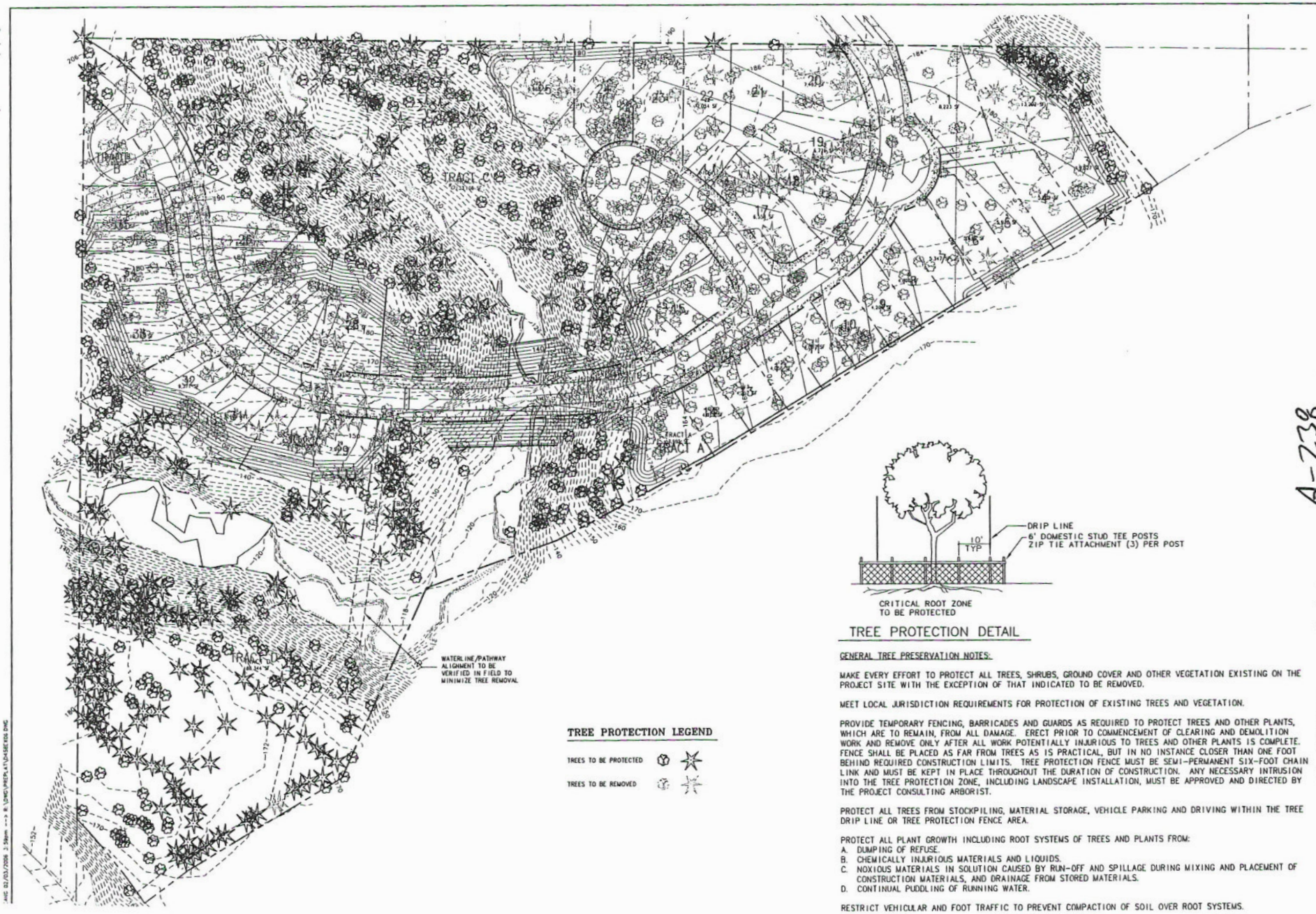
Copyright



TREE PROTECTION LEGEND

TREES TO BE PROTECTED

TREES TO BE REMOVED

TREE PROTECTION DETAIL

GENERAL TREE PRESERVATION NOTES:

MAKE EVERY EFFORT TO PROTECT ALL TREES, SHRUBS, GROUND COVER AND OTHER VEGETATION EXISTING ON THE PROJECT SITE WITH THE EXCEPTION OF THAT INDICATED TO BE REMOVED.

MEET LOCAL JURISDICTION REQUIREMENTS FOR PROTECTION OF EXISTING TREES AND VEGETATION.

PROVIDE TEMPORARY FENCING, BARRICADES AND GUARDS AS REQUIRED TO PROTECT TREES AND OTHER PLANTS, WHICH ARE TO REMAIN, FROM ALL DAMAGE. ERECT PRIOR TO COMMENCEMENT OF CLEARING AND DEMOLITION WORK AND REMOVE ONLY AFTER ALL WORK POTENTIALLY INJURIOUS TO TREES AND OTHER PLANTS IS COMPLETE. FENCE SHALL BE PLACED AS FAR FROM TREES AS IS PRACTICAL, BUT IN NO INSTANCE CLOSER THAN ONE FOOT BEHIND REQUIRED CONSTRUCTION LIMITS. TREE PROTECTION FENCE MUST BE SEMI-PERMANENT SIX-FOOT CHAIN LINK AND MUST BE KEPT IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION. ANY NECESSARY INTRUSION INTO THE TREE PROTECTION ZONE, INCLUDING LANDSCAPE INSTALLATION, MUST BE APPROVED AND DIRECTED BY THE PROJECT CONSULTING ARBORIST.

PROTECT ALL TREES FROM STOCKPILING, MATERIAL STORAGE, VEHICLE PARKING AND DRIVING WITHIN THE TREE DRIP LINE OR TREE PROTECTION FENCE AREA.

PROTECT ALL PLANT GROWTH INCLUDING ROOT SYSTEMS OF TREES AND PLANTS FROM:

A. DUMPING OF REFUSE.
B. CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS.
C. NOXIOUS MATERIALS IN SOLUTION CAUSED BY RUN-OFF AND SPILLAGE DURING MIXING AND PLACEMENT OF CONSTRUCTION MATERIALS, AND DRAINAGE FROM STORED MATERIALS.
D. CONTINUAL PUDDLING OF RUNNING WATER.

RESTRICT VEHICULAR AND FOOT TRAFFIC TO PREVENT COMPACTION OF SOIL OVER ROOT SYSTEMS.

A-238

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN(SYMBOLS)

Steans Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Incorpo
17355 SW Boon
Lake Oswego, O
Phone: (50
FAX: (50
Internet:

13458
Project No.

EX
Exhibit No.

Copyright

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A-239

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
TENTATIVE GRADING & EROSION CONTROL PLAN

Steans Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

EXO

Project No. 13458

Exhibit No.

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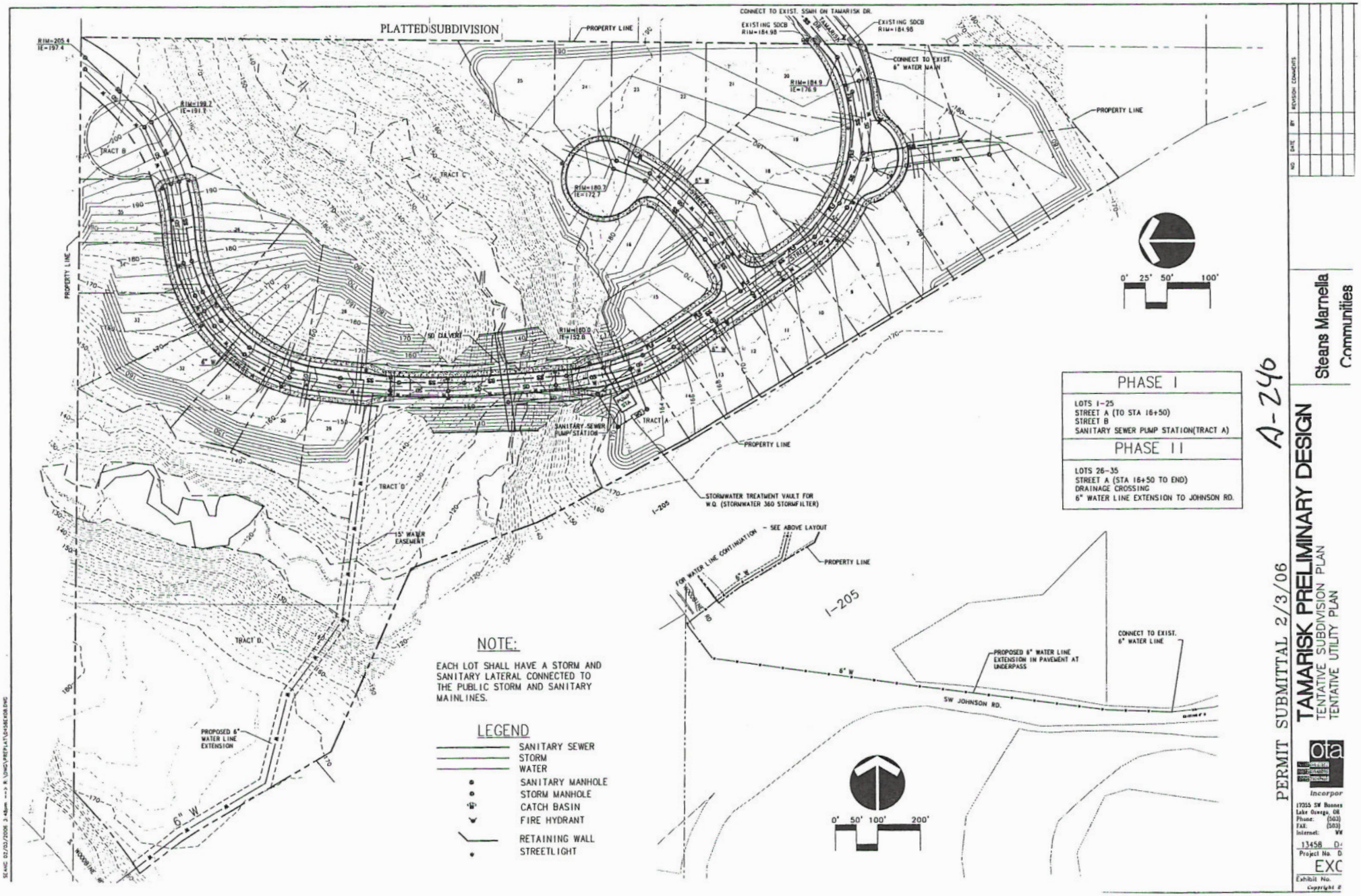

A-246

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

Steans Marnella Communities

NO. | DATE | BY | REVISION COMMENTS

Incorpor
17355 SW Boones
Lake Oswego, OR
Phone: (503)
FAX: (503)
Internet: WW

13458 D
Project No. D

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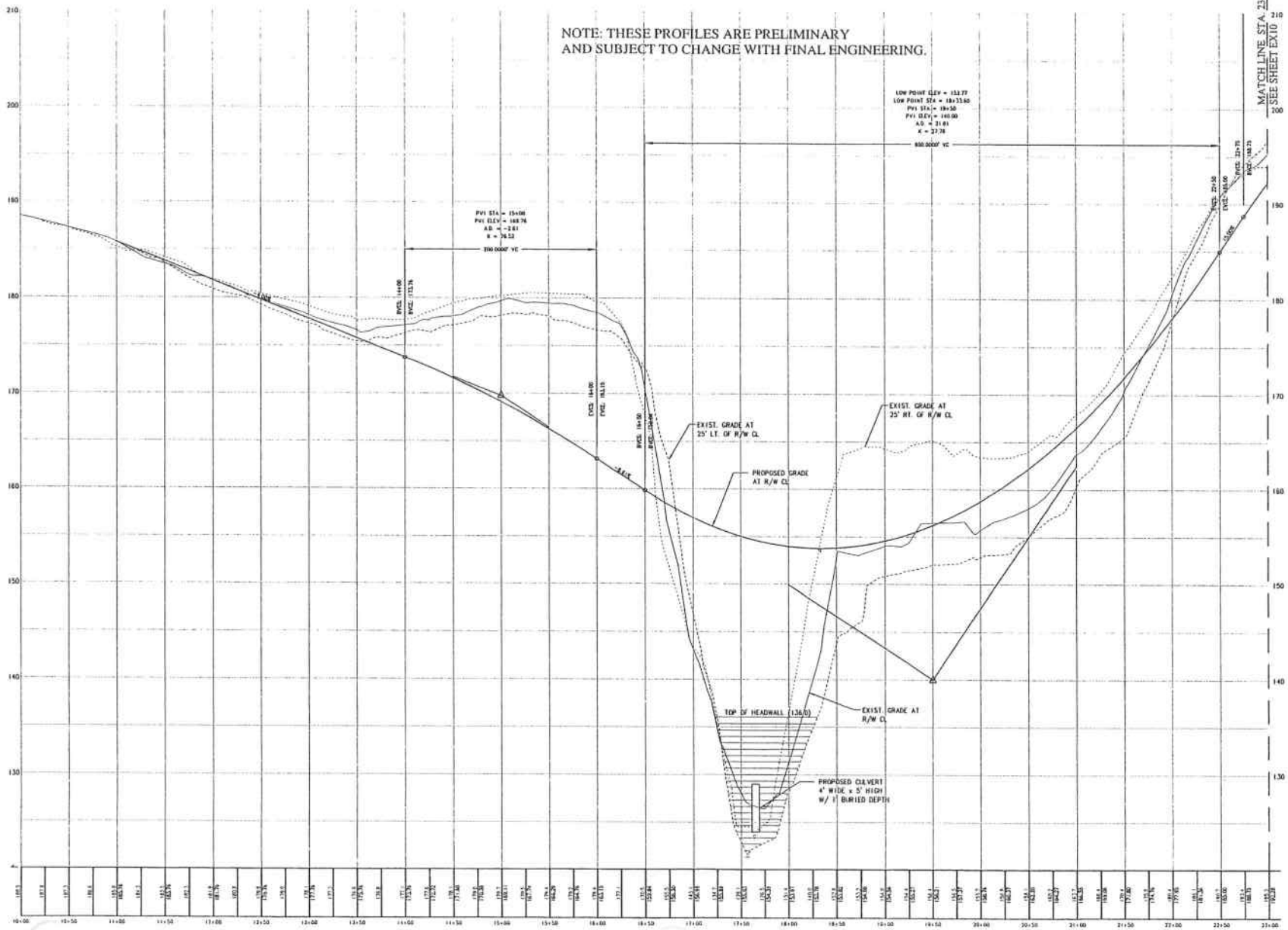


STREET A (TAMARISK DR.) 10+00 TO STA. 23+00
SCALE: 1"=50' H
SCALE: 1"=5' V

PERMIT SUBMITTAL 2/3/06

A-241

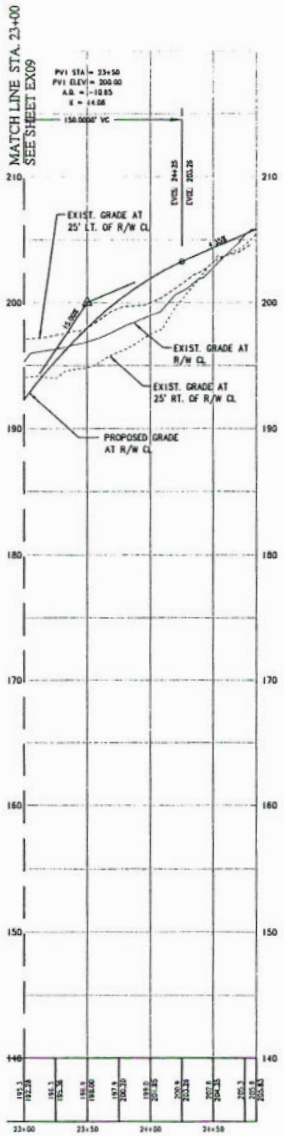
TAMARISK PRELIMINARY DESIGN
TENTATIVE SUBDIVISION PLAN
STREET A (TAMARISK DR.) PROFILE

Steans Marnella Communities

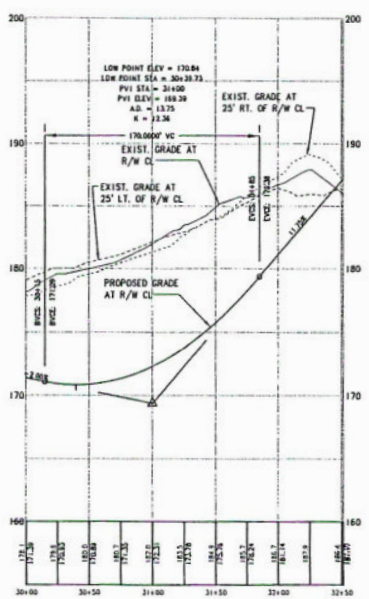
otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone: (503) 635-
FAX: (503) 635-
Internet: WWW.OTAK

13458 D458E
Project No. Drawing
EX09
Exhibit No.

NOTE: THESE PROFILES ARE PRELIMINARY
AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.



STREET A (TAMARISK DR.) STA. 23+00 TO STA. 25+34.73
SCALE: 1"=50' H
SCALE: 1"=5' V



STREET B STA. 30+00 TO STA. 35+32.50
SCALE: 1"=50' H
SCALE: 1"=5' V

A-242

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
STREET A (TAMARISK DR.)
AND STREET B PROFILE

Steans Marnella Communities

NO	DATE	BY	REVISION COMMENTS

otak
Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 970
Phone: (503) 6
FAX: (503) 6
Internet: WWW.O

13458 D45
Project No. Draw
EX1C
Exhibit No.
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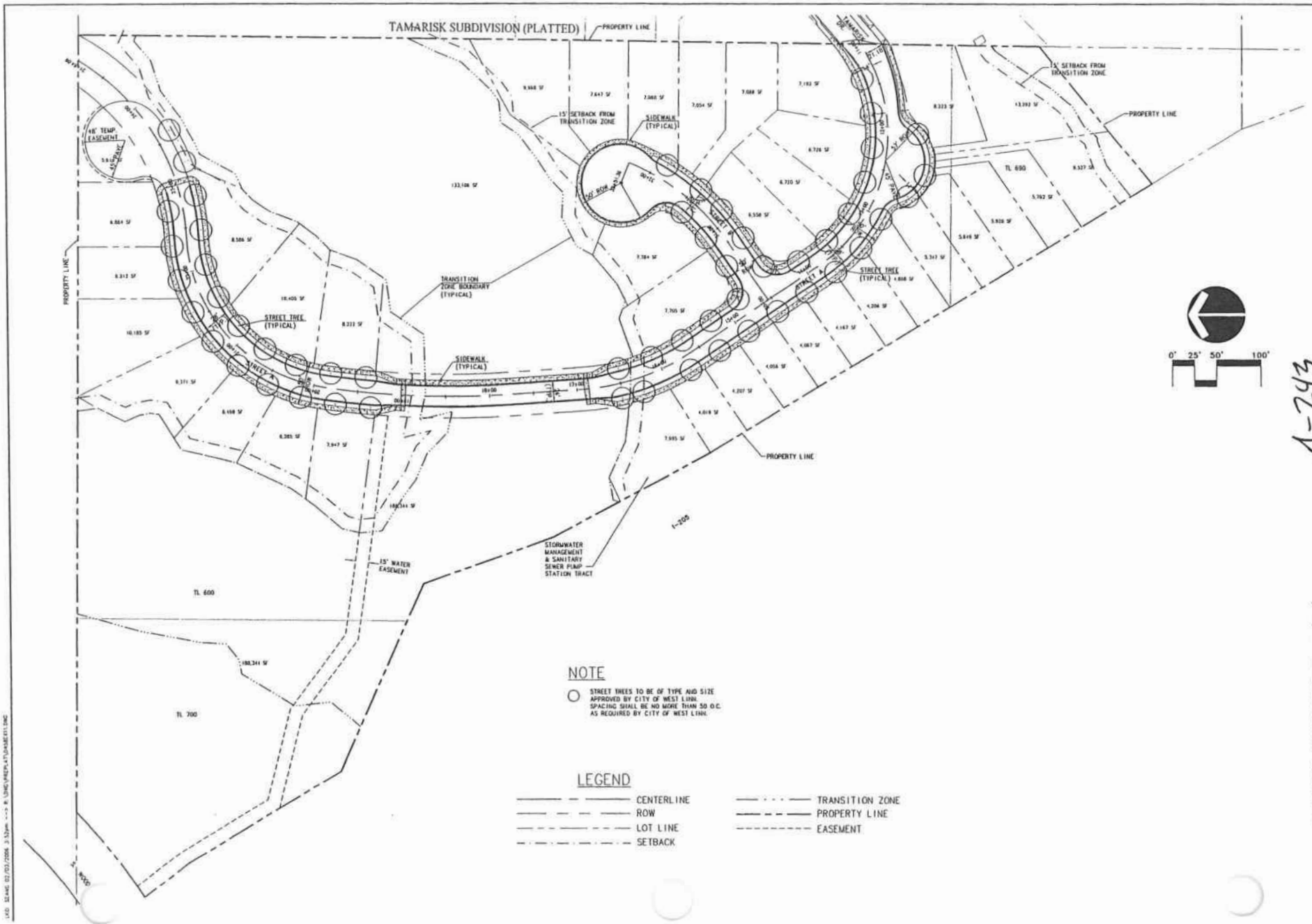

NOTE

○ STREET TREES TO BE OF TYPE AND SIZE APPROVED BY CITY OF WEST LINN. SPACING SHALL BE NO MORE THAN 50 O.C. AS REQUIRED BY CITY OF WEST LINN.

LEGEND

- CENTERLINE
- ROW
- LOT LINE
- SETBACK
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

A-243

PERMIT SUBMITTAL 2/3/06

TAMARISK PRELIMINARY DESIGN

TENTATIVE SUBDIVISION PLAN
STREET TREE PLAN

Steans Marnella Communities

Incorporated
17355 SW Boones Ferry
Lake Oswego, OR 97035
Phone: (503) 635-
FAX: (503) 635-
Internet: WWW.Otak

13458 D45BE
Project No. Drawing

EX11

TAMARISK SUBDIVISION

CITY OF WEST LINN, OREGON

Request for:
Planned Unit Development
Subdivision
Drainageway Permit

Prepared for:
Stearns/Marnella Communities

Prepared by:
Otak, Inc.

December 27, 2005

A-244

TAMARISK SUBDIVISION

REQUEST FOR PLANNED UNIT DEVELOPMENT, SUBDIVISION, AND DRAINAGEWAY PERMIT APPROVAL

REQUEST: This is a request for a Subdivision, Planned Unit Development (PUD), and Drainageway Permit approval for a 35-lot residential subdivision in West Linn, Oregon. The PUD approval is requested in light of the environmental constraints associated with the property. A Drainageway Permit is requested to allow an existing logging road and culvert to be improved to provide utilities and access to portions of the development. The subject site is approximately 15.35 acres in size and has two separate zoning classifications. A sewer pump is proposed on tract "A" to serve the development. The proposed lots are to be developed with single-family homes.

SUBJECT PROPERTY: The site is located at the terminus of Tamarisk Drive. The property is physically described as tax lots 600, 690, and 700 of map 21E34A in Clackamas County, Oregon.

PROPERTY OWNER:
Edwin L Fritchie and Gloria D Fritchie Trustee
21929 S. Clear Creek Road
Estacada, OR 97023

APPLICANT/ DEVELOPER:
Stearns Marnella Communities, LLC.
18318 SE Abernethy Lane
Milwaukie, OR 97267
Contact: Nick Stearns or Tony Marnella
Ph: (503) 654-1769

PLANNER:
Otak, Inc.
17355 SW Boones Ferry Road
Lake Oswego, OR 97035
Contact: Brad Kilby, AICP
Ph: (503) 635-3618
Fax: (503) 635-5395

ENGINEER:
Otak, Inc.
17355 SW Boones Ferry Road
Lake Oswego, OR, 97035
Contact: Mike Peebles, PE
Ph: (503) 635-3618
Fax: (503 635-5395

A-245

TABLE OR CONTENTS

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I.	PROPOSED DEVELOPMENT PLAN	1
II.	SITE DESCRIPTION	1
III.	PROJECT DESCRIPTION	3
IV.	COMPLIANCE WITH APPLICABLE CITY OF WEST LINN DEVELOPMENT CODE PROVISIONS	3
V.	CONCLUSION	58
VI.	EXHIBITS	59

Exhibit 1 Cover Sheet: including Vicinity Map
Exhibit 2 Vicinity Transportation Network Map
Exhibit 3 Existing Conditions Map
Exhibit 4 Existing Slope Analysis and Drainage Map
Exhibit 5 Tentative Subdivision Plat
Exhibit 6 Tree Preservation Plan
Exhibit 7 Tentative Grading and Erosion Control Plan
Exhibit 8 Tentative Utility Plan
Exhibit 9 Local Street Profiles
Exhibit 10 Street "A" Profiles

VI. APPENDICES

Appendix 1 Dunn Traffic Engineering Traffic Study
Appendix 2 SWCA Natural Resource Assessment
Appendix 3 Preliminary Stormwater Analysis
Appendix 4 Neighborhood Meeting Information
Appendix 5 City Pre-application Conference Minutes
Appendix 6 Clackamas County Tax Map
Appendix 7 Title Report

A-246

I. PROPOSED DEVELOPMENT PLAN

This is a request for a Planned Unit Development, Subdivision, and Drainageway Permit approval for a two-phase, 35-lot, single-family subdivision at the terminus of Tamarisk Drive in West Linn, Oregon. The subject site is zoned R-10 and R-15. The proposed lots are to be developed with single-family homes.

II. SITE DESCRIPTION

Location

The site is located at the terminus of Tamarisk Drive. The property is physically described as tax lots 600, 690, and 700 of map 21E34A in Clackamas County, Oregon.

Zoning

The West Linn Community Development Code designates .96 acre of the site R-10 (Low Density Residential), and 14.39 acres of the site R-15 (Low Density Residential). Single-family residential uses are listed as preferred uses. Both the R-10 and R-15 zones allow for single-family development as an outright permitted use. In this instance, density will be transferred from the Type I and II lands to the buildable portions of the site. Lot sizes within the proposed development will be varied to maximize density on the site.

Surrounding Land Uses

The surrounding properties are a mixture of urban residential, rural residential, and vacant uses. The properties located within the city limits and surrounding the site are all zoned residential. The properties located directly north of the site and within Clackamas County are all zoned Rural Residential Farm/Forest-5 (RRFF-5). According to Clackamas County, the RRFF-5 zone is applied to properties which have a general parcel size of five (5) acres; are affected by development; contain no serious natural hazards and the topography and soils are suitable for development; and are easily accessible to a Rural Center or incorporated city. I-205 is located directly adjacent to the western edge of the property along Parker Road.

Topography

The site has a variety of slopes with the majority of the site containing grades ranging from approximately 5 to 25 percent. There are two large areas within the site that have slopes exceeding 25 percent. These areas will largely remain intact with the exception

of the area needed to construct streets and utilities to accommodate the proposed development. See Exhibit 4 (Existing Slope Analysis and Drainage Map).

Vegetation

The site is heavily forested with a large variety of trees. It appears as though the understory of the site has been cleared within the past several years. The majority of trees onsite are Alder, Cedar, Ash, Hawthorn, or Oak.

Wetland and Riparian Areas

There are wetlands and two large drainageways on the site. A resource assessment and wetland delineation has been conducted by Mirth Walker and Stacey Reed, Wetland Scientists with SWCA. Their report and recommendations are included with this submittal.

Existing Structures

The only structure on the property is an existing culvert that was placed in the drainage to accommodate an old logging road. The culvert will be extended and replaced to accommodate the new road as prescribed by the City of West Linn Community Development Code (CDC). There are no other known structures on the property.

Access and Circulation

Tamarisk Road serves the site from the southeast. Tamarisk Road will continue through the site and be stubbed to the adjacent property to accommodate future development of the adjacent properties and to provide an ultimate connection of Tamarisk Road to Woodbine. A street connection through this site directly to Woodbine is not feasible due to the severity of the slopes along the area closest to Woodbine. Instead, Tamarisk Road has been realigned to follow the topography. All streets have been designed to meet the City of West Linn design standards for local streets with the exception of that portion of right-of-way that crosses the drainageway. The portion of street that crosses the drainageway is proposed to be a 24-foot paved section, with curb-tight sidewalks within a 50-foot right-of-way. All other streets are designed to be located within a 50-foot right-of-way with a 28-foot paved section including curb and gutter, a planter strip, and sidewalk. See Exhibits 1 (Cover Sheet), 2 (Vicinity Transportation Network Map), and 5 (Tentative Subdivision Plat).

Existing Utility Locations

Water. Water to the site will be provided by an extension of a six-inch waterline through the site from Tamarisk Drive, under I-205 via Woodbine Road, into an

existing line on SW Johnson Street. The system will also be stubbed to the north property line for future extension.

Sanitary Sewer: Sanitary Sewer will be pumped from an onsite sewer pump that is to be constructed with the development to the existing six-inch line located within Tamarisk Drive.

Storm Drainage: Stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

III. PROJECT DESCRIPTION

Use and Layout

This proposal is for a 35-lot Subdivision on approximately 15.35 acres, Planned Development approval, and Drainageway approval for road and utility work within one of the onsite drainageways. Each lot will be developed with a single-family dwelling in compliance with the underlying zoning preference.

IV. COMPLIANCE WITH APPLICABLE CITY OF WEST LINN DEVELOPMENT CODE PROVISIONS

The West Linn Community Development Code sets forth the approval standards for tentative subdivision plats. The provisions of the following chapters are applicable to the proposed development:

Chapter 10, Single-Family Residential Detached, R-15
Chapter 11, Single-Family Residential Detached, R-10
Chapter 24, Planned Unit Development
Chapter 30, Wetland and Riparian Area
Chapter 32, Natural Drainageway Protection
Chapter 33, Storm Water Quality
Chapter 46, Off-Street Parking
Chapter 48, Access
Chapter 54, Landscaping
Chapter 85, Land Divisions – General
Chapter 89, Subdivision and Partition Plats
Chapter 91, Improvement Guarantee
Chapter 92, Required Improvements
Chapter 96, Street Improvement Construction
Chapter 99, Administrative Procedures for Quasi-Judicial Decisions

Chapter 10, Single-Family Residential Detached, R-15
Dimensional Requirements

Except as may be otherwise provided by the provisions of this Code, the following requirements are the requirements for uses within this zone:

1. *The minimum lot size shall be 15,000 square feet for a single- family detached unit.*
2. *The minimum front lot line length or the minimum lot width at the front lot line shall be 45 feet.*
3. *The average minimum lot width shall be 80 feet.*
4. *The lot depth comprising non-Type I and II shall be less than two and one-half times the width, and more than an average depth of 90 feet.*
5. *The minimum yard dimensions or minimum building setback areas from the lot line shall be:*
   a. *For the front yard, 20 feet, except for steeply sloped lots where the provisions of Section 41.010 shall apply.*
   b. *For an interior side yard, 7-1/2 feet.*
   c. *For a side yard abutting a street, 15 feet.*
   d. *For a rear yard, 20 feet.*
6. *The maximum building height shall be two and one-half stories, or 35 feet, except for steeply sloped lots in which case the provisions of Section 41.000 shall apply.*
7. *The maximum lot coverage shall be 30 percent.*
8. *The minimum width of an accessway to a lot which does not abut a street or a flag lot, shall be 15 feet.*

Response: According to CDC Section 24.180 (Applicability of the Base Zone Provisions), the prescribed dimensional standards of the R-10 zoning classification do not apply. The exceptions to this criterion are that the lots are subject to a maximum 40 percent lot coverage requirement.

Chapter 11, Single-Family/Multiple-Family Residential, R-10
Dimensional Requirements

Except as may be otherwise provided by the provisions of this Code, the following are the requirements for uses within this zone:

1. *The minimum lot size shall be 10,000 square feet for a single-family detached unit.*
2. *The minimum front lot line length or the minimum lot width at the front lot line shall be 35 feet.*
3. *The average minimum lot width shall be 50 feet.*
4. *The lot depth comprising non-Type I and II lands shall be less than two and one-half times the width, and more than an average depth of 90 feet.*
5. *The minimum yard dimensions or minimum building setback area from the lot line shall be:*
   a. *For the front yard, 20 feet; except for steeply sloped lots where the provisions of Section 41.010 shall apply; and as specified in Section 26.040(D) for the Willamette Historic District.*

b. *For an interior side yard, 7-1/2 feet; except as specified in Section 26.040(D) for the Willamette Historic District.*
c. *For a side yard abutting a street, 15 feet.*
d. *For a rear yard, 20 feet.*

6. *The maximum building height shall be two and one-half stories, or 35 feet, except for steeply sloped lots in which case the provisions of Section 41.000 shall apply.*
7. *The maximum lot coverage shall be 35 percent.*
8. *The minimum width of an accessway to a lot which does not abut a street or a flag lot, shall be 15 feet.*

Response: According to CDC Section 24.180 (Applicability of the Base Zone Provisions), the prescribed dimensional standards of the R-10 zoning classification do not apply. The exceptions to this criterion are that the lots are subject to a maximum 35 percent lot coverage requirement, and that all flag lots are required to have a minimum accessway width of 15 feet. There are three flag lots. Each lot is provided with a minimum street frontage of eight feet as prescribed elsewhere in the development code, and all three will be served by a shared access that is a minimum of 15 feet in width.

24.000 PLANNED UNIT DEVELOPMENTS

Response: Pursuant to the West Linn zoning ordinance, Section 24.060(B)(1) requires this property to be developed as a planned unit development (PUD) because the property is comprised of more than 25 percent of Type I and Type II lands.

24.080 SUBMITTAL REQUIREMENTS

The submittal requirements shall apply to non-exempt projects as identified in Section 55.025, and shall include the following: (ORD. 1408)

a. *Narrative discussing proposal and applicability of the PUD and addressing approval criteria of this chapter and Design Review Section 55.100.*

Response: The West Linn CDC Section 24.060(B)(1) requires that development on this property undergo a PUD review. According to City staff and CDC Section 24.080, single-family subdivisions are exempt from the approval criteria of Design Review pursuant to CDC Section 55.025. Therefore, the submittal requirements provided are those that have been specifically requested within the applicable code sections.

b. *Narrative and table showing applicable density calculations.*

Response: The proposed site plan creates a total of 35 individual lots, and 35 units on the 15.35-acre site. The maximum net density permitted on the site is 35

units. The maximum net density was determined by the following steps:

R-10

a. Total area of .96 acre (41,817 SF) minus .13 acre (5,476 SF) of Type I and II land
b. Total net acres of .83 x 43,560 square feet per acre = 36,341 SF.
c. Total square feet of 36,341 / 10,000 square feet minimum lot size = **3.63 units maximum net density.**

R-15

a. Total area of 14.39 acres (626,828 SF) minus 1.95 acres (85,057 SF) for streets and 6.12 acres (266,587 SF) for Type I and II lands.
b. Total net acres of 7.15 x 43,560 square feet per acre = 311,525 square feet.
c. Total square feet of 311,525 / 15,000 square feet minimum lot size = **18.35 units maximum net density.**

As discussed earlier in this narrative, and in more detail later in this narrative, the proposal also involves the transfer of **13.1 units** from the resource areas onto the buildable area of the site consistent with CDC Section 24.130. The total allowed density based on the figures above and shown in the table below is 35.13 units. The proposed development is for 35 units.

Table 1.0 Project Density

TAMARISK PROPERTY- DENSITY CALCULATIONS

December 15, 2005 — Otak Project No. 13458

Base Density Summary:

A. Existing Conditions	Area (sf)	Area (ac)
R-10 Zone	41,817	0.96
R-15 Zone	626,828	14.39
Total Site Area:	668,645	15.35

B. Type I/II Lands	Area (sf)	Area (ac)
R-10 Zone	5,476	0.13
R-15 Zone	266,587	6.12
Total Type I/II Land Area:	272,063	6.25

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c. Proposed Right-of-Way	Area (sf)	Area (ac)
R-10 Zone	0	0.00
R-15 Zone	85,057	1.95
Total Proposed ROW:	85,057	1.95

D. Net Area (D=A-B-C)	Area (sf)	Area (ac)	Base Zone Density (sq ft/lot)	Base Zone Lots
R-10 Zone	36,341	0.83	10,000	3.63
R-15 Zone	275,184	6.32	15,000	18.35
Total Net Area:	311,525	7.15		**21.98**

Density Transfer Summary

1. Type I/II Lands	Area (sf)	Area (ac)
R-10 Zone	5,476	0.13
R-15 Zone	266,587	6.12
Total Type I/II Land Area:	272,063	6.25

2. Type I/II Lands	Area (sf)	Area (ac)
Slope >50% and/or wet	149,846	3.44
Slopes 25>50%	122,403	2.81
Total Type I/II Land Area:	272,249	6.25

3. Disturbed Type I/II Lands	Area (sf)	Area (ac)	Allowable Density Transfer	Base Zone Density (sq ft/lot)	Additional Lots
Slope >35%, dry, R-10	4,051	0.09	0%	10,000	0.00
Slopes 25>35%, dry, R-10	0	0.00	50%	10,000	0.00
Slope >35%, dry, R-15	0	0.00	0%	15,000	0.00
Slopes 25>35%, dry, R-15	14,600	0.34	50%	15,000	0.49
Total:	18,651	0.43			**0.49**

4. Undisturbed Type I/II Lands	Area (sf)	Area (ac)	Allowable Density Transfer	Base Zone Density (sq ft/lot)	Additional Lots
Slope >50% and/or wet, R-10	146,361	3.36	50%	10,000	7.31
Slopes 25>50%, R-10	0	0.00	75%	10,000	0.00
Slope >50% and/or wet, R-15	0	0.00	50%	15,000	0.00
Slopes 25>50%, R-15	107,157	2.46	75%	15,000	5.35
Total:	253,518	5.82			**12.66**

Total Allowable Lots:	**35.13**

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d. Map showing how the densities will be distributed within the project site.

Response: The density will be distributed across the site on individual lots primarily within the Type III and IV portions of the site. The lots are displayed on Exhibit 5 of the plan set. This criterion is met.

e. Compliance with submittal requirements of Chapter 55, Design Review, including full response to approval criteria for Chapter 55, Design Review, and Chapter 85, if it is a single-family PUD.

Response: Single-family subdivisions are exempt from Chapter 55 Design Review pursuant to CDC Section 55.025. As required, a section of this narrative addresses the approval criteria for Chapter 85 Land Divisions. This criterion is met.

f. Narrative, tables, and showing all density transfers.

Response: The proposed subdivision would include a transfer of density from the Type I and II lands as allowed by this chapter. A section of this narrative speaks to the density transfer, and tables have been provided as required. This criterion is met.

g. Tables and maps identifying all Type I, II, III and IV lands by acreage, location and type (please refer to definitions of these lands in CDC Chapter 2).

Response: Type I, II, III, and IV lands by acreage location and type are represented on Exhibit 3 – Existing Conditions.

h. Other material as required by the Planning Director.

Response: Those items identified as being required in the applicable chapters of the Community Development Code are being provided by this submittal. All other submittal items were provided in accordance with the City of West Linn submittal requirements for this specific application.

24.090 APPLICABILITY AND ALLOWED USES

Subject to the provisions of Sections 24.080, 24.070 and 24.090, the PUD Overlay Zone may be applied to all residential, commercial, and industrial zones.

A. In addition to the uses allowed outright in the underlying zone the following uses shall be allowed outright where all other applicable standards are met.

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1. *Single-family, duplex, attached housing and multiple family housing.*
2. *Community buildings.*
3. *Indoor recreation facility, athletic club, fitness center, racquet ball court, swimming pool, tennis court, or similar use.*
4. *Outdoor recreation facility, golf course, swimming pool, tennis court, or similar use.*
5. *Recreation vehicle storage area.*
6. *Public safety facilities.*
7. *Major or minor utilities.*
8. *Religious institution, day care center, public or private schools. (ORD. 1463)*

Response: The proposed development allows for single-family, detached housing in the R-10 and R-15 Zones. As indicated above, single-family housing is an allowed use within a Planned Unit Development. Single-family housing is also an allowed use within the R-10 and R-15 zoning designations.

B. *Any commercial uses listed under the Neighborhood Commercial (NC) zone shall be allowed in the manner provided by the base zone or adopted plan document and, in addition, the applicant must prove:*

1. *The uses are for the purpose of primarily serving the residents of the proposed development; and,*
2. *There is a need for the type and amount of commercial space. A market analysis may be required.*
3. *The use will reduce vehicle miles traveled (VMT) between residents and existing neighborhood commercial locations.*

Response: There are no commercial uses proposed with this application. This criterion is not applicable.

24.100 APPROVAL CRITERIA

A. *The approval criteria of Section 55.100, Design Review, shall apply to non-exempted projects per Section 55.025. Single-family detached, single family attached, and duplex residential units proposed shall comply with the provisions of Chapter 43. (Ord. 1463)*

Response: Single-family subdivisions are exempt from Design Review pursuant to Section 55.025. There is no Chapter 43 within the City of West Linn online code, and staff has not identified it as an applicable chapter to this application. This criterion is satisfied.

B. *The application shall also demonstrate compliance with the following criteria:*

1. *The proposal shall preserve the existing amenities of the site to the greatest extent possible by relating the type and design of the development to the topography, landscape features, and natural amenities existing on the site and in the vicinity.*

Response: There are two major drainageways through the site and some

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intermittent wetlands at the bottom of the drainageway. The site has been designed to minimize the impacts to the drainageways, steep slopes, and several of the larger treed areas.

2. *The proposed PUD shall provide a desirable, attractive, and stable environment in harmony with that of the surrounding area through thorough, well developed, detailed planning and by comprehensively correlating the provisions of this Code and all applicable adopted plans.*

Response: This proposal is consistent with development of the surrounding properties in that the majority of the surrounding properties are zoned R-10 that would have probably been required to be constructed as a planned development if today's regulations had been in effect at the time they were developed. The area north of this site, within unincorporated Clackamas County, is zoned RRFF-5, The development is designed so that densities are consistent with the R-10 and R-15 zones respectively. The proposed development is designed to be consistent with the intent and purpose of the Planned Development Chapter and the adopted West Linn Comprehensive Plan.

3. *The placement and design of buildings, use of open spaces, circulation facilities, off-street parking areas, and landscaping shall be designed to best utilize the potentials of the site characterized by special features of geography, topography, size, and shape.*

Response: The proposed development will best utilize the development potential of the site by providing a network of streets and sidewalks for internal circulation, and by providing for the protection of the resource areas, the associated buffers, and large stands of mature trees. The design of the homes, the location of the off-street parking areas within garages and driveways, and the proposed landscaping of each lot by the prospective owner will make the site consistent with other single-family developments.

4. *The PUD shall be developed so that it is compatible with neighboring development in terms of architecture, massing, and scale. Where that cannot be accomplished, appropriate transitions shall be provided that are deferential or sympathetic to existing development.*

Response: The surrounding properties are developed with subdivisions that provide houses in low to rural densities. The proposed subdivision would provide for detached single-family homes in compliance with the R-10 and R-15 zoning designation. The proposed housing is neither inconsistent nor incompatible with the adjacent surrounding uses.

B. *All densities, density transfers, transitions, density bonuses, and proposed setbacks shall conform to provisions of this chapter as required by Sections 24.080, 24.110 to 24.170 inclusive.*

Response: All proposed density calculations were made with these provisions in mind. Density and density transfers are discussed in the following narrative. The proposed densities and housing types are consistent with the criteria outlined above.

24.110 RESIDENTIAL DENSITY CALCULATIONS

A. The PUD allows density to be transferred on residential portions of the site. The following sections explain how the allowed number of dwelling units per acre is calculated. The standards are also intended to ensure that PUDs and adjoining developments are compatible and maintain a sense of neighborhood unity.

Response: A density transfer consistent with the requirements of this chapter is requested as part of this proposal. The following information was used to determine the density for this site as evidenced in the table and discussion below.

B. Net acres for land to be developed with detached single-family dwellings, or multi-family dwellings including duplexes, is computed by subtracting the following from the gross acres:

1. *Any land area which is included in a boundary street right-of-way or water course, or planned open space areas if density transfer is not requested.*
2. *An allocation of 25 percent for public or private facilities (e.g., streets, paths, right-of-way, etc.) or when a tentative plat or plan has been developed, the total land area allocated for public or private facilities.*
3. *A lot of at least the size required by the applicable base zone, if an existing dwelling is to remain on the site.*

C. The allowed density or number of dwelling units on the site, subject to the limitations in Sections 24.140 and 24.150 is computed by dividing the number of square feet in the net acres by the minimum number of square feet required for each lot, by the base zone.

Response: The previous table on pages 6 and 7 of this report illustrates the density calculations for this site. West Linn CDC Sections 24.140 and 24.15 explain the criteria that relates to density transfers and bonuses. Density transfers are requested as part of the proposed development. The property has split zoning. Slightly less than one acre of the site is zoned R-10. The remaining 14.39 acres are zoned R-15. The R-10 zone calls for a 10,000 square-foot minimum lot size and the R-15 zone calls for a 15,000 square-foot minimum lot size in a standard subdivision. The proposal provides the density that would be allowed on this parcel if it was flat. The proposed development calls for smaller lots by locating the lots within the areas of the site that are more conducive to development.

24.120 EXAMPLES OF RESIDENTIAL DENSITY CALCULATIONS

Response: These examples were reviewed and used to determine the minimum and maximum densities for this site, as evidenced in this proposal.

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24.130 ALLOWABLE DENSITY ON TYPE I AND II LANDS

A. *This table relates to the allowed density of development on Type I and II lands. Development means when the footprint of a home is placed on Type I or II lands, or when over 50 percent of the lot comprises Type I or II lands. Generally speaking, the greater the constraints, the lower the density; and the lower the constraints, the higher the allowable density. Please note that density transfers from constrained lands generally allows a 50-100 percent transfer. The rationale for only a 50 percent transfer is that these lands have historically been of marginal development value (e.g., wetlands, 52 percent slopes, etc.); so to say those lands should have the same 100 percent development value and potential as less constrained lands, would be wrong since they are tougher to build on and they are generally appraised at a lower land value than flatter, more developable sites.*

There are three categories of allowable density: 1) "building not allowed;" 2) allowable density "when developed;" and, 3) allowable density "when transferred." The first category means that no building is allowed in, for example, slopes over 50 percent or in wetlands. The prohibition is represented by an "X." The second category means that if a developer wants to develop an area, that it can only be developed at 50 percent of normal density or not at all. The third category, "when transferred," explains what percentage of the normal density of the Type I and II lands can be transferred to on-site non Type I and II lands.

B.

		Allowable Density*	
Type I or Type II lands	***Building Not Allowed***	***When Developed***	***When Transferred***
Slopes			
25 - 35%		*50%***	*75%*
35 - 50%		*X*	*75%*
More than 50%	*X*	*X*	*50%*
Confirmed Land Slide Hazards	*X*	*X*	*50%*
Flood Management			
100 year flood plain	*X*	*X*	*50%*
Floodway	*X*	*X*	*50%*
Water Quality Resource Area	*X*	*X*	*50%*
Significant Natural Areas	*X*	*X*	*50%*
Significant Tree/Tree Clusters on Type I and II Lands	*X*	*X*	*50%*
Significant Tree/Tree Clusters on Non-Type I and II Lands	*X*	*X*	*100%*

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*Planned Public Open Space/ Regional Storm Treatment Facility****	*X*	*X*	*100%*

* *Development of single-family detached residences on pre-existing lots of record are exempt from this chart; most restrictive density governs in the event of conflict or overlap.*

** *The "50 percent allowable density when developed" means that if we reduce the number of homes on constrained lands, we reduce the hazard potential which typically increases with higher density and increased site disturbance. Consequently, the density is reduced in half (50%). That means that to develop on a predominantly steep lot would require twice the minimum lot size of the underlying zone (e.g., you would need a 20,000 square foot lot in the R-10 zone). When Type I and II lands are to be developed, the 70 percent rule shall not apply to those areas; it shall only apply to the developable net area as defined in CDC Section 85.200(J)(7).*

Response: Approximately 18,651 square feet of the Type I and II land areas will have to be graded and disturbed for utility, road, and foundation construction. Because of this, that area was not able to realize a full density transfer. Table 1.0 on pages 6 and 7 of this report illustrates the base density calculations for the site, illustrates the proposed density transfer, and reflects the reduced density transfer on the disturbed Type I and II lands.

24.140 TRANSITIONS AND LIMITATIONS ON DENSITY TRANSFER

A. Because the PUD and the provisions of this chapter allow increased residential densities and various housing types, it is necessary that some kind of transition be provided between the project site and the surrounding properties. These transitions will, for example, mitigate the impacts of multi-family housing next to single-family housing. Transitions are not required in all cases, however. The following exceptions shall apply:

1. Single-family PUD next to single-family non-PUD does not require a transition (e.g., even though it is R-5 single-family next to R-10, etc.). Also, similar type housing does not need to transition (e.g., duplex next to duplex).

Response: The proposed development would qualify for this exception in that it is single-family, detached housing adjacent to or surrounded by other single-family detached developments. No transition is required for the proposed development. The remainder of this section is not applicable to the proposed development.

24.150 DENSITY BONUSES

Response: No density bonuses are being requested. These standards are not applicable to this proposal.

24.160 DENSITY BONUS CHART

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Response: No density bonuses are being requested. These standards are not applicable to this proposal.

24.170 USABLE OPEN SPACE REQUIRED

Residential planned unit developments (PUDs) shall comply with the following usable open space requirements:

1. *PUDs that contain multi-family units shall comply with the requirements of Section 55.100(F).*
2. *PUDs that contain 10 or more single-family detached, single-family attached, or duplex residential units shall comply with the following usable open space requirements.*

    a. *The plan shall include an open space area with at least 300 square feet of usable area per dwelling unit.*
    b. *The usable open space shall meet the design requirements of Section 55.100(F)(2).*
    c. *The usable open space shall be owned in common by the residents of the development unless the decision-making authority determines, based upon a request from the applicant and the recommendation of the City Director of Parks and Recreation, that the usable open space should be dedicated to the City for public use. If owned in common by the residents of the development then a homeowner's association shall be organized prior to occupancy to maintain the usable open space.*
    d. *If the usable open space contains active recreational facilities such as hard surface athletic courts or swimming pools, then the usable open space area shall not be located on the perimeter of the development unless buffered by a transition pursuant to CDC Section 24.140(B).*

Response: There are 35 proposed units. According to this provision, the development is required to provide 10,500 square feet of open space. To satisfy this standard, a pedestrian pathway through the site to Woodbine Street is proposed. The path will also provide access to the portions of tract D that are conducive to passive/active recreation by intermittent unimproved walking trails through the woods. The area is a little over an acre in size if we don't consider the Type I and II lands that are subject to the conservation easements. In this particular instance, there are currently trails made by adjacent property owners who currently walk the site.

24.180 APPLICABILITY OF THE BASE ZONE PROVISIONS

The provisions of the base zone are applicable as follows:

A. Lot dimensional standards. The minimum lot size and lot depth and lot width standards do not apply except as related to the density computation under Chapter 24.

Response: The lot sizes and dimensional standards have been varied throughout this subdivision to accommodate the desired density for the project. This criterion is satisfied.

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B. *Lot coverage. The lot coverage provisions of the base zone shall apply for detached single-family units. For single-family attached residential units, duplex residential units, and multiple-family residential units, the following lot coverage provisions shall apply, based upon the underlying base zone.*

1. *R-40, R-20 35 percent*
   R-15 40 percent
   R-10, R-7 45 percent
   R-5, R-4.5 50 percent
   R-3, R-2.1 60 percent

Response: The property is zoned R-10 and R-15. Therefore, the lots are subject to the 35 and 40 percent coverage requirements respectively. This information has been provided to the design team, and it is feasible that it can be met.

C. *Building height. The building height provisions of the underlying zone shall apply.*

Response: The maximum building height in the R-10 and R-15 zone is two and one half stories or 35 feet. The buildings will be designed so that they do not exceed this requirement.

D. *Structure setback provisions.*

1. *Setback areas contiguous to the perimeter of the project shall be the same as those required by the base zone unless otherwise provided by the base zone or Chapter 55.*
2. *The side yard setback provisions shall not apply except that all detached structures shall maintain a minimum side yard setback of five feet, or meet the Uniform Building Code requirement for fire walls.*
3. *The side street setback shall be 10 feet.*
4. *The front yard and rear yard setbacks shall be 15 feet. Porches may encroach forward another five feet. Additional encroachments, such as porches, are allowed per CDC Chapter 38.*
5. *The setback for a garage in the front yard that opens onto the street shall be 20 feet unless the provisions of Section 41.010 apply. Garages in the rear yard may meet the standards of Section 34.050.*
6. *The applicant may propose alternative setbacks. The proposed setbacks must be approved by the decision-making body and established as conditions of approval, or by amendment to conditions of approval. The decision-making body will consider among other things maintenance of privacy, adequate light, defensible space, traffic safety, etc.*

Response: Due to topographic constraints and the natural resources present on the site, it is logical to develop this property as a Planned Development. The proposed lots have been located to avoid impacting these resources to the extent possible; lot size has been reduced to allow the site to accommodate 35 units. Proposed lot sizes range from 4,019 square feet to ± 11,602 square feet. In order

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to build the proposed homes on the parcels in an efficient and orderly manner, the following setbacks are proposed:

Corner Side Yard – 10 feet (exclusive of clear vision triangles)

Standard Side Yard – 3 feet (complies with the IBC one- and two-family dwelling code)

Front Yard – 10 feet to porch and 15 feet to the face of the garage from the back of sidewalk

Rear Yard – 12 feet

E. *All other provisions of the base zone shall apply except as modified by this chapter.*

Response: The proposal will meet all other provisions of the base zone where this chapter has not allowed a modification. No other adjustments have been requested that are outside the allowed adjustments identified within this chapter.

Chapter 30, Wetland and Riparian Area

30.100 APPROVAL CRITERIA

A. *The Planning Director or Planning Commission, as applicable, shall make findings with respect to the following criteria when approving, approving with conditions, or denying an application. The provisions of the following chapters shall be met as applicable:*

1. *Chapter 27, Flood Hazard Construction.*
2. *Chapter 28, Willamette River Greenway.*
3. *Chapter 29, Tualatin River Bank Control.*
4. *Chapter 32, Natural Drainageway Protection.*

Response: There are no provisions of Chapter 27, 28, or 29 applicable to this specific application. Chapter 32 is discussed later in this narrative.

B. *Alternatives which avoid all adverse environmental impacts associated with the proposed action shall be considered first. For unavoidable adverse environmental impacts, alternatives which reduce or minimize these impacts shall be selected.*

Response: Natural resource areas onsite, including wetlands, drainage areas, steep slopes, and streams have been avoided to the maximum extent practicable in the proposed design. A crossing of the drainageway is proposed to facilitate internal traffic flow; however, in that location, the street is proposed to be 24 feet as opposed to 28 feet to minimize impacts. Any sidewalk would be curb tight and located on only one side at the crossing.

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C. *Wetland and Riparian Transition Area. The size of the transition area necessary to protect each site will be identified and staked in the field with temporary wooden stakes clearly marked "Transition Area" and approved by the Planning Director prior to issuance of a permit. Once the location of these temporary stakes has been approved, markers shall be staked as described in Section 30.100(C)(2) below. A construction fence and/or erosion control silt fabric, as appropriate, shall be established along the perimeter of the transition area during all phases of construction. Vegetative improvements to areas within the transition and resource areas may be required if the site is found to be in an unhealthy or disturbed state. "Unhealthy or disturbed" includes those sites that are heavily populated by exotic or non-indigenous species, areas overgrown with invasive plants, or areas that lack the proper balance of canopy trees, understory plants, and soil stabilizing groundcovers. "Vegetative improvements" consist of submitting a plan which calls for removal of non-indigenous, exotic, or invasive species which will be replaced by plant species in a manner to be approved by the City Parks Director and consistent with the purposes of Chapter 30. Once approved, the applicant is responsible for implementing the plan prior to final inspection.*

Response: Stacey Reed, an environmental consultant, has delineated the resource areas onsite. The site has already been surveyed and staked. These areas will be protected during construction of the project. No structures other than the culvert and street are proposed within the natural resource areas. Compliance with the West Linn City Code natural resource protection is discussed in greater detail below.

1. *The minimum width of the transition area will be as prescribed by CDC Section 32.050(4).*

   Response: The transition area widths have been established according to CDC Section 32.050(4) and are discussed in greater detail below.

2. *Transition area boundaries shall be permanently staked prior to final approval with City approved markers at all boundary direction changes and at 30- to 50-foot intervals to clearly delineate the extent of the transition area.*

   Response: All transition area boundaries will be permanently staked in compliance with this section.

3. *The wetland and transition area shall be dedicated to the public, or public easements established, to assure protection.*

   Response: All transition areas will either be dedicated to the public or placed within conservation easements where they encroach into the proposed lots to ensure that the integrity of the resources are not

compromised. In this instance, the preference would be to place these areas into conservation easements. Public access will be provided over the proposed trail system.

4. *Trimming and removal of shrubs and ground cover from the transition area is prohibited unless it is to reestablish native vegetation in place of non-native or invasive vegetation per Section 30.100(C). Tree removal is prohibited, with limited trimming allowed subject to Planning Director approval. Allowance for roadways, utilities, and boat launch ramps shall be provided if alternative locations are not practicable. The provisions of CDC Section 32.050(4) shall apply.*

Response: The majority of shrubs and understory areas of the site have been removed previously on this site. Some trees may have to be removed or pruned where the transition areas are adjacent to the proposed lots. The proposed locations of the street crossing and the sewer connections are necessary to service the proposed development. The current location of the proposed crossing was chosen at City staff's direction in order to minimize disturbance in a new location. All areas that must be disturbed to construct the improvements will be re-established once construction has been completed. A preliminary mitigation plan has been provided as part of the SWCA resource assessment and report.

D. *Development within Transition Areas*

1. *Development within the transition area shall not result in significant adverse impacts on the adjacent natural resource area from any change of drainage patterns, erosion, sedimentation, litter, or exterior lighting; and,*

Response: The proposed trail, utility, and street improvements have been designed to minimize the impacts to the slopes, drainageway, and wetland areas. The use of heavy equipment within the transition zones will be extremely limited and only allowed when there are no other viable alternatives. All work within these areas will be carefully monitored to ensure that the contractor follows the plans. The project has been designed so that there are no significant adverse impacts to the resources as a result of the proposed construction.

2. *The proposed construction management plan shall be adequate to protect the adjacent natural resource area.*

Response: A construction management plan will be prepared and submitted prior to any onsite construction.

3. *The provisions of CDC Section 32.050(4) shall apply.*

Response: The approval criteria of CDC Section 32.050(4) are discussed in detail later in this narrative.

E. *Development within the Wetland and Riparian Area zone. No development within the Wetland and Riparian Area zone shall be permitted unless the following requirements are met:*

1. *The proposal shall avoid or minimize adverse impacts on resource area and values, based on a case by case evaluation of impacts and consideration of the ESEE Analysis for the site;*
2. *Any adverse impacts on the resource area and values shall be compensated for through a mitigation plan; and,*
3. *The proposed construction management plan shall protect remaining natural resource areas during the construction period.*
4. *The provisions of CDC Section 32.050(4) shall apply.*

Response: According to CDC Chapter 2, riparian areas and transition areas are not the same. This is important to note simply because we do not intend to do any work within any of the wetlands or their riparian area, with the exception of the utility and street crossings. According to City staff, utility and street crossings can be made within the resources provided the appropriate permitting has taken place. With the assistance of SWCA, all Oregon Division of State Lands and US Army Corps of Engineers permits will be attained prior to commencing construction within these designated areas.

F. *Mitigation plans development within a natural resource area has the potential of degrading or destroying the natural resource and the values identified in the ESEE Analysis as being of public benefit. If an alternative analysis establishes that development outside of the resource area is not possible, the negative impacts must be eliminated or compensated for through mitigation. These provisions are intended to preserve the natural resource values of the resource while providing flexibility for development within or adjacent to a natural resource area. In evaluating proposals for mitigation, the following order of locational and resource preference applies:*

1. *On the property containing the resource site, with the same kind of resource;*
2. *Off the property containing the site, with the same kind of resource;*
3. *On the property containing the site, with a different kind of resource; and,*
4. *Off the property containing the site, with a different kind of resource.*

Response: A preliminary mitigation plan has been prepared by Stacey Reed of SWCA to mitigate for the impacts created to the drainageways and wetlands as a result of street and utility construction. Although the mitigation plans are designed to meet the current regulatory standards, they are considered preliminary until approved by all of the regulatory agencies.

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G. *Coordination among regulatory agencies. These regulations require coordination between city, state and federal agencies that are concerned with regulatory programs, especially with wetlands and water bodies. Other agencies with regulations that may also apply to individual sites include: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Oregon Division of State Lands, Oregon Department of Fish and Wildlife, and Oregon Department of Environmental Quality.*

Response: Prior to any work occurring within the delineated resource, a joint aquatics resource permit application and mitigation plan will be submitted to the Oregon Division of State Lands and the US Army Corps of Engineers. A detailed mitigation plan will also be filed with the City of West Linn.

Chapter 32, Natural Drainageway Protection

32.050 APPROVAL CRITERIA

The Planning Commission shall make a written finding with respect to the following criteria when approving, approving with conditions, or denying an application for altering a natural drainageway, or for development projects that have natural drainageways within their project boundaries.

1. *Proposed development submittals shall identify all natural drainageways on the project site. Drainageways that may flow intermittently and may be dry during the summer months, shall be so noted. The Storm Drainage Master Plan (1996) shall be used as the basis for determining existence of drainageways. The exact location of drainageways identified in the Storm Drainage Master Plan, and drainageway classification (e.g., open channel vs. enclosed storm drains), may have to be verified in the field by the City Engineer.*

   Response: As indicated earlier in this narrative, all resource areas and drainage areas have been identified and delineated by Stacey Reed, with SWCA. SWCA is an environmental consulting firm specializing in environmental science and compliance, cultural and natural resources survey, analysis, planning, and management.

2. *Proposed developments shall be so designed as to maintain the existing natural drainageways and utilize them as the primary method of stormwater conveyance through the project site unless the Storm Drainage Master Plan (1996) calls for alternate configurations (culverts, piping, etc.). Proposed development shall, particularly in the case of subdivisions, facilitate reasonable access to the drainageway for maintenance purposes.*

Response: All existing natural drainageways will remain undisturbed with the exception of the proposed trail, street, and utility improvements. It is necessary to cross through the drainageway, but the function of the drainageway will not be affected by the proposed development. Stormwater will be collected and conveyed by a series of

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catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

3. *Development should be conducted in a manner that will minimize adverse impact on natural drainageways.*

Response: The proposed work within the drainageways will be minimal. The work is necessary to provide internal connectivity and sewer service. The proposed street will be narrowed at the crossing to minimize impacts to the drainageway. Construction will occur in accordance with the approved grading and erosion control plan, and fencing will be installed prior to construction activity to ensure that the work that does occur is controlled and conducted in a manner that minimizes impacts on the natural drainageways.

4. *Natural drainageways and transition areas should be protected from development or encroachment by dedicating the land title deed to the City for public open space purposes if either: a finding can be made that the dedication is roughly proportional to the impact of the development; or, the applicant chooses to dedicate these areas. Otherwise, these areas shall be preserved through a protective easement. Protective or conservation easements are not preferred because natural drainageways and transition areas protected by easements have shown to be harder to manage and, thus, more susceptible to disturbance and damage. Natural vegetation, habitat areas, water quality, storm carrying capacity, hillside stability, typically suffer when these areas are privately held or protected only by easement. The protected area shall include the drainage channel, creek, or wetlands, and the transition zone. The transition zone shall extend a minimum of 30 feet from the edge of the creek, drainage channel, or wetland in those cases where the land sloping away does so at less than 10 percent. A 25-foot transition shall apply when the drainage channel is determined to be a man-made drainage ditch identified on the Storm Drainage Master Plan, but not if it is a residential drainage swale as described in Section 32.020(C) When the slope is 10-25 percent, then the transition zone shall extend either: (a) 50 feet or, (b) to the point where the slope tapers off to less than 10 percent for more than 30 feet, whichever is less. If (b) applies, the transition shall be at a minimum of 30 feet. When the slope is over 25 percent and it is determined to be a ravine with clearly delineated edges, then the top of the ravine shall mark the transition area boundary. When the slope is over 25 percent and the drainageway boundary is ill-defined due to variations of grades, slumps, fill areas, etc., the transition boundary shall be either: (a) the point where the slope tapers off to less than 10 percent for more than 50 feet (the minimum transition shall be 30 feet, or (b) when the drainageway does not taper off, then the transition shall be 150 feet. The percentage of grade is determined by the average grade of the first 50 feet from the edge of the wetland or body of water. Alternately, the City Engineer may determine which type of drainageway category applies by site visit in those cases where there are significant variations in grade that defy classification using the above methodology. Distances are measured in plan view (i.e., as shown on the site plan). Roads, driveways, utilities, or passive use recreation facilities may be built in the transition zone*

and across drainageways when no other practical alternative exists. For utility purposes, the determination of what is practical shall be based upon prudent engineering practices so long as it has no significant negative impact on transition zone and wetlands. Construction shall minimize impacts. Construction to the minimum dimensional standards for roads is encouraged. Variances to reduce road widths are encouraged as a way to minimize impacts. Full mitigation and revegetation is required. Seasonal or intermittent streams are those streams, or portions of streams, that flow only in direct response to precipitation. They receive little or no water from springs. They carry no measurable flow for three months of the year. The transition area from the edge of these seasonal streams shall be 15 feet.

Response: Drainageways and transition zones are illustrated on the site plan and will be protected to the greatest extent practicable throughout the course of construction. It is anticipated that the resource areas will be set aside in protective easements to be maintained by a homeowners association. Where areas are disturbed for street and utility construction, mitigation and revegetation will occur in accordance with approved plans. The proposed street improvements are being constructed to the minimum width allowed by the City of West Linn.

5. *The transition area (an area that is to be protected) shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.*

Response: All transition areas will be identified and staked in the field prior to initiating construction. All construction will be within approved areas only.

6. *Consideration should be given to development of passive recreational opportunities on major drainageways.*

Response: A soft trail is proposed along the utility corridor to Woodbine Street. The proposed trail would, at a minimum, be provided with a public access easement to provide pedestrian access through the site to Woodbine Street.

7. *Sound engineering principles regarding downstream impacts, soil stabilization, erosion control, and adequacy of improvements to accommodate the intended drainage through the drainage basin are used. Storm drainage should not be diverted from its natural watercourse. Interbasin transfers of storm drainage shall not be permitted.*

Response: No work is proposed within the drainageway with the exception of trail, street, and utility improvements. All construction and design will be at the direction of a licensed engineer, and no stormwater will be diverted from its natural course.

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8. *A construction fence and/or appropriate erosion control measures, as necessary, shall be established through all phases of construction along the perimeter of the transition area as described in Chapter 30 of this Code.*

Response: As indicated on the Grading and Erosion Control plan included with this submittal, erosion control fencing is provided along the boundaries of all transition areas to prevent erosion into the drainageway.

9. *Vegetative improvements to areas within the natural drainageway area may be required if the site is found to be in an unhealthy or disturbed state. "Unhealthy or disturbed" includes those sites that are heavily populated by exotic or non-indigenous species, areas overgrown with invasive plants, or areas that lack the proper balance of canopy trees, understory plants, and soil stabilizing groundcovers. Disturbed areas also include areas which have fill, debris, garbage, old tires, etc., which must be removed.*

"Vegetative improvements" consist of submitting a plan which calls for removal of non-indigenous, exotic, or invasive species which will be replaced by plant species in a manner to be approved by the City Parks Director and consistent with the purposes of Chapter 30.

Once approved, the applicant is responsible for implementing the plan prior to final inspection or the City's acceptance of dedication of the property.

Response: The drainageways onsite have been delineated and surveyed. According to the report, there is no indication that the drainageway is in an unhealthy state. If it is determined by the review authority to be unhealthy or disturbed, the applicant will comply with all necessary measures to ensure that the drainageway remains in a healthy state.

10. *Setback area: development projects shall keep all foundation walls and footings at least 15 feet from the edge of the transition area. Decks and structural elements may not be built on or cantilever over the setback area. Roof overhangs of up to three feet are permitted in the setback.*

Response: No structures will be located closer than 15 feet from the transition area, as required.

Chapter 33, Storm Water Quality

33.040 APPROVAL CRITERIA

The Planning Director and City Engineer shall make written findings with respect to the following criteria when approving, approving with conditions, or denying applications for stormwater detention permits and stormwater quality permits.

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A. *Stormwater quality facilities shall meet non-point source pollution control standards required by the Public Works Design Standards.*

Response: All stormwater facilities will be designed and constructed to meet the City of West Linn Public Works Design Standards and the non-point source pollution control standards. Preliminary stormwater analysis has been prepared by a professional engineer and is included as Appendix 3.

B. *Design of stormwater detention and pollution reduction facilities and related detention and water quality calculations shall meet Public Works Design Standards and shall be prepared by a professional engineer licensed to practice in the state of Oregon.*

Response: All stormwater facilities have been designed to meet the City of West Linn Public Works Design Standards. The plans have been prepared under the direct supervision of Mike Peebles, a licensed professional engineer in the State of Oregon.

C. *Soil stabilization techniques, erosion control, and adequate improvements to accommodate the intended drainage through the drainage basin shall be used. Storm drainage shall not be diverted from its natural watercourse unless no feasible alternatives exist. Interbasin transfers of storm drainage will not be permitted.*

Response: A grading and erosion control plan, and a utilities plan, have been provided with this application submittal. As demonstrated within these plans, this project does not redirect stormwater from its natural watercourse.

D. *Stormwater detention and treatment facilities shall encroach no further than 25 feet into the outside boundary of a water quality resource area. The area of encroachment must be replaced by adding an equal area to the water quality resource area on the subject property.*

Response: Stormwater detention and treatment facilities are located entirely outside of the boundary of the water quality resource areas and the associated transition areas onsite. As proposed, stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

E. *Stormwater detention and treatment facilities shall be vegetated with plants from the Metro=s native plant list as described in Section 33.070.*

Response: At the time of construction, the stormwater treatment facilities will be vegetated with native plants as required.

F. *Projects must either stockpile existing topsoil for re-use on the site or import topsoil, rather than amend subsoils. Soil amendments are allowed only where the applicant can demonstrate they are the only practical alternative for enabling the soil to support healthy plantings, promoting better stormwater treatment, or improving soil infiltration capacity (where appropriate).*

Response: The topsoil will be excavated, stockpiled onsite, and re-used. It might also become necessary to import topsoil in order to prepare the individual lawn areas.

G. *Interim erosion control measures, such as mulching, shall be placed immediately upon completion of grading of the facilities.*

Response: As indicated in the grading and erosion control plan, all disturbed areas will be treated with the appropriate erosion control measures once grading has been completed, and revegetated as construction allows.

Chapter 42, Clear Vision Areas

42.020 CLEAR VISION AREAS REQUIRED, USES PROHIBITED

A. *A clear vision area shall be maintained on the corners of all property adjacent to an intersection as provided by Section 42.040 through 42.050.*

B. *A clear vision area shall contain no planting, fence, wall, structure or temporary or permanent obstruction (except for an occasional utility pole or tree) exceeding three feet in height, measured from the top of the curb, or where no curb exists, from the street centerline grade, except that trees exceeding this height may be located in this area, provided all branches below eight feet are removed.*

Response: Clear vision areas will be maintained as required. No landscaping will be located within the clear vision areas unless it is compliant with the above standards. All shrubbery will be maintained at three feet, and trees will be pruned to eight feet where clear vision areas are identified.

Chapter 46, Off-Street Parking

46.090 MINIMUM OFF-STREET PARKING SPACE REQUIREMENTS

A. *Residential Parking Space Requirements:*

1. *Single-family residences (attached 1 off-street space for each or detached). dwelling unit; may or may not be in garage or carport.*

Response: Each unit will be provided with a minimum of two off-street parking spaces within a garage and additional parking within the driveway. As there are 35

units proposed, the development is required to provide 35 parking spaces. The development will exceed the minimum of 35 parking spaces within the garages and driveways. This standard can be satisfied. Sections B through E outline minimum parking standards for other uses and will not be responded to in this narrative.

F. *Maximum parking. While it is important to establish minimum standards to ensure that adequate parking is available, it is equally important to establish maximum parking standards to reduce paved impermeable areas, to reduce visual impact of parking lots, and to encourage alternate modes of transportation. For these reasons, parking spaces (except for single-family and two-family residential uses) shall not exceed the minimum by more than 10 percent except by variance.*

Response: According to this standard, single-family residential uses are exempt. This standard is not applicable. Standards G through I are not applicable to this type of development.

46.150 DESIGN AND STANDARDS

The following standards apply to the design and improvement of areas used for vehicle parking, storage, loading, and circulation:

A. *Design Standards:*

1. *"One standard parking space" means a minimum for a parking stall of 8 feet in width and 16 feet in length. These stalls shall be identified as "compact." To accommodate larger cars, 50 percent of the required parking spaces shall have a minimum dimension of 9 feet in width and 18 feet in length (9 X 18). When multi-family parking stalls back onto a main driveway, the stalls shall be 9 X 20.*

   Response: The garages and driveway pads will be constructed in compliance with the standards listed above to provide for the desired parking.

2. *Disabled parking and maneuvering spaces shall be consistent with current federal dimensional standards and Section 46.150(B) and placed nearest to accessible building entryways and ramps.*

   Response: No specific disabled parking spaces are required of single-family homes; however, all homes will be constructed with accessibility standards in mind.

3. *Parking spaces located in the public right-of-way that require backing movements or other maneuvering within a street or right-of-way are permitted with City Engineer approval as is in the case of Willamette Falls Drive parking facilities.*

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Response: There are no parking spaces proposed within the public right-of-way that would not be permitted as on-street in compliance with the City of West Linn street standards.

4. *Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site.*

Response: There are no service drives proposed with this application.

5. *Each parking and/or loading space shall have clear access, whereby the relocation of other vehicles to utilize the parking space is not required.*

Response: There are no proposed loading spaces for this development. All parking areas will have clear access as required.

6. *Except for single and two-family residences, any area intended to be used to meet the off-street parking requirements as contained in this chapter shall have all parking spaces clearly marked using a permanent paint. All interior drives and access aisles shall be clearly marked and signed to show direction of flow and maintain vehicular and pedestrian safety. Permeable parking surface spaces may have an alternative delineation for parking spaces.*

Response: Single-family residences are exempt from this standard; therefore, this standard is not applicable.

7. *Except for residential parking, and parking for public parks and trailheads, at least 50 percent of all areas used for the parking and/or storage and/or maneuvering of any vehicle, boat and/or trailer shall be improved with asphalt or concrete surfaces according to the same standards required for the construction and acceptance of city streets. The remainder of the areas used for parking may use a permeable paving surface designed to reduce surface runoff. Parking for public parks or trailheads may use a permeable paving surface designed to reduce surface runoff for all parking areas. Where a parking lot contains both paved and unpaved areas, the paved areas shall be located closest to the use which they serve.*

Response: The proposed development is residential and, therefore, exempt from this standard.

8. *Off-street parking spaces for single and two-family residences shall be improved with an asphalt or concrete surface, or a permeable parking surface designed to reduce surface runoff, to specifications as approved by the Building Official. Other parking facilities for two- and single-family homes that are to accommodate additional vehicles, boats, recreational vehicles, and trailers, etc. need not be paved. All parking for multi-family residential development shall be paved with concrete or asphalt.*

Response: The proposed driveways and garages will be provided with a

concrete surface.

9. *Access drives from the street to off-street parking or loading areas shall be designed and constructed to facilitate the flow of traffic and provide maximum safety for pedestrian and vehicular traffic on the site. The number of access drives shall be limited to the minimum that will allow the property to accommodate and service the anticipated traffic. Access drives shall be clearly and permanently marked and defined through use of rails, fences, walls, or other barriers or markers on frontage not occupied by service drives.*

   Response: The access drives servicing lots 1, 2, 3, and 4 will be constructed to accommodate two-way traffic, as required. All private access drives will be marked, as required.

10. *Access drives shall have a minimum vision clearance as provided in*

    Response: As indicated previously in this narrative, all clear vision areas will be established and maintained by the developer during construction and up until the lots are sold.

11. *Parking spaces along the boundaries of a parking lot or adjacent to interior landscaped areas or sidewalks shall be provided with a wheel stop at least 4 inches high located 2 feet back from the front of the parking stall. Alternately, landscaped areas or sidewalks adjacent to the parking stalls without wheel stops shall be two feet wider.*

    Response: There are no parking lots associated with the proposed development. This standard is not applicable.

12. *Off-street parking and loading areas shall be drained in accordance with plans and specifications approved by the City Engineer. Storm drainage at commercial sites may also have to be collected to treat oils and other residue.*

    Response: Each lot will be graded and improved so that all stormwater is conveyed to the proposed storm sewer system.

13. *Artificial lighting on all off-street parking facilities shall be designed to deflect all light downward away from surrounding residences and so as not to create a hazard to the public use of any road or street.*

    Response: No lighting other than that normally associated with residential developments is proposed. The proposed lighting will be consistent with what one might see in any other residential development.

14. *Directional arrows and traffic control devices, which are placed on parking lots shall be identified and installed.*

    Response: No parking lots are proposed with this development. This criterion is not applicable.

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15. *The maximum driveway grade for single-family housing shall be 12 percent. Deviations for steep lots may be approved by the Planning Director. Where a driveway is approved for grades greater than 12 percent, the last 16 feet in front of the garage must maintain a maximum grade of 12 percent. The grade break at the bottom of driveways where they meet the public sidewalk or street, shall allow for a smooth transition (e.g., one percent).*

Response: At this time, all proposed lots are being designed and will be graded to ensure that the driveway grades do not exceed 12 percent, as required. A grading plan is included as Exhibit 7 with this submittal.

16. *Visitor or guest parking must be identified by painted "GUEST" or "VISITOR."*

Response: There are no proposed visitor parking spaces associated with this development. It is expected that visitors and guests can park along the street or within the driveway like any other single-family development.

17. *The parking area shall have less than a five percent grade. No drainage across adjacent sidewalks or walkways is allowed.*

Response: Each lot will be provided with a level parking area within the garage and/or driveway, as required.

18. *Commercial, office, industrial, and public parking lots may not occupy more than 50 percent of the main lot frontage of a development site. The remaining frontage shall comprise buildings or landscaping. If over 50 percent of the lineal frontage comprises parking lot, the landscape strip between the right-of-way and parking lot shall be increased to 15 feet wide and shall include terrain variations (e.g., 1-foot high berm) plus landscaping. The defensible space of the parking lot should not be compromised.*

Response: This standard applies to all commercial, office, industrial, and public parking lots. This standard is not applicable to the proposed development.

19. *Areas of the parking lot improved with asphalt or concrete surfaces shall be designed into areas of 12 or less spaces through the use of defined landscaped area. Groups of 12 or less spaces are defined as:*

    a. *Twelve spaces in a row, provided there are no abutting parking spaces, as in the case when the spaces are abutting the perimeter of the lot; or,*
    b. *Twelve spaces in a group with six spaces abutting together; or,*
    c. *Two groups of twelve spaces abutting each other, but separated by a 15-foot wide landscape area including a six-foot wide walkway.*
    d. *Parking areas improved with a permeable parking surface may be designed using the configurations shown in a, b, and c, above except that groups of up to 18 spaces are allowed.*

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Response: This standard is not applicable to the proposed development.

20. *Pedestrian walkways shall be provided in parking areas having 20 or more spaces. Walkways or sidewalks shall be constructed between major buildings/ activity areas (an example in multi-family housing: between recreation center, swimming pool, manager's office, park or open space areas, parking lots, etc.) within a development, between adjacent developments and the new development, as feasible, and between major buildings/ activity areas within the development and adjacent streets and all adjacent transit stops. Internal parking lot circulation and design should maintain ease of access for pedestrians from streets and transit stops. Walkways shall be constructed using a material that visually contrasts with the parking lot and driveway surface. Walkways shall be further identifiable to pedestrians and motorists by grade separation, walls, curbs, surface texture, (surface texture shall not interfere with safe use of wheelchairs, baby carriages, shopping carts, etc.) and/ or landscaping. Walkways shall be six feet*

Response: This standard is applicable to parking areas having 20 or more spaces. The proposed development is for single-family residences on individual lots. This criterion is not applicable to the proposed development.

21. *The parking and circulation patterns are easily comprehended and defined. The patterns shall be clear to minimize traffic hazards and congestion and to facilitate emergency vehicles.*

Response: The proposed development is for single-family residences on individual lots. This criterion is not applicable to the proposed development.

22. *The parking spaces shall be close to the related use.*

Response: All proposed parking spaces will be within garages or driveways directly adjacent or attached to the residence.

23. *Permeable parking spaces shall be designed and built to City standards.*

Response: Permeable parking spaces are not proposed with this development.

B. *Accessible Parking Standards for Persons With Disabilities: If any parking is provided for the public or visitors, or both, the needs of the people with disabilities shall be based upon the following standards or current applicable federal standards, whichever is more stringent:*

1. *Minimum number of accessible parking space requirements*
2. *Location of parking spaces. Parking spaces for the individual with a disability that serve a particular building shall be located on the shortest possible accessible circulation route to an accessible entrance to a building. In separate parking structures or lots that do not serve a particular building, parking spaces for the persons with disabilities shall be*

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located on the shortest possible circulation route to an accessible pedestrian entrance of the parking facility.

3. *Accessible parking space and aisle shall meet ADA vertical and horizontal slope standards.*
4. *Where any differences exist between this section and current federal standards, those standards shall prevail over this Code section.*
5. *One in every eight accessible spaces, but not less than one, shall be served by an access aisle 96 inches wide. The van stall shall have an adjacent 8- foot wide aisle. All other accessible stalls shall have a 6-foot wide aisle. Two vehicles may share the same aisle if it is between them. The vertical clearance of the van space shall be 96 inches.*

Response: No public or visitor parking is formally proposed with this development. All proposed units will be provided with a driveway and garage. All units will be constructed so they are compliant with ADA accessibility requirements for single-family residences.

C. *Landscaping in Parking Areas: Reference Chapter 54, "Landscaping."*

Response: All homes will be individually landscaped.

D. *Bicycle Facilities and Parking:*

1. *Provisions shall be made for pedestrian and bicycle ways if such facilities are shown on an adopted plan.*
2. *Bicycle parking facilities shall either be lockable enclosures in which the bicycle is stored, or secure stationary racks which accommodate bicyclist's locks securing the frame and both wheels. The bicycle parking shall be no more than 50 feet from the entrance to the building, well lit, observable, and properly signed.*
3. *Bicycle parking must be provided in the following amounts:*

Response: Separate bicycle parking is not required of single-family developments.

E. *Office or industrial developments shall be allowed a 10 percent reduction in the number of required parking spaces when the property owner agrees to a demand management program that includes three or more of the following measures:*

1. *Designate a transportation coordinator responsible for promoting public transit and ride-sharing among employees.*
2. *Participate in region-wide ride matching program at the site.*
3. *Provide free transit passes to employees.*
4. *Provide showers and lockers for employees who commute by bicycle.*
5. *Charge employees for monthly parking and provide a transportation allowance to employees equal to the parking charge.*
6. *Install office technology, floor plans, and tenant regulations which are permanent, which effectively arrange for at least 10 percent of the employees to telecommute, thereby reducing employee automobile traffic by 10 percent. The required demand management measures*

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shall be included as conditions of approval for the proposed project. The property owner or manager shall file an annual affidavit with the City of West Linn stating that ongoing demand management measures required as conditions of approval have not been discontinued.

Response: This standard is not applicable to single-family developments.

Chapter 48, Access

48.020 APPLICABILITY AND GENERAL PROVISIONS

A. The provisions of this chapter do not apply where the provisions of the Land Division chapter are applicable and set forth differing standards.

Response: The Land Division Chapter is addressed later in this report. As proposed, the development can satisfy all of the access requirements of the Land Division Chapter and Chapter 48, Access.

B. All lots shall have access from a public street or from a platted private street approved under the Land Division chapter.

Response: All lots will be provided access to the internal network of public streets, as required.

C. No building or other permit shall be issued until scaled plans are presented to the City and approved by the City as provided by this chapter, and show how the access, egress, and circulation requirements are to be fulfilled. Access to state or county roads may require review, approval, and permits from the appropriate authority.

Response: Proposed access locations are identified on several of the included plans. As each lot will have access onto a local public street via a driveway. Please see Exhibits 2 and 5.

D. Should the owner or occupant of a lot or building enlarge or change the use to which the lot or building is put, resulting in increasing any of the requirements of this chapter, it shall be unlawful and a violation of this Code to begin or maintain such altered use until the provisions of this chapter have been met, and, if required, until the appropriate approval authority under Chapter 99 has approved the change.

Response: The proposed development is being subjected to review for compliance with this chapter as part of a permitting process.

E. Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same access and egress when the combined access and egress of both uses, structures, or parcels of land satisfies the requirements as designated in this Code provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases, or contracts to establish

joint use. Copies of said instrument shall be placed on permanent file with the City Recorder.

Response: The proposed development includes three lots (lots 2 to 4) where access must be shared. All accessways will be provided with perpetual easements by prescription on the face of the plat to ensure that every lot has access.

F. *Property owners shall not be compelled to access their homes via platted stems of flag lots if other driveways and easements are available and approved by the City Engineer.*

Response: There are no other driveways or easements available to allow alternative access to lots 2, 3, and 4 other than those that would be located within the stems of the flag lots.

48.030 MINIMUM VEHICULAR REQUIREMENTS FOR RESIDENTIAL USES

A. *Direct individual access from single-family dwellings and duplex lots to an arterial street, as designated in the Transportation element of the Comprehensive Plan, is prohibited for lots created after the effective date of this Code where an alternate access is either available or is expected to be available by imminent development application. Evidence of alternate or future access may include temporary cul-de-sacs, dedications or stubouts on adjacent parcels, or tentative street layout plans submitted at one time by adjacent property owner/ developer or by the owner/ developer, or previous owner/ developer, of the property in question. In the event that alternate access is not available as determined by the Planning Director and City Engineer, access may be permitted after review of the following criteria:*

1. *Topography.*
2. *Traffic volume to be generated by development (i.e., trips per day).*
3. *Traffic volume presently carried by the street to be accessed.*
4. *Projected traffic volumes.*
5. *Safety considerations such as line of sight, number of accidents at that location, emergency vehicle access, ability of vehicles to exit the site without backing into traffic.*
6. *The ability to consolidate access through the use of a joint driveway.*
7. *Additional review and access permits may be required by state or county agencies.*

Response: Tamarisk Drive is a local neighborhood street. There are no arterials or collectors located adjacent to this site. This standard is not applicable to the proposed development.

B. *When any portion of any house is less than 150 feet from the adjacent right- of-way, access to the home is as follows:*

1. *One single-family residential home requires a 12-foot wide paved or all weather surface.*
2. *Two to four single-family residential homes equals 14-20 foot wide paved or all weather surface. Width shall depend upon adequacy of line of sight and number of homes.*
3. *Maximum driveway grade shall be 12 percent, but variations are permitted due to topography so long as the last 16 feet in front of the garage is under 12 percent grade. A*

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maximum one percent grade break is permitted.

Response: All homes will be within 150 feet of the adjacent right-of way, and where shared access is proposed to the three lots mentioned previously, the access will be constructed in compliance with the Tualatin Valley Fire and Rescue Design Standards of 15 to 20 feet of all weather surface.

C. *When any portion of one or more homes is more than 150 feet from the adjacent right-of-way, the provisions of subsection "B" above, shall apply in addition to the following provisions.*

1. *A turnaround may be required as prescribed by the Fire Chief.*
2. *Minimum vertical clearance for the driveway shall be 13 feet, 6 inches.*
3. *A minimum centerline turning radius of 45 feet is required unless waived by the Fire Chief.*
4. *There shall be sufficient horizontal clearance on either side of the driveway so that the total horizontal clearance is 20 feet.*

Response: No lots are more than 150 feet away from an adjacent right-of-way.

D. *Access to five or more single-family homes shall be by a street built to full construction code standards. All streets shall be public. This full street provision may only be waived by variance.*

Response: Access to the homes will be provided by two internal local streets constructed to the City of West Linn design standards. A reduction in width from 28 feet to 24 feet has been requested to allow the street to cross the drainage with minimal impacts.

E. *Access and/or service drives for multi-family dwellings shall be fully improved with hard surface pavement:*

1. *With a minimum of 24 feet width when accommodating two-way traffic, or,*
2. *With a minimum of 15 feet width when accommodating one-way traffic Horizontal clearance shall be 2-1/2 feet wide on either side of the driveway.*
3. *Minimum vertical clearance of 13 feet, 6 inches.*
4. *Appropriate turnaround facilities per Fire Chief's standards for emergency vehicles when the drive is over 150 feet long. Fire Department turnaround areas shall not exceed seven percent grade unless waived by the Fire Chief.*
5. *The grade shall not exceed 10 percent on average, with a maximum of 15 percent.*
6. *A minimum centerline turning radius of 45 feet for the curve.*

Response: The proposed development is for single-family development. This criterion is not applicable.

F. *Where on-site maneuvering and/or access drives are necessary to accommodate required parking, in no case shall said maneuvering and/or access drives be less than that required in Chapter 46 and 48 of this Code.*

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Response: Where access drives are provided through other lots to individual lots as opposed to direct street access, the access has been designed to comply with Chapters 46 and 48 of the West Linn CDC. All required parking will be located within garages or driveways for the individual unit.

G. *The number of driveways or curb cuts shall be minimized on arterials or collectors. Consolidation or joint use of existing driveways shall be required when feasible.*

Response: There are no arterial or collector streets adjacent to this site. Therefore, this standard is not applicable to this development.

H. *In order to facilitate through traffic and improve neighborhood connections, it may be necessary to construct a public street through a multi-family site.*

Response: The proposed development is not multi-family. This criterion is not applicable.

I. *Gated accessways to residential development other than a single-family home is prohibited.*

Response: The development is not proposed to be gated, and the internal streets will be public.

48.060 WIDTH AND LOCATION OF CURB CUTS AND ACCESS SEPARATION REQUIREMENTS

A. *Minimum curb cut width shall be 16 feet.*

Response: All curb cuts for driveways and streets will be constructed to meet or exceed this standard.

B. *Maximum curb cut width shall be 36 feet, except along Highway 43 in which case the maximum curb cut shall be 40 feet.*

Response: No curb cuts will exceed 36 feet in width.

C. *No curb cuts shall be allowed any closer to an intersecting street right-of-way line than the following:*

1. *On an arterial when intersected by another arterial, 150 feet.*
2. *On an arterial when intersected by a collector, 100 feet.*
3. *On an arterial when intersected by a local street, 100 feet.*
4. *On a collector when intersecting an arterial street, 100 feet.*
5. *On a collector when intersected by another collector or local street, 35 feet.*
6. *On a local street when intersecting any other street, 35 feet.*

Response: All lots will be finished so that there are no curb cuts within 35 feet of any other local or collector street.

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D. *There shall be a minimum distance between any two adjacent curb cuts on the same side of a public street except for one-way entrance and exits, as follows:*

1. *On an arterial street, 150 feet.*
2. *On a collector street, 75 feet.*
3. *Between any two curb cuts on the same lot on a local street, 30 feet.*

Response: All curb cuts for individual lots will be located no closer than 30 feet from each other.

E. *A rolled curb may be installed in lieu of curb cuts and access separation requirements.*

Response: Standard curbs are proposed. It is not anticipated that the project will have problems meeting the access separation requirements.

F. *Curb cuts shall be kept to the minimum, particularly Highway 43. Consolidation of driveways is preferred. The standard on Highway 43 is one curb cut per business if consolidation of driveways is not possible.*

Response: The site is not adjacent to Highway 43. One driveway and curb cut will be constructed for each lot within the proposed development. This standard is satisfied.

G. *Adequate line of sight pursuant to engineering standards should be afforded at each driveway or accessway.*

Response: The project traffic engineer has reviewed the proposed plan and has not indicated that line of site would be an issue for this development. There is no information that would suggest otherwise.

Chapter 54, Landscaping

54.020 APPROVAL CRITERIA

A. *Every development proposal requires inventorying existing site conditions which include trees and landscaping. In designing the new project, every reasonable attempt should be made to preserve and protect existing trees and to incorporate them into the new landscape plan. Similarly, significant landscaping (e.g., bushes, shrubs) should be integrated. The rationale is that saving a 30-foot tall mature tree helps maintain the continuity of the site, they are qualitatively superior to two or three 2-inch caliper street trees, they provide immediate micro-climate benefits (e.g., shade), they soften views of the street, and they can increase the attractiveness, marketability, and value of the development.*

Response: The proposed development will protect the existing vegetation and trees to the extent practicable. Slightly less than half of the 15.35 acres are being set aside for the purpose of natural resource protection including trees and

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vegetation. Since a large portion of the site is limited due to the presence of these resources, there are large stands of existing trees that will remain on the site. Earlier in the process of considering the site, the City Arborist, Mike Perkins, walked the site with the project arborist, Walt Knapp, and identified the stands of trees that he wanted to see protected. The project has been designed with his observations in mind.

B. *To encourage tree preservation, the parking requirement may be reduced by one space for every significant tree that is preserved in the parking lot area for a maximum reduction of 10 percent of the required parking. The City Parks supervisor or arborist shall determine the significance of the tree and/or landscaping to determine eligibility for these reductions.*

Response: There is no need to reduce parking on this site. The majority of trees that would be deemed significant by the city arborist are likely to remain.

C. *Developers must also comply with the Municipal Code chapter on tree protection.*

Response: As illustrated within this narrative, and the associated plans, this development does comply with the tree protection chapter of the West Linn Municipal Code.

D. ***Heritage trees.*** *Heritage trees are trees which, because of their age, type, notability, or historical association are of special importance. Heritage trees are trees designated by the City Council following review of a nomination. A heritage tree may not be removed without a public hearing at least 30 days prior to the proposed date of removal. Development proposals involving land with heritage tree(s) shall be required to protect and save the tree(s). Further discussion of Heritage trees is found in the Municipal Code.*

Response: The City arborist confirmed that there are no known heritage trees onsite in an onsite conference with the project arborist.

E. *Landscaping – by type, location and amount.*

1. *Residential uses (non-single family). A minimum of 25 percent of the gross area including parking, loading and service areas shall be landscaped, and may include the open space and recreation area requirements under Section 55.100. Parking lot landscaping may be counted in the percentage.*
2. *Non-residential uses. A minimum of 20 percent of the gross site area shall be landscaped. Parking lot landscaping may be counted in the percentage.*
3. *All uses (residential uses [non-single family] and non-residential uses):*
   a. *The landscaping shall be located in defined landscaped areas which are uniformly distributed throughout the parking or loading area. There shall be one shade tree planted for every eight parking spaces. These trees shall be evenly distributed throughout the parking lot to provide shade. Parking lots with over 20 spaces shall have a minimum 10 percent of the interior of the parking lot devoted to landscaping. Pedestrian walkways in the landscaped areas are not to be counted in the percentage. The perimeter landscaping, explained in Section*

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54.020(E)(3)(d), shall not be included in the 10 percent figure. Parking lots with 10-20 spaces shall have a minimum 5 percent of interior of the parking lot devoted to landscaping. The perimeter landscaping, as explained above, shall not be included in the 5 percent. Parking lots with fewer than 10 spaces shall have the standard perimeter landscaping and at least two shade trees. Non-residential parking areas paved with a permeable parking surface may reduce the required minimum interior landscaping by one third for the area with the permeable parking surface only.

b. *The landscaped areas shall not have a width of less than five feet.*

c. *The soils, site, proposed soil amendments, and proposed irrigation system shall be appropriate for the healthy and long term maintenance of the proposed plant species.*

d. *A parking, loading, or service area which abuts a street shall be set back from the right-of-way line by perimeter landscaping in the form of a landscaped strip at least 10 feet in width. When a parking, loading, or service area, or driveway is contiguous to an adjoining parcel, there shall be an intervening five-foot wide landscape strip. The landscaped area shall contain:*

   1) *Street trees spaced as appropriate to the species, not to exceed 50 feet apart on the average;*
   2) *Shrubs, not to reach a height greater than three feet six inches, spaced no more than five feet apart on the average; or,*
   3) *Vegetative ground cover such as grass, wild flowers, or other landscape material to cover 100 percent of the exposed ground within two growing seasons. No bark mulch shall be allowed except under the canopy of low level shrubs.*

e. *If over 50 percent of the lineal frontage of the main street or arterial adjacent to the development site comprises parking lot, the landscape strip between the right-of-way and parking lot shall be increased to 15 feet in width and shall include terrain variations (e.g., 1-foot high berm) plus landscaping. This extra requirement only applies to one street frontage.*

f. *A parking, loading, or a service area which abuts a property line shall be separated from the property line by a landscaped area at least five feet in width and which shall act as a screen and noise buffer and the adequacy of the screen and buffer shall be determined by the criteria set forth in Section 55.100(C) and (D) except where shared parking is approved under Section 46.040. (ORD. 1408)*

g. *All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.*

h. *The landscaping in parking areas shall not obstruct lines of sight for safe traffic operation.*

i. *Outdoor storage areas, service areas (loading docks, refuse deposits, and delivery areas), and above-ground utility facilities shall be buffered and screened to obscure their view from adjoining properties and to reduce noise levels to acceptable levels at the property line. The adequacy of the buffer and screening shall be determined by the criteria set forth in Section 55.100(C)(1).*

j. *Crime prevention shall be considered and plant materials shall not be located in a manner which prohibits surveillance of public and semi-public areas (shared or*

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common areas).

k. Irrigation facilities shall be located so that landscaped areas can be properly maintained and so that the facilities do not interfere with vehicular or pedestrian circulation.

l. For commercial, office, multi-family, and other sites, the developer shall select trees that possess the following characteristics:

1) Provide generous "spreading" canopy for shade.
2) Roots do not break up adjacent paving.
3) Tree canopy spread starts at least six feet up from grade in, or adjacent to, parking lots, roads, or sidewalks unless the tree is columnar in nature.
4) No sticky leaves or sap dripping trees (no honey dew excretion).
5) No seed pods or fruit bearing trees (flowering trees are acceptable).
6) Disease resistant.
7) Compatible to planter size.
8) Drought tolerant unless irrigation is provided.
9) Attractive foliage or form all seasons.

m. Plant materials (shrubs, ground cover, etc.) shall be selected for their appropriateness to the site, drought tolerance, yearround greenery and coverage, staggered flowering periods, and avoidance of nuisance plants (Scotch broom, etc.).

Response: Single-family residential developments are exempt from these standards as evidenced in the standard itself. This criterion is not applicable.

F. *Landscaping (trees) in new subdivision.*

1. Street trees shall be planted by the City within the planting strips (minimum six-foot width) of any new subdivision in conformity with the Street Tree Plan for the area, and in accordance with the planting specifications of the Parks and Recreation Department. All trees shall be planted during the first planting season after occupancy. In selecting types of trees, the City Arborist may determine the appropriateness of the trees to local conditions and whether that tree has been overplanted, and whether alternate species should be selected. Also see Section 54.040(C)(12).

2. The cost of street trees shall be paid by the developer of the subdivision.

3. The fee per street tree, as established by the City, shall be based upon the following:

a. The cost of the tree;
b. Labor and equipment for original placement;
c. Regular maintenance necessary for tree establishment during the initial two-year period following the City schedule of maintenance; and,
d. *A two-year replacement warrantee based on the City's established failure rate.*

Response: Street trees will be planted, as required, at the appropriate time of year to ensure the long-term survival. A street tree plan will be prepared with the final plat to ensure that trees are properly spaced with respect to driveways, utilities, and street lights. The developer will provide a species that is approved by the City of West Linn, and is available in the market for the first planting season. All trees will be planted in accordance with the planting specifications of the Parks and Recreation Department. The developer will bear the cost for the

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street trees as required. The developer will pay the appropriate fees based on the above criteria and put in place the financial surety for the two-year initial schedule of maintenance, as required.

Chapter 85, Land Divisions – General

85.010 PURPOSE

Response: The proposed subdivision is consistent with the purposes and requirements of Chapter 85 in that it provides for the orderly division of the subject site, and does not do so without providing the appropriate levels of service as defined within the remainder of the West Linn Development Code.

85.020 SCOPE – CONFORMITY REQUIRED

Response: The proposed subdivision conforms to ORS Chapter 92. The final plat will be recorded upon City review and approval of the preliminary plat and after any required public improvements have been installed or guaranteed to the satisfaction of the city engineer.

85.030 NEGOTIATION OF SALE OF LOTS PROHIBITED UNTIL APPROVAL IS GRANTED

Response: The applicant recognizes that the preliminary plat must be approved prior to entering into a contract for the sale of the proposed parcels. The applicant also recognizes that no building permits will be issued until the final plat is recorded.

85.040 SALE OF LOTS PROHIBITED UNTIL SUBDIVISION PLAT IS RECORDED

Response: The applicant recognizes that none of the lots within the subdivision may be sold until the final plat is recorded with Clackamas County.

85.050 APPROVAL REQUIRED BEFORE CREATING STREET OR ROAD TO PARTITION LAND

Response: The applicant is not partitioning land. The streets proposed will be reviewed as part of the expedited land division/subdivision review by the planning director.

85.060 INCOMPLETE APPLICATIONS – THE DECISION-MAKING PERIOD

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Response: The applicant is aware of his rights to notification of a complete application within 30 days of submittal and a final decision within 120 days once the application has been deemed complete.

85.070 ADMINISTRATION AND APPROVAL PROCESS

Response: The Edwin L Fritchie/Gloria D Fritchie Trustee is the owner of record for the subject property. The applicant is aware of the approval process, which provides for the Hearings Officer to make decisions on planned developments of more than five units. The final plat will be filed with the planning director within one year of tentative plat approval, as required by this Code section.

85.080 SUBSTANTIAL DEVIATION FROM APPROVED PLAN PROHIBITED
85.090 EXPIRATION OF APPROVAL – CONTINUATION
85.100 NON-COMPLIANCE – BOND

Response: Sections 85.080-100 are not applicable due to the fact that the application request does not include a final plat at this time.

85.110 STAGED DEVELOPMENT

The applicant may elect to develop the site in stages. Staged development shall be subject to the provisions of Section 99.125. However, notwithstanding the provisions of Section 99.125, in no case shall the time period for platting all stages be greater than five years without re-filing the application.

Response: The subject site is proposed to be developed in two separate phases. Lots 1 through 25 are to be constructed in the first phase, and lots 26 through 35 will be constructed in the second phase. Both phases of construction can comply with this section. Section 99.125 is addressed directly below.

99.125 STAGED DEVELOPMENT

An applicant may elect to develop a proposed project in phases. The timing of each development phase shall be set forth in the application and subject to approval by the appropriate approval authority. Each phase shall meet all applicable development standards individually (e.g., access, parking, landscaping, utilities, etc.) without having to rely upon subsequent phases.

Response: The application will comply with all implementing ordinances as described in this narrative. The applicant anticipates beginning construction on Phase 1 in the summer of 2006. The second phase of the development will occur within the following four years depending on the number of homes constructed and sold within the development and market demands.

85.120 PARTIAL DEVELOPMENT

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Response: The construction of the site is proposed to occur in two phases.

85.130 LAND DIVISION APPLICATION IN CONJUNCTION WITH OTHER APPLICATIONS

Response: The applicant requests that the Subdivision request be reviewed in conjunction with the, Planned Development, and Drainageway requests in accordance with this section.

85.140 PRE-APPLICATION CONFERENCE REQUIRED

Response: The applicant attended a pre-application conference with City staff on Thursday, October 20, 2005, as required. The meeting minutes from the City and a summary of that meeting from the applicant has been provided as Appendix 5 to this narrative.

85.150 THE APPLICATION – THE TENTATIVE PLAN

Response: The requisite application materials are included with this submittal. They include 12 copies of the tentative plan map and supplemental drawings (plus two reduced copies), this narrative, an application form, and fee. A neighborhood meeting was conducted on November 9, 2005 with the Willamette Neighborhood Association. The site was posted with a meeting notice prior to the meeting in accordance with City requirements, and meeting minutes and a copy of the recording are included with this submittal.

85.160 SUBMITTAL REQUIREMENTS FOR THE TENTATIVE PLAN

85.160(D)(1) *Proposed name of the subdivision and streets; these names shall not duplicate nor resemble the name of any other subdivision or street in the City and shall be approved by the Planning Commission or Planning Director, as applicable. Street names should be easily spelled, pronounced, and of limited length.*

Response: At this point in time, we would like to request a waiver to 85.160(D)(1) in order to allow us time to verify street names with the property owner and City engineer.

85.160(E)(1) *Show ROW and street widths adjacent to the site.*

Response: The application satisfies this requirement by providing the right-of-way widths on the revised Exhibit 02 (Vicinity Transportation Network Map). The right-of-way names are already represented on that exhibit.

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85.160(E)(3) *Surveying and mapping control points are shown.*

Response: The surveying and mapping control points are now illustrated on Exhibit 7. The control point used for this specific site is as follows:

"City of West Linn Bench Mark "B" is 93.5' east and 17.0' south of the edge of pavement from 4-way intersection of Rosemont/Santa Anita. 3" cap on pipe with yellow water works lid elevation = 667.22."

85.160(E)(5) *Natural features such as rock outcroppings, wetlands tied by survey, wooded areas, heritage trees, and isolated trees (six-inch diameter at five feet above grade) identified by size, type, and location. All significant trees and tree clusters identified by the City Arborist using the criteria of CDC Section 55.100(B)(2) and all heritage trees, shall be delineated. Trees on non-Type I and II lands shall have their "dripline plus 10 feet" protected area calculated per CDC Section 55.100(B)(2) and expressed in square feet, and also as a percentage of total non-Type I and II area.*

Response: As indicated previously in this narrative, there are no known heritage trees onsite. In a meeting with the City Arborist, Mike Perkins, he had indicated that the clusters of trees that he was most concerned with had been protected within the open space that is proposed to be dedicated. It should be noted that there are several large trees on the site, and many of those trees could arguably be deemed significant; however, the West Linn development code, Section 55.100(B)(2), acknowledges that "...all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant." According to Mike, he will work with the design engineer to verify field techniques that will serve to protect the most trees during construction.

85.160(E)(7) *Identify the size and location of existing sewers, water mains, culverts, drain pipes, gas, electric, and other utility lines within the site, and in the adjoining streets and property.*

Response: Exhibit 3, the Existing Conditions Plan, has been revised to illustrate the utilities available to the site and located within the adjacent properties and streets.

85.160(E)(8) *Show zoning on adjoining parcels*

Response: The zoning on the adjoining properties is discussed in the site analysis, illustrated on the revised Exhibit 2 (Vicinity Transportation Network Map), and provided as an attachment to this letter.

85.160(E)(9) *Show uses to remain on adjoining properties*

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Response: As indicated in the narrative, the surrounding properties are a mixture of residential and underdeveloped rural uses. The properties immediately surrounding the site are all zoned residential with the exception of the Clackamas County properties west of the site. Development of this site will not cause any of the uses on adjacent properties to be changed.

85.160(F)(1) *The street - street location, proposed name, right-of-way width, and approximate radius of curves of each proposed street and street grades. Proposed street names shall comply with the street naming method explained in Section 85.200(A)(12).*

Response: A waiver has been requested earlier in this letter to allow the developer time to verify proposed street names with the property owner and the City of West Linn. Exhibits 1 and 5 of the plans submitted have been revised to better illustrate the street widths, approximate radius of curves, and street grades as requested.

85.170 SUPPLEMENTAL SUBMITTAL REQUIREMENTS FOR A TENTATIVE SUBDIVISION OR PARTITION PLAT

A. General

Response: All supplemental information required by this subsection is provided with the application, including this narrative, statement of ownership, legal description, and slope analysis. The housing density summary has been discussed previously in this report.

B. Transportation

Response: Street sections and centerline information is included in the plans. The grading plan shows how the proposed streets will meet existing street grades. A traffic study has been conducted and is included with this application as Appendix 1.

C. Grading

Response: A grading plan is provided with this application, which demonstrates compliance with roadway and subdivision standards. See Exhibit 7.

D. Water

Response: A preliminary utilities plan submitted with this application demonstrates compliance with the Water System Plan and fire protection standards. Water will be provided by extending a connection through the site to the water main in Johnson Road. See Exhibit 8.

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E. Sewer

Response: A preliminary utilities plan submitted with this application demonstrates compliance with the Sanitary Sewer Master Plan, engineering specifications for manholes, and service to individual lots. See Exhibit 8.

F. Storm

Response: Stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

85.180 RE-DIVISION PLAN REQUIREMENT

Response: A redivision plan is not appropriate due to the fact that the property cannot be developed at higher densities under the existing zoning and the proximity of the natural resources on the site.

85.190 ADDITIONAL INFORMATION REQUIRED AND WAIVER OF REQUIREMENTS

Response: The applicant is not requesting a waiver of requirements.

85.200 APPROVAL CRITERIA

A. Streets

The proposed subdivision complies with street standards as follows:

The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the generalized or reasonable layout of streets on adjacent undeveloped parcels, to topographical conditions, to public convenience and safety, to accommodate various types of transportation (automobile, bus, pedestrian, bicycle), and to the proposed use of land to be served by the streets.

Response: The location, width, and grade of the proposed streets are consistent with City standards and provide for a street stub to underdeveloped property located directly north and east of this site. The internal streets are proposed to consist of a 28-foot paved section within a 50-foot right-of-way. This configuration provides for on-street parking on one side. The exception to this

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width occurs at the crossing of the drainageway with a 24-foot paved section in a 50-foot right-of-way.

The proposed internal streets will provide for low levels of traffic, thereby providing a safe environment for walking, bicycling, and social interaction, and will preserve the privacy of the neighborhood. Sidewalks are provided to offer safe circulation for neighborhood travel.

Tree clusters are avoided to the extent practical, as shown on the grading and tree preservation plans. See Exhibits 6 and 7.

In order to accommodate larger tree lined boulevards and sidewalks, particularly in residential areas, the standard right-of-way widths for the different street classifications shall be within the range listed below. But, instead of filling in the right-of-way with pavement, they shall accommodate the amenities (e.g., boulevards, street trees, sidewalks). The exact width of the right-of-way shall be determined by the City Engineer or the approval authority.

Response: The proposed streets are consistent with the general right-of-way standard for local streets (40 to 60 feet), including a sidewalk abutting the proposed lots.

The proposed 50-foot right-of-way and a 28-foot pavement width are intended to calm traffic and slow traffic speeds within the development. Two lanes with parking on one side are provided. The streets are intended to function not only as the required local street right-of-way, but to also provide a safe environment, physical comfort to pedestrian and auto users, and spatial definition by emphasizing human scale and an aesthetically pleasing streetscape.

Street widths shall depend upon which classification of street is proposed. Streets fall into three main classes: arterial, collector, and local streets.

Response: Tamarisk street and the local cul-de-sac street are local and fall within the range identified by this chapter. No access to industrial areas is proposed and, therefore, subsection (d) is not applicable.

The decision-making body shall consider the City Engineer's recommendations on the desired right-of-way width, pavement width and street geometry of the various street types within the subdivision after consideration by the City Engineer…

Response: The proposed streets are consistent with engineering criteria for traffic volumes, parking, sidewalk improvements, utilities, drainage, driveway grades, and geometry. The streets will serve as local streets in the subdivision and provide a street stub to undeveloped property to the north. On-street parking is provided on all streets. Sidewalks are provided throughout the site and the streets

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will serve as the bike route due to the fact that the streets will have low traffic volumes and are not identified as formal bicycle routes. Utilities and street lighting will be placed in accordance with City standards. Street trees will be provided subject to species approval and market availability. Driveway placement is undetermined at this time, but will meet City grade requirements.

...when determining appropriate street width, the decision-making body shall consider...

a. *When a local street is the only street serving a residential area and is expected to carry more than the normal local street traffic load, the designs with two travel and one parking lane are appropriate.*
b. *Streets intended to serve as signed but unstriped bike routes should have the travel lane widened by two feet.*
c. *Collectors should have two travel lanes and may accommodate some parking. Bike routes are appropriate.*
d. *Arterials should have two travel lanes. On-street parking is not allowed unless part of a Street Master Plan. Bike lanes are required as directed by the Parks Master Plan and Transportation Master Plan.*

Response: The proposed streets are local streets and not arterials or collectors, making subsection (c) and (d) not applicable. Subsequently, the subject streets will have low traffic volumes, and are not identified as formal bicycle routes. The criterion states that, "a roadway that is local and is expected to carry more than the normal local street traffic load can be designed with two travel lanes and one parking lane."

Reserve strips or street plugs controlling the access to streets are not permitted unless owned by the City.

Response: One street stub is proposed to the northwest. The applicant realizes that a non-access reserve strip may be imposed by the Oregon Department of Transportation for the properties frontage along I-205.

All streets other than local streets or cul-de-sacs, as far as practical, shall be in alignment with existing streets by continuations of the centerlines thereof. The staggering of street alignments resulting in "T" intersections shall, wherever practical, leave a minimum distance of 200 feet between the centerlines of streets having approximately the same direction and otherwise shall not be less than 100 feet.

Response: All of the streets within this development will be local streets. The extension of Tamarisk Drive will be aligned with the existing centerline.

Where necessary to give access to, or permit a satisfactory future subdivision of adjoining land, streets shall be extended to the boundary of the subdivision and the resulting dead-end streets

may be approved without turnarounds. (Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long.)

Response: A future street extension is provided to the underdeveloped property directly north and west of the site. The street is over 100 feet in length and will, therefore, be provided with a temporary fire turnaround, as required.

Streets shall be laid out to intersect angles as near to right angles as practical, except where topography requires lesser angles, but in no case less than 60 degrees unless a special intersection design is approved. Intersections, which are not at right angles, shall have minimum corner radii of 15 feet along right-of-way lines, which form acute angles. Right-of-way lines at intersections with arterial streets shall have minimum curb radii of not less than 35 feet. Other street intersections shall have curb radii of not less than 25 feet. All radii shall maintain a uniform width between the roadway and the right-of-way lines. The intersection of more than two streets at any one point will not be allowed unless no alternative design exists.

Response: The proposed intersection angles are laid out to meet this criterion.

Additional Right-of-Way for Existing Streets. Wherever existing street right-of-ways adjacent to or within a tract are of inadequate widths based upon the standards of this chapter, additional right-of- way shall be provided at the time of subdivision or partition.

Response: Tamarisk Drive will be extended through the site to serve the proposed development. Additional right-of-way needs were not raised as a concern within the pre-application conference. This criterion can be satisfied.

Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75. All cul-de-sacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and do not include planter strips or sidewalks.

Response: There is one proposed cul-de-sac within this development. The proposed cul-de-sac is less than 300 feet in length and serves six lots on the eastern edge of the property. The cul-de-sac will be provided with a turnaround, as required. This criterion is satisfied.

No street names shall be used which will duplicate or be confused with the names of existing streets within the City. Street names that involve difficult or unusual spellings are discouraged. Street names shall be subject to the approval of the Planning Commission or Planning Director, as applicable.

Continuations of existing streets shall have the name of the existing street. Streets, drives, avenues, ways, boulevards, lanes, shall describe through streets. Place and court shall describe cul-de- sacs. Crescent, terrace, and circle shall describe loop or arcing roads.

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Response: No duplicate street names will be proposed. The primary street within the development is proposed to be extended as Tamarisk Drive. A new street name will be decided and verified prior to final plat approval for the cul-de-sac serving lots 17 and 22 through 26. This criterion can be satisfied.

Grades shall not exceed 8 percent on major or secondary arterials, 10 percent on collector streets, or 15 percent on any other street unless by variance. Willamette Drive/ Highway 43 shall be designed to a minimum horizontal and vertical design speed of 45 mph, subject to Oregon Department of Transportation (ODOT) approval. Arterials shall be designed to a minimum horizontal and vertical design speed of 35 mph. Collectors shall be designed to a minimum horizontal and vertical design speed of 30 mph. All other streets shall be designed to have a minimum centerline radii of 50 feet. Super elevations (i.e., banking) shall not exceed 4 percent. The centerline profiles of all streets may be provided where terrain constraints (e.g., over 20 percent slopes) may result in considerable deviation from the originally proposed alignment.

Response: All streets within the development are local, and the grades and curves will comply with the 15 percent standard, as shown on the grading plan. See Exhibit 5.

Access to Local Streets. Intersection of a local residential street with an arterial street may be prohibited by the decision-making authority if suitable alternatives exist for providing interconnection of proposed local residential streets with other local streets. Where a subdivision or partition abuts or contains an existing or proposed major arterial street, the decision-making authority may require marginal access streets, reverse frontage lots with suitable depth, visual barriers, noise barriers, berms, no access reservations along side and rear property lines, and/ or other measures necessary for adequate protection of residential properties from incompatible land uses, and to ensure separation of through traffic and local traffic.

Response: There are no arterials adjacent to the site; therefore, this standard is not applicable to the proposed development.

Alleys shall be provided in commercial and industrial districts unless other permanent provisions for access to off-street parking and loading facilities are made as approved by the decision-making authority.

Response: No alleys are proposed within this development. This standard is not applicable to the proposed development.

Sidewalks shall be installed per Section 92.010(H), Sidewalks. The residential sidewalk width is six feet plus planter strip as specified below.

Response: A five and a half-foot sidewalk is proposed between the street pavement and lots, as shown on the tentative plat. See Exhibit 1 for street sections.

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The planter strip is between the curb and sidewalk providing space for a grassed or landscaped area and street trees. The planter strip shall be at least 6 feet wide to accommodate a fully matured tree without the boughs interfering with pedestrians on the sidewalk or vehicles along the curbline.

Response: A five-foot planter strip is proposed between the curb and sidewalk, providing enough space for street trees. There is an exception requested of this standard in the Type I and II land areas. The project also requires curb tight sidewalks at the crossing of the transition zone.

Streets and roads shall be dedicated without any reservations or restrictions.

Response: No streets will be dedicated with reservations or restrictions.

All lots in a subdivision shall have frontage on a public street. Lots created by partition may have access to a public street via an access easement pursuant to the standards and limitations set forth for such accessways in Chapter 48.

Response: All lots within this subdivision will have frontage onto a public street.

Gated streets are prohibited in all residential areas on both public and private streets. A driveway to an individual home may be gated.

Response: This subsection does not apply as no private, gated streets are proposed.

When the applicant desires to construct certain walls, planters, and other architectural entryway treatments within a subdivision, the following standards shall apply:

a. *All entryway treatments except islands shall be located on private property and not in the public right-of-way.*
b. *Planter islands may be allowed provided there is no structure (i.e., brick, signs, etc.) above the curbline, except for landscaping. Landscaped islands shall be set back a minimum of 24 feet from the curbline of the street to which it is perpendicular.*
c. *All islands shall be in public ownership. The minimum isle width between the curb and center island curbs shall be 14 feet. Additional width may be required as determined by the City Engineer.*
d. *Brick or special material treatments are acceptable at intersections with the understanding that the City will not maintain these sections except with asphalt overlay, and that they must meet the Americans with Disabilities Act (ADA) standards. They shall be laid out to tie into existing sidewalks at intersections.*
e. *Maintenance for any common areas and entryway treatments (including islands) shall be guaranteed through homeowners' association agreements, CC&Rs, etc.*
f. *Under Chapter 52, subdivision monument signs shall not exceed 32 square feet in area.*

Response: This subsection does not apply, as no entryway treatments are proposed at this time. Should entryway treatments subsequently be proposed, they will be designed to meet these standards.

B. *Blocks and Lots*

The length, width, and shape of blocks shall be designed with due regard for the provision of adequate building sites for the use contemplated; consideration of the need for traffic safety, convenience, access, circulation, and control; and recognition of limitations and opportunities of topography and solar access.

Response: The proposed subdivision does not contain blocks of the traditional sense, meaning blocks bounded by streets on all sides, similar to a grid street pattern. The shape of the parcel, the presence of resource areas, surrounding ownership limitations, and street connectivity requirements dictate where lots and streets could be placed.

The recommended block size is 400 feet in length to encourage greater connectivity within the subdivision. Blocks shall not exceed 800 feet in length between street lines, except for blocks adjacent to arterial streets or unless topographical conditions or the layout of adjacent streets justify a variation. The recommended minimum distance between intersections on arterial streets is 500 feet. Designs of proposed intersections shall demonstrate adequate sight distances to the City Engineer's specifications.

Response: As stated above, the subdivision does not contain blocks in a traditional sense where the block is bounded on all sides by streets, similar to a grid pattern.

Lot size, width, shape, and orientation shall be appropriate for the location of the subdivision, for the type of use contemplated, for potential utilization of solar access, and for the protection of drainageways, trees, and other natural features. No lot shall be dimensioned to contain part of an existing or proposed street. All lots shall be buildable, and the buildable depth should not exceed two and one-half times the average width.

Response: The subject property is zoned R-10 and R-15. As demonstrated throughout this narrative, the proposed lot layout addresses solar access, tree preservation, the protection of natural resources, and other requirements consistent with the R-10 and R-15 requirements. The lot width, shape, and orientation are appropriate for the location of the subdivision. Trees are preserved where practicable and within large open spaces dedicated to the preservation of the onsite natural resources. Lots do not contain streets. The lot dimensional standards of the underlying zone are waived by the Planned Development Section of the West Linn CDC.

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Access to subdivisions, partitions, and lots shall conform to the provisions of Chapter 48, Access.

Response: The provisions of Chapter 48 have been previously discussed within this narrative. All provisions have been met or exceeded by the proposed development.

Through lots have frontage on a street at the front and rear of the lot. They are also called double frontage lots. Through lots and parcels shall be avoided except where they are essential to provide separation of residential development from arterial streets or adjacent non-residential activities, or to overcome specific disadvantages of topography and orientation. A planting screen or impact mitigation easement at least 10 feet wide, and across which there shall be no right of access, may be required along the line of building sites abutting such a traffic artery or other incompatible use.

Response: There are no double frontage lots proposed within this development. This criterion is not applicable to this proposal.

The lines of lots and parcels, as far as is practicable, should run at right angles to the street upon which they face, except that on curved streets they should be radial to the curve.

Response: The proposed lot lines run as close to 90 degrees as practicable, and are radial to the curve where necessary.

Flag lots can be created where it can be shown that no other reasonable street access is practicable to achieve the requested land division. A single flag lot shall have a minimum street frontage of 15 feet for its accessway. Where two to four flag lots share a common accessway, the minimum street frontage and accessway shall be 8 feet in width per lot. Common accessways shall have mutual maintenance agreements and reciprocal access and utility easements.

Response: There are three flag lots proposed within this development. The three lots will share access and meet the minimum street frontage of eight feet each, as required. Maintenance agreements, reciprocal access, and utility easements will be provided as required. The three flag lots are proposed lots 2, 3, and 4.

In dividing tracts into large lots or parcels which, at some future time, are likely to be redivided, the approval authority may require that the blocks be of such size and shape, and be so divided into building sites, and contain such easements and site restrictions as will provide for extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size.

Response: All areas left undeveloped are being preserved for the purpose of resource lands conservation and open space. Because this development is proposed as a PUD, the lot sizes are smaller than what would be allowed in the

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underlying zoning classification, and it is highly unlikely that they would be further divided.

C. *Pedestrian and Bicycle Trails*

Trails or multi-use pathways shall be installed, consistent and compatible with federal ADA requirements and with the Oregon Transportation Planning Rule, between subdivisions, cul-de-sacs, and streets that would otherwise not be connected by streets due to excessive grades, significant tree(s), and other constraints natural or man-made. Trails shall also accommodate bicycle or pedestrian traffic between neighborhoods and activity areas such as schools, libraries, parks, or commercial districts. Trails shall also be required where designated by the Parks Master Plan.

Response: The proposed street system provides for an internal street with sidewalks that will encourage pedestrian and bicycle travel within the surrounding neighborhoods. Because of the natural resources and excessive grades, a full street connection is not provided through the site. Instead, a trail is proposed through the site to make a connection with Woodbine.

D. *Transit Facilities*

The applicant shall consult with Tri-Met and the City Engineer to determine the appropriate location of transit stops, bus pullouts, future bus routes, etc. contiguous to, or within the development site. If transit service is planned to be provided within the next two years, then facilities such as pullouts shall be constructed per Tri- Met standards at the time of development. More elaborate facilities, like shelters, need only be built when service is existing or imminent. Additional right-of-ways may be required of developers to accommodate buses.

Response: According to Tri-Met staff, there are no existing or proposed transit facilities on or adjacent to the proposed subdivision site. This standard is not applicable to the proposed development.

E. *Lot Grading*

All cuts and fills shall comply with the excavation and grading provisions of the Uniform Building Code and the following…

Response: The proposed subdivision can comply with subsections E.1 through E.8 (Uniform Building Code, soil suitability, grading plan, minimum grading, landslides, slopes), as evidenced by the preliminary grading plan submitted with this application.

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F. *Water*

A plan for domestic water supply lines or related water service facilities shall be prepared consistent with the adopted Comprehensive Water System Plan, plan update, March 1987, and subsequent superseding revisions or updates.

Adequate location and sizing of the water lines.

Adequate looping system of water lines to enhance water quality.

For all non single-family developments, there shall be a demonstration of adequate fire flow to serve the site.

A written statement, signed by the City Engineer, that water service can be made available to the site by the construction of onsite and off-site improvements and that such water service has sufficient volume and pressure to serve the proposed development's domestic, commercial, industrial, and fire flows.

Response: The composite utilities plan submitted with this application demonstrates compliance with this subsection. As indicated previously in this narrative, a preliminary utilities plan submitted with this application demonstrates compliance with the Water System Plan and fire protection standards. Water will be provided by a connection to the six-inch water main in Tamarisk Drive that will then be extended through the site and looped to an existing line located in Johnson Road.

G. *Sewer*

A plan prepared by a licensed engineer shall show how the proposal is consistent with the Sanitary Sewer Master Plan (July 1989). Agreement with that plan must demonstrate how the sanitary sewer proposal will be accomplished and how it is gravity efficient. The sewer system must be in the correct basin and should allow for full gravity service.

Sanitary sewer information will include plan view of the sanitary sewer lines, including manhole locations and depth or invert elevations.

Sanitary sewer lines shall be located in the public right-of-way, particularly the street, unless the applicant can demonstrate why the alternative location is necessary and meets accepted engineering standards.

Sanitary sewer line should be at a depth that can facilitate connection with down system properties in an efficient manner.

The sanitary sewer line should be designed to minimize the amount of lineal feet in the system.

The sanitary sewer line shall avoid disturbance of wetland and drainageways. In those cases where that is unavoidable, disturbance shall be mitigated pursuant to Chapter 30, Wetland, and Chapter 32, Natural Drainageway, all trees replaced, and proper permits obtained. Dual sewer lines may be required so the drainageway is not disturbed.

Sanitary sewer shall be extended or stubbed out to the next developable subdivision or a point in the street that allows for reasonable connection with adjacent or nearby properties.

The sanitary sewer system shall be built pursuant to DEQ, City, and Tri-City Service District sewer standards. The design of the sewer system should be prepared by a licensed engineer, and the applicant must be able to demonstrate the ability to satisfy these submittal requirements or standards at the pre-construction phase.

A written statement, signed by the City Engineer, that sanitary sewers with sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.

Response: A licensed engineer prepared the proposed utility plan submitted with this application. The plan is gravity efficient and complies with the City's Sanitary Sewer Master Plan. The utility plan is in plan view and shows manhole locations, as required.

The proposed sanitary sewer line is located in conformance with City engineering standards. As part of this proposal, a sewer pump is being proposed to connect to the existing system in Tamarisk. The amount of sewer line is minimized, as shown on the utility plan. Sanitary sewer lines will be stubbed where necessary to provide a reasonable connection for adjacent properties. Utility construction plans are submitted with this application for review and approval from the City engineer. The applicant recognizes that City review and approval of these plans must occur prior to construction.

H. *Storm*

A storm water quality and detention plan shall be submitted which complies with the submittal criteria and approval standards contained within CDC Chapter 33. It shall include profiles of proposed drainageways with reference to the adopted Storm Drainage Master Plan.

Storm treatment and detention facilities shall be sized to accommodate a 25-year storm incident. A registered civil engineer shall prepare a plan and statement which shall be supported by factual data that clearly shows that there will be no adverse off-site impacts from increased intensity of runoff downstream or constriction causing ponding upstream. The plan and statement shall identify all on- or off-site impacts and measures to mitigate those impacts. The plan and statement shall, at a minimum, determine the off-site impacts from a 25-year storm.

Plans shall demonstrate how storm drainage will be collected from all impervious surfaces including roof drains. Storm drainage connections shall be provided to each dwelling unit/ lot.

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The location, size, and type of material selected for the system shall correlate with the 25-year storm incident.

Treatment of storm runoff shall meet Municipal Code standards.

Response: Stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek. The stormwater will be treated, and discharged to an approved location as required by the West Linn Municipal Code.

I. *Utility Easements*

All subdivisions and partitions shall establish, at minimum, five-foot utility easements on front and rear lot lines. Easements may be wider and side yard easements established, as determined by the City Engineer to accommodate the particular service. The developer of the subdivision shall make accommodation for cable television wire in all utility trenches and easements so that cable can fully serve the subdivision.

Response: The subdivision will include utility easements meeting the five-foot minimum requirement where necessary.

J. *Supplemental Provisions*

Wetlands and natural drainageways shall be protected as required by Chapter 30, Wetland and Riparian Area Protection, and Chapter 32, Natural Drainageway Areas. Utilities may be routed through the protected corridor as a last resort, but impact mitigation is required.

Response: Chapter 30 and Chapter 32 of the West Linn Development Code have been previously addressed in this narrative. The proposed project can comply with the standards within those chapters.

The approval authority may require the dedication to the City, or setting aside of, greenways which will be open or accessible to the public. Except for trails or paths, such greenways will usually be left in a natural condition without improvements. Refer to CDC Chapters 28 and 29 for further information on the Willamette and Tualatin River Greenways.

Response: The subject site is not located within the Willamette River or Tualatin River Greenways.

Street trees are required as identified in the appropriate section of the Municipal Code and Chapter 54 of this Code.

Response: Street trees have been addressed previously in this narrative. The applicant is aware that the cost of the street trees are required to be paid by the developer in accordance with Section 54.000(F)(3).

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To reduce ambient light and glare, high or low-pressure sodium light bulbs shall be required for all subdivision street or alley lights. The light shall be shielded so that the light is directed downwards rather than omni-directional.

Response: Plans for any lighting will be submitted with utility construction plans. Lighting will comply with the requirement for sodium light bulbs and shielding along the streets. All other lighting will be that associated with the lighting provided by the individual single-family homes that are to be constructed onsite.

The City may require an applicant to dedicate land and/or construct a public improvement that provides a benefit to property or persons outside the property that is the subject of the application when the exaction is roughly proportional. No exaction shall be imposed unless supported by a determination that the exaction is roughly proportional to the impact of development.

Response: Portions of the property will be constructed and dedicated to the City for the purposes of roads and utilities.

All utilities, such as electrical, telephone, and television cable, that may at times be above ground or "overhead" shall be buried underground in the case of new development...

Response: All utilities are proposed to be underground with the exception of the meters serving the individual lots and other necessary above-grade equipment.

Density shall occur at 70 percent or more of the maximum density allowed by the underlying zoning.

Response: As demonstrated previously in this narrative, the site meets the minimum density requirements of the West Linn Development Code.

The "mix" rule means that developers shall have no more than 15 percent of the R-2.1 and R-3 development as single-family residential. The intent is that the majority of the site shall be developed as medium high density multi-family housing.

Response: The site is zoned R-10 and R-15; this standard is not applicable.

All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers, shall be saved pursuant to CDC Section 55.100(B)(2). Trees are defined per the Municipal Code as having a trunk 6" in diameter or 19" in circumference at a point five feet above the mean ground level at the base of the trunk.

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Response: A tree preservation plan and inventory are submitted with this application. Individual trees are preserved to the greatest extent practicable. Tree preservation has been discussed in detail elsewhere in this narrative. See Exhibit 6. There are no identified heritage trees on this property.

Chapter 89, Subdivision and Partition Plats

Response: This chapter outlines final plat procedures and specifications and does not apply to the tentative plat approval.

Chapter 91, Improvement Guarantee

Response: This chapter outlines improvement guarantees that must be executed prior to recording a final plat. All improvement guarantees will be performed and executed by the developer at the required time.

Chapter 92, Required Improvements

Response: This chapter outlines improvement requirements which must be made prior to recording a final plat. Once a decision has been issued on the preliminary plat, each one of these items will be individually addressed and adhered to, where applicable.

Chapter 96, Street Improvement Construction

Response: This chapter outlines street construction requirements that must be met prior to issuance of a building permit. The client understands that all infrastructure and street improvements will be constructed to the City Engineer's satisfaction prior to receiving building permits on the project.

Chapter 99, Administrative Procedures for Quasi-Judicial Decisions

Response: This section outlines the procedural due process and notice requirements for specific land use applications. In compliance with this section, the applicant has completed a pre-application conference, a neighborhood meeting, and has provided the City-recommended documentation to support this application. Findings demonstrating compliance with all applicable code requirements are provided within this narrative.

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V. CONCLUSION

The preceding narrative and supporting plans demonstrate that the proposed development complies with all of the applicable criteria. The applicant respectfully requests that the City approve the Subdivision, Planned Development, and Drainageway Permit.

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Appendix 1—Dunn Traffic Engineering Traffic Study

December 18, 2005 Project #: 0008.0

Nick Stearns
Stearns Marnella Construction LLC
18318 SE Abernethy Lane
Milwaukie, OR 97267

RE: Traffic Impact Study for Tamarisk PUD Development – West Linn, Oregon

Dear Mr. Stearns:

This letter constitutes a traffic impact study for the proposed residential development located at the west end of Tamarisk Drive and along the east side of Interstate 205, in West Linn, Oregon. The proposed Tamarisk PUD Development will consist of up to 40 units of single-family detached homes on the development site, which is currently vacant. A site vicinity map is provided in Figure 1 with the proposed site plan shown in Figure 2. As shown in Figure 2, access to the proposed residential development will be achieved via an extension of Tamarisk Drive. No other street connections or extensions are proposed as part of the development. However, a street stub will be provided in the northeast corner of the site to provide for a future street extension to Woodbine Road. Such an extension is expected to occur when the area north of the site is incorporated into the urban growth boundary and the city limits of West Linn.

SCOPE OF TRANSPORTATION IMPACT STUDY

This letter report identifies the transportation-related impacts associated with the proposed Tamarisk PUD development and was prepared in accordance with a preliminary scoping letter approved by City staff. The overall study area and study intersections for this project were selected to address the concerns of the City of West Linn and the Oregon Department of Transportation (ODOT). Based on our discussions with city staff, and our review of other traffic impact studies recently prepared in the site vicinity, the following study intersections were identified for vehicle operations and queuing analyses:

- 10th Street at I-205 Eastbound Ramps;
- 10th Street at I-205 Westbound Ramps;
- 10th Street at Blankenship Road/Salamo Road; and
- Blankenship Road at Tannler Drive.

This letter report addresses the following transportation issues:

- An inventory of current transportation facilities within the site vicinity;
- A review of in-process developments and planned transportation improvements in the study area;
- Year 2006 background traffic conditions (without the proposed development) during the weekday a.m. and p.m. peak hours at the study intersections;
- Site trip generation estimates for the average daily and weekday a.m. and p.m. peak hours;
- Year 2006 total traffic conditions (with the proposed development) during the weekday a.m. and p.m. peak hours at the study intersections;
- A review of the traffic operations and vehicle queuing conditions at the study intersections, including an assessment of mitigation needs;
- An assessment of internal site-circulation and the need for street connectivity; and
- Conclusions and recommendations.

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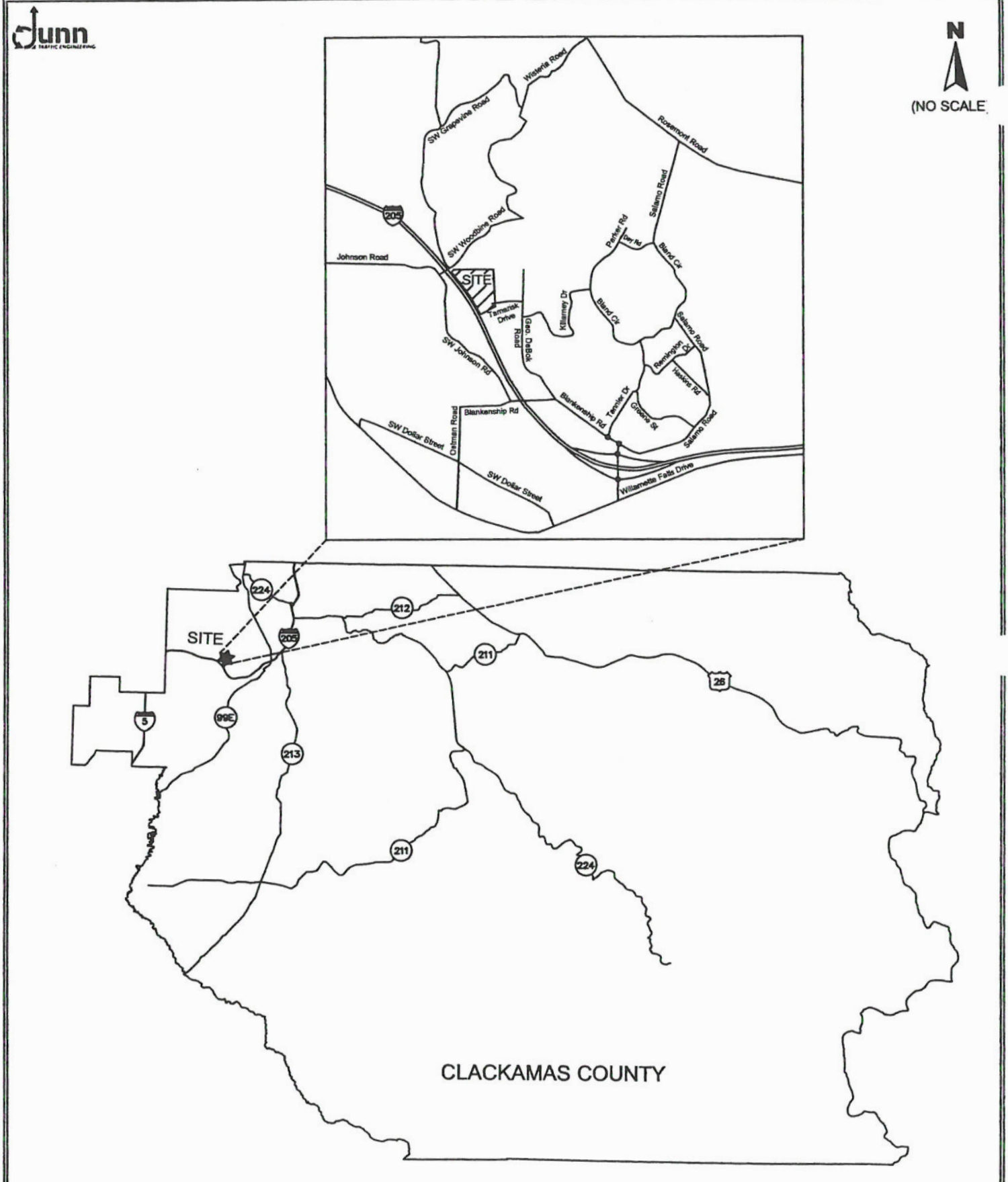
PROJECT NAME: Tammarisk PUD

PROJECT #: 0008



LEGEND	SITE VICINITY MAP	FIGURE No.:
● - STUDY INTERSECTION	DECEMBER, 2005	1

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PROJECT NAME: Tammarisk PUD

PROJECT #: 0008

dunn

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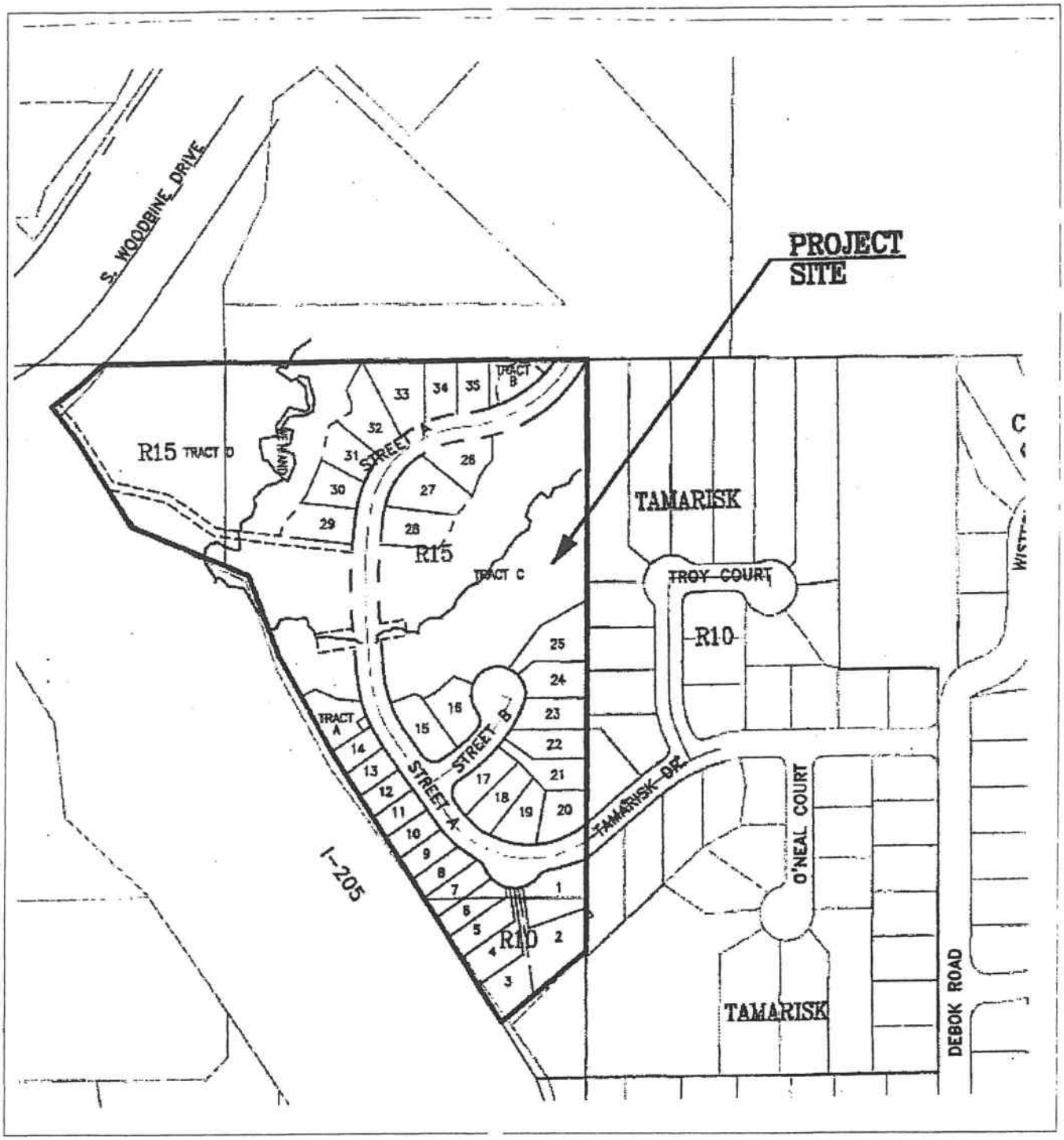
(NO SCALE)



LEGEND	PROPOSED SITE PLAN	FIGURE No.:
	DECEMBER, 2005	2

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TRANSPORTATION FACILITIES

An inventory was performed in November 2005 of all key roadway facilities in the vicinity of the proposed development. These facilities are described in Table 1 and the following paragraphs.

TABLE 1
INVENTORY OF ROADWAY FACILITIES

Roadway	Classification	Cross-Section	Speed Limit (mph)	Continuous Sidewalks?	Bicycle Lanes?	On-Street Parking?
Tamarisk Drive	Local	2 lanes	NP	Both sides	No	Yes
Debok Road						
(North of Village Park Place)	Collector	2 lanes	25	East, Partial on West	No	Yes
(South of Village Park Place)	Collector	2 lanes	25	Both sides	Yes	No
Blankenship Road						
(Northwest of Virginia Lane)	Collector	2 lanes	25	Both sides	Yes	No
(Virginia Lane to 13th Street)	Collector	2 lanes	25	North, Partial on South	No	No
(13th Street to Tannler Drive)	Collector	3 lanes	25	Both sides	Yes	No
(Tannler Drive to 10th Street)	Arterial	4 lanes	25	South	No	No
Salamo Road	Arterial	2 lanes	40	No	No	No
Tannler Drive	Collector	2 lanes*	25	No	No	Yes*
10th Street	Arterial	3-4 lanes	25	Yes- West	Yes	No
I-205	Freeway	4 lanes	55	No	No	No
Woodbine Road**	Collector/Local	2 lanes	NP	No	No	No
Grapevine Road**	Collector	2 lanes	NP	No	No	No

*- Tannler Drive, near its intersection with Blankenship Road, measures 44.5 feet in width. This width is sufficient to restripe the roadway to facilitate separate left- and right-turn lanes on the southbound approach to Blankenship Road. This would, however, require on-street parking to be limited to one side of the street.

**- Woodbine Road and Grapevine Road are located outside the city limits and urban growth boundary of West Linn.

Tannler Drive is classified as a *Local* street. The dead-end section at the west end of this roadway will serve as the connection point for the proposed subdivision. The roadway has two lanes of travel with continuous sidewalks and on-street parking on both sides of the street.

Debok Road is classified as a *Collector* street. This north-south roadway distributes traffic between the local streets feeding the adjacent neighborhoods and Blankenship Road to the south. The roadway has two lanes of travel with a posted speed of 25 mph. Along its length, there are intermittent sections where sidewalks, bicycle lanes, and on-street parking are provided.

Blankenship Road is classified as a *Collector* street west of Tannler Drive and an *Arterial* street east of Tannler Drive. The roadway generally follows an east-west pattern and distributes traffic from the neighborhoods on the hillside north of I-205 to the 10th Street corridor and the I-205 interchange. The roadway also provides an alternative connection to the extreme southwest portion of the city via a crossing under the I-205 freeway, just west of Debok Road. Blankenship Road has a posted speed of 25 mph, with two travel lanes west of 13th Street, three travel lanes east of 13th Street, and then four travel lanes east of Tannler Drive. On-street parking is not allowed along any portion of the roadway. The roadway generally has sidewalks and bicycle lanes located on both sides of the street. However, there are a few short sections of roadway where bicycle lanes or sidewalks are missing.

Salamo Road is classified as an *Arterial* street and has a posted speed of 40 mph. From 10th Street, this roadway proceeds up a steep hillside to the north and serves as the primary route between the northern-central section of the city and the I-205 interchange. Salamo Road has two travel lanes and there are no bicycle lane or sidewalk facilities.

Tannler Drive is classified as a *Collector* street. Similar to Debok Road, this north-south roadway distributes traffic between the local streets feeding the adjacent neighborhoods and Blankenship Road to the south. The roadway has two lanes of travel with a posted speed of 25 mph. Along its southern section, there are no sidewalks and no bicycle lanes. However, striping is provided on both sides of the street to delineate continuous on-street parking areas.

10th Street is classified as an *Arterial* street. This street is only one of two roads in the city providing access directly to I-205. The street is also one of the primary north-south connectors across I-205. The posted speed along 10th Street is 25 mph and there is a sidewalk on the west side of the street with bicycle lanes provided on both sides of the street.

I-205 is an interstate freeway that traverses West Linn north of the Willamette River. In the vicinity of the 10th Street interchange, the freeway has four travel lanes (two in each direction) and a posted speed of 55 mph. The interchange between I-205 and 10th Street creates a standard diamond configuration with ramp terminals located in all four quadrants.

Woodbine Road and Grapevine Road are rural County facilities designated by the City of West Linn as *Collector* roadways (Woodbine Road becomes a *Local* road east of Grapevine Road). Both roadways have two lanes of travel and there are no sidewalks, bicycle lanes, or on-street parking. Both roadways are also located outside the city limits of West Linn and outside the urban growth boundary.

IN-PROCESS DEVELOPMENTS

Based on information collected from City staff, only one in-process development has been identified in the site vicinity. The Parker Building, located on the northwest corner of the Blankenship Road/Summerlin Drive intersection, has been approved by the City of West Linn and is now under construction. The vehicle trips that will be generated by the Parker Building were, therefore, incorporated into the background and total traffic conditions analyses presented in this study, based on the findings of the traffic impact study prepared for this approved development (Reference 1).

Additionally, the City of West Linn is currently reviewing a development application for the Tannler East mixed-use development, to be located along the north side of Blankenship Road, between Salamo Road and Tannler Drive. Because this development is still being reviewed by the City and has not been approved, two scenarios have been prepared and summarized in the background and total traffic analysis section of this study to evaluate traffic conditions both without and with the Tannler East development. The vehicle trips associated with the Tannler East development are documented in the traffic impact study prepared by Lancaster Engineering (Reference 2).

PLANNED TRANSPORTATION IMPROVEMENTS

City staff have indicated a new traffic signal installation is programmed for construction within the next year at the intersection between 10th Street and the I-205 eastbound ramp terminals. Therefore, for the purposes of this study, a traffic signal installation was assumed to exist at this intersection under all background and total traffic analysis scenarios. Additionally, in the preliminary stages of developing the background and total traffic conditions analysis, it was determined that protected/permitted left-turn signal phasing would optimize traffic operations and minimize vehicle queues on the southbound approach of 10th Street at the I-205 eastbound ramp terminals. Therefore, this type of signal phasing was assumed to occur on this intersection approach.

No other short-term transportation improvements are programmed for the remaining study intersections along Blankenship Road or 10th Street. Although the traffic impact study prepared for the Tannler East development evaluated and recommended a traffic signal installation as a possible treatment for adverse operating conditions at the Blankenship Road/Tannler Drive intersection, an independent review conducted by a consultant from DKS Associates for the City of West Linn led to a recommendation against signalizing this intersection because of its close proximity to the traffic signal at the Blankenship Road/10th Street intersection (Reference 3). Therefore, signalization of the Blankenship Road/Tannler Drive intersection was not considered as a mitigating option for this study. One recommendation was, however, carried forward from the Tannler East traffic impact study. This was the recommendation that the southbound approach of the Blankenship Road/Tannler Drive intersection be restriped to facilitate separate left- and right-turn lanes, rather than remain as a single lane approach. Field measurements indicate separate turn lanes can be provided simply by restriping the approach and limiting on-street parking to one side of the street.

The West Linn Transportation System Plan (TSP, Reference 4) indicates a long-term need for additional capacity enhancements in the 10th Street corridor, including the Blankenship Road/Salamo Road/10th Street intersection. The TSP provides an evaluation of two alternative solutions for the 10th Street corridor but recommends a street improvement project that is consistent with only one of these alternatives. The recommended project consists of realigning the I-205 westbound off ramp to intersect Salamo Road east of 10th Street, and the construction of two roundabouts or traffic signals at a reconfigured intersection between Blankenship Road, Salamo Road, 10th Street, and the I-205 westbound on-ramp and the existing intersection between 10th Street and the I-205 eastbound ramp terminals. The TSP identifies a construction timeline of 2007-2013, but the City has not secured the funding necessary to build the project. City staff have indicated, however, that a program is in place to collect systems development charges, or SDC's, for new developments which send trips through the 10th Street corridor, in an effort to raise finances for the planned transportation improvement.

Based on the transportation improvements expected to be in place by 2006, Figure 3 identifies the assumed lane configurations and traffic control devices at all the identified study intersections.

YEAR 2006 BACKGROUND TRAFFIC CONDITIONS

The background traffic conditions analysis forecasts how the study intersections will operate in the year the proposed development will be built and occupied. The purpose of preparing an analysis of background conditions is to set the stage for a basis of comparison to future total traffic conditions which include the proposed Tamarisk PUD development.

The analysis of year 2006 background traffic conditions account for traffic related to the approved Parker Building development, and a two percent annual growth rate applied to the base traffic counts conducted in this year 2005. It does not include traffic from the proposed Tamarisk PUD development. Two separate background scenarios were analyzed for this study: one without the Tannler East development and one with the development. The process used to develop year 2006 background traffic volumes for both scenarios has already been documented in the traffic impact study prepared for the Tannler East development. Figures 4 and 5 show the resulting year 2006 background traffic volumes at the study intersections during the weekday a.m. and p.m. peak hours, without and with traffic from the Tannler East development, respectively.

Intersection Operations Analysis Parameters

To be consistent with the independent review conducted by DKS Associates of the Tannler East traffic impact study, two separate intersection operations analyses were prepared for this report. One type of analysis was performed using the Synchro software program, which provides level of service, average vehicle delay, and volume-to-capacity ratio results that are based on procedures stated in the *2000 Highway Capacity Manual* (HCM, Reference 5). *The HCM level of service descriptions and the criteria by*

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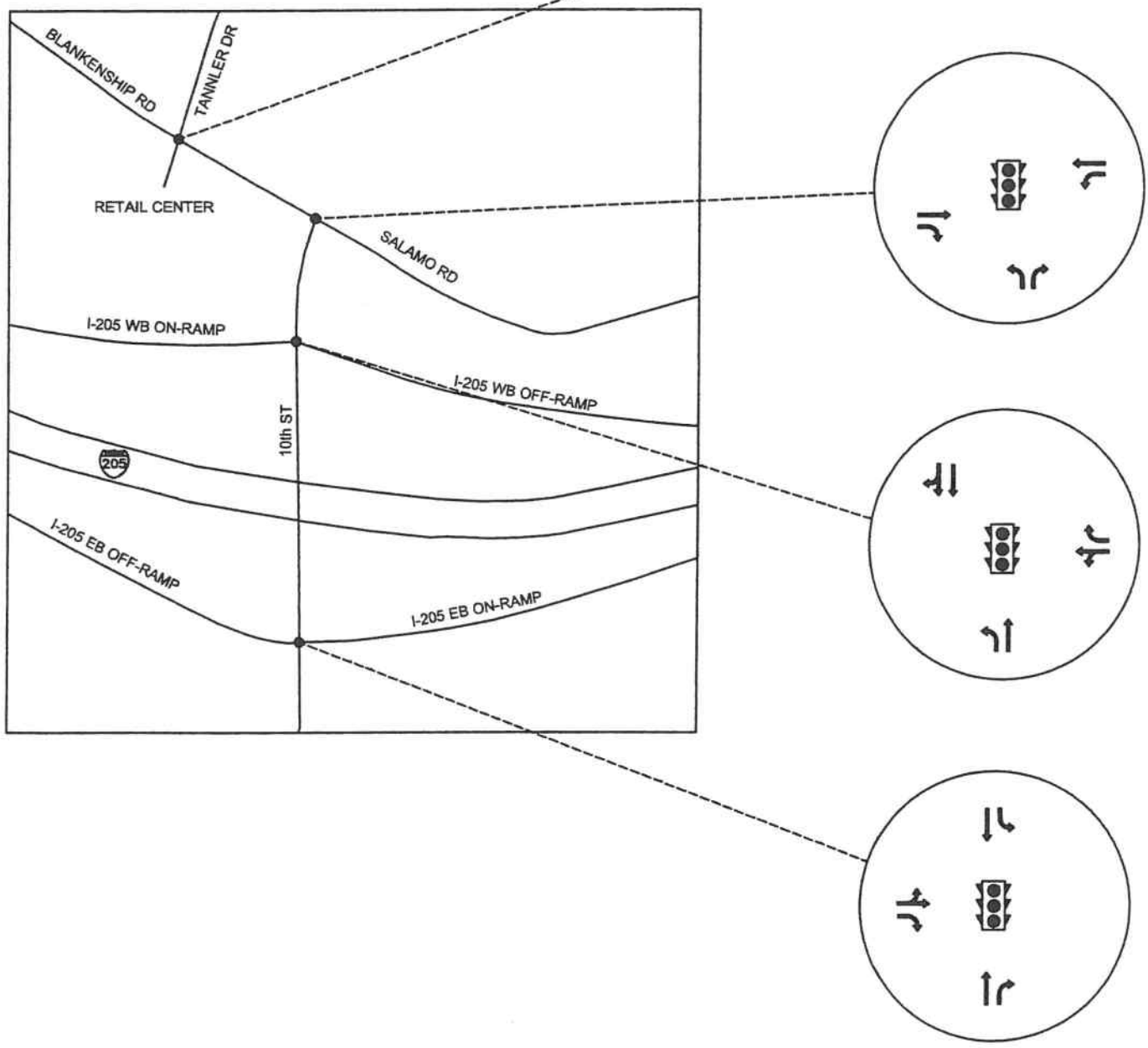

LEGEND	ASSUMED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES	FIGURE No.:
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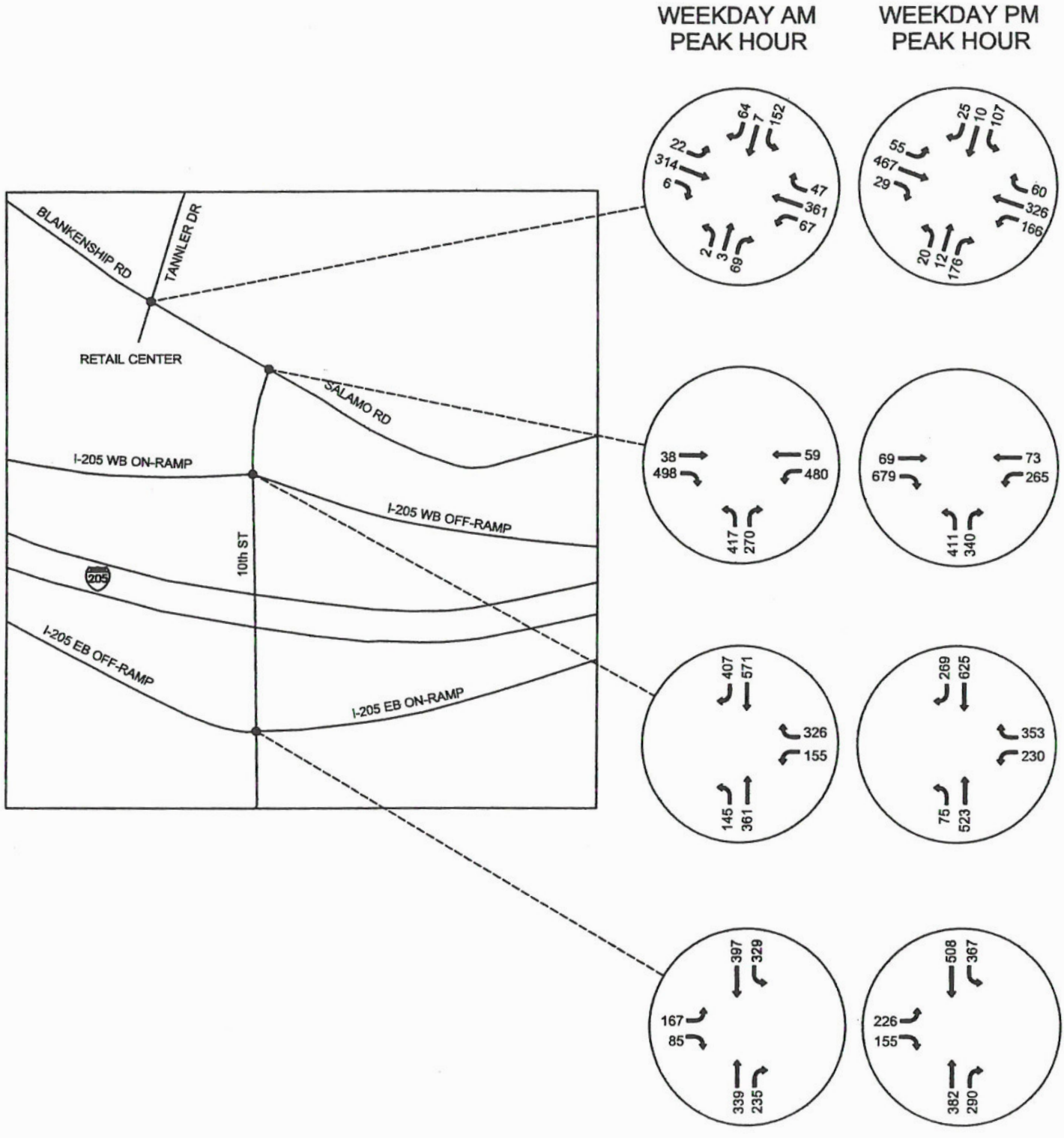

LEGEND	YEAR 2006 BACKGROUND TRAFFIC VOLUMES (WITHOUT TANNLER EAST DEVELOPMENT)	FIGUR No.:
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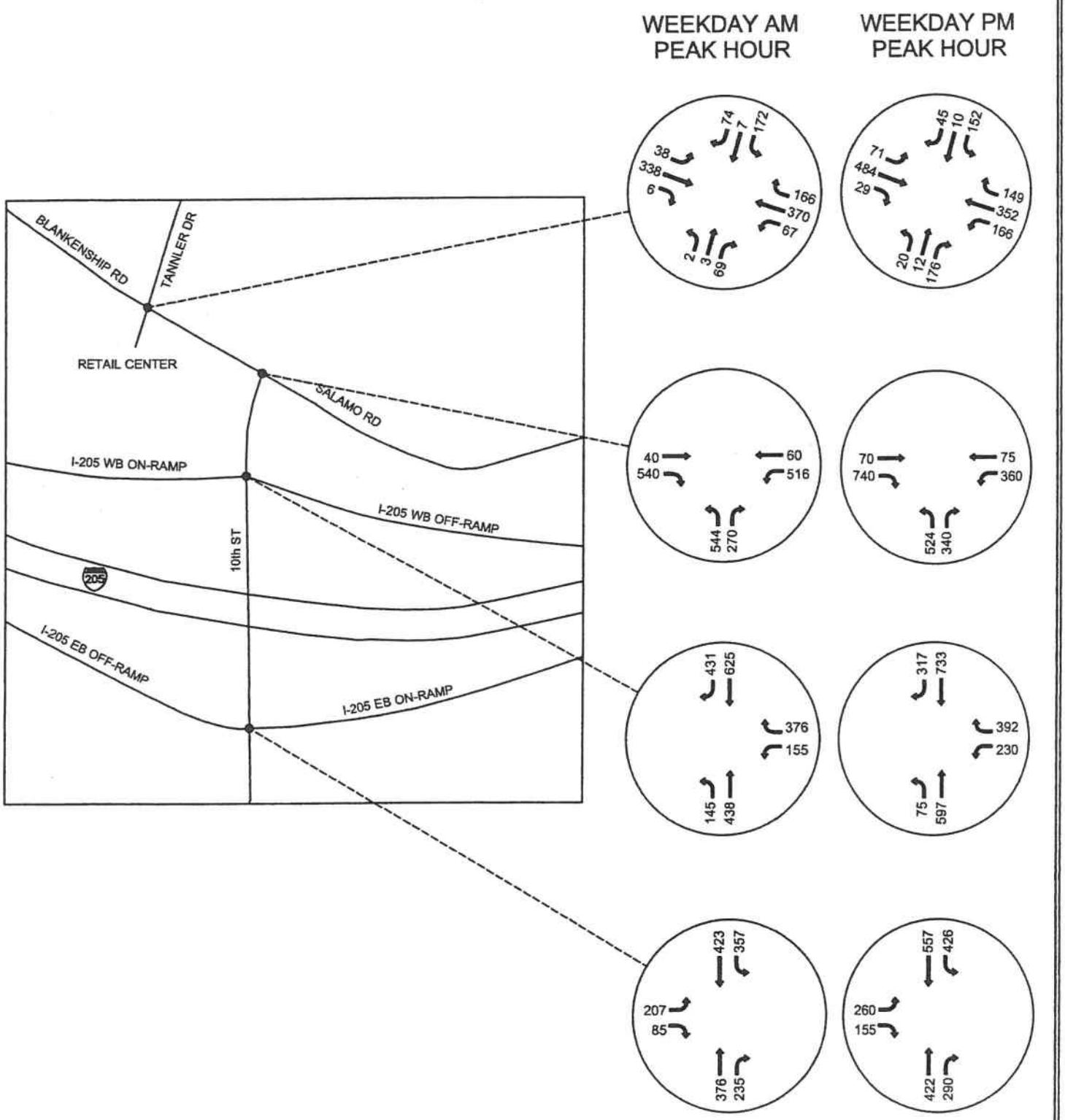

LEGEND	YEAR 2006 BACKGROUND TRAFFIC VOLUMES (WITH TANNLER EAST DEVELOPMENT)	FIGURE No.:
## = PEAK HOUR TRAFFIC VOLUME	DECEMBER, 2005	5

which they are determined are presented in Appendix "A." The second type of operations analysis was conducted using Simtraffic, which is a simulation-based program used to determine average vehicle delays and vehicle queuing at intersections. It is important to emphasize that the Synchro analysis results are based on isolated intersection conditions, and do not account for the interplay, or coordination between adjacent traffic signals, or the vehicle queuing effects that may impact nearby intersections. The Simtraffic analysis results do account for signal coordination and vehicle queuing impacts. Utilization of both types of analyses can provide useful insight into the resulting intersection operations.

To ensure that the analyses prepared for this study were based on reasonable "worst-case" conditions, the peak 15-minute flow rates during the weekday a.m. and p.m. peak hours were used in the evaluation of all intersection operational levels of service. For this reason, all analyses reflect conditions that are only likely to occur for peak fifteen minutes out of each peak hour. The traffic conditions during all other weekday hours will likely operate under better conditions than those described in this report. Additionally, the signal timing and coordination parameters for each study intersection were adjusted in each analysis scenario to optimize traffic flow operations and to minimize vehicle queues.

For signalized intersections, such as those along 10th Street at Blankenship Road, the I-205 westbound ramps, and the I-205 eastbound ramps, operational performance is measured by two variables: level of service (LOS) and the volume-to-capacity (v/c) ratio. LOS is based on a measurement of average control delay per vehicle, while the v/c ratio is a measurement of the intersection capacity utilization. Although the City of West Linn TSP indicates a LOS D or better is generally desirable during the peak hour for signalized intersections, ODOT has an overriding policy to maintain a v/c ratio of 0.99 or less during the peak hours at the signalized study intersections along 10th Street. At unsignalized intersections, the City discourages a LOS F result for the critical movement or approach, particularly when the v/c ratio exceeds 1.0.

Intersection Operations Analysis Results (No Tannler East Development)

Tables 2 and 3 summarize the operations analysis results for the four study intersections under year 2006 background conditions during the respective weekday a.m. and p.m. peak hours, and without the Tannler East development in place. *Appendix "B" includes the analysis worksheets for year 2006 background traffic conditions without the Tannler East development.*

TABLE 2
YEAR 2006 BACKGROUND OPERATIONS ANALYSIS RESULTS
(WEEKDAY AM PEAK HOUR, NO TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.5	1.1	11.4	>50	12.1	0.81
	SimTraffic*	4.6	1.0	22.1	>50	14.4	N/A
Blankenship/10th	HCM	21.7	71.2	4.1	-	30.0	0.68
	SimTraffic*	23.2	>80	7.4	-	38.3	N/A
I-205 WB Ramps/10th	HCM	-	52.1	48.9	13.8	32.2	0.53
	SimTraffic*	-	28.7	41.4	11.2	23.2	N/A
I-205 EB Ramps/10th	HCM	26.7	-	9.6	3.6	9.5	0.51
	SimTraffic*	23.0	-	11.3	7.0	11.3	N/A

Notes: N/A = results not available

*- SimTraffic analysis results reported as averages from 10 iterations during the peak hour. The full performance report is provided in the appendix for the average conditions of the 10 runs.

**- For unsignalized intersections, v/c ratio reflects critical movement/approach. For signalized intersections, v/c ratio reflects the combination of all critical movements.

As illustrated in Table 2, during the background weekday a.m. peak hour, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. However, the westbound approach of the Blankenship Road/10th Street intersection operates with an average delay over 80 seconds, which is representative of a LOS F for this approach. Also, the southbound approach at the

unsignalized Blankenship Road/Tannler Drive intersection operates with an average delay over 50 seconds, which is representative of a LOS F for this approach.

TABLE 3
YEAR 2006 BACKGROUND OPERATIONS ANALYSIS RESULTS
(WEEKDAY PM PEAK HOUR, NO TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.8	2.7	20.8	>50	48.4	1.94
	SimTraffic*	7.5	4.5	>50	>50	>50	N/A
Blankenship/10th	HCM	21.0	49.6	2.5	-	18.7	0.67
	SimTraffic*	20.7	50.7	5.8	-	19.4	N/A
I-205 WB Ramps/10th	HCM	-	58.5	43.7	17.3	36.5	0.64
	SimTraffic*	-	47.1	35.6	13.1	29.0	N/A
I-205 EB Ramps/10th	HCM	25.5	-	14.1	4.8	12.1	0.61
	SimTraffic*	30.0	-	21.3	8.6	17.2	N/A

Note: The same notes from Table 2 apply.

As illustrated in Table 3, during the background weekday p.m. peak hour, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. However, both the northbound and southbound approaches at the unsignalized Blankenship Road/Tannler Drive intersection operate with an average delay over 50 seconds, which is representative of a LOS F for both approaches. Also, the southbound approach of Tannler Drive operates with a v/c ratio over 1.0.

Intersection Operations Analysis Results (With Tannler East Development)

Tables 4 and 5 summarize the operations analysis results for the four study intersections under year 2006 background conditions during the respective weekday a.m. and p.m. peak hours, and with the Tannler East development in place. *Appendix "C" includes the analysis worksheets for year 2006 background traffic conditions with the Tannler East development.*

TABLE 4
YEAR 2006 BACKGROUND OPERATIONS ANALYSIS RESULTS
(WEEKDAY AM PEAK HOUR, WITH TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.9	0.9	11.9	>50	25.3	1.15
	SimTraffic*	6.9	1.4	29.3	>50	43.3	N/A
Blankenship/10th	HCM	29.8	73.0	5.0	-	32.2	0.74
	SimTraffic*	28.3	>80	9.4	-	46.2	N/A
I-205 WB Ramps/10th	HCM	-	52.1	51.0	13.0	32.8	0.59
	SimTraffic*	-	37.1	48.6	10.5	27.7	N/A
I-205 EB Ramps/10th	HCM	25.1	-	12.2	5.9	11.5	0.59
	SimTraffic*	74.8	-	22.0	9.4	25.8	N/A

Note: The same notes from Table 2 apply.

As illustrated in Table 4, during the background weekday p.m. peak hour, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. However, the westbound approach at the Blankenship Road/10th Street intersection operates with an average delay over 80 seconds, which is representative of a LOS F for this approach. At the unsignalized Blankenship Road/Tannler Drive intersection, the southbound approach operates with an average delay over 50 seconds, which is representative of a LOS F. The v/c ratio for this same approach is also over 1.0.

TABLE 5
YEAR 2006 BACKGROUND OPERATIONS ANALYSIS RESULTS
(WEEKDAY PM PEAK HOUR, WITH TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	1.1	2.3	24.6	**>50.0**	**>50.0**	**3.57**
	SimTraffic*	7.9	3.0	**>50.0**	**>50.0**	**>50.0**	N/A
Blankenship/10th	HCM	22.6	79.3	3.0	-	26.3	0.78
	SimTraffic*	20.8	**>80.0**	6.2	-	32.5	N/A
I-205 WB Ramps/10th	HCM	-	58.1	49.8	15.8	36.8	0.71
	SimTraffic*	-	52.8	36.2	12.5	30.1	N/A
I-205 EB Ramps/10th	HCM	29.3	-	16.9	6.4	14.5	0.72
	SimTraffic*	58.1	-	37.6	9.8	28.9	N/A

Note: The same notes from Table 2 apply.

As illustrated in Table 5, during the background weekday p.m. peak hour, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. However, the westbound approach at the Blankenship Road/10th Street intersection operates with an average delay over 80 seconds, which is representative of a LOS F for this approach. Both the northbound and southbound approaches at the unsignalized Blankenship Road/Tannler Drive intersection operate with an average delay over 50 seconds, which is representative of a LOS F for both approaches. Also, the southbound approach at this intersection operates with a v/c ratio over 1.0.

Potential Mitigation Measures for Blankenship Road/Tannler Drive Intersection

Based on the findings presented in Tables 2 through 5, it appears some sort of treatment is needed to mitigate the adverse operating conditions forecasted for the Blankenship Road/Tannler Drive intersection during the weekday a.m. and p.m. peak hours, regardless of whether or not the Tannler East project is developed. Because the independent review prepared by DKS Associates of the traffic impact study for the Tannler East development resulted in a recommendation against signalization of the Blankenship Road/Tannler Drive intersection, other potential treatments besides signalization are evaluated in the following paragraphs.

One low-cost and potentially feasible alternative would be to restrict movements at the Blakenship Road/Tannler Drive intersection to right-in/right-out/left-in (RIROLI) through the construction of a raised median along Blankenship Road. A figure illustrating this concept is shown in Figure 6. As shown in the figure, such a treatment would restrict only the southbound left-turn movement from Tannler Drive and the northbound left-turn movement from the retail center driveway, which are the primary movements for which vehicle delays become excessive during the weekday a.m. and p.m. peak hours.

Further analysis has been conducted to demonstrate that the raised median concept for the Blankenship Road/Tannler Drive intersection would allow the unrestricted movements at this intersection to function at LOS B or better during the year 2006 background weekday a.m. and p.m. peak hours, which translates into average vehicle delays of below 15 seconds. *Appendix "D" provides the analysis worksheets for the year 2006 background traffic conditions with the proposed median treatment in place.* It should be emphasized here that analysis results contained in the appendix account for the *Tannler East development* and the redirection of left-turning traffic that would result due to the impacts of the raised median. To explain it more clearly, all southbound left-turn movements from Tannler Drive onto Blankenship Road were rerouted to the westbound left-turn movement from Salamo Road onto 10th Street to reflect the redistribution of traffic onto alternative routes connecting Tannler Drive with Salamo Road (i.e. Bland Circle, Remington Drive, Haskins Road, Greene Street, and, potentially, a street connection within the Tannler East development). Additionally, all left-turn movements out of the retail center driveway on the northbound approach were redirected to the adjacent Albertson's driveway to the west.

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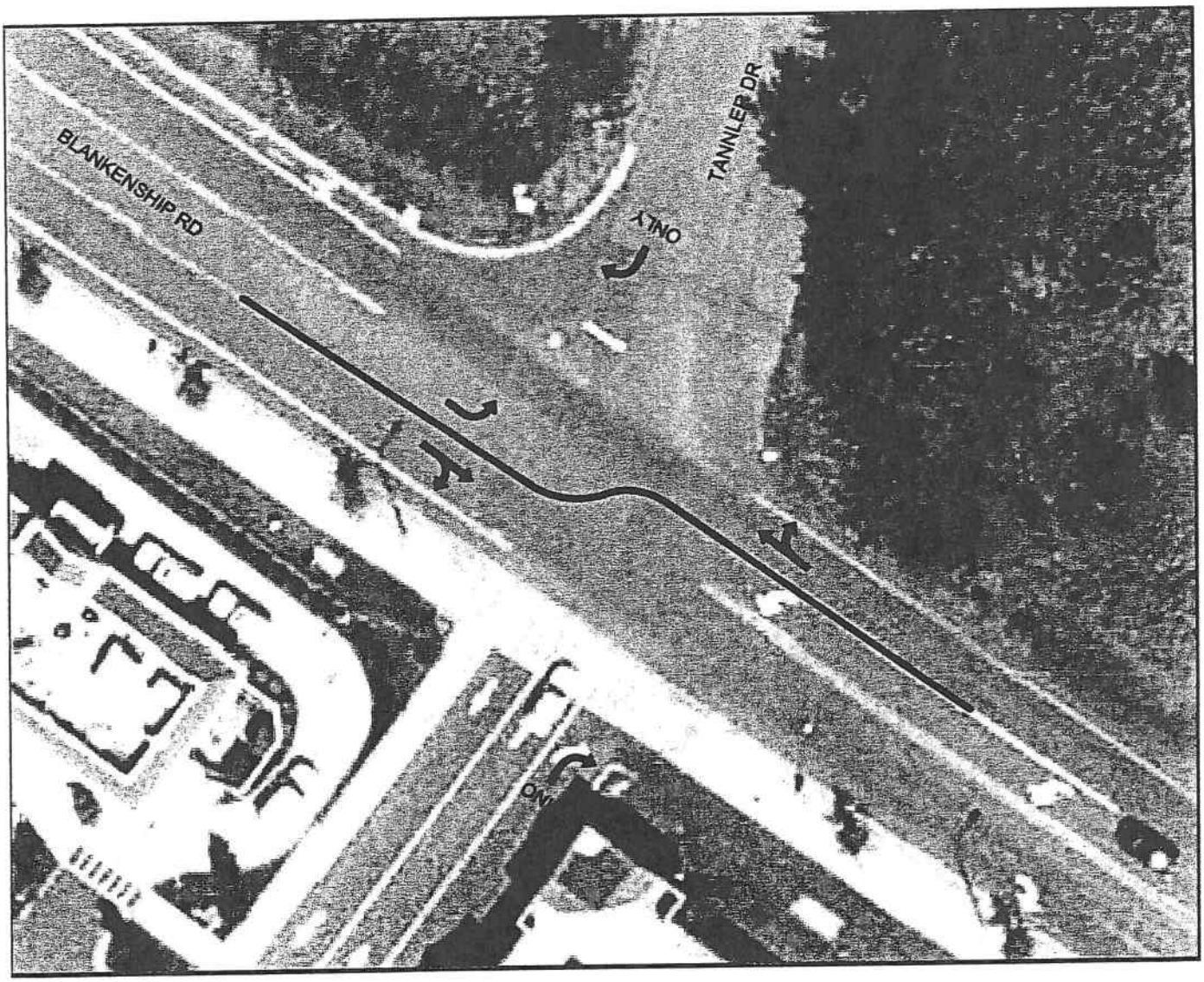

LEGEND	PROPOSED MITIGATION TREATMENT FOR BLANKENSHIP/TANNLER INTERSECTION	FIGURE No.:
= RAISED CONCRETE MEDIAN	DECEMBER, 2005	6

A second improvement alternative now being considered by staff from the City of West Linn, in association with the Tannler East development, would be to realign Tannler Drive to intersect Blankenship Road/Salamo Road, directly across from 10th Street to create a four-way signalized intersection. Based on observations made in the field, such an alternative does not appear to be feasible given the steep topography of the hillside immediately north of the Blankenship Road/10th Street intersection. Additionally, such a project is not consistent with the City TSP and the improvements planned for the I-205/10th Street interchange. Implementation of this improvement would require an update to the City's TSP. Although this improvement alternative may be addressed as a possible solution for the Tannler East development, it cannot be considered as a feasible solution in relation to the proposed Tamarisk PUD development. This is because the improvement cost would be prohibitively expensive, plus the Tammarisk PUD developer does not have the ability to acquire the necessary right-of-way for a new Tannler Drive alignment. For these reasons, this improvement was not evaluated as an alternative for this study.

Potential Improvement Measure for Blankenship Road/10th Street Intersection

Although overall traffic operations at the Blankenship Road/10th Street intersection are acceptable under background conditions, based on ODOT's v/c ratio standard of 0.99 or less during peak travel hours, a potential project has been identified to improve traffic conditions for the westbound left-turn movement, which has been shown to operate with average delays over 80 seconds (LOS F) during the background weekday peak hour analysis periods. The potential project would include modifying the traffic signal phasing, lane striping, and pedestrian crossings, to allow for the outside through travel lane on the westbound approach of Salamo Road to operate as a shared left-through lane. With two receiving lanes on the south leg of the intersection, two westbound left-turn lane movements can be established on the westbound approach. With this treatment established, vehicles destined for the I-205 westbound on-ramp can use the shared left-through turn lane while vehicles destined for the south side of the I-205 interchange can use the exclusive left-turn lane that exists today. This improvement would utilize much of the capacity that goes unused in the outside through travel lane.

Further analysis has been conducted to demonstrate that the potential left-turn lane improvement identified for this intersection has the ability to dramatically reduce average vehicle delays on the westbound approach, while allowing all other movements at this and all adjacent intersections to continue operating adequately. For example, revised HCM and Simtraffic analysis results show average vehicle delays at or below 48 seconds on the westbound approach of Salamo Road during the weekday a.m. peak hour, which translates into a LOS D. For the weekday p.m. peak hour, the same approach is shown to operate with vehicle delays at or below 72 seconds, which translates into a LOS E. *Appendix "D" also provides the analysis worksheets for the year 2006 background traffic conditions with the potential left-turn lane treatment in place.* It should also be emphasized again that analysis results contained in this appendix also account for the *Tannler East development* and the redirection of traffic by the potential raised median at the Blankenship Road/Tannler Drive intersection.

PROPOSED SITE DEVELOPMENT PLAN

The proposed development will consist of the construction of up to 40 single-family homes. As shown in the proposed site plan in Figure 2, all the homes within the development will have direct access to Tamarisk Drive. A stubbed street connection will also be provided along the northern site boundary for a future extension once the area north of the site is incorporated into the city limits and urban growth boundary. The proposed development will occur in phases with construction beginning in 2006.

Site Trip Generation and Distribution

Estimates for the average daily, weekday a.m., and weekday p.m. peak hour vehicle trip ends for the proposed site development were derived from empirical observations at other similar developments. These observations are summarized in the standard reference manual, *Trip Generation, 7th Edition*, published by the Institute of Transportation Engineers (Reference 6).

Table 6 summarizes the estimated site trip generation during a typical weekday as well as during the weekday a.m. and p.m. peak hours for the proposed development. As shown in Table 3, the proposed site development will generate approximately 383 daily trips, with 30 trips occurring during the weekday a.m. peak hour and 40 trips occurring during the weekday p.m. peak hour.

TABLE 6
TRIP GENERATION ESTIMATE

Land Use	ITE Code	Size	Average Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Single Family Homes	210	40 units	383	30	8	22	40	25	15

The distribution of site-generated trips onto the study area roadways was determined using professional judgment and based on the location of the site relative to the major trip attractions in the area and the location of existing *Collector* and *Arterial* routes leading into and out of the City of West Linn. Figure 7 illustrates the resulting estimated trip distribution pattern, with the assignment of site-generated traffic volumes for the weekday a.m. and p.m. peak hours shown in Figure 8. As shown in Figure 7, 90 percent of the site-generated traffic is expected to travel to/from the southeast along Blankenship Road towards the I-205 interchange with 10th Street, with the remaining 10 percent utilizing other routes leading to the northeast and southwest.

YEAR 2006 TOTAL TRAFFIC CONDITIONS

The year 2006 total traffic conditions analysis forecasts how the study area's transportation system will operate with the inclusion of traffic from the proposed development, and includes an assessment of traffic operations and vehicle queuing needs at the study intersections during the weekday a.m. and p.m. peak hours.

Traffic Volumes

The future year 2006 background traffic volumes for the weekday a.m. and p.m. peak hours shown in Figures 4 and 5, for conditions without and with the Tannler East development, were added to the weekday a.m. and p.m. peak hour site-generated traffic volumes shown in Figure 8 to arrive at the year 2006 total traffic volumes as shown in Figures 9 and 10, for conditions without and with the Tannler East development, respectively.

Intersection Operations Analysis Results (No Tannler East Development)

Tables 7 and 8 summarize the operations analysis results for the four study intersections under year 2006 total traffic conditions during the respective weekday a.m. and p.m. peak hours, and without the Tannler East development in place. *Appendix "E" includes the analysis worksheets for year 2006 total traffic conditions without the Tannler East development.*

TABLE 7
YEAR 2006 TOTAL OPERATIONS ANALYSIS RESULTS
(WEEKDAY AM PEAK HOUR, NO TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.5	1.1	11.9	**>50.0**	15.1	0.91
	SimTraffic*	6.5	1.2	35.2	**>50.0**	43.6	N/A
Blankenship/10th	HCM	22.2	70.9	4.3	-	29.8	0.71
	SimTraffic*	25.1	**>80.0**	7.9	-	40.4	N/A
I-205 WB Ramps/10th	HCM	-	52.1	49.6	14.7	32.6	0.54
	SimTraffic*	-	29.7	43.8	11.3	24.1	N/A
I-205 EB Ramps/10th	HCM	27.2	-	9.6	5.1	10.3	0.54
	SimTraffic*	22.1	-	11.0	6.9	10.9	N/A

Note: The same notes from Table 2 apply.

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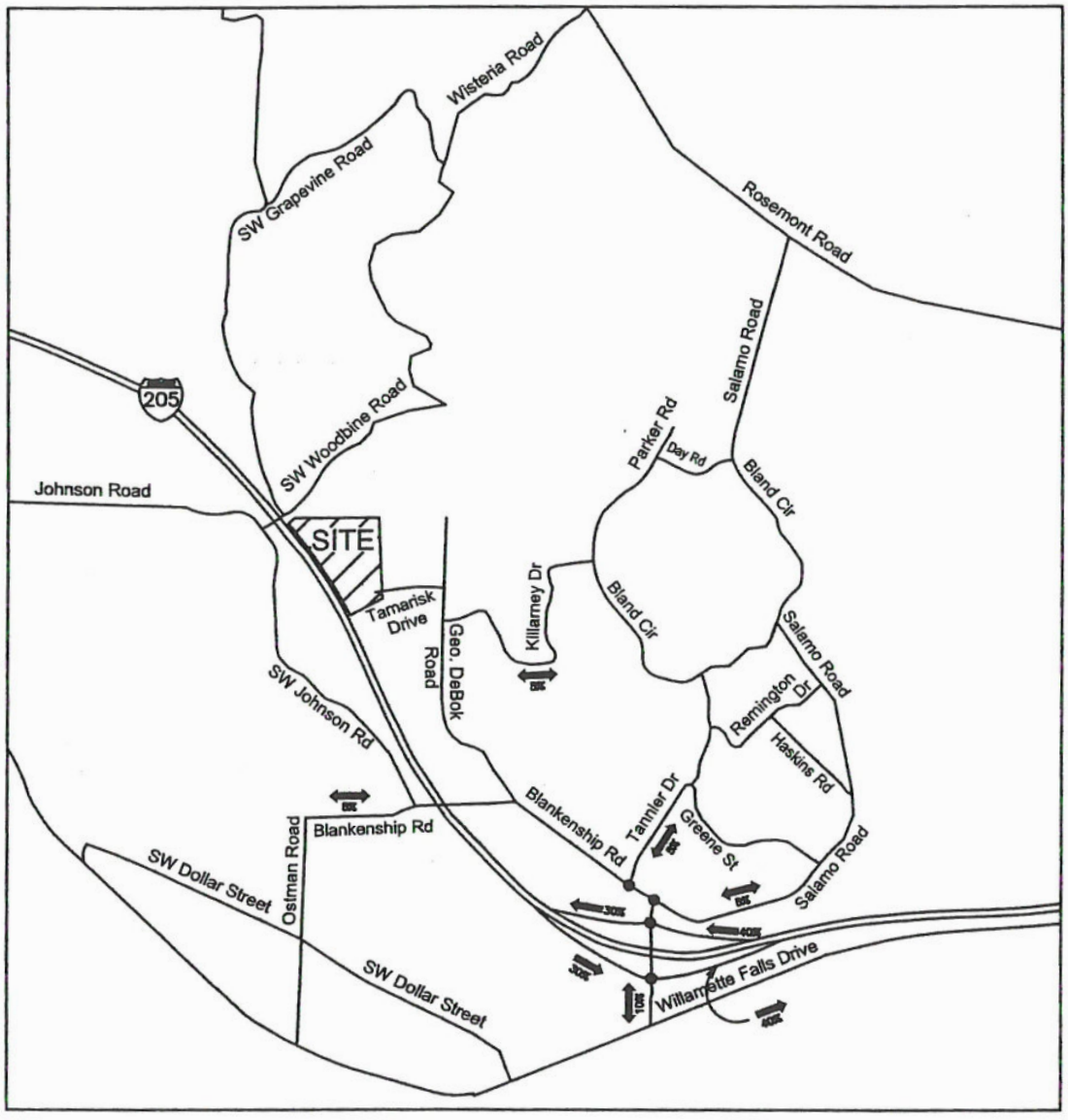

LEGEND	ESTIMATED TRIP DISTRIBUTION PATTERNS	FIGURE No.:
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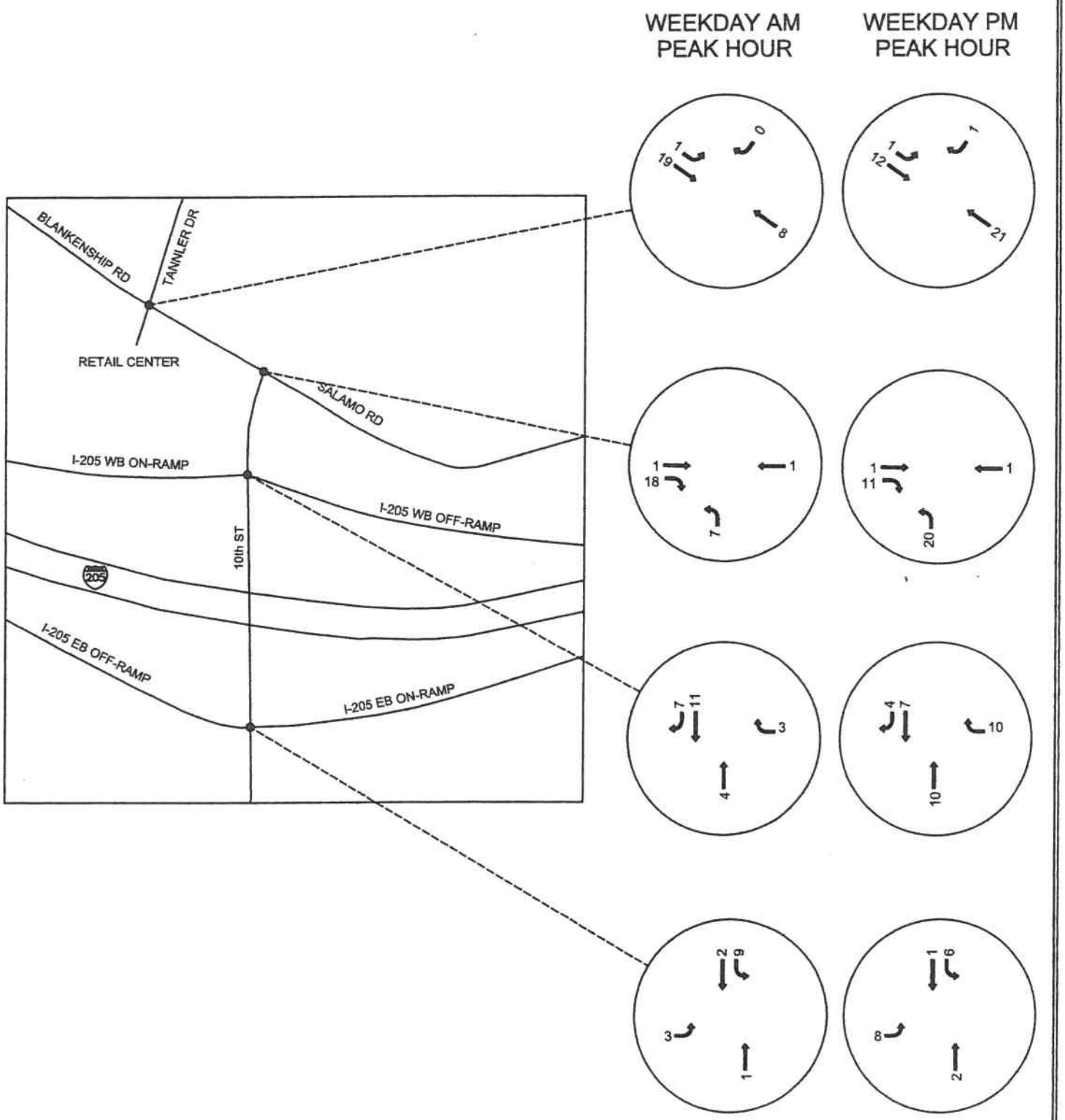
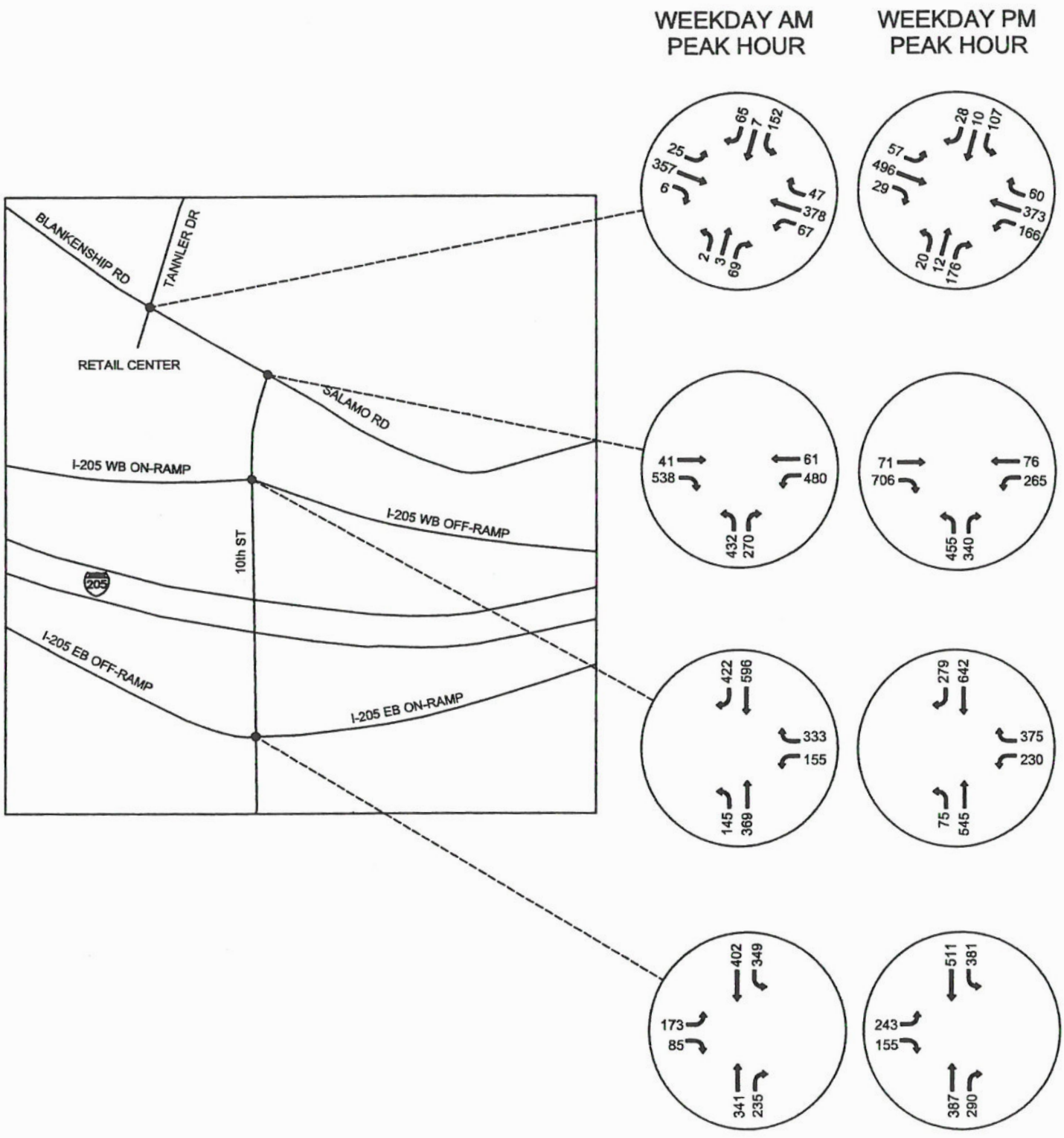


LEGEND	SITE-GENERATED TRAFFIC VOLUMES	FIGURE No.:
## = PEAK HOUR TRAFFIC VOLUME	DECEMBER, 2005	8

dunn TRAFFIC ENGINEERING

N
(NO SCALE)

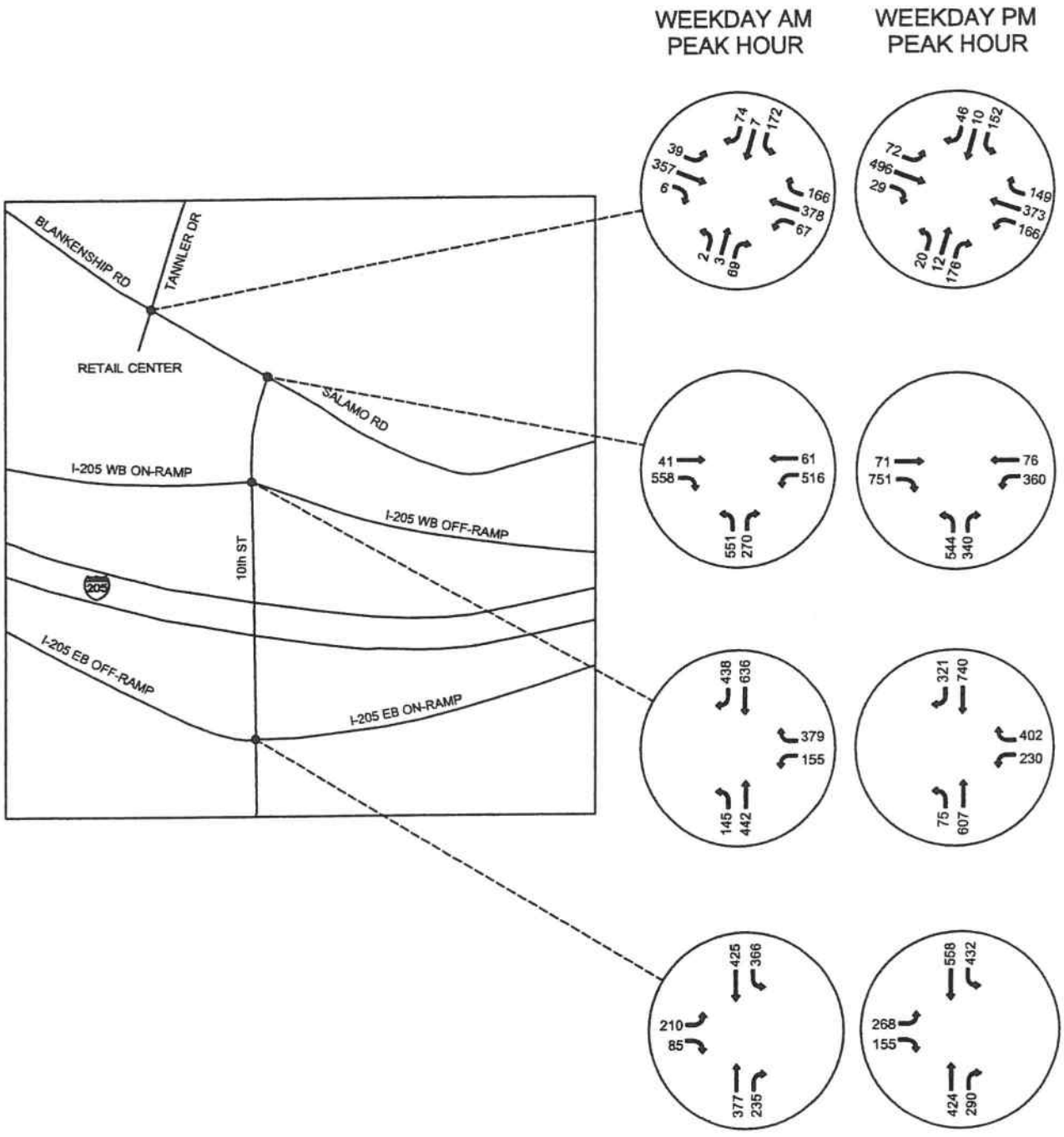


LEGEND	YEAR 2006 TOTAL TRAFFIC VOLUMES (WITHOUT TANNLER EAST DEVELOPMENT)	FIGURE No.:
## = PEAK HOUR TRAFFIC VOLUME	DECEMBER, 2005	9

Dunn TRAFFIC ENGINEERING

N

(NO SCALE)



LEGEND	YEAR 2006 TOTAL TRAFFIC VOLUMES (WITH TANNLER EAST DEVELOPMENT) DECEMBER, 2005	FIGURE No.:
## = PEAK HOUR TRAFFIC VOLUME		10

The weekday a.m. peak hour total traffic operations analysis results shown in Table 7 are similar to the results shown in Table 2 for the background conditions. As shown, all the signalized study intersections along 10th Street continue to operate adequately with v/c ratios below 0.99. The westbound approach of the Blankenship Road/10th Street intersection also continues to operate with an average delay over 80 seconds, which is representative of a LOS F for this approach. The southbound approach at the unsignalized Blankenship Road/Tannler Drive intersection continues to operate with an average delay over 50 seconds, which is representative of a LOS F for this approach.

TABLE 8
YEAR 2006 TOTAL OPERATIONS ANALYSIS RESULTS
(WEEKDAY PM PEAK HOUR, NO TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.8	2.6	23.2	>50.0	>50.0	2.31
	SimTraffic*	7.6	3.6	>50.0	>50.0	>50.0	N/A
Blankenship/10th	HCM	21.8	49.4	2.8	-	18.8	0.69
	SimTraffic*	20.4	50.9	5.9	-	19.0	N/A
I-205 WB Ramps/10th	HCM	-	58.3	46.0	17.4	37.2	0.65
	SimTraffic*	-	48.7	35.1	12.9	29.3	N/A
I-205 EB Ramps/10th	HCM	24.9	-	15.0	6.2	13.0	0.64
	SimTraffic*	33.1	-	25.8	8.7	19.8	N/A

Note: The same notes from Table 2 apply.

The weekday p.m. peak hour total traffic operations analysis results shown in Table 8 are similar to the results shown in Table 3 for the background conditions. As shown, all the signalized study intersections along 10th Street continue to operate adequately with v/c ratios below 0.99. Both the northbound and southbound approaches at the unsignalized Blankenship Road/Tannler Drive intersection also continue to operate with an average delay over 50 seconds, which is representative of a LOS F for both approaches. The southbound approach of Tannler Drive continues to operate with a v/c ratio over 1.0.

Intersection Operations Analysis Results (With Tannler East Development)

Tables 9 and 10 summarize the operations analysis results for the four study intersections under year 2006 total conditions during the respective weekday a.m. and p.m. peak hours, and with the Tannler East development in place. *Appendix "F" includes the analysis worksheets for year 2006 background traffic conditions with the Tannler East development.*

TABLE 9
YEAR 2006 TOTAL OPERATIONS ANALYSIS RESULTS
(WEEKDAY AM PEAK HOUR, WITH TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	0.8	0.9	12.2	>50.0	28.2	1.22
	SimTraffic*	6.5	1.5	43.9	>50.0	>50.0	N/A
Blankenship/10th	HCM	30.7	73.0	5.0	-	32.3	0.75
	SimTraffic*	28.5	>80.0	9.1	-	42.5	N/A
I-205 WB Ramps/10th	HCM	-	52.2	51.3	13.1	32.8	0.59
	SimTraffic*	-	40.0	46.5	11.2	28.0	N/A
I-205 EB Ramps/10th	HCM	25.4	-	12.2	6.4	11.8	0.60
	SimTraffic*	23.7	-	14.0	8.4	13.1	N/A

Note: The same notes from Table 2 apply.

The weekday a.m. peak hour total traffic operations analysis results shown in Table 9 are similar to the results shown in Table 4 for the background conditions. As shown, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. The westbound approach at the Blankenship Road/10th Street intersection continues to operate with an average delay over 80 seconds, which is representative of a LOS F for this approach. At the unsignalized Blankenship Road/Tannler Drive intersection, the southbound approach continues to operate with an average delay over 50 seconds, which is representative of a LOS F. The v/c ratio for this same approach continues to be over 1.0.

TABLE 10
YEAR 2006 TOTAL OPERATIONS ANALYSIS RESULTS
(WEEKDAY PM PEAK HOUR, WITH TANNLER EAST DEVELOPMENT)

Intersection	Analysis Method	EB Approach Delay (seconds)	WB Approach Delay (seconds)	NB Approach Delay (seconds)	SB Approach Delay (seconds)	Delay for All Movements (seconds)	V/C Ratio**
Blankenship/Tannler	HCM	1.1	2.2	26.1	>50.0	>50.0	3.86
	SimTraffic*	7.3	2.9	>50.0	>50.0	>50.0	N/A
Blankenship/10th	HCM	23.1	79.2	3.1	-	26.2	0.79
	SimTraffic*	20.0	>80.0	6.6	-	29.4	N/A
I-205 WB Ramps/10th	HCM	-	58.0	52.5	15.9	37.6	0.72
	SimTraffic*	-	55.2	38.7	12.7	32.0	N/A
I-205 EB Ramps/10th	HCM	25.9	-	18.9	7.4	15.0	0.73
	SimTraffic*	47.4	-	47.2	10.5	30.8	N/A

Note: The same notes from Table 2 apply.

The weekday p.m. peak hour total traffic operations analysis results shown in Table 10 are similar to the results shown in Table 5 for the background conditions. As shown, all the signalized study intersections along 10th Street operate adequately with v/c ratios below 0.99. The westbound approach at the Blankenship Road/10th Street intersection continues to operate with an average delay over 80 seconds, which is representative of a LOS F for this approach. Both the northbound and southbound approaches at the unsignalized Blankenship Road/Tannler Drive intersection also continue to operate with an average delay over 50 seconds, which is representative of a LOS F for both approaches. Also, the southbound approach at this intersection continues to operate with a v/c ratio over 1.0.

Potential Mitigation Measures for Blankenship Road/Tannler Drive Intersection

Further analysis has been conducted to demonstrate that the raised median concept for the Blankenship Road/Tannler Drive intersection would allow the unrestricted movements at this intersection to function acceptably at LOS B or better during the weekday a.m. peak hour and LOS E or better during the weekday p.m. peak hour. *Appendix "G" provides the analysis worksheets for the year 2006 total traffic conditions with the proposed median treatment in place.* It should be emphasized again that the analysis results contained in the appendix account for the *Tannler East development* and the redirection of left-turning traffic due to the raised median.

Potential Improvement Measure for Blankenship Road/10th Street Intersection

Although traffic operations at the Blankenship Road/10th Street intersection are acceptable under total traffic conditions, based on ODOT's v/c ratio standard of 0.99 or less during peak travel hours, further analysis has been conducted to determine the impacts of modifying the outside through travel lane on the westbound approach of Salamo Road to operate as a shared left-through lane. With this treatment established, the revised HCM and Simtraffic analysis results show average vehicle delays below 48 seconds on the westbound approach of Salamo Road during the weekday a.m. peak hour, which translates into a LOS D. For the weekday p.m. peak hour, the same approach is shown to operate with vehicle delays at or below 67 seconds, which translates into a LOS E. *Appendix "G" also provides the analysis worksheets for the year 2006 total traffic conditions with the potential left-turn lane treatment in*

place. It should also be emphasized again that analysis results contained in this appendix also account for the *Tannler East development* and the redirection of traffic by the potential raised median at the Blankenship Road/Tannler Drive intersection.

Vehicle Queuing

A vehicle queuing analysis was conducted for key movements at the four study intersections under year 2006 background and total traffic conditions, both without and with traffic related to the Tannler East development. For the queuing analysis, a 95th-percentile vehicle queue length was determined using the output from the SimTraffic program.

Queuing Results Without Tannler East Development

Table 11 summarizes the vehicle queuing analysis results under year 2006 background and total traffic conditions during the respective weekday a.m. and p.m. peak hours, without the Tannler East development in place. *Appendices "B" and "E" contain the queuing analysis worksheets for the respective year 2006 background and total traffic conditions without the Tannler East development.*

TABLE 11
VEHICLE QUEUING ANALYSIS RESULTS
(NO TANNLER EAST DEVELOPMENT)

Intersection	Weekday AM Peak Hour		Weekday PM Peak Hour		Storage Available
	Background	Total	Background	Total	
Blankenship/Tannler					
EB TH	106*	139*	204*	201*	Cont.
SB LT	162	194	181	182	125**
SB TR	235	561	523	502	Cont.
Blankenship/10th					
EB TH	256	253	250	255	230
EB RT	149	155	143	141	150
WB LT	207	199	218	219	165
WB TH	535***	541***	322***	335***	Cont.
NB LT	144	150	137	147	100
I-205 WB Ramps/10th					
WB LT	190	191	394	453	Cont. (>800)
WB RT	140	152	257	278	300
NB LT	181	191	155	149	200
NB TH	270	268	258	258	Cont. (450)
I-205 EB Ramps/10th					
EB LT	157	140	255	332	Cont. (>800)
EB RT	88	84	133	142	110
SB LT	152	149	205	208	200

Notes: LT = left turn, TH = through, RT = right turn, TR = through-right turn, Cont. = continuous lane storage

All SimTraffic queuing analysis results are reported as averages from 10 iterations during the peak hour. The full performance report is provided in the appendix for the average conditions of the 10 runs.

*- The vehicle queues present on this free-flowing approach are due to the backup of vehicles at the Blankenship/10th intersection.

**- The assumed storage length of 125 feet was derived from the recommendations of the traffic impact study for the Tannler East development.

***- Insufficient storage exists for the westbound left-turn lane, resulting in spillback of vehicles into the westbound through lane.

As demonstrated in Table 11, most movements at the study intersections have sufficient lane storage to accommodate projected vehicle queues. There are, however, four specific locations where vehicle queues will exceed available lane storage by a significant margin. One location is on the southbound approach to the Blankenship Road/Tannler Drive intersection where left-turn demand will far exceed the assumed lane storage of 125 feet. Because weekday a.m. and p.m. peak hour delays are so excessive on this stop-controlled approach, no practical amount of left-turn lane storage can be provided to allow right-turning vehicles to pass by unimpeded. At the Blankenship Road/10th Street intersection, vehicle

queues on the eastbound approach of Blankenship Road will extend back to and beyond the adjacent Blankenship Road/Tannler Drive intersection, which is approximately 230 feet away. At the same intersection, vehicle queues within the westbound left-turn lane on the Salamo Road approach will far exceed the available lane storage of 165 feet. As seen from the amount of spillback into the westbound through lane, a much longer storage length would be needed to allow westbound through vehicles to pass by unimpeded. However, this may not be practical because a significant portion of the traffic demand on the westbound approach consists of left-turn maneuvers. Extending the left-turn lane storage would do nothing to significantly enhance intersection operations, particularly for the westbound approach. Again, at the same intersection, vehicle queues within the northbound left-turn lane are expected to exceed the lane storage of 100 feet. Under current conditions, the lane storage cannot be increased beyond 100 feet because the intersection is immediately adjacent to the signalized intersection between the I-205 westbound ramp terminals and 10th Street.

Adequate lane storage will be available on each of the I-205 off-ramp terminals accessing 10th Street. As shown in Table 11, vehicle queues will not exceed available storage within the left- or right-turn lanes on the westbound off-ramp terminal. At the eastbound off-ramp terminal, vehicle queues in the right-turn lane will slightly exceed available storage during the weekday p.m. peak hour of both the background and total traffic conditions. Although ODOT prefers that vehicle queues not exceed available storage, the residual spillback of cars into the continuous approach lane equates to approximately one vehicle (32 feet maximum). This is not significant enough to affect the overall operations of the intersection or extend vehicle queues into the deceleration section of the freeway off-ramp.

Queuing Results With Tannler East Development

Table 12 summarizes the vehicle queuing analysis results for the four study intersections under year 2006 background and total traffic conditions during the respective weekday a.m. and p.m. peak hours, with the Tannler East development in place. *Appendices "C" and "F" contain the queuing analysis worksheets for the respective year 2006 background and total traffic conditions with the Tannler East development.*

TABLE 12
VEHICLE QUEUING ANALYSIS RESULTS
(WITH TANNLER EAST DEVELOPMENT)

Intersection	Weekday AM Peak Hour		Weekday PM Peak Hour		Storage Available
	Background	Total	Background	Total	
Blankenship/Tannler					
EB TH	148*	144*	217*	188*	Cont.
SB LT	182	176	160	160	125**
SB TR	537	560	507	459	Cont.
Blankenship/10th					
EB TH	249	209	243	242	230
EB RT	147	139	141	139	150
WB LT	200	194	209	211	165
WB TH	528***	509***	555***	548***	Cont.
NB LT	153	157	154	156	100
I-205 WB Ramps/10th					
WB LT	229	233	429	501	Cont. (>800)
WB RT	221	282	317	343	300
NB LT	190	181	164	152	200
NB TH	257	265	260	254	Cont. (450)
I-205 EB Ramps/10th					
EB LT	515	183	460	387	Cont. (>800)
EB RT	133	84	168	162	110
SB LT	205	188	237	246	200

Notes: LT = left turn, TH = through, RT = right turn, TR = through-right turn, Cont. = continuous lane storage

All SimTraffic queuing analysis results are reported as averages from 10 iterations during the peak hour. The full performance report is provided in the appendix for the average conditions of the 10 runs.

*- The vehicle queues present on this free-flowing approach are due to the backup of vehicles at the Blankenship/10th intersection.

**- The assumed storage length of 125 feet was derived from the recommendations of the traffic impact study for the Tannler East development.

***- Insufficient storage exists for the westbound left-turn lane, resulting in spillback of vehicles into the westbound through lane.

As demonstrated in Table 12, most movements at the study intersections continue to have sufficient lane storage to accommodate projected vehicle queues, even with the establishment of the Tannler East development. The same issues discussed previously regarding individual locations where vehicle queues will exceed available lane storage, still apply.

Even with the inclusion of traffic from Tannler East development, adequate lane storage will be available on each of the I-205 off-ramp terminals accessing 10th Street. As shown in Table 12, vehicle queues in the right-turn lane on the westbound off-ramp terminal will slightly exceed available storage during the weekday p.m. peak hour of both the background and total traffic conditions. The residual spillback of cars into the continuous approach lane equates to approximately two vehicles (43 feet maximum). This is not significant enough to affect overall operations of the intersection and would not result in vehicle queues extending into the deceleration section of the freeway off-ramp. The same condition applies for the right-turn lane on the eastbound off-ramp terminal where vehicle queues will slightly exceed available storage by approximately two vehicles (58 feet maximum). Again, this is not significant enough to affect overall operations of the intersection or safety on the freeway off-ramp.

SITE CIRCULATION AND STREET CONNECTIVITY

As part of this study, the proposed site plan has been refined to meet the needs of pedestrians and drivers, in terms of providing an efficient internal circulation pattern and meaningful external access points designed to provide more direct pedestrian connections and to enhance the connectivity of the city street system.

Throughout the process to develop the development application, City staff have enquired about the possibility of making a direct *Local* street connection to Woodbine Road located in the northwest corner of the site. City staff have also made reference to a figure in the City's TSP showing such a *Local* street connection. Based on a review of the City's TSP, our understanding of the driving behavior of residents in the area, and the environmental data collected by OTAK (the civil engineering firm representing the applicant), a direct street connection to Woodbine Road from the development site is not practical for several reasons. First, OTAK has identified the presence of a wetland area that renders the extreme northwest corner of the site undevelopable. Second, the topography in the northwest corner is very steep with slopes averaging over 30 degrees. Lastly, from a transportation standpoint, there is no immediate need to make a street connection to Woodbine Road, as traffic demand between the neighborhoods in this area of West Linn and other attractions west or northwest of I-205 is not significant and is adequately accommodated by the existing Blankenship Road underpass under I-205 which provides convenient access to roads such Johnson Road and Woodbine Road. With all these factors considered, the proposed site plan has been refined to show a stubbed street ending in the northeast corner of the site. The alignment of this road and the location of the street stub were selected to follow the natural contours of the site, to avoid wetland areas, and to meet the intent of the street connectivity map presented in the City's TSP. The proposed street stub will make a future connection to Woodbine Road possible, but only when the areas north of the site are developed after they are brought into the urban growth boundary and incorporated into the city limits of West Linn.

CONCLUSIONS AND RECOMMENDATIONS

Based on the traffic analysis findings and potential improvements documented in this study, the proposed Tamarisk PUD development can occur without adversely affecting the traffic operations or safety at the four study intersections along Blankenship Road and 10th Street. Therefore, on behalf of the Applicant,

Dunn Traffic Engineering, LLC, is requesting that the City of West Linn approve the proposed development application and consider the following recommendations:

1. As a condition of approval for the Tamarisk PUD development, construct a non-traversable median along Blakenship Road designed to restrict movements at the Blankenship Road/Tannler Drive intersection to right-in/right-out/left-in only. This improvement would restrict all left- and straight through movements from the southbound approach of Tannler Drive and the northbound approach from the retail center driveway.

2. Independent of the proposed Tamarisk PUD development, the City should consider modifying the traffic signal phasing, signing, lane striping, and pedestrian crossings at the Blankenship Road/Salamo Road/10th Street intersection to create a second left-turn lane out of the existing through travel lane on the westbound approach of Salamo Road. Appropriate signage should also be provided on the westbound approach directing drivers to the outside left-turn lane if they are destined for the I-205 westbound on-ramp or directing drivers to the inside left-turn lane if they are destined for the south side of the I-205 interchange.

We trust that this report adequately addresses the requirements for traffic impact study for the proposed residential development. If you have any questions or comments regarding this study, please contact me at (503)-774-2669.

Sincerely,
DUNN TRAFFIC ENGINEERING, LLC

Brian J. Dunn, P.E.
Principal

Enclosure: Appendices "A" through "G"

References:

1. Lancaster Engineering. *The Parker Building Traffic Impact Study.* May 2004.
2. Lancaster Engineering. *Tannler East Development Traffic Impact Study.* July 2005.
   (Also includes supplemental traffic impact analysis dated August 24, 2005.)
3. DKS Associates Memorandum. *Tannler East Development/ West Linn Supplemental Review.* November 7, 2005.
4. DKS Associates. *West Linn Transportation System Plan Street Element, Final Report.* July 17, 2000.
5. Transportation Research Board. *Highway Capacity Manual, Special Report No. 209.* 2000.
6. Institute of Transportation Engineers. *ITE Trip Generation, 7th Edition.* 2003.

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APPENDIX A

LEVEL OF SERVICE CONCEPT

Level of service (LOS) is a quality measure describing operational conditions for drivers as they travel through an intersection or along a roadway segment. LOS is defined by such service measures as speed and travel time, freedom to maneuver, impediments caused by other vehicles, and comfort and convenience. Six LOS grades are used to denote the various levels of service, from A to F, with LOS A representing the best operating conditions and LOS F representing the worst.

Signalized Intersections

At signalized intersections, level of service is defined by the average control delay per vehicle. Average control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The following table presents the relationship between the six LOS grades and average control delay, plus a qualitative description of each level of service grade. The level of service thresholds acceptable to the specific reviewing jurisdiction(s) are described in the body of the report.

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay Per Vehicle (Seconds)[1]	Description of Conditions
A	≤10.0	Very low average control delay with extremely favorable traffic progression and most vehicles arriving during the green phase. Vehicles clear the intersection every signal cycle.
B	>10 and ≤20	Low average control delay with good progression, but more vehicles stop than for a level of service A condition, causing higher levels of average control delay. Operating speeds are beginning to be affected by other traffic.
C	>20 and ≤35	Higher delays from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping. Operating speeds and maneuverability are closely controlled by other traffic.
D	>35 and ≤55	The influence of traffic congestion is noticeable. There are longer delays resulting from some combination of unfavorable traffic progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are also noticeable, but operating speeds are tolerable.
E	>55 and ≤80	Very long traffic delays generally indicate poor progression, long cycle lengths, and/or high volume/capacity ratios. Individual cycle failures are frequent occurrences. Operating speeds are restricted and traffic flow has become unstable, meaning any interruptions will cause vehicle queues to form and operations to deteriorate to level of service F.
F	>80	Extreme delays resulting in conditions that are unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

1. The average control delay ranges presented in this table are from the Transportation Research Board, Highway Capacity Manual, (2000).

Unsignalized Intersections

Unsignalized intersections include two way stop controlled (TWSC) and all way stop controlled (AWSC) intersections. The 2000 Highway Capacity Manual provides models for estimating average control delay at both TWSC and AWSC intersections. Both quantitative and qualitative descriptions of the various service levels associated with an unsignalized intersection are presented in the following table. Again, the level of service thresholds acceptable to the specific reviewing jurisdiction(s) are described in the body of the report.

LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay Per Vehicle (Seconds)[1]	Description of Conditions
A	≤10.0	Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in queue.
B	>10 and ≤15	Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in queue.
C	>15 and ≤25	Many times there is more than one vehicle in queue. Most drivers feel restricted, but not objectionably so.
D	>25 and ≤35	Often there is more than one vehicle in queue. Drivers feel quite restricted.
E	>35 and ≤50	Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in queue. Drivers find the delays approaching intolerable levels.
F	>50	Forced flow. Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

1. The average control delay ranges presented in this table are from the Transportation Research Board, Highway Capacity Manual, (2000).

It should be noted that the level of service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. **While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections.** No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level-of-service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOE's) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

APPENDIX B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.43	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	800	1863	
Volume (vph)	167	0	85	0	0	0	0	339	235	329	397	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	176	0	89	0	0	0	0	357	247	346	418	0
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	121	0	0	0
Lane Group Flow (vph)	0	176	14	0	0	0	0	357	126	346	418	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		9.2	9.2					30.2	30.2	42.8	42.8	
Effective Green, g (s)		9.2	9.2					30.2	30.2	42.8	42.8	
Actuated g/C Ratio		0.15	0.15					0.50	0.50	0.71	0.71	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		271	243					938	797	710	1329	
v/s Ratio Prot								0.19		c0.07	0.22	
v/s Ratio Perm		0.10	0.01						0.08	c0.28		
v/c Ratio		0.65	0.06					0.38	0.16	0.49	0.31	
Uniform Delay, d1		23.9	21.7					9.2	8.0	3.7	3.2	
Progression Factor		1.00	1.00					1.00	1.00	1.11	0.68	
Incremental Delay, d2		5.3	0.1					1.2	0.4	0.5	0.5	
Delay (s)		29.2	21.8					10.3	8.5	4.6	2.7	
Level of Service		C	C					B	A	A	A	
Approach Delay (s)		26.7			0.0			9.6			3.6	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3318	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3318	
Volume (vph)	0	0	0	155	0	326	145	361	0	0	571	407
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	343	153	380	0	0	601	428
RTOR Reduction (vph)	0	0	0	0	0	294	0	0	0	0	107	0
Lane Group Flow (vph)	0	0	0	0	163	49	153	380	0	0	922	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	14.0	41.0			77.0	
Effective Green, g (s)					17.0	17.0	14.0	41.0			77.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.34			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	207	637			2129	
v/s Ratio Prot					c0.09	0.03	c0.09	c0.20			c0.28	
v/s Ratio Perm												
v/c Ratio					0.65	0.22	0.74	0.60			0.43	
Uniform Delay, d1					48.7	45.6	51.2	32.7			10.7	
Progression Factor					1.00	1.00	1.11	1.04			1.26	
Incremental Delay, d2					12.3	2.2	19.9	3.7			0.4	
Delay (s)					61.0	47.8	77.0	37.7			13.8	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.1			48.9			13.8	
Approach LOS		A			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	38	498	480	59	417	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	40	524	505	62	439	284
RTOR Reduction (vph)	0	0	0	0	0	31
Lane Group Flow (vph)	40	524	505	62	439	253
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	5.0	71.0	35.0	43.0	68.0	107.0
Effective Green, g (s)	5.0	71.0	35.0	44.0	68.0	107.0
Actuated g/C Ratio	0.04	0.59	0.29	0.37	0.57	0.89
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	78	937	516	683	1003	1412
v/s Ratio Prot	0.02	c0.33	c0.29	0.03	c0.25	0.16
v/s Ratio Perm						
v/c Ratio	0.51	0.56	0.98	0.09	0.44	0.18
Uniform Delay, d1	56.3	15.0	42.1	24.9	15.0	0.8
Progression Factor	1.00	1.00	1.00	1.00	0.37	0.00
Incremental Delay, d2	22.1	2.4	34.7	0.3	1.1	0.2
Delay (s)	78.4	17.4	76.8	25.2	6.6	0.2
Level of Service	E	B	E	C	A	A
Approach Delay (s)	21.7			71.2	4.1	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	30.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	22	314	6	67	361	47	2	3	69	152	7	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	23	331	6	71	380	49	2	3	73	160	7	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	429			337			972	951	334	961	929	405
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429			337			972	951	334	961	929	405
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			94			99	99	90	19	97	90
cM capacity (veh/h)	1130			1222			191	240	708	197	247	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	23	337	71	429	78	160	75
Volume Left	23	0	71	0	2	160	0
Volume Right	0	6	0	49	73	0	67
cSH	1130	1700	1222	1700	759	197	557
Volume to Capacity	0.02	0.20	0.06	0.25	0.10	0.81	0.13
Queue Length 95th (ft)	2	0	5	0	9	144	12
Control Delay (s)	8.3	0.0	8.1	0.0	11.4	72.7	12.5
Lane LOS	A		A		B	F	B
Approach Delay (s)	0.5		1.1		11.4	53.5	
Approach LOS					B	F	

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	23.0	11.3	7.0	11.3
Stop Delay (hr)	0.5	0.5	0.3	1.3
St Del/Veh (s)	19.4	9.3	4.8	8.9

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	28.7	41.4	11.2	23.2
Stop Delay (hr)	1.1	1.8	0.8	3.7
St Del/Veh (s)	24.9	38.5	9.5	20.7

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	23.2	93.1	7.4	38.3
Stop Delay (hr)	1.0	4.3	0.4	5.7
St Del/Veh (s)	20.9	87.8	6.1	35.4

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	4.6	1.0	22.1	55.8	14.4
Stop Delay (hr)	0.1	0.0	0.2	1.1	1.3
St Del/Veh (s)	2.8	0.3	21.7	54.6	13.3

Total Network Performance

Delay / Veh (s)	60.9
Stop Delay (hr)	12.2
St Del/Veh (s)	53.4

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	R	L	T
Maximum Queue (ft)	157	101	218	97	159	167
Average Queue (ft)	96	34	99	42	88	69
95th Queue (ft)	157	88	221	95	152	156
Link Distance (ft)	689		252			296
Upstream Blk Time (%)			1			0
Queuing Penalty (veh)			0			0
Storage Bay Dist (ft)		110		75	200	
Storage Blk Time (%)	5		8	0	0	0
Queuing Penalty (veh)	4		18	1	0	1

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	177	142	160	239	148	164	212
Average Queue (ft)	106	76	125	198	45	108	169
95th Queue (ft)	190	140	181	270	158	185	226
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			1	15	0	0	9
Queuing Penalty (veh)			0	78	1	1	44
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)			1	15			
Queuing Penalty (veh)			3	22			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	203	138	197	435	127	146
Average Queue (ft)	152	135	189	376	92	37
95th Queue (ft)	256	149	207	535	144	144
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	12	11		18		2
Queuing Penalty (veh)	66	0		0		16
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	12	11	51		8	
Queuing Penalty (veh)	62	4	30		22	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	30	124	38	1	49	73	141	172
Average Queue (ft)	10	39	16	0	7	38	99	74
95th Queue (ft)	35	106	41	2	42	72	162	235
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)					0			1
Queuing Penalty (veh)					0			0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)						1	18	
Queuing Penalty (veh)						0	13	

Nework Summary

Network wide Queuing Penalty: 386

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.34	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	637	1863	
Volume (vph)	226	0	155	0	0	0	0	382	290	367	508	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	238	0	163	0	0	0	0	402	305	386	535	0
RTOR Reduction (vph)	0	0	132	0	0	0	0	0	160	0	0	0
Lane Group Flow (vph)	0	238	31	0	0	0	0	402	145	386	535	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.5	11.5					24.9	24.9	40.5	40.5	
Effective Green, g (s)		11.5	11.5					24.9	24.9	40.5	40.5	
Actuated g/C Ratio		0.19	0.19					0.42	0.42	0.68	0.68	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		339	303					773	657	649	1258	
v/s Ratio Prot								0.22		c0.12	0.29	
v/s Ratio Perm		0.13	0.02						0.09	c0.29		
v/c Ratio		0.70	0.10					0.52	0.22	0.59	0.43	
Uniform Delay, d1		22.6	20.0					13.1	11.3	5.5	4.4	
Progression Factor		1.00	1.00					1.00	1.00	1.31	0.29	
Incremental Delay, d2		6.4	0.2					2.5	0.8	1.4	0.8	
Delay (s)		29.1	20.1					15.6	12.1	8.5	2.1	
Level of Service		C	C					B	B	A	A	
Approach Delay (s)		25.5			0.0			14.1			4.8	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3380	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3380	
Volume (vph)	0	0	0	230	0	353	75	523	0	0	625	269
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	372	79	551	0	0	658	283
RTOR Reduction (vph)	0	0	0	0	0	313	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	242	59	79	551	0	0	901	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					19.0	19.0	12.0	45.0			77.0	
Effective Green, g (s)					19.0	19.0	12.0	45.0			77.0	
Actuated g/C Ratio					0.16	0.16	0.10	0.38			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					280	251	177	699			2169	
v/s Ratio Prot					c0.14	0.04	0.04	c0.30			c0.27	
v/s Ratio Perm												
v/c Ratio					0.86	0.23	0.45	0.79			0.42	
Uniform Delay, d1					49.2	44.1	50.9	33.3			10.5	
Progression Factor					1.00	1.00	1.20	0.99			1.61	
Incremental Delay, d2					28.1	2.2	6.9	7.2			0.4	
Delay (s)					77.3	46.3	67.7	40.3			17.3	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			58.5			43.7			17.3	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	69	679	265	73	411	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	73	715	279	77	433	358
RTOR Reduction (vph)	0	0	0	0	0	35
Lane Group Flow (vph)	73	715	279	77	433	323
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	80.0	26.0	37.0	74.0	104.0
Effective Green, g (s)	8.0	80.0	26.0	38.0	74.0	104.0
Actuated g/C Ratio	0.07	0.67	0.22	0.32	0.62	0.87
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	124	1055	384	590	1092	1372
v/s Ratio Prot	0.04	c0.45	c0.16	0.04	c0.24	0.20
v/s Ratio Perm						
v/c Ratio	0.59	0.68	0.73	0.13	0.40	0.24
Uniform Delay, d1	54.4	12.2	43.7	29.2	11.7	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.32	0.00
Incremental Delay, d2	18.9	3.5	11.4	0.5	0.7	0.3
Delay (s)	73.3	15.7	55.1	29.7	4.4	0.3
Level of Service	E	B	E	C	A	A
Approach Delay (s)	21.0			49.6	2.5	
Approach LOS	C			D	A	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	55	467	29	166	326	60	20	12	176	107	10	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	58	492	31	175	343	63	21	13	185	113	11	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	406			522			1347	1378	507	1431	1362	375
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	406			522			1347	1378	507	1431	1362	375
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			83			78	89	67	0	91	96
cM capacity (veh/h)	1152			1044			97	114	566	58	117	672

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	58	522	175	406	219	113	37
Volume Left	58	0	175	0	21	113	0
Volume Right	0	31	0	63	185	0	26
cSH	1152	1700	1044	1700	669	58	285
Volume to Capacity	0.05	0.31	0.17	0.24	0.33	1.94	0.13
Queue Length 95th (ft)	4	0	15	0	36	269	11
Control Delay (s)	8.3	0.0	9.1	0.0	20.8	591.4	19.5
Lane LOS	A		A		C	F	C
Approach Delay (s)	0.8		2.7		20.8	450.5	
Approach LOS					C	F	

Intersection Summary			
Average Delay	48.4		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	30.0	21.3	8.6	17.2
Stop Delay (hr)	0.9	1.1	0.5	2.5
St Del/Veh (s)	24.9	18.3	6.0	14.0

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	47.1	35.6	13.1	29.0
Stop Delay (hr)	2.2	1.8	1.0	5.0
St Del/Veh (s)	41.2	32.4	11.4	25.7

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	20.7	50.7	5.8	19.4
Stop Delay (hr)	1.2	1.5	0.4	3.0
St Del/Veh (s)	17.9	46.9	4.4	17.1

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	7.5	4.5	204.2	445.3	64.7
Stop Delay (hr)	0.2	0.2	3.5	4.5	8.4
St Del/Veh (s)	4.2	3.6	206.9	446.3	63.4

Total Network Performance

Delay / Veh (s)	79.1
Stop Delay (hr)	19.3
St Del/Veh (s)	70.7

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	242	123	271	108	214	236	15
Average Queue (ft)	129	62	173	62	118	76	2
95th Queue (ft)	255	133	302	121	205	199	18
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)			6			0	
Queuing Penalty (veh)			0			3	
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	15	0	22	1	1	0	
Queuing Penalty (veh)	23	0	63	3	6	1	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	330	241	146	242	277	167	214
Average Queue (ft)	204	128	82	226	136	138	176
95th Queue (ft)	394	257	155	258	323	194	226
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			0	32	2	1	9
Queuing Penalty (veh)			0	193	12	3	44
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	3	1	0	32			
Queuing Penalty (veh)	11	1	0	24			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	221	139	191	328	125	142
Average Queue (ft)	170	137	164	134	84	41
95th Queue (ft)	250	143	218	322	137	142
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	13	12		0		2
Queuing Penalty (veh)	100	0		0		20
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	13	12	18		7	
Queuing Penalty (veh)	90	8	13		23	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	45	216	102	53	186	175	154	383
Average Queue (ft)	20	91	56	9	130	138	139	262
95th Queue (ft)	50	204	109	69	255	213	181	523
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)			0	2	47	31		23
Queuing Penalty (veh)			0	8	0	0		0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)		0	4			62	75	
Queuing Penalty (veh)		0	14			20	26	

Nework Summary

Network wide Queuing Penalty: 712

APPENDIX C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.37	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	691	1863	
Volume (vph)	207	0	85	0	0	0	0	376	235	357	423	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	0	89	0	0	0	0	396	247	376	445	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	120	0	0	0
Lane Group Flow (vph)	0	218	17	0	0	0	0	396	127	376	445	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.3	11.3					27.1	27.1	40.7	40.7	
Effective Green, g (s)		11.3	11.3					27.1	27.1	40.7	40.7	
Actuated g/C Ratio		0.19	0.19					0.45	0.45	0.68	0.68	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		333	298					841	715	641	1264	
v/s Ratio Prot								0.21		c0.09	0.24	
v/s Ratio Perm		0.12	0.01						0.08	c0.30		
v/c Ratio		0.65	0.06					0.47	0.18	0.59	0.35	
Uniform Delay, d1		22.5	20.0					11.5	9.8	5.1	4.1	
Progression Factor		1.00	1.00					1.00	1.00	1.54	0.62	
Incremental Delay, d2		4.6	0.1					1.9	0.5	1.2	0.6	
Delay (s)		27.1	20.1					13.3	10.3	9.1	3.2	
Level of Service		C	C					B	B	A	A	
Approach Delay (s)		25.1			0.0			12.2			5.9	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3322	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3322	
Volume (vph)	0	0	0	155	0	376	145	438	0	0	625	431
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	396	153	461	0	0	658	454
RTOR Reduction (vph)	0	0	0	0	0	340	0	0	0	0	104	0
Lane Group Flow (vph)	0	0	0	0	163	56	153	461	0	0	1008	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	14.0	41.0			77.0	
Effective Green, g (s)					17.0	17.0	14.0	41.0			77.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.34			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	207	637			2132	
v/s Ratio Prot					c0.09	0.04	0.09	c0.25			c0.30	
v/s Ratio Perm												
v/c Ratio					0.65	0.25	0.74	0.72			0.47	
Uniform Delay, d1					48.7	45.8	51.2	34.5			11.1	
Progression Factor					1.00	1.00	1.14	1.05			1.13	
Incremental Delay, d2					12.3	2.7	19.0	5.9			0.4	
Delay (s)					61.0	48.5	77.6	42.1			13.0	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.1			51.0			13.0	
Approach LOS		A			D			D			B	

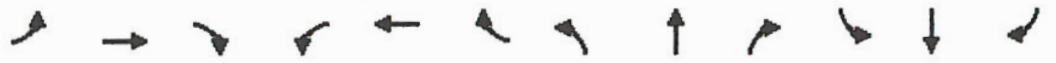
Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	40	540	516	60	544	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	568	543	63	573	284
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	42	568	543	63	573	273
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7	3 5 6 7
Permitted Phases						2
Actuated Green, G (s)	3.0	69.0	37.0	43.0	68.0	109.0
Effective Green, g (s)	3.0	69.0	37.0	44.0	68.0	109.0
Actuated g/C Ratio	0.02	0.57	0.31	0.37	0.57	0.91
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	47	910	546	683	1003	1438
v/s Ratio Prot	0.02	c0.36	c0.31	0.03	c0.32	0.17
v/s Ratio Perm						
v/c Ratio	0.89	0.62	0.99	0.09	0.57	0.19
Uniform Delay, d1	58.3	16.9	41.4	24.9	16.7	0.6
Progression Factor	1.00	1.00	1.00	1.00	0.34	0.04
Incremental Delay, d2	102.5	3.2	37.2	0.3	1.6	0.2
Delay (s)	160.8	20.1	78.6	25.2	7.3	0.2
Level of Service	F	C	E	C	A	A
Approach Delay (s)	29.8			73.0	5.0	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	338	6	67	370	166	2	3	69	172	7	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	40	356	6	71	389	175	2	3	73	181	7	78
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	564			362			1051	1144	359	1092	1060	477
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			362			1051	1144	359	1092	1060	477
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			99	98	89	0	96	87
cM capacity (veh/h)	1007			1196			160	181	685	157	203	588

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	40	362	71	564	78	181	85
Volume Left	40	0	71	0	2	181	0
Volume Right	0	6	0	175	73	0	78
cSH	1007	1700	1196	1700	735	157	505
Volume to Capacity	0.04	0.21	0.06	0.33	0.11	1.15	0.17
Queue Length 95th (ft)	3	0	5	0	9	247	15
Control Delay (s)	8.7	0.0	8.2	0.0	11.9	176.7	13.6
Lane LOS	A		A		B	F	B
Approach Delay (s)	0.9		0.9		11.9	124.5	
Approach LOS					B	F	

Intersection Summary			
Average Delay	25.3		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	74.8	22.0	9.4	25.8
Stop Delay (hr)	1.9	1.1	0.5	3.5
St Del/Veh (s)	68.9	19.2	7.0	22.6

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	37.1	48.6	10.5	27.7
Stop Delay (hr)	1.6	2.4	0.8	4.9
St Del/Veh (s)	32.7	45.3	8.9	24.9

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	28.3	115.3	9.4	46.2
Stop Delay (hr)	1.3	5.8	0.6	7.6
St Del/Veh (s)	25.6	109.7	7.9	43.2

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	6.9	1.4	29.3	229.4	43.3
Stop Delay (hr)	0.2	0.0	0.2	4.5	4.9
St Del/Veh (s)	4.6	0.3	28.9	227.9	41.8

Total Network Performance

Delay / Veh (s)	96.0
Stop Delay (hr)	21.6
St Del/Veh (s)	87.1

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	312	128	264	100	208	212	22
Average Queue (ft)	196	54	171	58	113	70	2
95th Queue (ft)	515	133	306	116	205	184	33
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)	6		6			0	0
Queuing Penalty (veh)	0		0			2	0
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	24	0	20	1	1	1	
Queuing Penalty (veh)	21	0	48	3	6	2	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	228	212	161	242	298	165	207
Average Queue (ft)	125	116	132	228	169	114	166
95th Queue (ft)	229	221	190	257	374	185	227
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			2	37	8	0	9
Queuing Penalty (veh)			0	214	45	1	49
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	0	1	2	37			
Queuing Penalty (veh)	1	1	7	53			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	206	139	197	435	130	182
Average Queue (ft)	168	137	190	409	113	101
95th Queue (ft)	249	147	200	528	153	241
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	18	16		28		8
Queuing Penalty (veh)	101	0		0		62
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	18	16	54		19	
Queuing Penalty (veh)	95	7	33		51	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	40	162	46	8	25	82	156	391
Average Queue (ft)	18	59	17	1	3	41	142	273
95th Queue (ft)	47	148	45	7	19	77	182	537
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)								25
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)		0				1	71	
Queuing Penalty (veh)		0				0	57	

Nework Summary

Network wide Queuing Penalty: 857

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.28	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	516	1863	
Volume (vph)	260	0	155	0	0	0	0	422	290	426	557	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	0	163	0	0	0	0	444	305	448	586	0
RTOR Reduction (vph)	0	0	131	0	0	0	0	0	153	0	0	0
Lane Group Flow (vph)	0	274	32	0	0	0	0	444	152	448	586	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.7	11.7					22.9	22.9	40.3	40.3	
Effective Green, g (s)		11.7	11.7					22.9	22.9	40.3	40.3	
Actuated g/C Ratio		0.19	0.19					0.38	0.38	0.67	0.67	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		345	309					711	604	627	1251	
v/s Ratio Prot								0.24		c0.16	0.31	
v/s Ratio Perm		0.15	0.02						0.10	c0.32		
v/c Ratio		0.79	0.10					0.62	0.25	0.71	0.47	
Uniform Delay, d1		23.0	19.8					15.1	12.7	6.7	4.7	
Progression Factor		1.00	1.00					1.00	1.00	1.23	0.30	
Incremental Delay, d2		11.9	0.1					4.1	1.0	3.5	1.0	
Delay (s)		34.9	20.0					19.2	13.7	11.7	2.4	
Level of Service		C	B					B	B	B	A	
Approach Delay (s)		29.3			0.0			16.9			6.4	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3379	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3379	
Volume (vph)	0	0	0	230	0	392	75	597	0	0	733	317
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	413	79	628	0	0	772	334
RTOR Reduction (vph)	0	0	0	0	0	348	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	242	65	79	628	0	0	1066	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					19.0	19.0	12.0	45.0			77.0	
Effective Green, g (s)					19.0	19.0	12.0	45.0			77.0	
Actuated g/C Ratio					0.16	0.16	0.10	0.38			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					280	251	177	699			2168	
v/s Ratio Prot					c0.14	0.04	0.04	c0.34			c0.32	
v/s Ratio Perm												
v/c Ratio					0.86	0.26	0.45	0.90			0.49	
Uniform Delay, d1					49.2	44.3	50.9	35.3			11.3	
Progression Factor					1.00	1.00	1.20	0.99			1.37	
Incremental Delay, d2					28.1	2.5	6.2	12.6			0.4	
Delay (s)					77.3	46.8	67.3	47.6			15.8	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			58.1			49.8			15.8	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	70	740	360	75	524	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	779	379	79	552	358
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	74	779	379	79	552	324
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	80.0	26.0	37.0	74.0	104.0
Effective Green, g (s)	8.0	80.0	26.0	38.0	74.0	104.0
Actuated g/C Ratio	0.07	0.67	0.22	0.32	0.62	0.87
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	124	1055	384	590	1092	1372
v/s Ratio Prot	0.04	c0.49	c0.21	0.04	c0.31	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.74	0.99	0.13	0.51	0.24
Uniform Delay, d1	54.4	13.1	46.8	29.3	12.8	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.31	0.00
Incremental Delay, d2	19.4	4.6	42.8	0.5	0.9	0.2
Delay (s)	73.8	17.8	89.6	29.7	4.9	0.2
Level of Service	E	B	F	C	A	A
Approach Delay (s)	22.6			79.3	3.0	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	71	484	29	166	352	149	20	12	176	152	10	45
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	75	509	31	175	371	157	21	13	185	160	11	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	527			540			1447	1551	525	1556	1488	449
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	527			540			1447	1551	525	1556	1488	449
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			83			72	86	66	0	89	92
cM capacity (veh/h)	1040			1028			76	88	553	45	96	610

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	75	540	175	527	219	160	58
Volume Left	75	0	175	0	21	160	0
Volume Right	0	31	0	157	185	0	47
cSH	1040	1700	1028	1700	523	45	308
Volume to Capacity	0.07	0.32	0.17	0.31	0.42	3.57	0.19
Queue Length 95th (ft)	6	0	15	0	51	Err	17
Control Delay (s)	8.7	0.0	9.2	0.0	24.6	Err	19.4
Lane LOS	A		A		C	F	C
Approach Delay (s)	1.1		2.3		24.6	7347.4	
Approach LOS					C	F	

Intersection Summary			
Average Delay	917.3		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	58.1	37.6	9.8	28.9
Stop Delay (hr)	1.8	2.2	0.6	4.7
St Del/Veh (s)	50.0	33.9	7.1	24.8

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	52.8	36.2	12.5	30.1
Stop Delay (hr)	2.6	2.0	1.0	5.7
St Del/Veh (s)	46.5	33.1	10.8	26.8

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	20.8	110.8	6.2	32.5
Stop Delay (hr)	1.2	4.2	0.4	5.8
St Del/Veh (s)	17.8	105.0	4.8	29.7

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	7.9	3.0	187.8	1770.2	123.3
Stop Delay (hr)	0.3	0.1	3.4	13.8	17.6
St Del/Veh (s)	4.6	2.0	190.2	1773.9	122.1

Total Network Performance

Delay / Veh (s)	129.1
Stop Delay (hr)	34.5
St Del/Veh (s)	119.4

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	418	136	267	103	222	308	62
Average Queue (ft)	230	87	224	80	135	87	10
95th Queue (ft)	460	168	332	130	237	232	73
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)			15			1	0
Queuing Penalty (veh)			0			10	1
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	40	0	36	1	4	0	
Queuing Penalty (veh)	62	1	103	4	21	1	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	384	286	154	242	318	168	220
Average Queue (ft)	215	173	89	233	227	139	184
95th Queue (ft)	429	317	164	260	383	190	239
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			0	41	6	1	11
Queuing Penalty (veh)			0	277	39	4	63
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	4	1	0	41			
Queuing Penalty (veh)	16	2	0	30			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	219	139	202	432	129	187
Average Queue (ft)	180	137	189	360	105	77
95th Queue (ft)	243	141	209	555	154	208
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	15	13		21		4
Queuing Penalty (veh)	121	0		0		40
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	15	13	57		12	0
Queuing Penalty (veh)	110	9	43		41	0

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	53	228	100	41	182	175	154	440
Average Queue (ft)	25	96	55	8	128	138	149	426
95th Queue (ft)	55	217	101	59	249	198	160	507
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)			0	0	39	15		87
Queuing Penalty (veh)			0	1	0	0		0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)		0	1		1	63	98	
Queuing Penalty (veh)		0	5		2	20	54	

Nework Summary

Network wide Queuing Penalty: 1084

APPENDIX D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.36	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	662	1863	
Volume (vph)	207	0	85	0	0	0	0	376	235	357	423	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	0	89	0	0	0	0	396	247	376	445	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	123	0	0	0
Lane Group Flow (vph)	0	218	17	0	0	0	0	396	124	376	445	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.6	11.6					25.6	25.6	40.4	40.4	
Effective Green, g (s)		11.6	11.6					25.6	25.6	40.4	40.4	
Actuated g/C Ratio		0.19	0.19					0.43	0.43	0.67	0.67	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		342	306					795	675	645	1254	
v/s Ratio Prot								0.21		c0.10	0.24	
v/s Ratio Perm		0.12	0.01						0.08	c0.29		
v/c Ratio		0.64	0.06					0.50	0.18	0.58	0.35	
Uniform Delay, d1		22.3	19.7					12.5	10.7	5.3	4.2	
Progression Factor		1.00	1.00					1.00	1.00	1.83	1.19	
Incremental Delay, d2		3.9	0.1					2.2	0.6	1.2	0.7	
Delay (s)		26.1	19.8					14.7	11.3	10.9	5.7	
Level of Service		C	B					B	B	B	A	
Approach Delay (s)		24.3			0.0			13.4			8.1	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3322	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3322	
Volume (vph)	0	0	0	155	0	376	145	438	0	0	625	431
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	396	153	461	0	0	658	454
RTOR Reduction (vph)	0	0	0	0	0	340	0	0	0	0	104	0
Lane Group Flow (vph)	0	0	0	0	163	56	153	461	0	0	1008	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	15.0	38.0			76.0	
Effective Green, g (s)					17.0	17.0	15.0	38.0			76.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.32			0.63	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	221	590			2104	
v/s Ratio Prot					c0.09	0.04	0.09	c0.25			c0.30	
v/s Ratio Perm												
v/c Ratio					0.65	0.25	0.69	0.78			0.48	
Uniform Delay, d1					48.7	45.8	50.3	37.2			11.6	
Progression Factor					1.00	1.00	1.12	1.00			0.91	
Incremental Delay, d2					12.3	2.7	14.6	8.4			0.6	
Delay (s)					61.0	48.5	70.9	45.8			11.1	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.1			52.0			11.1	
Approach LOS		A			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (prot)	1863	1583	1681	1698	1770	1583
Flt Permitted	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (perm)	1863	1583	1681	1698	1770	1583
Volume (vph)	40	540	688	60	544	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	568	724	63	573	284
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	42	568	383	404	573	251
Turn Type		pt+ov	Split			custom
Protected Phases		4 4 5 6 7	3	3	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	6.0	75.0	37.0	37.0	65.0	106.0
Effective Green, g (s)	6.0	75.0	37.0	37.0	65.0	106.0
Actuated g/C Ratio	0.05	0.62	0.31	0.31	0.54	0.88
Clearance Time (s)	4.0		4.0	4.0		
Lane Grp Cap (vph)	93	989	518	524	959	1398
v/s Ratio Prot	0.02	c0.36	0.23	c0.24	c0.32	0.16
v/s Ratio Perm						
v/c Ratio	0.45	0.57	0.74	0.77	0.60	0.18
Uniform Delay, d1	55.4	13.2	37.2	37.7	18.6	1.0
Progression Factor	1.00	1.00	1.00	1.00	0.36	0.00
Incremental Delay, d2	15.0	2.4	9.1	10.5	1.8	0.2
Delay (s)	70.4	15.6	46.3	48.2	8.5	0.2
Level of Service	E	B	D	D	A	A
Approach Delay (s)	19.4			47.3	5.7	
Approach LOS	B			D	A	

Intersection Summary			
HCM Average Control Delay	23.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	41	338	6	67	370	166	0	0	69	0	0	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	43	356	6	71	389	175	0	0	73	0	0	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	564			362			1061	1151	359	1133	1066	477
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			362			1061	1151	359	1133	1066	477
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			100	100	89	100	100	86
cM capacity (veh/h)	1007			1196			159	178	685	149	200	588

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	43	362	71	564	73	85
Volume Left	43	0	71	0	0	0
Volume Right	0	6	0	175	73	85
cSH	1007	1700	1196	1700	685	588
Volume to Capacity	0.04	0.21	0.06	0.33	0.11	0.14
Queue Length 95th (ft)	3	0	5	0	9	13
Control Delay (s)	8.7	0.0	8.2	0.0	10.9	12.2
Lane LOS	A		A		B	B
Approach Delay (s)	0.9		0.9		10.9	12.2
Approach LOS					B	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	38.5	17.6	9.6	17.5
Stop Delay (hr)	0.9	0.8	0.5	2.2
St Del/Veh (s)	33.4	14.9	6.9	14.4

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	37.6	49.9	8.7	25.1
Stop Delay (hr)	1.6	2.4	0.8	4.8
St Del/Veh (s)	33.1	46.6	6.9	22.3

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	27.6	48.0	9.8	28.4
Stop Delay (hr)	1.4	3.0	0.6	5.0
St Del/Veh (s)	25.5	42.9	8.4	25.4

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	3.8	1.5	9.6	5.8	3.1
Stop Delay (hr)	0.1	0.0	0.1	0.0	0.2
St Del/Veh (s)	2.1	0.3	9.7	5.3	1.8

Total Network Performance

Delay / Veh (s)	56.7
Stop Delay (hr)	12.8
St Del/Veh (s)	48.2

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	246	122	249	102	213	262	43
Average Queue (ft)	140	55	172	51	119	97	4
95th Queue (ft)	301	132	302	109	220	239	41
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)			3			1	0
Queuing Penalty (veh)			0			7	0
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	15	0	19	0	2	0	
Queuing Penalty (veh)	13	0	44	1	9	1	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	209	221	161	242	291	165	200
Average Queue (ft)	123	123	129	226	160	100	155
95th Queue (ft)	287	254	184	262	361	179	236
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			2	36	6	1	9
Queuing Penalty (veh)			0	209	36	3	54
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)		3	2	36			
Queuing Penalty (veh)		4	9	52			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	214	154	277	433	127	179
Average Queue (ft)	106	137	217	317	111	98
95th Queue (ft)	236	182	318	481	156	237
Link Distance (ft)	161			416		172
Upstream Blk Time (%)	6	9		6		9
Queuing Penalty (veh)	23	0		0		75
Storage Bay Dist (ft)		150	250		100	
Storage Blk Time (%)	5	10	2	17	20	
Queuing Penalty (veh)	28	4	8	58	54	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	R	R
Maximum Queue (ft)	42	90	46	14	61	67
Average Queue (ft)	18	20	20	1	35	35
95th Queue (ft)	45	80	48	14	63	65
Link Distance (ft)		787		161	168	424
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250		100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Nework Summary

Network wide Queuing Penalty: 693

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.27	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	494	1863	
Volume (vph)	260	0	155	0	0	0	0	422	290	426	557	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	0	163	0	0	0	0	444	305	448	586	0
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	145	0	0	0
Lane Group Flow (vph)	0	274	34	0	0	0	0	444	160	448	586	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		12.6	12.6					22.1	22.1	39.4	39.4	
Effective Green, g (s)		12.6	12.6					22.1	22.1	39.4	39.4	
Actuated g/C Ratio		0.21	0.21					0.37	0.37	0.66	0.66	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		372	332					686	583	607	1223	
v/s Ratio Prot								0.24		c0.16	0.31	
v/s Ratio Perm		0.15	0.02						0.10	c0.32		
v/c Ratio		0.74	0.10					0.65	0.27	0.74	0.48	
Uniform Delay, d1		22.1	19.1					15.7	13.3	7.2	5.2	
Progression Factor		1.00	1.00					1.00	1.00	1.52	0.66	
Incremental Delay, d2		7.4	0.1					4.7	1.2	4.2	1.0	
Delay (s)		29.6	19.3					20.4	14.5	15.1	4.4	
Level of Service		C	B					C	B	B	A	
Approach Delay (s)		25.7			0.0			18.0			9.1	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3379	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3379	
Volume (vph)	0	0	0	230	0	392	75	597	0	0	733	317
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	413	79	628	0	0	772	334
RTOR Reduction (vph)	0	0	0	0	0	348	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	242	65	79	628	0	0	1066	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					19.0	19.0	12.0	43.0			77.0	
Effective Green, g (s)					19.0	19.0	12.0	43.0			77.0	
Actuated g/C Ratio					0.16	0.16	0.10	0.36			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					280	251	177	668			2168	
v/s Ratio Prot					c0.14	0.04	0.04	c0.34			c0.32	
v/s Ratio Perm												
v/c Ratio					0.86	0.26	0.45	0.94			0.49	
Uniform Delay, d1					49.2	44.3	50.9	37.3			11.3	
Progression Factor					1.00	1.00	1.27	0.92			1.14	
Incremental Delay, d2					28.1	2.5	6.1	18.2			0.5	
Delay (s)					77.3	46.8	70.7	52.3			13.4	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			58.1			54.4			13.4	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (prot)	1863	1583	1681	1706	1770	1583
Flt Permitted	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (perm)	1863	1583	1681	1706	1770	1583
Volume (vph)	70	740	512	75	524	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	779	539	79	552	358
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	74	779	301	317	552	324
Turn Type		custom	Split			custom
Protected Phases	4	4 5 7	3	3	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	78.0	28.0	28.0	72.0	104.0
Effective Green, g (s)	8.0	78.0	28.0	28.0	72.0	104.0
Actuated g/C Ratio	0.07	0.65	0.23	0.23	0.60	0.87
Clearance Time (s)	4.0		4.0	4.0		
Lane Grp Cap (vph)	124	1029	392	398	1062	1372
v/s Ratio Prot	0.04	c0.49	0.18	c0.19	c0.31	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.76	0.77	0.80	0.52	0.24
Uniform Delay, d1	54.4	14.5	43.0	43.3	14.0	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.31	0.00
Incremental Delay, d2	19.4	5.2	13.5	15.2	0.9	0.2
Delay (s)	73.8	19.7	56.4	58.5	5.3	0.2
Level of Service	E	B	E	E	A	A
Approach Delay (s)	24.4			57.5	3.3	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (prot)	1863	1583	1681	1706	1770	1583
Flt Permitted	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (perm)	1863	1583	1681	1706	1770	1583
Volume (vph)	70	740	512	75	524	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	779	539	79	552	358
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	74	779	301	317	552	324
Turn Type		custom	Split			custom
Protected Phases	4	4 5 7	3	3	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	78.0	28.0	28.0	72.0	104.0
Effective Green, g (s)	8.0	78.0	28.0	28.0	72.0	104.0
Actuated g/C Ratio	0.07	0.65	0.23	0.23	0.60	0.87
Clearance Time (s)	4.0		4.0	4.0		
Lane Grp Cap (vph)	124	1029	392	398	1062	1372
v/s Ratio Prot	0.04	c0.49	0.18	c0.19	c0.31	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.76	0.77	0.80	0.52	0.24
Uniform Delay, d1	54.4	14.5	43.0	43.3	14.0	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.31	0.00
Incremental Delay, d2	19.4	5.2	13.5	15.2	0.9	0.2
Delay (s)	73.8	19.7	56.4	58.5	5.3	0.2
Level of Service	E	B	E	E	A	A
Approach Delay (s)	24.4			57.5	3.3	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	83	484	29	166	352	149	0	0	176	0	0	55
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	87	509	31	175	371	157	0	0	185	0	0	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	527			540			1477	1576	525	1668	1513	449
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	527			540			1477	1576	525	1668	1513	449
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			83			100	100	66	100	100	91
cM capacity (veh/h)	1040			1028			77	83	553	42	91	610

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	87	540	175	527	185	58
Volume Left	87	0	175	0	0	0
Volume Right	0	31	0	157	185	58
cSH	1040	1700	1028	1700	553	610
Volume to Capacity	0.08	0.32	0.17	0.31	0.34	0.09
Queue Length 95th (ft)	7	0	15	0	37	8
Control Delay (s)	8.8	0.0	9.2	0.0	14.8	11.5
Lane LOS	A		A		B	B
Approach Delay (s)	1.2		2.3		14.8	11.5
Approach LOS					B	B

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	77.2	28.2	14.4	31.2
Stop Delay (hr)	2.5	1.6	1.0	5.1
St Del/Veh (s)	68.6	24.8	11.0	26.8

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	54.2	40.4	9.8	29.0
Stop Delay (hr)	2.8	2.2	0.9	5.9
St Del/Veh (s)	47.6	37.1	8.0	25.6

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	56.0	72.1	7.1	39.7
Stop Delay (hr)	3.8	3.7	0.5	8.0
St Del/Veh (s)	53.1	66.6	5.6	36.8

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	8.5	3.4	63.6	6.2	12.7
Stop Delay (hr)	0.3	0.1	1.1	0.0	1.5
St Del/Veh (s)	5.1	2.1	65.2	5.8	10.9

Total Network Performance

Delay / Veh (s)	79.8
Stop Delay (hr)	21.7
St Del/Veh (s)	69.6

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	404	138	262	103	228	338	107
Average Queue (ft)	273	82	211	75	166	161	29
95th Queue (ft)	598	161	324	127	263	355	131
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)	5		10			3	1
Queuing Penalty (veh)	0		0			30	3
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	42	1	29	2	8	0	
Queuing Penalty (veh)	65	3	84	7	46	1	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	386	295	152	241	306	167	217
Average Queue (ft)	226	170	82	236	256	134	181
95th Queue (ft)	426	300	155	247	384	195	232
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			0	50	9	1	11
Queuing Penalty (veh)			0	338	63	4	70
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	3	1	0	50			
Queuing Penalty (veh)	11	3	0	37			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	222	155	225	428	127	182
Average Queue (ft)	176	151	193	333	111	102
95th Queue (ft)	261	171	264	500	147	230
Link Distance (ft)	161			416		172
Upstream Blk Time (%)	17	23		14		7
Queuing Penalty (veh)	114	0		0		68
Storage Bay Dist (ft)		150	200		100	
Storage Blk Time (%)	16	27	5	34	15	
Queuing Penalty (veh)	119	19	15	87	52	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	R	R
Maximum Queue (ft)	60	200	92	40	154	51
Average Queue (ft)	28	83	53	6	108	31
95th Queue (ft)	60	199	94	48	195	54
Link Distance (ft)		787		161	168	424
Upstream Blk Time (%)				0	16	
Queuing Penalty (veh)				1	0	
Storage Bay Dist (ft)	250		100			
Storage Blk Time (%)		0	2	0		
Queuing Penalty (veh)		0	8	0		

Nework Summary

Network wide Queuing Penalty: 1249

APPENDIX E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.43	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	797	1863	
Volume (vph)	173	0	85	0	0	0	0	341	235	349	402	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	0	89	0	0	0	0	359	247	367	423	0
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	120	0	0	0
Lane Group Flow (vph)	0	182	14	0	0	0	0	359	127	367	423	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		9.3	9.3					30.2	30.2	42.7	42.7	
Effective Green, g (s)		9.3	9.3					30.2	30.2	42.7	42.7	
Actuated g/C Ratio		0.16	0.16					0.50	0.50	0.71	0.71	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		274	245					938	797	705	1326	
v/s Ratio Prot								0.19		c0.07	0.23	
v/s Ratio Perm		0.10	0.01						0.08	c0.30		
v/c Ratio		0.66	0.06					0.38	0.16	0.52	0.32	
Uniform Delay, d1		23.9	21.6					9.2	8.0	3.9	3.2	
Progression Factor		1.00	1.00					1.00	1.00	1.75	0.80	
Incremental Delay, d2		6.0	0.1					1.2	0.4	0.6	0.5	
Delay (s)		29.8	21.7					10.4	8.5	7.4	3.1	
Level of Service		C	C					B	A	A	A	
Approach Delay (s)		27.2			0.0			9.6			5.1	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3319	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3319	
Volume (vph)	0	0	0	155	0	333	145	369	0	0	596	422
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	351	153	388	0	0	627	444
RTOR Reduction (vph)	0	0	0	0	0	301	0	0	0	0	106	0
Lane Group Flow (vph)	0	0	0	0	163	50	153	388	0	0	965	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	14.0	40.0			77.0	
Effective Green, g (s)					17.0	17.0	14.0	40.0			77.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.33			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	207	621			2130	
v/s Ratio Prot					c0.09	0.03	c0.09	c0.21			c0.29	
v/s Ratio Perm												
v/c Ratio					0.65	0.22	0.74	0.62			0.45	
Uniform Delay, d1					48.7	45.6	51.2	33.7			10.9	
Progression Factor					1.00	1.00	1.09	1.04			1.32	
Incremental Delay, d2					12.3	2.3	19.9	4.2			0.4	
Delay (s)					61.0	47.9	75.6	39.3			14.7	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.1			49.6			14.7	
Approach LOS		A			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	41	538	480	61	432	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	566	505	64	455	284
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	43	566	505	64	455	251
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	6.0	71.0	35.0	44.0	67.0	106.0
Effective Green, g (s)	6.0	71.0	35.0	45.0	67.0	106.0
Actuated g/C Ratio	0.05	0.59	0.29	0.38	0.56	0.88
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	93	937	516	699	988	1398
v/s Ratio Prot	0.02	c0.36	c0.29	0.03	c0.26	0.16
v/s Ratio Perm						
v/c Ratio	0.46	0.60	0.98	0.09	0.46	0.18
Uniform Delay, d1	55.4	15.6	42.1	24.3	15.8	1.0
Progression Factor	1.00	1.00	1.00	1.00	0.36	0.00
Incremental Delay, d2	15.6	2.9	34.7	0.3	1.2	0.2
Delay (s)	71.1	18.5	76.8	24.5	6.9	0.2
Level of Service	E	B	E	C	A	A
Approach Delay (s)	22.2			70.9	4.3	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	25	357	6	67	378	47	2	3	69	152	7	65
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	376	6	71	398	49	2	3	73	160	7	68
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	447			382			1043	1020	379	1030	998	423
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	447			382			1043	1020	379	1030	998	423
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			94			99	99	89	9	97	89
cM capacity (veh/h)	1113			1176			169	217	668	175	224	631

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	26	382	71	447	78	160	76
Volume Left	26	0	71	0	2	160	0
Volume Right	0	6	0	49	73	0	68
cSH	1113	1700	1176	1700	716	175	536
Volume to Capacity	0.02	0.22	0.06	0.26	0.11	0.91	0.14
Queue Length 95th (ft)	2	0	5	0	9	172	12
Control Delay (s)	8.3	0.0	8.3	0.0	11.9	100.5	12.8
Lane LOS	A		A		B	F	B
Approach Delay (s)	0.5		1.1		11.9	72.3	
Approach LOS					B	F	

Intersection Summary			
Average Delay	15.1		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	22.1	11.0	6.9	10.9
Stop Delay (hr)	0.4	0.5	0.3	1.2
St Del/Veh (s)	18.6	8.9	4.6	8.5

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	29.7	43.8	11.3	24.1
Stop Delay (hr)	1.2	1.9	0.9	3.9
St Del/Veh (s)	25.9	40.7	9.7	21.5

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	25.1	99.6	7.9	40.4
Stop Delay (hr)	1.2	4.6	0.4	6.1
St Del/Veh (s)	22.4	94.2	6.6	37.4

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	6.5	1.2	35.2	213.9	43.6
Stop Delay (hr)	0.1	0.0	0.2	4.1	4.5
St Del/Veh (s)	4.1	0.5	35.0	213.0	42.3

Total Network Performance

Delay / Veh (s)	76.5
Stop Delay (hr)	15.9
St Del/Veh (s)	68.8

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	R	L	T
Maximum Queue (ft)	150	89	204	92	160	149
Average Queue (ft)	86	34	102	42	88	68
95th Queue (ft)	140	84	205	92	149	151
Link Distance (ft)	689		252			296
Upstream Blk Time (%)			1			
Queuing Penalty (veh)			0			
Storage Bay Dist (ft)		110		75	200	
Storage Blk Time (%)	4	0	8	0	0	0
Queuing Penalty (veh)	3	0	18	1	0	0

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	185	145	161	241	215	162	216
Average Queue (ft)	104	79	126	204	67	117	175
95th Queue (ft)	191	152	191	268	215	192	234
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			2	19	0	0	12
Queuing Penalty (veh)			0	97	1	1	61
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)			2	19			
Queuing Penalty (veh)			8	27			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	213	138	197	431	129	179
Average Queue (ft)	165	135	190	361	93	45
95th Queue (ft)	253	155	199	541	150	161
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	17	14		19		3
Queuing Penalty (veh)	97	0		0		22
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	17	14	49		11	
Queuing Penalty (veh)	90	6	30		29	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	40	127	44	1	29	84	156	358
Average Queue (ft)	14	62	19	0	6	46	130	263
95th Queue (ft)	42	139	46	3	25	87	194	561
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)								30
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)						1	66	0
Queuing Penalty (veh)						0	48	0

Nework Summary

Network wide Queuing Penalty: 540

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	608	1863	
Volume (vph)	243	0	155	0	0	0	0	387	290	381	511	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	256	0	163	0	0	0	0	407	305	401	538	0
RTOR Reduction (vph)	0	0	130	0	0	0	0	0	154	0	0	0
Lane Group Flow (vph)	0	256	33	0	0	0	0	407	151	401	538	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		12.3	12.3					24.0	24.0	39.7	39.7	
Effective Green, g (s)		12.3	12.3					24.0	24.0	39.7	39.7	
Actuated g/C Ratio		0.20	0.20					0.40	0.40	0.66	0.66	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		363	325					745	633	629	1233	
v/s Ratio Prot								0.22		c0.12	0.29	
v/s Ratio Perm		0.14	0.02						0.10	c0.30		
v/c Ratio		0.71	0.10					0.55	0.24	0.64	0.44	
Uniform Delay, d1		22.2	19.4					13.8	11.9	6.0	4.8	
Progression Factor		1.00	1.00					1.00	1.00	1.52	0.35	
Incremental Delay, d2		6.1	0.1					2.9	0.9	2.0	0.9	
Delay (s)		28.3	19.5					16.7	12.8	11.1	2.6	
Level of Service		C	B					B	B	B	A	
Approach Delay (s)		24.9			0.0			15.0			6.2	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3378	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3378	
Volume (vph)	0	0	0	230	0	375	75	545	0	0	642	279
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	395	79	574	0	0	676	294
RTOR Reduction (vph)	0	0	0	0	0	332	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	242	63	79	574	0	0	930	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					19.0	19.0	12.0	45.0			77.0	
Effective Green, g (s)					19.0	19.0	12.0	45.0			77.0	
Actuated g/C Ratio					0.16	0.16	0.10	0.38			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					280	251	177	699			2168	
v/s Ratio Prot					c0.14	0.04	0.04	c0.31			c0.28	
v/s Ratio Perm												
v/c Ratio					0.86	0.25	0.45	0.82			0.43	
Uniform Delay, d1					49.2	44.2	50.9	33.9			10.6	
Progression Factor					1.00	1.00	1.21	1.02			1.60	
Incremental Delay, d2					28.1	2.4	6.8	8.5			0.4	
Delay (s)					77.3	46.6	68.2	42.9			17.4	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			58.3			46.0			17.4	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	71	706	265	76	455	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	743	279	80	479	358
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	75	743	279	80	479	325
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	80.0	26.0	37.0	74.0	104.0
Effective Green, g (s)	8.0	80.0	26.0	38.0	74.0	104.0
Actuated g/C Ratio	0.07	0.67	0.22	0.32	0.62	0.87
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	124	1055	384	590	1092	1372
v/s Ratio Prot	0.04	c0.47	c0.16	0.04	c0.27	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.70	0.73	0.14	0.44	0.24
Uniform Delay, d1	54.5	12.6	43.7	29.3	12.1	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.32	0.00
Incremental Delay, d2	20.0	3.9	11.4	0.5	0.8	0.3
Delay (s)	74.4	16.5	55.1	29.8	4.6	0.3
Level of Service	E	B	E	C	A	A
Approach Delay (s)	21.8			49.4	2.8	
Approach LOS	C			D	A	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	57	496	29	166	373	60	20	12	176	107	10	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	522	31	175	393	63	21	13	185	113	11	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	456			553			1434	1463	537	1515	1446	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			553			1434	1463	537	1515	1446	424
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			83			74	87	66	0	90	95
cM capacity (veh/h)	1105			1017			82	101	544	49	103	630

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	60	553	175	456	219	113	40
Volume Left	60	0	175	0	21	113	0
Volume Right	0	31	0	63	185	0	29
cSH	1105	1700	1017	1700	578	49	269
Volume to Capacity	0.05	0.33	0.17	0.27	0.38	2.31	0.15
Queue Length 95th (ft)	4	0	15	0	44	290	13
Control Delay (s)	8.4	0.0	9.3	0.0	23.2	775.6	20.7
Lane LOS	A		A		C	F	C
Approach Delay (s)	0.8		2.6		23.2	577.8	
Approach LOS					C	F	

Intersection Summary			
Average Delay	59.1		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	33.1	25.8	8.7	19.8
Stop Delay (hr)	1.0	1.5	0.5	2.9
St Del/Veh (s)	27.7	22.7	6.3	16.5

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	48.7	35.1	12.9	29.3
Stop Delay (hr)	2.3	1.8	0.9	5.1
St Del/Veh (s)	42.5	32.0	11.1	25.9

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	20.4	50.9	5.9	19.0
Stop Delay (hr)	1.2	1.5	0.4	3.0
St Del/Veh (s)	17.5	47.2	4.6	16.7

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	7.6	3.6	140.3	365.7	50.9
Stop Delay (hr)	0.2	0.1	2.5	3.8	6.6
St Del/Veh (s)	4.2	2.7	142.0	365.9	49.4

Total Network Performance

Delay / Veh (s)	74.6
Stop Delay (hr)	18.1
St Del/Veh (s)	66.0

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	262	129	269	106	216	213	18
Average Queue (ft)	144	67	198	74	123	70	3
95th Queue (ft)	332	142	315	129	208	178	43
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)	0		9			0	0
Queuing Penalty (veh)	0		0			2	0
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	15	0	26	2	2		
Queuing Penalty (veh)	24	0	76	6	10		

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	312	240	153	241	296	167	215
Average Queue (ft)	213	136	84	227	153	131	179
95th Queue (ft)	453	278	149	258	331	191	228
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			0	33	2	0	10
Queuing Penalty (veh)			0	207	15	2	49
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	5	0	0	33			
Queuing Penalty (veh)	17	1	0	25			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	221	139	196	318	128	157
Average Queue (ft)	176	137	162	131	94	49
95th Queue (ft)	255	141	219	335	147	165
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	15	13		0		3
Queuing Penalty (veh)	113	0		0		23
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	15	13	18		9	
Queuing Penalty (veh)	103	9	14		31	

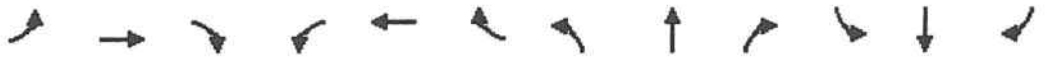
Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	69	216	103	55	187	171	154	376
Average Queue (ft)	22	88	51	7	127	125	138	235
95th Queue (ft)	72	201	97	63	244	198	182	502
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)			0	1	34	12		19
Queuing Penalty (veh)			0	6	0	0		0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)		0	2	0	0	57	71	
Queuing Penalty (veh)		0	8	0	0	18	27	

Nework Summary

Network wide Queuing Penalty: 787

APPENDIX F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.37	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	689	1863	
Volume (vph)	210	0	85	0	0	0	0	377	235	366	425	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	0	89	0	0	0	0	397	247	385	447	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	120	0	0	0
Lane Group Flow (vph)	0	221	17	0	0	0	0	397	127	385	447	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.3	11.3					27.1	27.1	40.7	40.7	
Effective Green, g (s)		11.3	11.3					27.1	27.1	40.7	40.7	
Actuated g/C Ratio		0.19	0.19					0.45	0.45	0.68	0.68	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		333	298					841	715	640	1264	
v/s Ratio Prot								0.21		c0.10	0.24	
v/s Ratio Perm		0.12	0.01						0.08	c0.31		
v/c Ratio		0.66	0.06					0.47	0.18	0.60	0.35	
Uniform Delay, d1		22.6	20.0					11.5	9.8	5.2	4.1	
Progression Factor		1.00	1.00					1.00	1.00	1.68	0.61	
Incremental Delay, d2		4.9	0.1					1.9	0.5	1.4	0.6	
Delay (s)		27.5	20.1					13.4	10.3	10.1	3.1	
Level of Service		C	C					B	B	B	A	
Approach Delay (s)		25.4			0.0			12.2			6.4	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3323	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3323	
Volume (vph)	0	0	0	155	0	379	145	442	0	0	636	438
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	399	153	465	0	0	669	461
RTOR Reduction (vph)	0	0	0	0	0	342	0	0	0	0	103	0
Lane Group Flow (vph)	0	0	0	0	163	57	153	465	0	0	1027	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	14.0	41.0			77.0	
Effective Green, g (s)					17.0	17.0	14.0	41.0			77.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.34			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	207	637			2132	
v/s Ratio Prot					c0.09	0.04	0.09	c0.25			c0.31	
v/s Ratio Perm												
v/c Ratio					0.65	0.25	0.74	0.73			0.48	
Uniform Delay, d1					48.7	45.8	51.2	34.6			11.1	
Progression Factor					1.00	1.00	1.15	1.05			1.14	
Incremental Delay, d2					12.3	2.7	19.0	6.1			0.4	
Delay (s)					61.0	48.5	78.0	42.6			13.1	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.2			51.3			13.1	
Approach LOS		A			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	41	558	516	61	551	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	587	543	64	580	284
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	43	587	543	64	580	273
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	3.0	69.0	37.0	43.0	68.0	109.0
Effective Green, g (s)	3.0	69.0	37.0	44.0	68.0	109.0
Actuated g/C Ratio	0.02	0.57	0.31	0.37	0.57	0.91
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	47	910	546	683	1003	1438
v/s Ratio Prot	0.02	c0.37	c0.31	0.03	c0.33	0.17
v/s Ratio Perm						
v/c Ratio	0.91	0.65	0.99	0.09	0.58	0.19
Uniform Delay, d1	58.4	17.2	41.4	24.9	16.8	0.6
Progression Factor	1.00	1.00	1.00	1.00	0.34	0.06
Incremental Delay, d2	107.9	3.5	37.2	0.3	1.7	0.2
Delay (s)	166.2	20.7	78.6	25.2	7.4	0.2
Level of Service	F	C	E	C	A	A
Approach Delay (s)	30.7			73.0	5.0	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	32.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	39	357	6	67	378	166	2	3	69	172	7	74
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	41	376	6	71	398	175	2	3	73	181	7	78
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	573			382			1082	1175	379	1122	1091	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	573			382			1082	1175	379	1122	1091	485
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			99	98	89	0	96	87
cM capacity (veh/h)	1000			1176			152	173	668	149	194	582

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	41	382	71	573	78	181	85
Volume Left	41	0	71	0	2	181	0
Volume Right	0	6	0	175	73	0	78
cSH	1000	1700	1176	1700	716	149	496
Volume to Capacity	0.04	0.22	0.06	0.34	0.11	1.22	0.17
Queue Length 95th (ft)	3	0	5	0	9	262	15
Control Delay (s)	8.8	0.0	8.3	0.0	12.2	202.9	13.8
Lane LOS	A		A		B	F	B
Approach Delay (s)	0.8		0.9		12.2	142.3	
Approach LOS					B	F	

Intersection Summary			
Average Delay	28.2		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	23.7	14.0	8.4	13.1
Stop Delay (hr)	0.5	0.7	0.4	1.6
St Del/Veh (s)	19.7	11.5	6.1	10.4

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	40.0	46.5	11.2	28.0
Stop Delay (hr)	1.7	2.3	0.9	5.0
St Del/Veh (s)	35.5	43.4	9.6	25.3

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	28.5	103.6	9.1	42.5
Stop Delay (hr)	1.3	5.1	0.6	7.0
St Del/Veh (s)	25.8	98.1	7.7	39.5

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	6.5	1.5	43.9	532.7	81.8
Stop Delay (hr)	0.2	0.0	0.3	9.2	9.6
St Del/Veh (s)	4.1	0.4	44.0	532.1	80.4

Total Network Performance

Delay / Veh (s)	104.0
Stop Delay (hr)	23.6
St Del/Veh (s)	95.4

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	R	L	T
Maximum Queue (ft)	187	99	255	103	180	156
Average Queue (ft)	104	35	154	49	109	63
95th Queue (ft)	183	84	276	103	188	155
Link Distance (ft)	689		252			296
Upstream Blk Time (%)			1			0
Queuing Penalty (veh)			0			0
Storage Bay Dist (ft)		110		75	200	
Storage Blk Time (%)	7		14	1	0	0
Queuing Penalty (veh)	6		33	2	2	1

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	228	237	161	241	258	165	221
Average Queue (ft)	113	137	136	220	121	118	176
95th Queue (ft)	233	282	181	265	284	189	236
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			1	31	1	0	12
Queuing Penalty (veh)			0	182	6	1	66
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)		2	1	31			
Queuing Penalty (veh)		3	6	45			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	207	139	193	434	125	185
Average Queue (ft)	183	137	190	406	107	95
95th Queue (ft)	209	139	194	509	157	237
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	20	16		26		11
Queuing Penalty (veh)	122	0		0		86
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	20	16	54		18	
Queuing Penalty (veh)	114	6	33		50	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	49	142	47	6	33	98	156	441
Average Queue (ft)	19	67	17	1	9	51	149	408
95th Queue (ft)	50	144	47	6	59	103	176	560
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)					1	0		71
Queuing Penalty (veh)					0	0		0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)						4	93	0
Queuing Penalty (veh)						0	76	0

Nework Summary

Network wide Queuing Penalty: 839

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.25	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	469	1863	
Volume (vph)	268	0	155	0	0	0	0	424	290	432	558	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	282	0	163	0	0	0	0	446	305	455	587	0
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	151	0	0	0
Lane Group Flow (vph)	0	282	35	0	0	0	0	446	154	455	587	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		12.8	12.8					21.4	21.4	39.2	39.2	
Effective Green, g (s)		12.8	12.8					21.4	21.4	39.2	39.2	
Actuated g/C Ratio		0.21	0.21					0.36	0.36	0.65	0.65	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		378	338					664	565	606	1217	
v/s Ratio Prot								0.24		c0.17	0.32	
v/s Ratio Perm		0.16	0.02						0.10	c0.32		
v/c Ratio		0.75	0.10					0.67	0.27	0.75	0.48	
Uniform Delay, d1		22.1	19.0					16.3	13.8	7.5	5.3	
Progression Factor		1.00	1.00					1.00	1.00	1.16	0.34	
Incremental Delay, d2		7.8	0.1					5.4	1.2	4.7	1.1	
Delay (s)		29.9	19.1					21.7	15.0	13.3	2.9	
Level of Service		C	B					C	B	B	A	
Approach Delay (s)		25.9			0.0			18.9			7.4	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3379	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3379	
Volume (vph)	0	0	0	230	0	402	75	607	0	0	740	321
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	423	79	639	0	0	779	338
RTOR Reduction (vph)	0	0	0	0	0	356	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	242	67	79	639	0	0	1077	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					19.0	19.0	12.0	45.0			77.0	
Effective Green, g (s)					19.0	19.0	12.0	45.0			77.0	
Actuated g/C Ratio					0.16	0.16	0.10	0.38			0.64	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					280	251	177	699			2168	
v/s Ratio Prot					c0.14	0.04	0.04	c0.34			c0.32	
v/s Ratio Perm												
v/c Ratio					0.86	0.27	0.45	0.91			0.50	
Uniform Delay, d1					49.2	44.4	50.9	35.7			11.3	
Progression Factor					1.00	1.00	1.20	1.03			1.37	
Incremental Delay, d2					28.1	2.6	5.9	14.0			0.4	
Delay (s)					77.3	47.0	67.1	50.6			15.9	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			58.0			52.5			15.9	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	37.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Volume (vph)	71	751	360	76	544	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	791	379	80	573	358
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	75	791	379	80	573	325
Turn Type		custom	Prot			custom
Protected Phases	4	4 5 7	3	8	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	80.0	26.0	37.0	74.0	104.0
Effective Green, g (s)	8.0	80.0	26.0	38.0	74.0	104.0
Actuated g/C Ratio	0.07	0.67	0.22	0.32	0.62	0.87
Clearance Time (s)	4.0		4.0	5.0		
Lane Grp Cap (vph)	124	1055	384	590	1092	1372
v/s Ratio Prot	0.04	c0.50	c0.21	0.04	c0.32	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.75	0.99	0.14	0.52	0.24
Uniform Delay, d1	54.5	13.3	46.8	29.3	13.0	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.30	0.00
Incremental Delay, d2	20.0	4.9	42.8	0.5	1.0	0.2
Delay (s)	74.4	18.2	89.6	29.8	4.9	0.2
Level of Service	E	B	F	C	A	A
Approach Delay (s)	23.1			79.2	3.1	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	72	496	29	166	373	149	20	12	176	152	10	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	76	522	31	175	393	157	21	13	185	160	11	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	549			553			1485	1588	537	1593	1525	471
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	549			553			1485	1588	537	1593	1525	471
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			83			70	85	66	0	88	92
cM capacity (veh/h)	1020			1017			71	83	544	41	90	593

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	76	553	175	549	219	160	59
Volume Left	76	0	175	0	21	160	0
Volume Right	0	31	0	157	185	0	48
cSH	1020	1700	1017	1700	489	41	297
Volume to Capacity	0.07	0.33	0.17	0.32	0.45	3.86	0.20
Queue Length 95th (ft)	6	0	15	0	57	Err	18
Control Delay (s)	8.8	0.0	9.3	0.0	26.1	Err	20.1
Lane LOS	A		A		D	F	C
Approach Delay (s)	1.1		2.2		26.1	7312.4	
Approach LOS					D	F	

Intersection Summary			
Average Delay	898.6		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	47.4	47.2	10.5	30.8
Stop Delay (hr)	1.5	2.9	0.7	5.1
St Del/Veh (s)	40.6	43.2	7.8	26.8

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	55.2	38.7	12.7	32.0
Stop Delay (hr)	2.9	2.2	1.0	6.1
St Del/Veh (s)	48.4	35.5	11.0	28.5

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	20.0	98.8	6.6	29.4
Stop Delay (hr)	1.2	3.7	0.5	5.4
St Del/Veh (s)	17.2	93.4	5.2	26.7

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	7.3	2.9	195.5	1685.4	121.5
Stop Delay (hr)	0.2	0.1	3.6	13.6	17.6
St Del/Veh (s)	4.1	1.9	198.7	1689.8	120.5

Total Network Performance

Delay / Veh (s)	129.4
Stop Delay (hr)	35.1
St Del/Veh (s)	119.8

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	355	136	267	106	224	240	64
Average Queue (ft)	185	85	247	81	150	82	13
95th Queue (ft)	387	162	324	131	246	231	80
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)	0		25			1	0
Queuing Penalty (veh)	0		0			11	1
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	32	0	43	1	5	0	
Queuing Penalty (veh)	49	1	125	6	28	1	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	403	289	151	242	314	167	217
Average Queue (ft)	229	190	82	235	250	134	184
95th Queue (ft)	501	343	152	254	388	190	234
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			1	45	8	0	11
Queuing Penalty (veh)			0	312	58	3	63
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	5	3	1	45			
Queuing Penalty (veh)	19	6	5	34			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	218	139	196	430	130	202
Average Queue (ft)	175	137	186	310	111	102
95th Queue (ft)	242	139	211	548	156	239
Link Distance (ft)	145			416		172
Upstream Blk Time (%)	14	10		15		7
Queuing Penalty (veh)	112	0		0		66
Storage Bay Dist (ft)		150	165		100	
Storage Blk Time (%)	14	10	48		15	
Queuing Penalty (veh)	102	7	37		52	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	L	TR
Maximum Queue (ft)	46	187	88	27	172	178	158	450
Average Queue (ft)	25	83	51	3	150	151	150	435
95th Queue (ft)	52	188	91	29	253	211	160	459
Link Distance (ft)		782		145	169			424
Upstream Blk Time (%)				0	55	27		92
Queuing Penalty (veh)				0	0	0		0
Storage Bay Dist (ft)	250		100			100	125	
Storage Blk Time (%)		0	0		2	75	100	0
Queuing Penalty (veh)		0	3		4	24	56	0

Nework Summary

Network wide Queuing Penalty: 1183

APPENDIX G

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.35	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	658	1863	
Volume (vph)	210	0	85	0	0	0	0	377	235	366	425	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	0	89	0	0	0	0	397	247	385	447	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	122	0	0	0
Lane Group Flow (vph)	0	221	17	0	0	0	0	397	125	385	447	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		11.7	11.7					25.5	25.5	40.3	40.3	
Effective Green, g (s)		11.7	11.7					25.5	25.5	40.3	40.3	
Actuated g/C Ratio		0.19	0.19					0.42	0.42	0.67	0.67	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		345	309					792	673	642	1251	
v/s Ratio Prot								0.21		c0.11	0.24	
v/s Ratio Perm		0.12	0.01						0.08	c0.29		
v/c Ratio		0.64	0.06					0.50	0.19	0.60	0.36	
Uniform Delay, d1		22.2	19.7					12.6	10.8	5.4	4.3	
Progression Factor		1.00	1.00					1.00	1.00	2.04	1.17	
Incremental Delay, d2		4.0	0.1					2.3	0.6	1.3	0.7	
Delay (s)		26.2	19.7					14.9	11.4	12.4	5.7	
Level of Service		C	B					B	B	B	A	
Approach Delay (s)		24.4			0.0			13.5			8.8	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.94	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3323	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3323	
Volume (vph)	0	0	0	155	0	379	145	442	0	0	636	438
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	163	0	399	153	465	0	0	669	461
RTOR Reduction (vph)	0	0	0	0	0	342	0	0	0	0	103	0
Lane Group Flow (vph)	0	0	0	0	163	57	153	465	0	0	1027	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					17.0	17.0	15.0	38.0			76.0	
Effective Green, g (s)					17.0	17.0	15.0	38.0			76.0	
Actuated g/C Ratio					0.14	0.14	0.12	0.32			0.63	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					251	224	221	590			2105	
v/s Ratio Prot					c0.09	0.04	0.09	c0.25			c0.31	
v/s Ratio Perm												
v/c Ratio					0.65	0.25	0.69	0.79			0.49	
Uniform Delay, d1					48.7	45.8	50.3	37.3			11.7	
Progression Factor					1.00	1.00	1.12	1.01			0.91	
Incremental Delay, d2					12.3	2.7	14.6	8.6			0.6	
Delay (s)					61.0	48.5	71.0	46.2			11.3	
Level of Service					E	D	E	D			B	
Approach Delay (s)		0.0			52.2			52.4			11.3	
Approach LOS		A			D			D			B	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (prot)	1863	1583	1681	1698	1770	1583
Flt Permitted	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (perm)	1863	1583	1681	1698	1770	1583
Volume (vph)	41	558	688	61	551	270
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	587	724	64	580	284
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	43	587	384	404	580	251
Turn Type		pt+ov	Split			custom
Protected Phases	4	4 5 6 7	3	3	5 6 7	3 5 6 7
Permitted Phases						2
Actuated Green, G (s)	6.0	75.0	37.0	37.0	65.0	106.0
Effective Green, g (s)	6.0	75.0	37.0	37.0	65.0	106.0
Actuated g/C Ratio	0.05	0.62	0.31	0.31	0.54	0.88
Clearance Time (s)	4.0		4.0	4.0		
Lane Grp Cap (vph)	93	989	518	524	959	1398
v/s Ratio Prot	0.02	c0.37	0.23	c0.24	c0.33	0.16
v/s Ratio Perm						
v/c Ratio	0.46	0.59	0.74	0.77	0.60	0.18
Uniform Delay, d1	55.4	13.4	37.2	37.7	18.7	1.0
Progression Factor	1.00	1.00	1.00	1.00	0.36	0.00
Incremental Delay, d2	15.6	2.6	9.2	10.5	1.8	0.2
Delay (s)	71.1	16.0	46.4	48.2	8.5	0.2
Level of Service	E	B	D	D	A	A
Approach Delay (s)	19.8			47.3	5.8	
Approach LOS	B			D	A	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	357	6	67	378	166	0	0	69	0	0	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	44	376	6	71	398	175	0	0	73	0	0	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	573			382			1092	1181	379	1163	1097	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	573			382			1092	1181	379	1163	1097	485
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			100	100	89	100	100	85
cM capacity (veh/h)	1000			1176			151	171	668	141	191	582

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	44	382	71	573	73	85
Volume Left	44	0	71	0	0	0
Volume Right	0	6	0	175	73	85
cSH	1000	1700	1176	1700	668	582
Volume to Capacity	0.04	0.22	0.06	0.34	0.11	0.15
Queue Length 95th (ft)	3	0	5	0	9	13
Control Delay (s)	8.8	0.0	8.3	0.0	11.0	12.2
Lane LOS	A		A		B	B
Approach Delay (s)	0.9		0.9		11.0	12.2
Approach LOS					B	B

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A	
Analysis Period (min)	15			

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	27.8	16.6	9.6	15.3
Stop Delay (hr)	0.6	0.8	0.5	1.9
St Del/Veh (s)	23.5	13.9	6.9	12.3

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	36.4	49.0	9.0	25.0
Stop Delay (hr)	1.6	2.5	0.8	4.9
St Del/Veh (s)	32.1	45.7	7.1	22.2

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	26.5	47.9	10.1	27.8
Stop Delay (hr)	1.4	3.0	0.6	5.0
St Del/Veh (s)	24.3	42.7	8.6	24.9

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	4.0	1.5	9.0	5.3	3.1
Stop Delay (hr)	0.1	0.0	0.1	0.0	0.2
St Del/Veh (s)	2.3	0.3	9.1	4.8	1.8

Total Network Performance

Delay / Veh (s)	54.5
Stop Delay (hr)	12.5
St Del/Veh (s)	46.0

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16
Directions Served	LT	R	T	R	L	T	T
Maximum Queue (ft)	199	116	254	99	219	234	3
Average Queue (ft)	114	44	168	55	125	92	0
95th Queue (ft)	197	109	290	111	220	209	5
Link Distance (ft)	689		252			296	169
Upstream Blk Time (%)			3			0	
Queuing Penalty (veh)			0			2	
Storage Bay Dist (ft)		110		75	200		
Storage Blk Time (%)	12	0	17	1	1	0	
Queuing Penalty (veh)	10	0	40	3	5	0	

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	225	233	160	242	286	168	206
Average Queue (ft)	112	128	127	228	162	106	164
95th Queue (ft)	215	252	184	262	342	184	229
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			1	37	3	0	10
Queuing Penalty (veh)			0	215	18	3	63
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)		1	1	37			
Queuing Penalty (veh)		2	3	53			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	208	154	276	424	128	183
Average Queue (ft)	122	140	216	318	114	108
95th Queue (ft)	245	179	322	475	148	244
Link Distance (ft)	161			416		172
Upstream Blk Time (%)	7	11		7		10
Queuing Penalty (veh)	29	0		0		83
Storage Bay Dist (ft)		150	250		100	
Storage Blk Time (%)	6	13	2	18	21	
Queuing Penalty (veh)	34	5	10	63	56	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	R	R
Maximum Queue (ft)	40	96	49	8	59	56
Average Queue (ft)	20	23	21	1	33	36
95th Queue (ft)	47	87	53	8	60	59
Link Distance (ft)		787		161	168	424
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250		100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Nework Summary

Network wide Queuing Penalty: 696

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					1863	1583	1770	1863	
Flt Permitted		0.95	1.00					1.00	1.00	0.23	1.00	
Satd. Flow (perm)		1770	1583					1863	1583	421	1863	
Volume (vph)	268	0	155	0	0	0	0	424	290	432	558	0
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	282	0	163	0	0	0	0	446	305	455	587	0
RTOR Reduction (vph)	0	0	125	0	0	0	0	0	156	0	0	0
Lane Group Flow (vph)	0	282	38	0	0	0	0	446	149	455	587	0
Turn Type	Perm		Perm						Perm	pm+pt		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		13.9	13.9					19.9	19.9	38.1	38.1	
Effective Green, g (s)		13.9	13.9					19.9	19.9	38.1	38.1	
Actuated g/C Ratio		0.23	0.23					0.33	0.33	0.64	0.64	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		410	367					618	525	587	1183	
v/s Ratio Prot								0.24		c0.18	0.32	
v/s Ratio Perm		0.16	0.02						0.09	c0.31		
v/c Ratio		0.69	0.10					0.72	0.28	0.78	0.50	
Uniform Delay, d1		21.1	18.1					17.6	14.8	9.1	5.8	
Progression Factor		1.00	1.00					1.00	1.00	0.86	0.59	
Incremental Delay, d2		4.8	0.1					7.1	1.3	5.7	1.1	
Delay (s)		25.8	18.3					24.8	16.1	13.6	4.6	
Level of Service		C	B					C	B	B	A	
Approach Delay (s)		23.1			0.0			21.3			8.5	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	
Frt					1.00	0.85	1.00	1.00			0.95	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1770	1583	1770	1863			3379	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1770	1583	1770	1863			3379	
Volume (vph)	0	0	0	230	0	402	75	607	0	0	740	321
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	242	0	423	79	639	0	0	779	338
RTOR Reduction (vph)	0	0	0	0	0	360	0	0	0	0	41	0
Lane Group Flow (vph)	0	0	0	0	242	63	79	639	0	0	1076	0
Turn Type				Split		Prot	Prot					
Protected Phases				7	7	7	1	5			2 3 4	
Permitted Phases												
Actuated Green, G (s)					18.0	18.0	11.0	45.0			79.0	
Effective Green, g (s)					18.0	18.0	11.0	45.0			79.0	
Actuated g/C Ratio					0.15	0.15	0.09	0.38			0.66	
Clearance Time (s)					4.0	4.0	4.0	4.0				
Lane Grp Cap (vph)					266	237	162	699			2225	
v/s Ratio Prot					c0.14	0.04	0.04	c0.34			c0.32	
v/s Ratio Perm												
v/c Ratio					0.91	0.27	0.49	0.91			0.48	
Uniform Delay, d1					50.2	45.2	51.8	35.7			10.3	
Progression Factor					1.00	1.00	1.24	0.81			1.15	
Incremental Delay, d2					36.1	2.8	7.2	14.2			0.5	
Delay (s)					86.3	47.9	71.6	43.0			12.2	
Level of Service					F	D	E	D			B	
Approach Delay (s)		0.0			61.9			46.1			12.2	
Approach LOS		A			E			D			B	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (prot)	1863	1583	1681	1706	1770	1583
Flt Permitted	1.00	1.00	0.95	0.96	0.95	1.00
Satd. Flow (perm)	1863	1583	1681	1706	1770	1583
Volume (vph)	71	751	512	76	544	340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	75	791	539	80	573	358
RTOR Reduction (vph)	0	0	0	0	0	33
Lane Group Flow (vph)	75	791	302	317	573	325
Turn Type		custom	Split			custom
Protected Phases	4	4 5 7	3	3	5 6 7 3 5 6 7	
Permitted Phases						2
Actuated Green, G (s)	8.0	79.0	27.0	27.0	73.0	104.0
Effective Green, g (s)	8.0	79.0	27.0	27.0	73.0	104.0
Actuated g/C Ratio	0.07	0.66	0.22	0.22	0.61	0.87
Clearance Time (s)	4.0		4.0	4.0		
Lane Grp Cap (vph)	124	1042	378	384	1077	1372
v/s Ratio Prot	0.04	c0.50	0.18	c0.19	c0.32	0.20
v/s Ratio Perm						
v/c Ratio	0.60	0.76	0.80	0.83	0.53	0.24
Uniform Delay, d1	54.5	14.0	43.9	44.3	13.6	1.3
Progression Factor	1.00	1.00	1.00	1.00	0.31	0.00
Incremental Delay, d2	20.0	5.2	16.1	18.0	1.0	0.2
Delay (s)	74.4	19.2	60.0	62.3	5.3	0.2
Level of Service	E	B	E	E	A	A
Approach Delay (s)	24.0			61.2	3.3	
Approach LOS	C			E	A	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	84	496	29	166	373	149	0	0	176	0	0	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	88	522	31	175	393	157	0	0	185	0	0	59
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					230							
pX, platoon unblocked												
vC, conflicting volume	549			553			1515	1613	537	1705	1550	471
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	549			553			1515	1613	537	1705	1550	471
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			83			100	100	66	100	100	90
cM capacity (veh/h)	1020			1017			72	79	544	39	86	593

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	88	553	175	549	185	59
Volume Left	88	0	175	0	0	0
Volume Right	0	31	0	157	185	59
cSH	1020	1700	1017	1700	544	593
Volume to Capacity	0.09	0.33	0.17	0.32	0.34	0.10
Queue Length 95th (ft)	7	0	15	0	38	8
Control Delay (s)	8.9	0.0	9.3	0.0	15.0	11.7
Lane LOS	A		A		C	B
Approach Delay (s)	1.2		2.2		15.0	11.7
Approach LOS					C	B

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-205 EB off-ramp & 10th St Performance by approach

Approach	EB	NB	SB	All
Delay / Veh (s)	34.3	77.8	13.4	38.9
Stop Delay (hr)	1.1	4.6	0.9	6.6
St Del/Veh (s)	28.4	73.6	10.1	34.7

10: I-205 WB on-ramp & 10th St Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	56.6	36.3	9.4	28.4
Stop Delay (hr)	2.9	2.1	0.9	5.8
St Del/Veh (s)	50.0	33.1	7.6	25.0

13: Blankenship Rd & 10th St Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	43.1	67.0	7.1	33.7
Stop Delay (hr)	2.9	3.3	0.5	6.7
St Del/Veh (s)	40.3	61.8	5.6	30.9

14: Blankenship Rd & Tannler Drive Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	7.9	3.1	45.1	6.2	9.9
Stop Delay (hr)	0.3	0.1	0.7	0.0	1.1
St Del/Veh (s)	4.6	1.9	46.4	5.8	8.2

Total Network Performance

Delay / Veh (s)	78.7
Stop Delay (hr)	21.3
St Del/Veh (s)	68.8

Intersection: 7: I-205 EB off-ramp & 10th St

Movement	EB	EB	NB	NB	SB	SB	B16	B16
Directions Served	LT	R	T	R	L	T		T
Maximum Queue (ft)	266	129	274	107	227	295	19	88
Average Queue (ft)	162	76	245	85	162	140	2	20
95th Queue (ft)	292	150	328	132	250	317	33	100
Link Distance (ft)	689		252			296	169	169
Upstream Blk Time (%)			29			2	0	0
Queuing Penalty (veh)			0			16	1	1
Storage Bay Dist (ft)		110		75	200			
Storage Blk Time (%)	25	0	47	2	5	0		
Queuing Penalty (veh)	39	1	137	7	29	1		

Intersection: 10: I-205 WB on-ramp & 10th St

Movement	WB	WB	NB	NB	B16	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	390	290	154	242	314	170	213
Average Queue (ft)	228	184	78	233	248	131	176
95th Queue (ft)	480	317	146	254	400	195	236
Link Distance (ft)	966			169	296	172	172
Upstream Blk Time (%)			0	42	9	1	9
Queuing Penalty (veh)			0	292	64	4	57
Storage Bay Dist (ft)		300	200				
Storage Blk Time (%)	5	2	0	42			
Queuing Penalty (veh)	19	5	0	32			

Intersection: 13: Blankenship Rd & 10th St

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	221	155	225	397	125	191
Average Queue (ft)	161	150	186	292	114	103
95th Queue (ft)	270	172	262	459	146	238
Link Distance (ft)	161			416		172
Upstream Blk Time (%)	13	18		9		7
Queuing Penalty (veh)	90	0		0		72
Storage Bay Dist (ft)		150	200		100	
Storage Blk Time (%)	13	22	4	24	16	
Queuing Penalty (veh)	94	16	15	63	55	

Intersection: 14: Blankenship Rd & Tannler Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	R	R
Maximum Queue (ft)	81	203	100	4	163	52
Average Queue (ft)	34	76	55	0	99	30
95th Queue (ft)	84	198	100	5	187	57
Link Distance (ft)		787		161	168	424
Upstream Blk Time (%)					12	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	250		100			
Storage Blk Time (%)		0	1			
Queuing Penalty (veh)		0	6			

Nework Summary

Network wide Queuing Penalty: 1114

Appendix 2—SWCA Natural Resource Assessment

SWCA
ENVIRONMENTAL CONSULTANTS

Tamarisk Drive, West Linn
Wetland and Waters Delineation

T2S R1E SECTION 34A, TAX LOTS 700, 600, AND 690
WEST LINN, CLACKAMAS COUNTY, OREGON

Prepared for:
Stearns Marnella Communities LLC
4859 SE Vintage Place
Milwaukie, OR 97267

Prepared by:

SWCA Environmental Consultants
434 NW 6th Avenue, Suite 304
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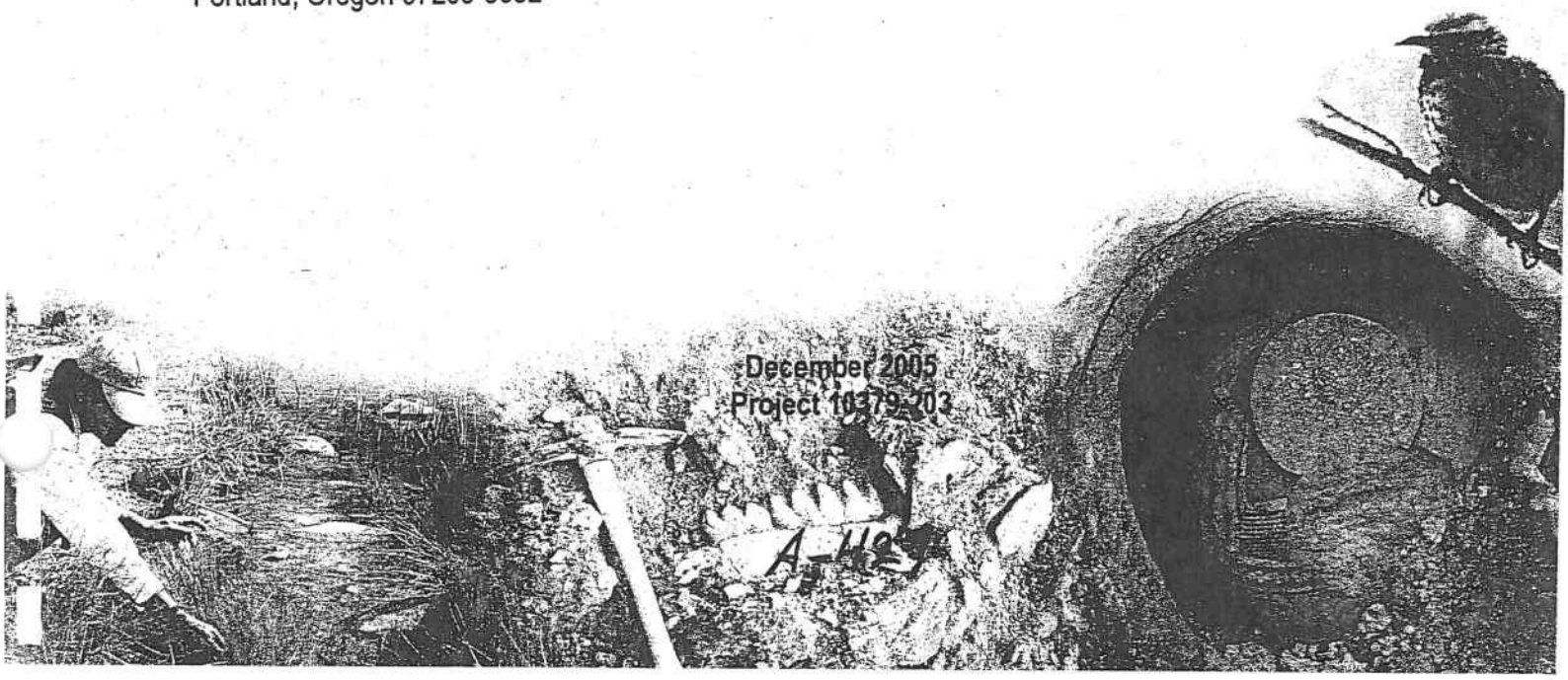

December 2005
Project 10379-203

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Tamarisk Drive, West Linn
Wetland and Waters Delineation

T2S R1E SECTION 34A, TAX LOTS 700, 600, AND 690
WEST LINN, CLACKAMAS COUNTY, OREGON

Prepared for:
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December 2005
Project 10379-203

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Figure 4. Soil Survey Map 13
Figure 5. Wetlands/Waters Existing Site Conditions Map 14
Figure 6. Site Transition Area Boundary and Site Plan Map 15

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Wetland and Waters Delineation Summary

SITE NAME: Tamarisk Drive, West Linn

SITE LOCATION: Northeast of Interstate-205, south of SW Woodbine Road, and west of Tamarisk Drive in the City of West Linn, Clackamas County, Oregon.
T2S, R1E, NE ¼ of Section 34, Tax lots 700, 600 and 690; Tax map 2 1E 34A
Latitude 45° 21' 33"N, Longitude 122° 39' 57"W

APPLICANT: Nick Stearns
Stearns Marnella Communities LLC
4859 SE Vintage Place
Milwaukie, OR 97267
503.654.6642

AGENT: Mike Peebles
OTAK, Inc.
17355 SW Boones Ferry Rd
Lake Oswego, OR 97035
503.699.4526

DATE OF SITE VISITS: September 28th and October 4th, 2005

PROJECT STAFF: C. Mirth Walker, Senior Wetland Scientist
Stacy Benjamin, Senior Wetland Ecologist
Jeff Handley, Wetland Scientist
Stacey Reed, Wetland Scientist

SWCA PROJECT: 10379-203

Summary

SWCA Environmental Consultants[1] was contracted by Stearns Marnella Communities to conduct a wetland and waters determination/delineation on a 14.84-acre site composed of three tax lots located in the City of West Linn, Clackamas County, Oregon (Figure 1). This report has been prepared to meet the Oregon Department of State Lands wetland delineation report requirements and the City of West Linn development requirements.

Fifteen palustrine forested, scrub/shrub and emergent wetlands (labeled Wetlands A, B, C, D, E, F, G, H, I, U, V, W, X, Y, and Z) associated with two natural perennial tributaries to Fritchie Creek (labeled northern and southern tributaries) were delineated in the northern portion of the study area. Wetland G extends off-site to the

1 The Portland, Oregon office of SWCA Environmental Consultants was acquired from Fishman Environmental Services in 2004.

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west, Wetlands I and U extend off-site to the north. The total on-site wetland area is approximately 47,568 square feet (1.09 acres). The City of West Linn requires a protective transition zone (buffer) extending from the top of bank and/or wetland boundary to the top of ravines in areas with a greater than 25 percent slope and/or 50 feet from the edge of drainage channel or wetland, or to the point where the slope tapers off to less than 10 percent for more than 30 feet, whichever is less for a minimum of 30 feet when the adjacent slope is between 10-25%.

1 Introduction And Background Information

1.1 Study Area Boundary

The study area consists of tax lots 700, 600 and 690 on tax map 2 1E 34A in West Linn, Clackamas County Oregon (Figure 2).

1.2 Local Wetlands Inventory

Palustrine emergent riverine flow-through wetlands associated with the north fork to Fritchie Creek are mapped within the study area on the City of West Linn Goal 5 Inventory Map (map code FR-01) (Appendix A).

1.3 National Wetlands Inventory

Wetlands are mapped on the project site on the Canby, Oregon National Wetland Inventory map (Figure 4). Fritchie Creek is mapped as a palustrine, forested, broad leaf deciduous wetland with a saturated/semipermanent/seasonal water regime (PFO1Y). No other wetlands are mapped within the study area.

1.4 Soil Survey

Soils were mapped on the site by the USDA Soil Conservation Service in the *Soil Survey of Clackamas County, Oregon* (USDA SCS 1985; Figure 4). The somewhat poorly drained Cascade silt loam with 8 to 15 percent slope (unit 13C) and the moderately well drained Woodburn silt loam with 3 to 8 percent slope (unit 91B) are mapped in the northern and southern portions of the study area. The well drained Xerochrepts and Haploxerolls with very steep slopes (unit 92F) are mapped in the northern portion of tax lot 600 adjacent to north and southern forks of Fritchie Creek.

Woodburn silt loams with 3 to 8 percent slope may contain Dayton and Huberly soil inclusions and wet spots as indicated on the hydric soils list in the *Hydric Soils of Washington County Area, Oregon* list (USDA SCS 1989).

1.5 Site Elevation and Topography

The northern portion of the site is very steep, with steep ravines surrounding both drainages flowing through the site. Elevation in the northern portion of the study area ranges from about 200 feet above sea level at the top of the ravine to about than 120 feet above sea level at the bottom of the ravine. The southern portion of tax lot 600 steeply slopes to the south towards Tate Creek, which is located off-site.

1.6 Floodplain

Portions of the site are present on two different flood insurance rate maps. All of the site is mapped as Zone C ("Areas of minimal flooding") on the FEMA Flood Insurance Rate Map for the unincorporated areas of Clackamas County, Oregon (Community Panel No. 415588 0135A, updated 1987) and the FEMA combined

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Flood Hazard Boundary Map H-01/Flood Insurance Rate Map 1-01 for the City of West Linn (Community Number 410024B, Panel H & I-01, effective 1977).

1.7 Precipitation

There was approximately 1.70 inches of rainfall for the two weeks prior to the September 29th and October 3rd site visits according to the Portland weather station of the National Weather Service. Total rainfall for the month of September was 1.71 inches, which is 0.06 inches above normal according to the National Weather Service Portland weather station. Historic precipitation averages for the month of September is 1.75 inches according to the WETS WB Portland City station. Therefore, rainfall observed in the vicinity of the project site was slightly below normal for the month of September, but within the 30-70 percentile range.

2 Methodology

The methodology used for determining the presence of wetlands and delineating wetland boundaries follows the routine wetland determination methodology and plant community approach of the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) used by both the Corps and the Oregon Department of State Lands. Fieldwork was conducted on September 29th and October 4th, 2005. Soils, vegetation and indicators of hydrology were recorded at 19 sample plot locations (Test Pits R1-R10 and L1-L9) to document site conditions. The ample plot locations in the wetlands were chosen as representative of conditions of on-site wetlands. Wetland determination data sheets are included in Appendix C. The top of bank for the on-site portions of the northern and southern tributaries to Fritchie Creek were flagged at the geomorphic break between the incised channel cut and the flatter surrounding lands. The top of bank, on-site wetland boundaries, and Test Pits L1, L2, L3, L4, L5, L8, R2, R5, R6, R7, R8, R9, and R10 were professionally surveyed by Otak, Inc. as shown on the Existing Site Conditions Map, Figure 5. The approximate locations of Test Pits R1, R3, R4, L6, L7, and L9 were hand mapped.

Site photographs and a map of their location are included in Appendix D. A list of vegetation noted on the site is in Appendix E.

Reference material used in this study included Reed's *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* and the *1993 Supplement* to the list, where the indicator status of wetland plants are listed. These indicators include:

OBL	Obligate Wetland – Plants that occur almost always in wetlands (estimated probability >99%) under natural conditions, but which may also rarely occur in non-wetlands (<1% probability). Examples: broadleaf cattail, skunk cabbage
FACW	Facultative Wetland - Plants that usually occur in wetlands (estimated probability 67%-99%), but also occur in non-wetlands an estimated 1%-33% of the time. Examples: Oregon ash, red-osier dogwood
FAC	Facultative – Plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%). Examples: red alder, salmonberry
FACU	Facultative Upland - Plants that usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands (estimated probability 1%-33%). Examples:

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	bigleaf maple, Himalayan blackberry
UPL, NOL	Upland, Not Listed - Plants that almost always occur in non-wetlands (<1% probability of occurring in wetlands).
NI	No Indicator (insufficient information available or plant is widely tolerant).

Plant taxonomy follows Hitchcock and Cronquist (1973) and synonymy follows Reed (1988); synonymy is shown in [single square brackets]. Taxonomy of some species has been updated (Kartesz 1994) and the new nomenclature is shown in [[double square brackets]]. Updates to the Kartez nomenclature are available from the USDA, NRCS 2004 "The PLANTS Database" website, but this database does not include the 1993 supplement to the wetland plant indicator status

Soils were described with standardized color chips (*Munsell Soil Color Charts*, GretagMacbeth, 2000 revised washable edition) of hue, value, and chroma and by texture (sand, silt, clay, loam, muck, and peat).

Other materials used in this study are included in the Reference section.

3 Wetlands and Waters

3.1 Waters

Two perennial tributaries to Fritchie Creek (labeled northern tributary and southern tributary) flow through the northern portion of the study area on tax lot 600. The southern fork enters the site from the east and flows in a southwesterly direction at the bottom of steep ravine. The channel meanders through the site and is well-defined upstream (Photo 1) becoming broad and flat downstream (Photo 2). Many small shallow side channels were observed within downstream portions at lower broad elevations. The channel flows through a 16-inch diameter culvert located on-site under a fill road before joining the northern tributary off-site to the west and flowing under Highway 205 through a three foot diameter metal culvert (Photo 3). Floodplain wetlands associated with both banks (Wetlands U-Z and E) were observed along with seepage on slopes adjacent to the left bank (Wetlands A-G). The channel mainstem was approximately 3-5 feet wide by 1-3 feet deep with water depths averaging ½ foot. The channel substrate was dominated by sand with lesser amounts of gravel and generally lacked vegetation.

The northern tributary enters the site from the north through three 18-inch plastic corrugated culverts installed under an off-site fill road (Photo 4). The channel flows through the site in a southerly direction through a large ponded area (approximately 2 feet deep) created by a beaver dam (Photo 5) and then meanders downstream into a broad, flat floodplain. The channel is very deep and incised within the floodplain with several small side channels cut by nutria or beaver. Flow was present in the north tributary on the days of our field investigation and areas with a defined channel generally lacked vegetation. Floodplain wetlands (Wetlands U, H, and I) associated with the northern tributary were documented.

Both stream channels are relatively undisturbed and contained within steep sided ravines. Fritiche Creek flows into the Tualatin River off-site to the west. Tate Creek is located off-site to the south of lot 600.

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3.2 Wetlands

Nine palustrine scrub/shrub and emergent floodplain wetlands and six palustrine forested slope wetlands were identified and delineated on-site and labeled: Wetlands A-G on left bank of the southern tributary, Wetlands U-Z on right bank of southern tributary, Wetlands H-I on right bank northern tributary and Wetland U on left bank of northern tributary.

Table 1. Approximate On-site Wetland Area

Wetland Name	On-site Square Footage	On-site Acreage
Wetland A*	1,427	0.03
Wetland B	1,234	0.03
Wetland C	2,597	0.06
Wetland D	2,942	0.07
Wetland E	3,123	0.07
Wetland F	342	0.008
Wetland G	2,629	0.06
Wetland H*	10,640	0.24
Wetland I*	163	0.003
Wetland U*	18,227	0.42
Wetland V	834	0.02
Wetland W	401	0.01
Wetland X	346	0.008
Wetland Y	1,401	0.03
Wetland Z	1,262	0.03
Total	**47,568**	**1.09**

*Wetlands continue outside the study area and the total areas are not known.

3.2.1 Floodplain Wetlands

Wetlands labeled Z, Y, X, W, E, and V are palustrine scrub/shrub and emergent floodplain wetlands associated with the southern tributary with conditions documented at plots R1, R3 and L7. Vegetation was generally dominated by salmonberry, Himalayan blackberry, piggy-back plant, stinging nettle, lady fern, skunk cabbage, common horsetail, and tall managrass. Surface soils were a very dark brown (10YR 3/2) silty clay loam underlain by greenish black gley (10Y 2.5/1) silty clay loam at 9 inches below the surface. Soils at all wetlands were saturated to the surface with surface inundation noted at plot L7 within Wetland E. These areas were determined to be wetland based upon having a predominance of hydrophytic vegetation species, hydric soils, and wetland hydrology. The wetland boundary was well defined by a topographic increase to the adjacent steeply sloped uplands along with a change in vegetation from hydrophytic dominated vegetation species to non-hydrophytic dominated vegetation species.

Wetlands U and H are palustrine emergent floodplain wetlands associated with the broad, flat floodplain near the confluence of the southern and northern tributaries and the upstream portions of the northern tributary where they are contained within steep sided ravines. Conditions of both wetlands were documented at plots R5, R7and R10. Along the southern tributary, Wetland U is dominated by Himalayan blackberry and piggy-back plant with lesser amounts of stinging nettle (plot R5-Photo 6) and transitions into 100% reed canary grass (plot R7) along the left bank of the northern tributary. Wetland H has a reed canarygrass dominated vegetation

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community in the floodplain adjacent to the right bank of the northern tributary. Both wetlands H and U transition from a reed canarygrass dominated vegetation community (Photo 8) to an emergent community dominated primarily by reed canarygrass, stinging nettle, and bittersweet nightshade upslope of the beaver dam (plot R10) (Photo 9). Soil matrices were a black (10YR 3/1) and very dark brown (10YR 3/2) silty clay loam and silt loam with greenish black gley (10Y 2.5/1) below 8 inches upstream at plot R10. Plot R7 also had common, medium brown (7.5YR 3/4) redox concentrations below 9 inches. Soils were saturated to the surface and contained seeps up to 6 inches below the surface. These areas were determined to be wetland based upon having a predominance of hydrophytic vegetation species, hydric soils, and wetland hydrology. The wetland boundary was well-defined by a topographic increase to the adjacent sloped upland along with a lesser prevalence of hydrophytic vegetation species (Photo 10).

Wetland I is also a floodplain wetland associated with the left bank of the northern tributary located near the northern property boundary. Both Wetlands U and I extend off-site to the north and are cut off by a fill road (Photo 7)

3.2.2 Slope Wetlands

Wetlands labeled A, B, C, D, F and G are palustrine forested slope wetlands associated with the left bank of the southern tributary. Wetland conditions documented at plots L1, L3, L5, and L8. Wetland B also has an emergent floodplain component adjacent to upslope seepage. Vegetation was generally dominated by Western red cedar, red alder, salmonberry, common horsetail, piggy-back plant and lady fern with lesser amounts of Himalayan blackberry, stinging nettle and tall managrass. Soils were generally low chroma silt loams containing redox concentrations in the surface 10 inches. Wetland B (plot L3) contained dark greenish gray (10Y 4/1) gley silt on the floodplain bench with common, medium brown (7.5YR 4/4) redox concentrations. Soils were generally saturated at the surface with upslope seepage (Photo 11). These areas were determined to be wetland based upon having a predominance of hydrophytic vegetation species, hydric soils, and indicators of wetland hydrology. The wetland boundary was defined by an increase to the adjacent upper-sloped uplands, a change in dominant vegetation from hydrophytic to non-hydrophytic, along with a lack of hydrology. Field personnel were impressed with how far upslope seepage occurred.

4 Uplands

Upland conditions adjacent to the southern tributary and wetlands were documented at plots R2, L2, L4, R4, R6, L6 and L9. Uplands were generally forested steep sided slopes dominated by Western red cedar, red alder, bigleaf maple, Himalayan blackberry, beaked hazelnut and sword fern with lesser amounts of red elderberry, salmonberry, vine maple and Indian-plum (Photo 12). Soils within the surface 12 inches were generally dry, bright colored (10YR 3/3 and 4/3 and 5/3) silt loam and silty clay loam including strong brown (7.5YR 5/6) redox concentrations in upland slopes adjacent to the left bank (plots L2, L4 and L9). These areas were determined to be upland based upon having a predominance of non-hydrophytic vegetation species along with a lack of hydric soils and wetland hydrology indicators.

Upland conditions adjacent to the northern tributary were documented at plots R8 and R9. Conditions were very similar to uplands adjacent to the southern tributary with 100% Himalayan blackberry dominated vegetation community in the lower downstream elevations transitioning to steep sloped forested uplands in

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upstream portions dominated by bigleaf maple, Western red cedar, Himalayan blackberry, red elderberry and sword fern with lesser amounts of Indian plum and salmonberry.

The remainder of the site generally consists of a forested upland community dominated by bigleaf maple, red alder, sword fern and bare ground and steeply slopes off-site to the south towards Tate Creek. The entire site is undeveloped and in relatively undisturbed condition. Surrounding land use is residential bordered by Highway 205 to the west of the site.

5 Wetland / Riparian Area Buffers

5.1 Extent of On-site Transition Areas

The City of West Linn requires protective transition zones (buffers) adjacent to sensitive areas located within their jurisdiction. Buffers required for natural perennial creeks, rivers and streams, and wetlands with the an adjacent slope between 10-25 percent is either 50 feet from the edge of drainage channel or wetland, or to the point where the slope tapers off to less than 10 percent for more than 30 feet, whichever is less for a minimum of 30 feet (West Linn Community Code, ORD 1463, Appendix E). When the slope is greater than 25 percent and is determined to be a ravine with clearly delineated edges, than the top of ravine (determined at the point where the grade breaks to less than 25 percent) shall mark the transition area boundary. The extent of the on-site buffer areas is shown on Figure 6.

5.2 Transition Area Assessment

The majority of the buffer areas located on-site are forested with bigleaf maple, Western red cedar, and red alder and can generally be considered "healthy" due to a combination of native trees, shrubs, and groundcover covering greater than 80 percent of the area along with an 80 percent tree canopy. However, the transition buffer adjacent to the downstream portions of Wetland U (shown on Figure 6) is dominated by Himalayan blackberry, which is considered an invasive species, and lacks the proper balance of canopy trees. Therefore, this area can be considered "unhealthy". A Vegetative Improvement Enhancement Plan for the 16, 428square foot "unhealthy" transition area requiring removal of invasive species and the installation of native trees, shrubs, and groundcover is included in Appendix F.

5.3 Proposed Impacts

An access road is proposed within a portion of the transition zone that was determined to be "unhealthy" as shown on Figure 6. The proposed access road is an improvement to an existing fill road that currently crosses the downstream portion of the southern tributary. The Enhancement Plan included in Appendix F will help reestablish any adversely impacted areas of the transition zone from the development of the access road in the transition area buffer. The City of West Linn Community Code 30.100 (D) does not require mitigation in the transition areas. However, impacts to associated wetland areas do require mitigation [CEC 30.100 (E)].

6 Conclusion

It was determined that approximately 47,568 square feet (approximately 1.09 acres) composed of nine palustrine floodplain wetlands and six palustrine slope wetlands are present in the study area. Wetlands

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observed on-site are associated with the northern and southern tributaries to Fritchie Creek. Wetland boundaries were distinct and associated by changes in vegetation, soils, and hydrology.

7 Limitations

This report documents the investigation, best professional judgment and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

8 List of Preparers

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Field Work and Report Review

Stacey Reed, Wetland Scientist
Field Work and Report Preparation

Stacy Benjamin, Senior Wetland Ecologist
Field Work

Jeff Handley, Wetland Scientist
Field Work

9 References

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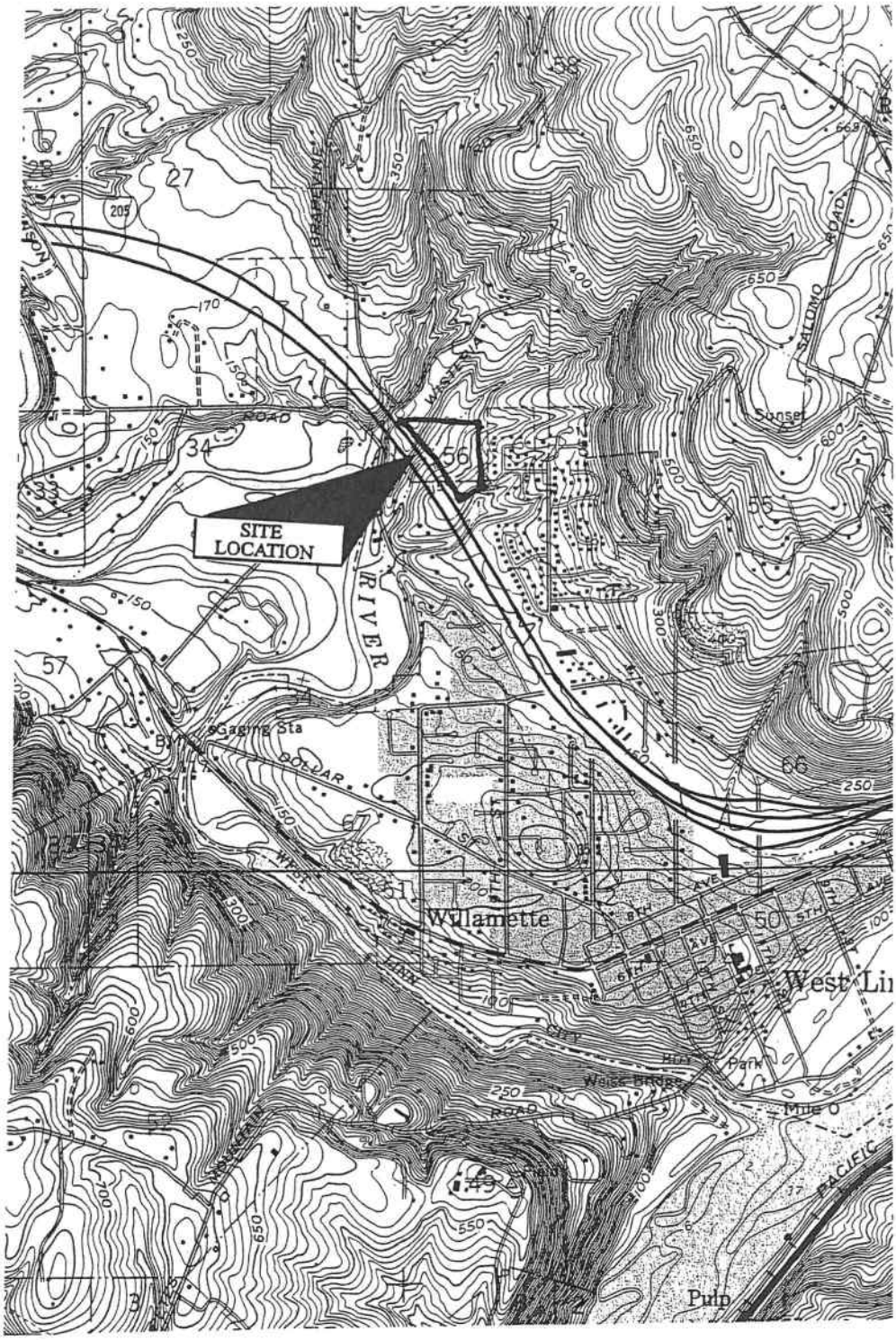

Legend

1 inch = 2,000 feet

N

Source: USGS 1961, photorevised 1985. Canby, Oregon 7.5' topographic quadrangle.

P:\10000\10379-203_WestLinnTamarisk\Figure 1 site location.doc

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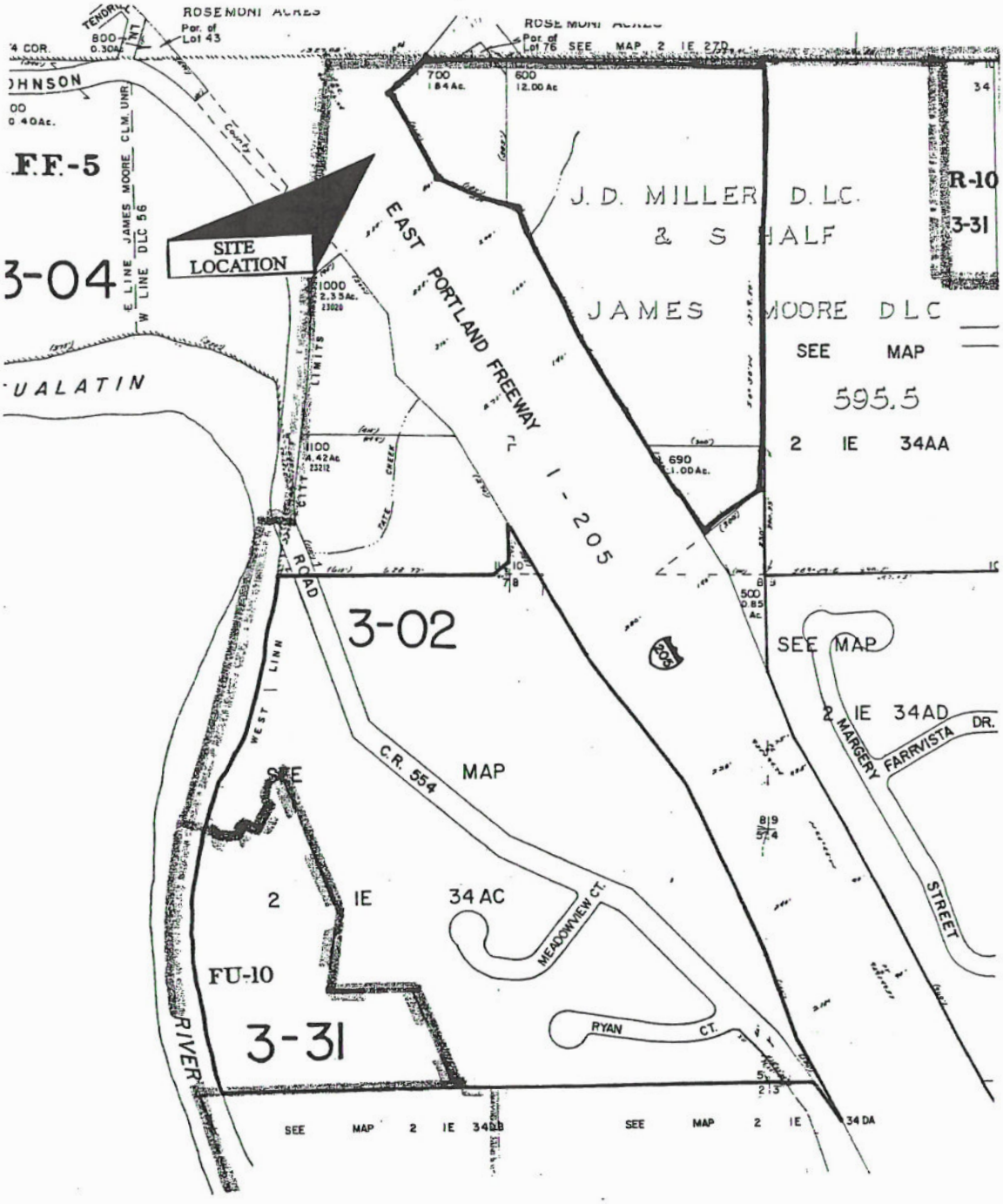
Tamarisk Drive – West Linn Wetland and Waters Delineation

SITE LOCATION MAP

Project 10379-203	December 2005	Figure 1

A-439



Legend

No Scale

Source: OrMap, http://www.ormap.org
21E34A.pdf
P:\10000\10379-203_WestLinnTamarisk\Figure 2 tax lot map.doc

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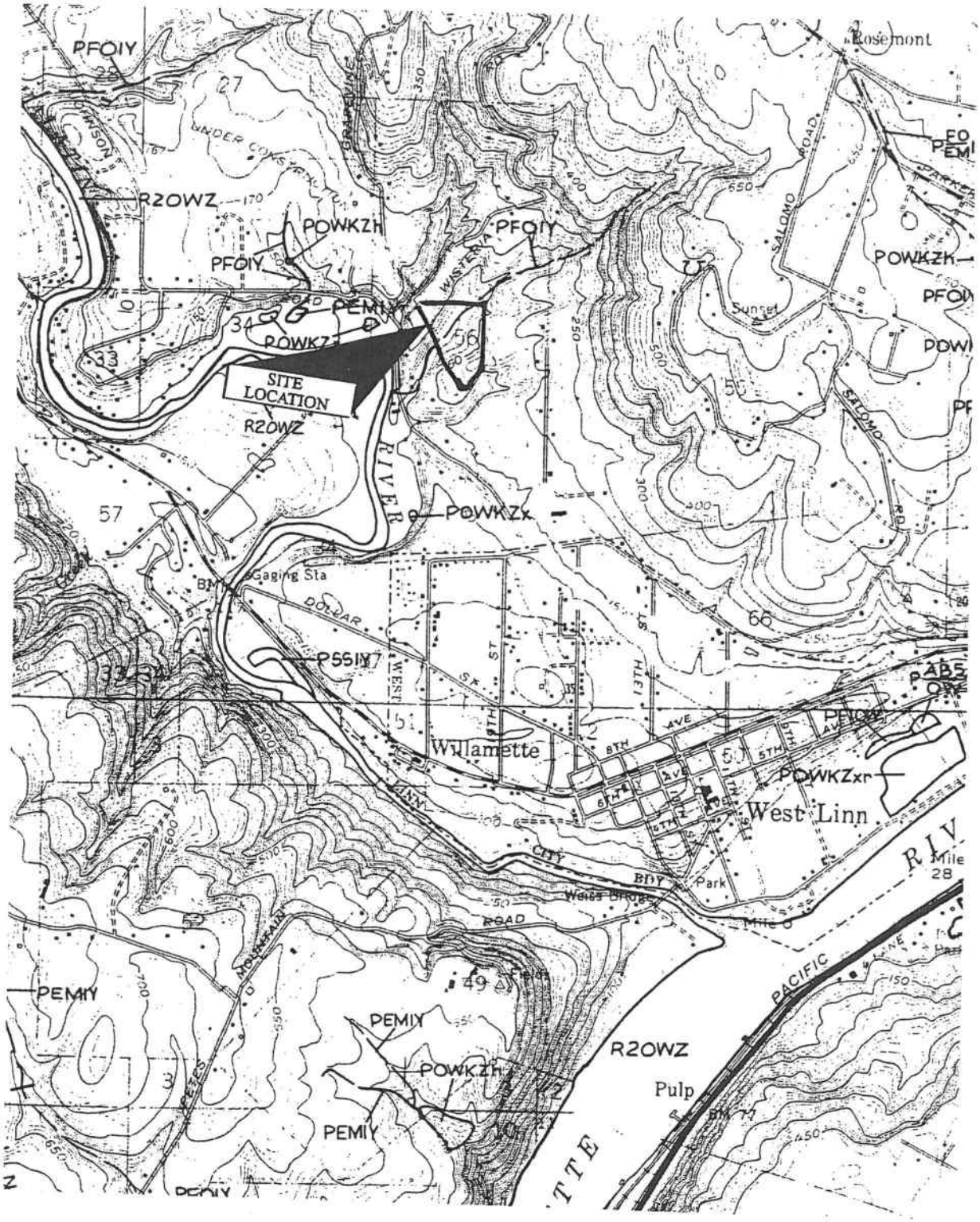
Tamarisk Drive – West Linn
Wetland and Waters Delineation

TAX LOT MAP

Project 10379-203	December 2005	Figure 2

A-440



Legend

1 inch = 2,000 feet

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Source: US Fish and Wildlife Service. No Date. Canby, Oregon, NWI map. CIR Aerial photography flown 8/81 at 1:58,000.

P:\10000\10379-203_WestLinnTamarisk\Figure 3 NWI map.doc

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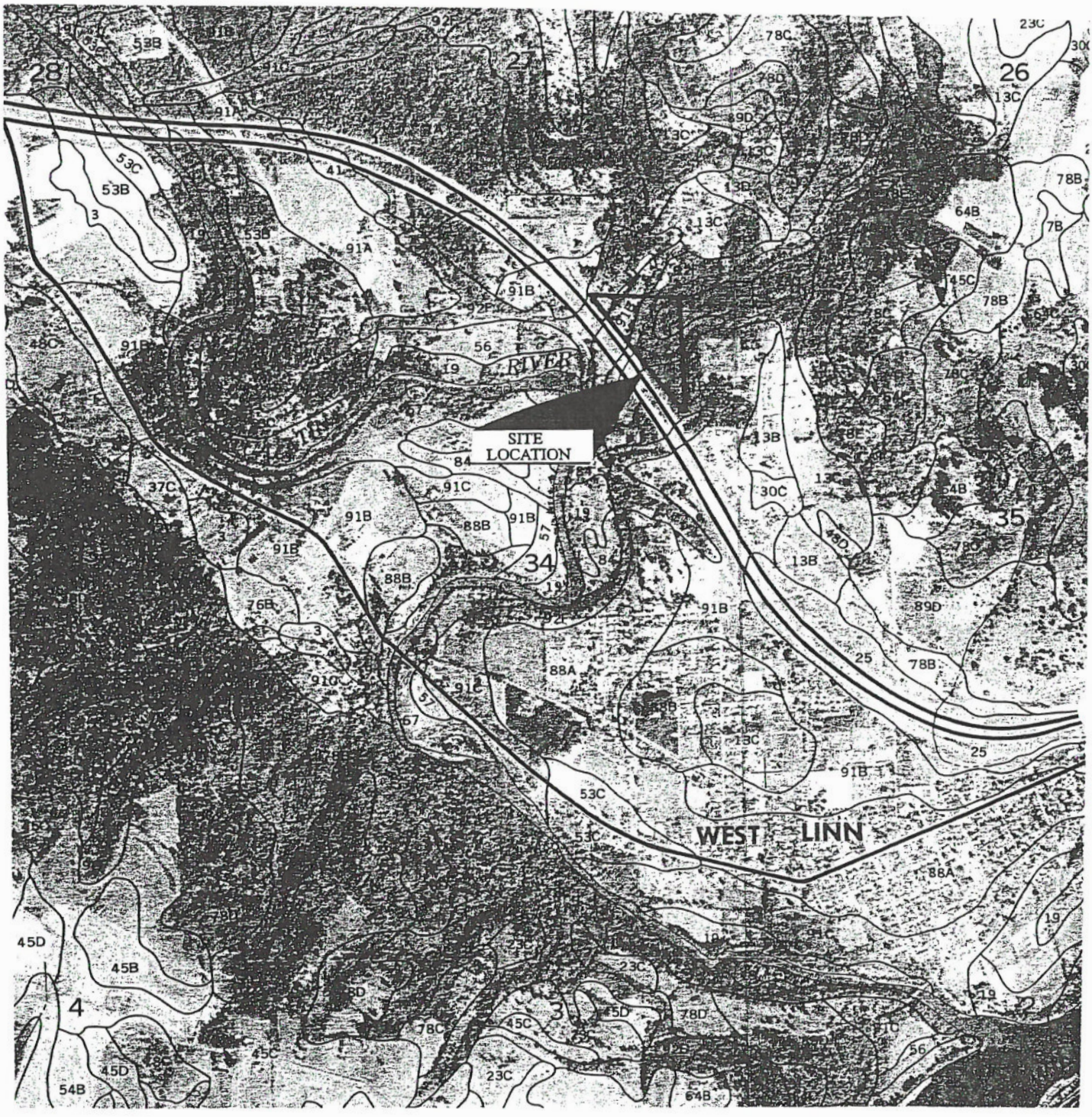
Tamarisk Drive – West Linn
Wetland and Waters Delineation

NATIONAL WETLAND INVENTORY MAP

Project 10379-203	December 2005	Figure 3



1 inch = 1,667 feet

N

Legend

91B – Woodburn silt loam, 3-8% slope (hydric Dayton & Huberly inclusions)
92F—Xerochrepts and Haploxerolls with very steep slops
13C—Cascade silt loam, 8-15% slope

Source: USDA SCS. 1985. Soil Survey of Clackamas County, Oregon. Sheet 13.

P:\10000\10379-203 WestLinnTamarisk\Figures\Figure 4 Soils

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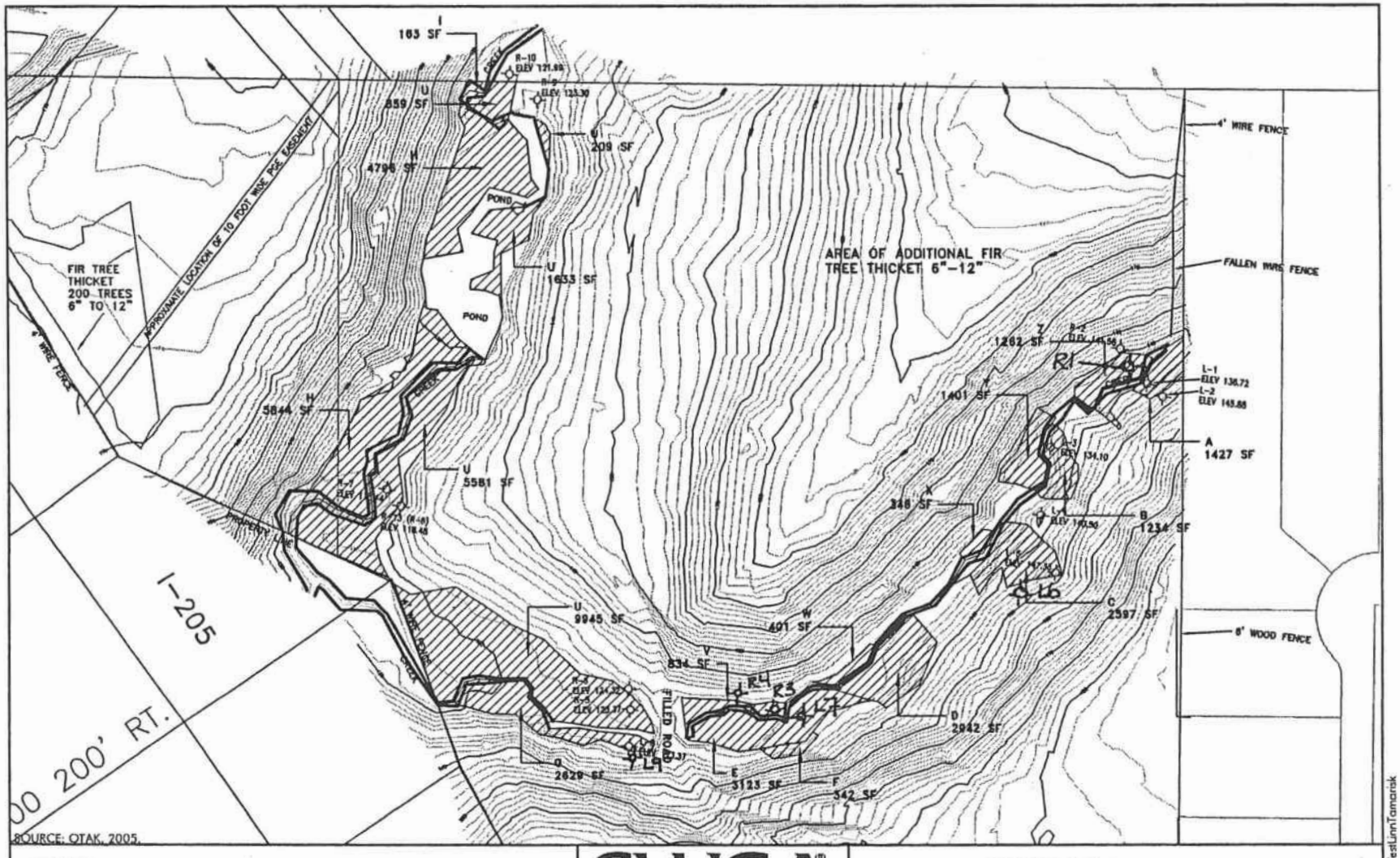
Tamarisk Drive – West Linn
Wetland and Waters Delineation

SOILS MAP

Project 10379-203	December 2005	Figure 4

A-442


I
163 SF
U
859 SF
H
4796 SF
U
209 SF
U
1633 SF
POND
POND
FIR TREE THICKET 200 TREES 6" TO 12"
APPROXIMATE LOCATION OF 10 FOOT WIDE PGE EASEMENT
4' WIRE FENCE
H
5844 SF
U
5581 SF
U
9945 SF
Q
2629 SF
V
834 SF
W
491 SF
E
3123 SF
F
342 SF
D
2942 SF
AREA OF ADDITIONAL FIR TREE THICKET 6"-12"
4' WIRE FENCE
FALLEN WIRE FENCE
Z
1282 SF
X
1401 SF
348 SF
A
1427 SF
B
1234 SF
C
2597 SF
6' WOOD FENCE
I-205
200' RT.
SOURCE: OTAK, 2005.
WETLAND
TOP OF BANK
Test Pits
0 feet 60 120 180 240
SCALE 1"=120'
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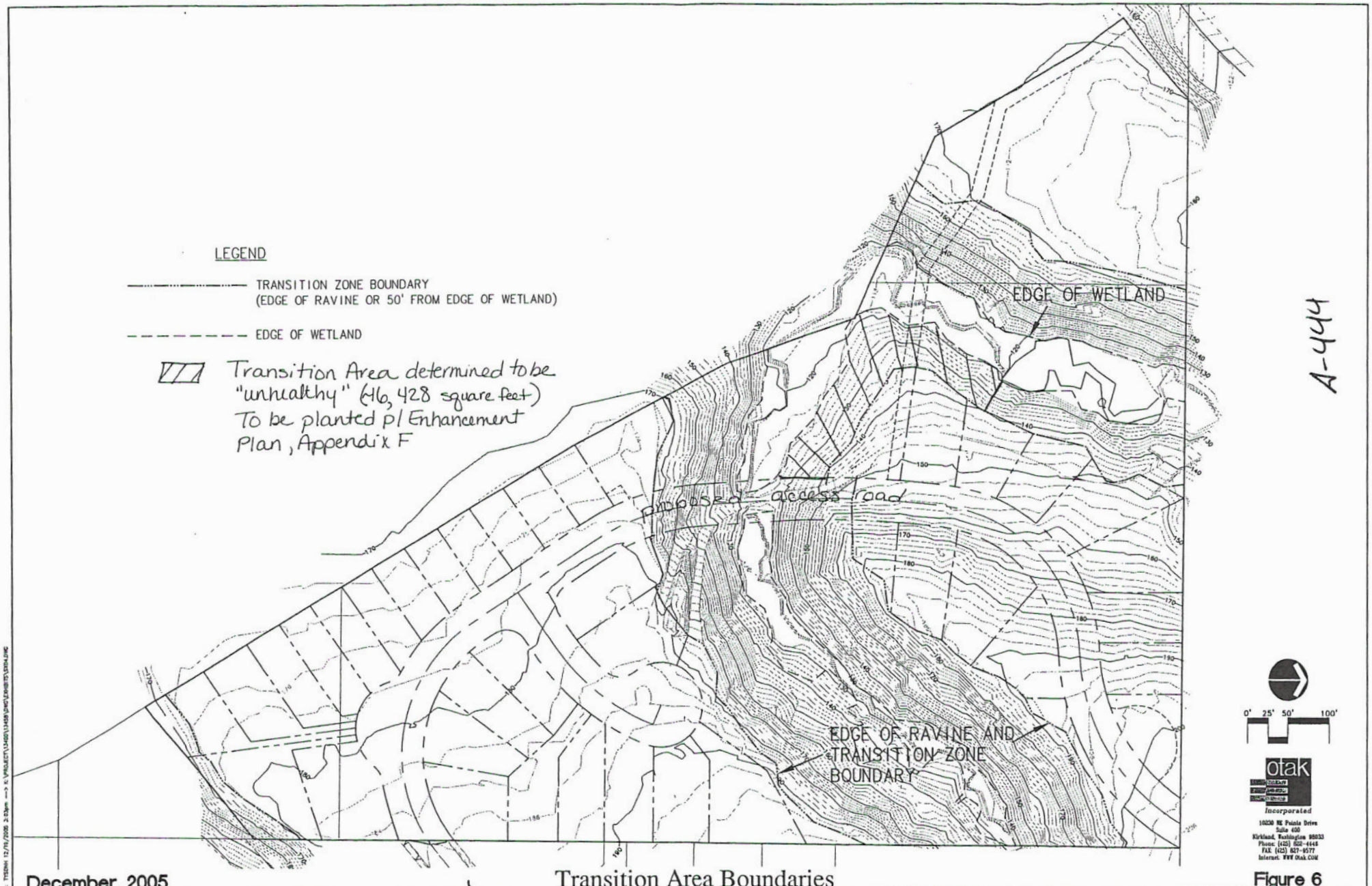
TAMARISK DRIVE, WEST LINN, OR
EXISTING SITE CONDITIONS
10379-203
DEC 2005
FIGURE 5
P:\10000\10379-203_WestLinnTamarisk

A-4h2



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December, 2005

Transition Area Boundaries

Figure 6

Appendices

Appendix A: Local Wetlands Inventory Map
Appendix B: Wetland Determination Data Sheets
Appendix C: Site Photographs
Appendix D: Vegetation Table
Appendix E: City of West Linn Transition Area Boundary Code
Appendix F: Transition Area Enhancement Plan

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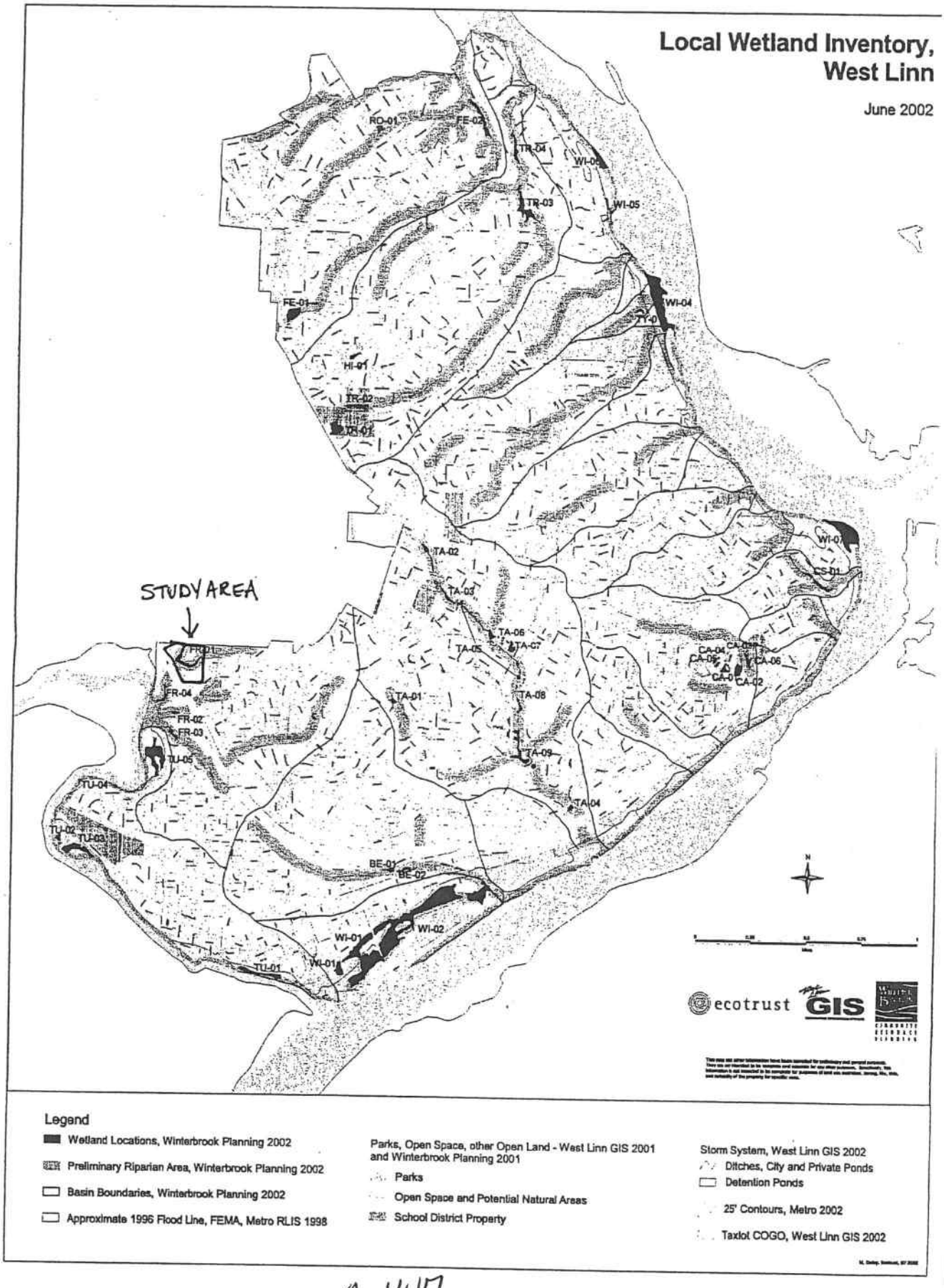
APPENDIX A:

LOCAL WETLANDS INVENTORY MAP


Local Wetland Inventory,
West Linn
June 2002
STUDY AREA
RO-01
FE-02
TR-04
WI-05
TR-03
WI-05
FE-01
WI-04
HI-01
TR-02
TR-01
WI-07
TA-02
CS-01
TA-03
TA-06
TA-07
TA-05
CA-04
CA-05
CA-03
CA-06
CA-01
CA-02
FR-01
FR-04
TA-01
TA-08
FR-02
FR-03
TU-05
TA-09
TU-04
TA-04
TU-02
TU-03
BE-01
BE-02
WI-01
WI-02
WI-01
TU-01
N
ecotrust
GIS
Legend
Wetland Locations, Winterbrook Planning 2002
Preliminary Riparian Area, Winterbrook Planning 2002
Basin Boundaries, Winterbrook Planning 2002
Approximate 1996 Flood Line, FEMA, Metro RLIS 1998
Parks, Open Space, other Open Land - West Linn GIS 2001 and Winterbrook Planning 2001
Parks
Open Space and Potential Natural Areas
School District Property
Storm System, West Linn GIS 2002
Ditches, City and Private Ponds
Detention Ponds
25' Contours, Metro 2002
Taxlot COGO, West Linn GIS 2002

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

General Information

Wetland: North Fork Fritchie Creek | Code: FR-01 | Field dates: 3/20/02

Plot #s: DP-1, DP-2 | Size: 1.42 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PEM | HGM Class: RFT | Investigators: LW, TB, AK

Basin: Tualatin River | Sub-basin: Fritchie Creek

Location

Location/address: north of I-205, east of Woodbine Road

Legal description: Lots 600, 700; T2S, R1E, Section 34 (Atlas #5230, 5330)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland FR-01 is associated with the Fritchie Creek floodplain at the bottom of a steep-sided canyon. The stream is incised but meandering. A beaver dam spans the stream about 100 ft. upstream from the sample site. Wetland hydrology is provided by the stream and by precipitation and sheetflow from the beaver dam and surrounding side-slopes. The stream flows into a culvert under I-205 about 200 ft. downstream from sample site. The forested canyon walls and stream channel are relatively undisturbed. The wetland boundary is at a sharp topographic break at the foot of the canyon embankments. Uplands are dominated by big-leaf maple, Himalayan blackberry, and red elderberry.

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: surface flow, sheetflow, precipitation

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Western red cedar	Himalayan blackberry		reed canarygrass

Wetland Functions: intact fish habitat; high enhancement potential; low education, recreation and aesthetic values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream; connected to ODFW fish-bearing stream

Potential Restoration Opportunities: Manage invasive species; add native emergents and shrubs for greater species diversity.

APPENDIX B:

WETLAND DETERMINATION DATA SHEETS

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: C. Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** PFO
Plot Location: Wetland A - approx. 5 ft south of south tributary bank **WetDet Plot #** L1
Topographic Location: approx. 2 ft higher in elevation than tributary bank
Remarks:

VEGETATION:
* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		5%
* *Athyrium filix-femina*	FAC	5%

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		55%
* *Rubus spectabilis*	FAC+	40%
Acer circinatum	FAC-	10%
Rubus discolor	FACU	5%

Tree Stratum	Ind. status	% Cover
% Total Cover		50%
* *Alnus rubra*	FAC	30%
* *Thuja plicata*	FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 4 of 4 = 100%
Hydrophytic Vegetation? Yes
Remarks: beaked hazelnut upslope of plot

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** no
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-8"		10YR 2/1	no redox	silt loam, saturated
8-16"		7.5YR 2.5/1	few, fine 7.5YR 4/4	silt with trace sands; peds have gley

__ Histosol
__ Histic Epipedon
X Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ **Hydric Soils Present?** Yes

__ Reducing Conditions
X Gleyed or low-chroma soils
X Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):

Remarks: probed below 16" 10Y 3/1 gley silt; free water at unknown depth (probably at same elevation of tributary). Slight sulfur smell.

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >16" Depth to Saturation surface

Primary Indicators
__ Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
__ **Wetland Hydrology Present?** Yes

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks: seeps at 9"; seepage coming down from upslope. Free water below 16" in probed layer at unknown depth.

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? Yes
Wetland Hydrology Present? Yes
Is This Sampling Point Within A Wetland? Yes
Remarks: Slope wetland
Entered by: SAR QC check by: JAH Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: C. Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** Upland
Plot Location: approx. 20 ft south of L1& approx. 5 ft west of eastern property line **WetDet Plot #** L2
Topographic Location: approx. 5 ft upslope of wetland boundary
Remarks:

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover: 40%		
* *Polystichum munitum*	FACU	40%
* *Adiantum pedatum [[aleuticum]]*	FAC	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover: 45%		
* *Acer circinatum*	FAC-	40%
Rubus spectabilis	FAC+	5%

Tree Stratum	Ind. status	% Cover
% Total Cover: 40%		
* *Thuja plicata*	FAC	20%
* *Alnus rubra*	FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 5 = 60%
Hydrophytic Vegetation? Yes
Remarks: moss and bare ground also present at plot

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** yes
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-21"		10YR 4/3	few, medium 7.5YR 5/6 (dry color)	silt loam, dry, crumbly, somewhat rooty to 6"
21-23"		10YR 4/2	common coarse 7.5YR 5/6	heavy silt loam, slightly moist

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
Hydric Soils Present? No

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):

Remarks: probed 13"-23"; 21" - 23" 10YR 4/2 with common, coarse 7.5YR 5/6, slightly moist, heavy silt loam

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >23" Depth to Saturation >23"

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
Wetland Hydrology Present? No

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? No
Wetland Hydrology Present? No
Is This Sampling Point Within A Wetland? No
Remarks:

Entered by: SAR QC check by: JAH Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: C. Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** PEM / PFO
Plot Location: Wetland B- approx. 6-8 ft south of south trib bank **WetDet Plot #** L3
Topographic Location: approx. 1 ft higher in elevation than trib on bench
Remarks:

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover: 70%		
* *Equisetum arvense*	FAC	30%
* *Athyrium filix-femina*	FAC	20%
Glyceria elata	FACW+	10%
Tolmiea menziesii	FAC	5%
Urtica dioica	FAC+	5%
Stachys cooleyae [emersonii]	FACW	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover: 40%		
* *Rubus discolor*	FACU	40%

Tree Stratum	Ind. status	% Cover
% Total Cover: 0%		

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 3 = 67%
Hydrophytic Vegetation? Yes
Remarks: Plot on wetland bench; upslope seepage with *Thuja plicata, Alnus rubra, Salix lasiandra, Lysichitum americanum* and *Athyrium filix-femina*

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** no
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-8"		7.5YR 4/1	common, medium 7.5YR 4/4	silt, saturated
8-16"		10Y 4/1 gley	common, medium 7.5YR 4/4	silt, saturated

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
Hydric Soils Present? Yes

__ Reducing Conditions
X Gleyed or low-chroma soils
X Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches): __

Remarks: probed depths approx.

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? 21" Depth to Saturation surface

Primary Indicators
__ Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
Wetland Hydrology Present? Yes

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? Yes
Wetland Hydrology Present? Yes
Is This Sampling Point Within A Wetland? Yes
Remarks: Floodplain / Slope wetland
Entered by: SAR QC check by: JAH Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	September 29, 2005
Applicant/Owner:	Stearn Marnella Communities LLC	**County:**	Clackamas
Investigators:	C. Mirth Walker and Jeff Handley	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	Upland
Plot Location:	approx. 20 ft west of L3 & approx. 15 ft south of top of bank	**WetDet Plot #**	L4
Topographic Location:	approx. 15 ft higher in elevation than south trib.		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**	**Shrub/Sapling Stratum**		**Ind. status**	**%Cover**
% Total Cover	5%			% Total Cover	60%		
* *Polystichum munitum*		FACU	5%	* *Rubus discolor*		FACU	40%
Carex deweyana		FACU	trace	*Rubus spectabilis*		FAC+	10%
* *Athyrium filix-femina*		FAC	trace	*Oemleria cerasiformis*		FACU	10%
				Sambucus racemosa		FACU	trace
				Tree Stratum		**Ind. status**	**% Cover**
				% Total Cover	80%		
				* *Acer macrophyllum*		FACU	30%
				* *Thuja plicata*		FAC	30%
				* *Alnus rubra*		FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 5 = 60%

Hydrophytic Vegetation? No

Remarks: moss present at plot

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** yes

Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-7"		10YR 4/2	no redox	silt loam, dry, crumbly, very rooty
7-16"		10YR 5/3	common-many, coarse 7.5YR 5/6	silt loam, dry, blocky, rooty

__ Histosol	__ Reducing Conditions	__ High Organic Content Surface Layer
__ Histic Epipedon	__ Gleyed or low-chroma soils	__ Organic Streaking
__ Sulfidic Odor	__ Mottled (w/i 10")	__ Organic Pan
__ Prob. Aquic Moisture Regime	__ Concretions (w/i 3", >2mm)	__ On Hydric Soils List (and matches profile)
__ Other (explain in remarks)		Major portion of the root zone (inches):

Hydric Soils Present? No

Remarks: probed 12-16"

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none Depth to Free Water? >12" Depth to Saturation >12"

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
__ Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? No

Remarks:

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	No
Hydric Soils Present?	No
Wetland Hydrology Present?	No
Is This Sampling Point Within A Wetland?	No

Remarks:

Entered by: SAR QC check by: JAH Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: C. Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** PFO
Plot Location: Wetland C- approx. 10 ft downslope of wetland boundary **WetDet Plot #** L5
Topographic Location: upslope of south tributary
Remarks:

VEGETATION:
* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover: 0%		
Polystichum munitum	FACU	trace
Athyrium filix-femina	FAC	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover: 40%		
* *Rubus spectabilis*	FAC+	40%

Tree Stratum	Ind. status	% Cover
% Total Cover: 60%		
* *Thuja plicata*	FAC	40%
* *Alnus rubra*	FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 3 = 100%
Hydrophytic Vegetation? Yes
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** no
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-8"		10YR 3/2	common, medium 7.5YR 4/4	silt loam, moist
8-14"		2.5Y 3/1	common, coarse 7.5YR 3/4	silt loam, saturated
14-16"		2.5Y 2.5/1	no redox	silt loam

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
X Gleyed or low-chroma soils
X Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)

Major portion of the root zone (inches):

Hydric Soils Present? Yes
Remarks:

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? 14-16" Depth to Saturation 8"

Primary Indicators
__ Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Wetland Hydrology Present? Yes
Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? Yes
Wetland Hydrology Present? Yes
Is This Sampling Point Within A Wetland? Yes
Remarks: Slope wetland

Entered by: SAR QC check by: JAH Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	September 29, 2005
Applicant/Owner:	Stearn Marnella Communities LLC	**County:**	Clackamas
Investigators:	C. Mirth Walker and Jeff Handley	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	Upland
Plot Location:	approx. 10 ft upslope of wetland boundary	**WetDet Plot #**	L6
Topographic Location:	approx. 5-6 ft higher in elevation than south tributary		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum	**Ind. status**	**%Cover**
% Total Cover: 60%		
* *Polystichum munitum*	FACU	60%

Shrub/Sapling Stratum	**Ind. status**	**%Cover**
% Total Cover: 20%		
* *Rubus spectabilis*	FAC+	20%

Tree Stratum	**Ind. status**	**% Cover**
% Total Cover: 90%		
* *Thuja plicata*	FAC	60%
* *Acer macrophyllum*	FACU	30%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 4 = 50%

Hydrophytic Vegetation? Yes

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, very steep — **Matches Profile?** yes

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-12"+		10YR 4/3	no redox	silt loam, dry

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)

Major portion of the root zone (inches): ____

Hydric Soils Present? No

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? >12" — Depth to Saturation >12"

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
__ Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? No

Remarks:

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	No
Wetland Hydrology Present?	No
Is This Sampling Point Within A Wetland?	**No**

Remarks:

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

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WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: C. Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** PEM
Plot Location: Wetland E - approx. 10 ft south of south trib in floodplain **WetDet Plot #** L7
Topographic Location: approx. 1/2 ft (?) higher in elevation than south trib
Remarks:

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		80%
* *Glyceria elata*	FACW+	50%
* *Equisetum arvense*	FAC	25%
Urtica dioica	FAC+	5%
Athyrium filix-femina	FAC	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		10%
* *Rubus discolor*	FACU	10%

Tree Stratum	Ind. status	% Cover
% Total Cover		0%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 3 = 67%
Hydrophytic Vegetation? Yes
Remarks: 20% bare ground and water at plot

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** no
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-4"		10YR 2/2	no redox	muck, saturated
4-16"		10YR 3/1 & 2.5Y 2.5/1	matrix layered, no redox	silt w/trace mica, leaf litter layer at 7"

__ Histosol
__ Histic Epipedon
X Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
Hydric Soils Present? Yes

__ Reducing Conditions
X Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches): __

Remarks:

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? 1/2" nearby Depth to Free Water? surface Depth to Saturation surface

Primary Indicators
X Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
Wetland Hydrology Present? Yes

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks: Seeps throughout. 1/2" surface inundation present about 2 feet N of plot.

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? Yes
Wetland Hydrology Present? Yes
Is This Sampling Point Within A Wetland? Yes
Remarks: Floodplain wetland

Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-456

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	October 4, 2005
Applicant/Owner:	Steam Marnella Communities LLC	**County:**	Clackamas
Investigators:	C.Mirth Walker and Jeff Handley	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PFO
Plot Location:	Wetland G- approx. 6 ft south of wetland boundary	**WetDet Plot #**	L8
Topographic Location:	approx. 6" higher in elevation than south trib.		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**
% Total Cover	80%		
* *Athyrium filix-femina*		FAC	50%
* *Tolmiea menziesii*		FAC	30%
Equisetum arvense		FAC	trace

Shrub/Sapling Stratum		**Ind. status**	**%Cover**
% Total Cover	60%		
* *Rubus spectabilis*		FAC+	60%

Tree Stratum		**Ind. status**	**% Cover**
% Total Cover	40%		
* *Alnus rubra*		FAC	40%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 4 of 4 = 100%

Hydrophytic Vegetation? Yes

Remarks: 20% bare ground. Bigleaf maple rooted upslope.

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, very steep — **Matches Profile?** no

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-9"		10YR 3/1	no redox	silty silt loam, saturated, very rooty
9-16"		10YR 3/1	no redox	silt, small concretions, charcoal

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ **Hydric Soils Present?** Yes

__ Reducing Conditions
X Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches): ____

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? >16" — Depth to Saturation surface

Primary Indicators
__ Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
__ **Wetland Hydrology Present?** Yes

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks: seeps at 11"

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	Yes

Remarks: Floodplain wetland

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

A-457

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** October 4, 2005
Applicant/Owner: Steam Marnella Communities LLC **County:** Clackamas
Investigators: C.Mirth Walker and Jeff Handley **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** Upland
Plot Location: **WetDet Plot #** L9
Topographic Location: approx. 3 ft higher in elevation than wetland boundary
Remarks:

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover: 30%		
* *Polystichum munitum*	FACU	10%
* *Adiantum pedatum [[aleuticum]]*	FAC	10%
Tolmiea menziesii	FAC	5%
Carex hendersonii	FAC	5%

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover: 60%		
* *Rubus spectabilis*	FAC+	30%
* *Oemleria cerasiformis*	FACU	30%

Tree Stratum	Ind. status	% Cover
% Total Cover: 80%		
* *Acer macrophyllum*	FACU	60%
* *Alnus rubra*	FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 6 = 50%
Hydrophytic Vegetation? No
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** no
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-5"		10YR 3/2	no redox	silt loam, slightly moist, charcoal
5-16"		10YR 3/3	common, medium 7.5YR 5/6	silt loam, drier at depth

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
Hydric Soils Present? No

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):

Remarks:

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >16" Depth to Saturation >16"

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
Wetland Hydrology Present? No

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? No
Hydric Soils Present? No
Wetland Hydrology Present? No
Is This Sampling Point Within A Wetland? No
Remarks:
Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-458

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	September 29, 2005
Applicant/Owner:	Stearn Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacey Reed and Stacy Benjamin	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PSS
Plot Location:	Wetland Z - northern side of south tributary	**WetDet Plot #**	R1
Topographic Location:	approx. 1/2 foot higher in elevation than south tributary		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**	**Shrub/Sapling Stratum**		**Ind. status**	**%Cover**
% Total Cover	20%			% Total Cover	85%		
* *Tolmiea menziesii*		FAC	10%	* *Rubus discolor*		FACU	50%
* *Athyrium filix-femina*		FAC	5%	* *Rubus spectabilis*		FAC+	30%
* *Urtica dioica*		FAC+	5%	*Oemleria cerasiformis*		FACU	5%
Carex deweyana		FACU	trace				
				Tree Stratum		**Ind. status**	**% Cover**
				% Total Cover	0%		

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 4 of 5 = 80%

Hydrophytic Vegetation? Yes

Remarks: 50% bare ground and 30% moss

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** No

Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-9"		10YR 3/2	no redox	silty clay loam with trace fine sands, saturated
9-16"		10Y 2.5/1 gley	common coarse 5YR 4/6	silty clay loam

__ Histosol	__ Reducing Conditions	__ High Organic Content Surface Layer
__ Histic Epipedon	X Gleyed or low-chroma soils	__ Organic Streaking
__ Sulfidic Odor	X Mottled (w/i 10")	__ Organic Pan
__ Prob. Aquic Moisture Regime	__ Concretions (w/i 3", >2mm)	__ On Hydric Soils List (and matches profile)
__ Other (explain in remarks)		Major portion of the root zone (inches):

Hydric Soils Present? Yes

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none Depth to Free Water? >16" Depth to Saturation surface

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
X Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? Yes

Remarks: No seeps

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	Yes

Remarks: floodplain

Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-459

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: Stacey Reed and Stacy Benjamin **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** Upland
Plot Location: approx. 15 ft north of plot R2 on steep slope **WetDet Plot #** R2
Topographic Location: approx. 6 ft higher in elevation than plot R2
Remarks:

VEGETATION:
* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		5%
* *Tolmiea menziesii*	FAC	5%
Athyrium filix-femina	FAC	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		100%
* *Corylus cornuta*	FACU	80%
* *Rubus discolor*	FACU	50%
Rubus spectabilis	FAC+	trace
Thuja plicata	FAC	trace

Tree Stratum	Ind. status	% Cover
% Total Cover		30%
* *Acer macrophyllum*	FACU	20%
* *Thuja plicata*	FAC	10%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 5 = 40%
Hydrophytic Vegetation? No
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** close - clay in surf.
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-3"		10YR 3/2	no redox	silty clay loam
3-8"		10YR 3/3	no redox	silty clay loam
8-14"		10YR 3/4	no redox	silty clay loam

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)
__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):
Hydric Soils Present? No
Remarks: slightly moist throughout getting drier at depth

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >14" Depth to Saturation >14"

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other
Wetland Hydrology Present? No
Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? No
Hydric Soils Present? No
Wetland Hydrology Present? No
Is This Sampling Point Within A Wetland? No
Remarks:
Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-46

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	September 29, 2005
Applicant/Owner:	Stearn Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacey Reed and Stacy Benjamin	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PSS
Plot Location:	Wetland V - north side of south tributary	**WetDet Plot #**	R3
Topographic Location:	approx. 6" higher in elevation than tributary		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**	**Shrub/Sapling Stratum**		**Ind. status**	**%Cover**
% Total Cover	55%			% Total Cover	55%		
* *Glyceria elata*		FACW+	20%	* *Rubus discolor*		FACU	50%
* *Equisetum arvense*		FAC	10%	*Rubus spectabilis*		FAC+	5%
* *Athyrium filix-femina*		FAC	10%	*Salix species*		FAC or wetter	trace
* *Tolmiea menziesii*		FAC	10%				
Urtica dioica		FAC+	5%				
				Tree Stratum		**Ind. status**	**% Cover**
				% Total Cover	0%		

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 4 of 5 = 80%

Hydrophytic Vegetation? Yes

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, very steep — **Matches Profile?** no

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-9"		10YR 3/2	no redox	silty clay loam with trace fine sands and leaf litter; saturated
9-16"		10Y 2.5/1 gley	no redox	silty clay loam with trace fine sands

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
X Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)

Major portion of the root zone (inches):

Hydric Soils Present? Yes

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? 14"+ — Depth to Saturation surface

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
X Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? Yes

Remarks: Free water in pit rising; seeps at 8"

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	**Yes**

Remarks: Floodplain

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

A-461

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** September 29, 2005
Applicant/Owner: Stearn Marnella Communities LLC **County:** Clackamas
Investigators: Stacey Reed and Stacy Benjamin **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2S 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** Upland
Plot Location: approx. 10 ft north of plot R3 **WetDet Plot #** R4
Topographic Location: approx. 5 ft higher in elevation than plot R3
Remarks:

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		0%
Equisetum arvense	FAC	trace

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		100%
* *Rubus discolor*	FACU	90%
Corylus cornuta	FACU	20%
Rhamnus purshiana	FAC-	10%

Tree Stratum	Ind. status	% Cover
% Total Cover		90%
* *Acer macrophyllum*	FACU	70%
Thuja plicata	FAC	20%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 0 of 2 = 0%
Hydrophytic Vegetation? No
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?** yes
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-10"		10YR 3/3	no redox	silt loam; dry

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):

Hydric Soils Present? No
Remarks: Probe and shovel refusal at 10" due to very dry soils

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >10" Depth to Saturation >10"

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Wetland Hydrology Present? No
Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? No
Hydric Soils Present? No
Wetland Hydrology Present? No
Is This Sampling Point Within A Wetland? No
Remarks:
Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-462

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	October 4, 2005
Applicant/Owner:	Steam Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacy Benjamin and Stacey Reed	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PSS/PEM
Plot Location:	Wetland U- Approx. 20 ft east of fill road	**WetDet Plot #**	R5
Topographic Location:	approx. 1 ft higher in elevation than south trib		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover: 100%		
* *Tolmiea menziesii*	FAC	80%
Urtica dioica	FAC+	20%
Equisetum arvense	FAC	5%
Rubus ursinus	FACU	5%
Athyrium filix-femina	FAC	5%

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover: 20%		
* *Rubus discolor*	FACU	20%

Tree Stratum	Ind. status	% Cover
% Total Cover: 5%		
* *Alnus rubra*	FAC	5%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 3 = 67%

Hydrophytic Vegetation? Yes

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, steep slope — **Matches Profile?** no

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-16"		10YR 3/1	no redox	silty clay loam, very rooty to 8", saturated
16-28"		10YR 3/1	no redox	dense silty clay loam, probed

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
X Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)

Major portion of the root zone (inches): ____

Hydric Soils Present? Yes

Remarks: Probed below 16"

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? 10" — Depth to Saturation surface

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
X Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? Yes

Remarks: Seeps at 6"

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	Yes

Remarks: Floodplain wetland

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

A-463

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** October 4, 2005
Applicant/Owner: Steam Marnella Communities LLC **County:** Clackamas
Investigators: Stacy Benjamin and Stacey Reed **State:** OR
Do Normal Circumstances exist on the site? Yes **T/R/S:** 2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? No **If yes, describe:**
Is the area a potential Problem Area? No **Cowardin Class:** Upland
Plot Location: approx. 25' north of Plot R5 **WetDet Plot #** R6
Topographic Location: approx. 1 ft higher in elevation than R5
Remarks:

VEGETATION:
* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		30%
* *Equisetum arvense*	FAC	20%
* *Urtica dioica*	FAC+	10%

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		80%
* *Rubus discolor*	FACU	80%

Tree Stratum	Ind. status	% Cover
% Total Cover		5%
* *Alnus rubra*	FAC	5%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 4 = 75%
Hydrophytic Vegetation? Yes
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, steep slope **Matches Profile?** yes
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-6"		10YR 3/2	no redox	silt loam, slightly moist, crumbly, very rooty
6-16"		10YR 3/2	no redox	silty clay loam, moist

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ Hydric Soils Present? No

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches): ____

Remarks:

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? none Depth to Free Water? >16" Depth to Saturation >16"

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
__ Wetland Hydrology Present? No

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks: No free water or seeps

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? Yes
Hydric Soils Present? No
Wetland Hydrology Present? No
Is This Sampling Point Within A Wetland? No
Remarks:

Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-464

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	October 4, 2005
Applicant/Owner:	Steam Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacy Benjamin and Stacey Reed	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PEM
Plot Location:	Wetland U - reed canary grass community on bench	**WetDet Plot #**	R7
Topographic Location:	same elevation as top of bank for north tributary, ~15' W of N. trib.		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**	**Shrub/Sapling Stratum**		**Ind. status**	**%Cover**
% Total Cover	100%			% Total Cover	0%		
* *Phalaris arundinacea*		FACW	100%				
				Tree Stratum		**Ind. status**	**% Cover**
				% Total Cover	0%		

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 1 of 1 = 100%

Hydrophytic Vegetation? Yes

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, steep slope — **Matches Profile?** no

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-9"		10YR 3/2	no redox	silt loam, very rooty, moist
9-16"		10YR 3/2	common, medium 7.5YR 3/4	silty clay loam, rooty, saturated, some ORC

__ Histosol	__ Reducing Conditions	__ High Organic Content Surface Layer
__ Histic Epipedon	__ Gleyed or low-chroma soils	__ Organic Streaking
__ Sulfidic Odor	X Mottled (w/i 10")	__ Organic Pan
__ Prob. Aquic Moisture Regime	__ Concretions (w/i 3", >2mm)	__ On Hydric Soils List (and matches profile)
__ Other (explain in remarks)		Major portion of the root zone (inches):

Hydric Soils Present? Yes

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? >16" — Depth to Saturation 9"

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
X Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? Yes

Remarks: No seeps.

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	Yes

Remarks: Floodplain wetland continued on eastern side of north trib

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

A-465

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203 **Site:** Tamarisk Drive - West Linn **Date:** October 4, 2005
Applicant/Owner: Steam Marnella Communities LLC **County:** Clackamas
Investigators: Stacy Benjamin and Stacey Reed **State:** OR
Do Normal Circumstances exist on the site? **T/R/S:** 2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)? **If yes, describe:**
Is the area a potential Problem Area? **Cowardin Class:** Upland
Plot Location: Upland slope above Plot R7 **WetDet Plot #** R8
Topographic Location: moderate slope above wetland flood plain
Remarks:

VEGETATION:
* Dominant Plant Species

Herb Stratum	Ind. status	%Cover
% Total Cover		0%

Shrub/Sapling Stratum	Ind. status	%Cover
% Total Cover		100%
* *Rubus discolor*	FACU	100%

Tree Stratum	Ind. status	% Cover
% Total Cover		0%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 0 of 1 = 0%
Hydrophytic Vegetation? No
Remarks:

SOILS:
Mapped Unit Name: Xerochrepts & Haploxerolls, very steep **Matches Profile?**
Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:**

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
NA				

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ Hydric Soils Present?

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches):

Remarks: Unable to access for sampling; obvious upland.

HYDROLOGY:
Recorded Data Available?
Depth of Inundation? Depth to Free Water? Depth to Saturation

Primary Indicators
__ Inundated
__ Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
__ Wetland Hydrology Present?

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks:

WETLAND DETERMINATION:
Hydrophytic Vegetation Present? No
Hydric Soils Present?
Wetland Hydrology Present?
Is This Sampling Point Within A Wetland? **No**
Remarks:
Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-466

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	October 4, 2005
Applicant/Owner:	Steam Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacy Benjamin and Stacey Reed	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	Upland
Plot Location:	approx. 50ft south of off-site northern fill road, approx. 10ft north of pond area	**WetDet Plot #**	**R9**
Topographic Location:	approx. 1ft higher in elevation than ponded area to south		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**
% Total Cover	100%		
* *Poa species*		FAC/wetter	30%
* *Carex deweyana*		FACU	20%
Glyceria elata		FACW+	10%
Urtica dioica		FAC+	10%
Phalaris arundinacea		FACW	5%
Athyrium filix-femina		FAC	5%
Polystichum munitum		FACU	5%
Tolmiea menziesii		FAC	5%
Scirpus microcarpus		OBL	5%
Juncus effusus		FACW	5%

Shrub/Sapling Stratum		**Ind. status**	**%Cover**
% Total Cover	20%		
* *Rubus discolor*		FACU	20%
Oemleria cerasiformis		FACU	trace
Sambucus racemosa		FACU	trace
Rubus spectabilis		FAC+	trace

Tree Stratum		**Ind. status**	**% Cover**
% Total Cover	15%		
* *Thuja plicata*		FAC	15%

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 2 of 4 = 50%

Hydrophytic Vegetation? No

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, steep slope — **Matches Profile?** yes

Taxonomy: Xerochrepts & Haploxerolls — **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-10"		10YR 3/2	no redox	silt loam, slightly moist, crumbly, very rooty 0-4"
10-12"		10YR 3/2	common, fine 7.5YR 3/4	silt loam, moist
12-16"		10YR 3/2	common, fine 7.5YR 3/4	silty clay loam, moist & blocky

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)

__ Reducing Conditions
__ Gleyed or low-chroma soils
__ Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)

Major portion of the root zone (inches):

Hydric Soils Present? No

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none — Depth to Free Water? >16" — Depth to Saturation >16"

Primary Indicators	*Secondary Indicators*
__ Inundated	__ Oxidized Root Channels in Upper 12" with Live Root
__ Saturated in Upper 12"	__ Water-stained leaves
__ Water Marks	__ Local Soil Survey Data
__ Drift Lines	__ FAC-Neutral Test
__ Sediment Deposits	__ Other
__ Drainage Patterns	

Wetland Hydrology Present? No

Remarks: No seeps or free water

WETLAND DETERMINATION:

Hydrophytic Vegetation Present? No

Hydric Soils Present? No

Wetland Hydrology Present? No

Is This Sampling Point Within A Wetland? No

Remarks: Riparian

Entered by: SAR — QC check by: JAH — Revisions entered by: CMW

A-467

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Project #: 10379-203	**Site:** Tamarisk Drive - West Linn	**Date:**	October 4, 2005
Applicant/Owner:	Steam Marnella Communities LLC	**County:**	Clackamas
Investigators:	Stacy Benjamin and Stacey Reed	**State:**	OR
Do Normal Circumstances exist on the site?	Yes	**T/R/S:**	2E 1E S34
Are soils, veg., or hydrol. significantly disturbed (Atypical Situation)?	No	**If yes, describe:**	
Is the area a potential Problem Area?	No	**Cowardin Class:**	PEM
Plot Location:	Wetland U- approx. 30 ft north of plot R9	**WetDet Plot #**	**R10**
Topographic Location:	approx. 1 ft lower in elevation than R9		
Remarks:			

VEGETATION:

* Dominant Plant Species

Herb Stratum		**Ind. status**	**%Cover**
% Total Cover	90%		
* *Phalaris arundinacea*		FACW	30%
* *Urtica dioica*		FAC+	30%
* *Solanum dulcamara*		FAC+	20%
Athyrium filix-femina		FAC	10%
Juncus effusus		FACW	trace

Shrub/Sapling Stratum		**Ind. status**	**%Cover**
% Total Cover	0%		
Rubus discolor		FACU	trace

Tree Stratum		**Ind. status**	**% Cover**
% Total Cover	0%		

Percent of Dominant Species that are OBL, FACW, and/or FAC (excluding FAC-): 3 of 3 = 100%

Hydrophytic Vegetation? Yes

Remarks:

SOILS:

Mapped Unit Name: Xerochrepts & Haploxerolls, steep slope **Matches Profile?** no

Taxonomy: Xerochrepts & Haploxerolls **Drainage Class:** well drained

Depth	Horizon	Matrix Color	Mottle (Redox) Abundance, Size, Color	Texture, Structure, etc.
0-8"		10YR 3/2	no redox	silty clay loam, saturated, very rooty
8-16"		10Y 2.5/1	gley	silty clay loam with trace mica

__ Histosol
__ Histic Epipedon
__ Sulfidic Odor
__ Prob. Aquic Moisture Regime
__ Other (explain in remarks)
__ **Hydric Soils Present?** Yes

__ Reducing Conditions
X Gleyed or low-chroma soils
X Mottled (w/i 10")
__ Concretions (w/i 3", >2mm)

__ High Organic Content Surface Layer
__ Organic Streaking
__ Organic Pan
__ On Hydric Soils List (and matches profile)
Major portion of the root zone (inches): __

Remarks:

HYDROLOGY:

Recorded Data Available?

Depth of Inundation? none Depth to Free Water? 14"+ Depth to Saturation surface

Primary Indicators
__ Inundated
X Saturated in Upper 12"
__ Water Marks
__ Drift Lines
__ Sediment Deposits
__ Drainage Patterns
__ **Wetland Hydrology Present?** Yes

Secondary Indicators
__ Oxidized Root Channels in Upper 12" with Live Root
__ Water-stained leaves
__ Local Soil Survey Data
__ FAC-Neutral Test
__ Other

Remarks: seeps at 5"

WETLAND DETERMINATION:

Hydrophytic Vegetation Present?	Yes
Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes
Is This Sampling Point Within A Wetland?	Yes

Remarks: Floodplain wetland "U"; extends off-site to north; cut off by fill road

Entered by: SAR QC check by: JAH Revisions entered by: CMW

A-468

APPENDIX C:

SITE PHOTOGRAPHS

TAMARISK DRIVE – WEST LINN
WETLAND AND WATERS DELINEATION

Photo 1. View of well-defined upstream channel of southern tributary to Fritchie Creek (view looking northeast).

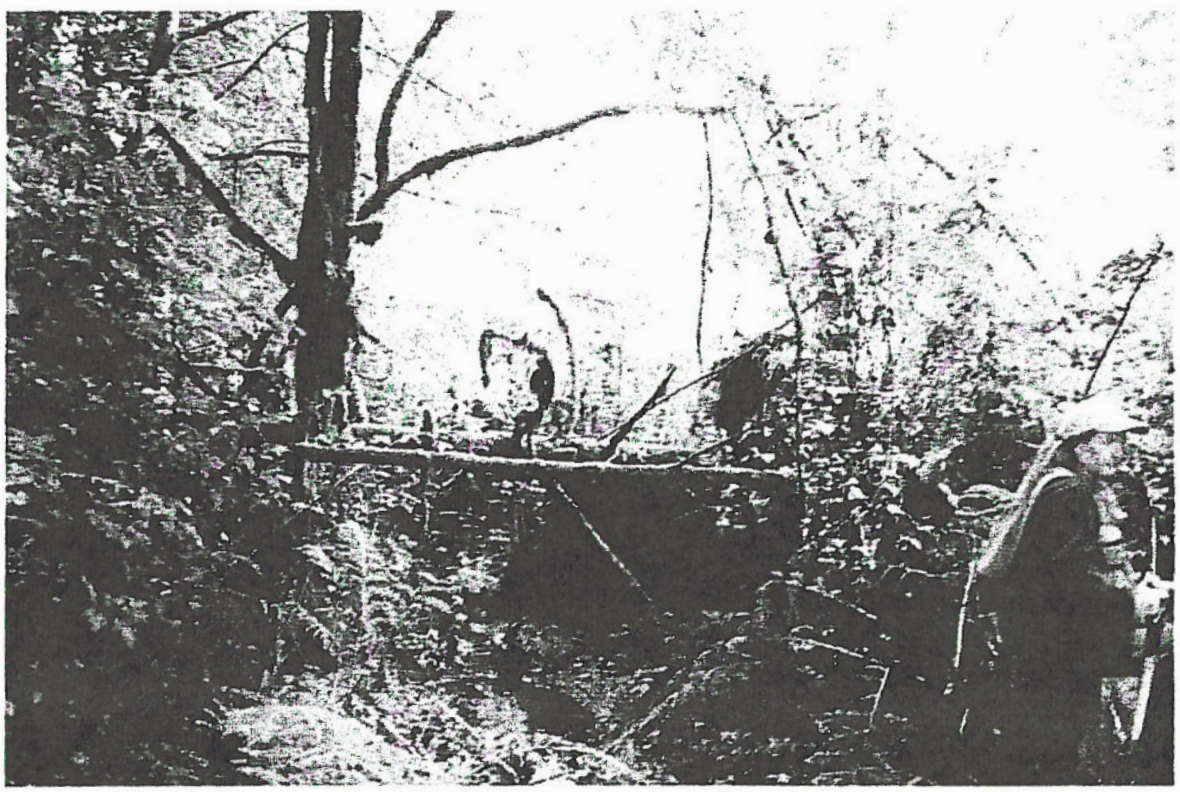


Photo 2. View of downstream channel of southern tributary just downstream of culverted fill road (view looking west).

A-470

Photo 3. View of Fritchie Creek flowing southwest through culvert under Highway 205 (view looking west).

Photo 4. View of northern tributary entering site through culverts under off-site fill road (view looking north).

A-47

Photo 5. View of beaver dammed area of northern tributary and associated floodplain Wetland U on left bank (view looking north).

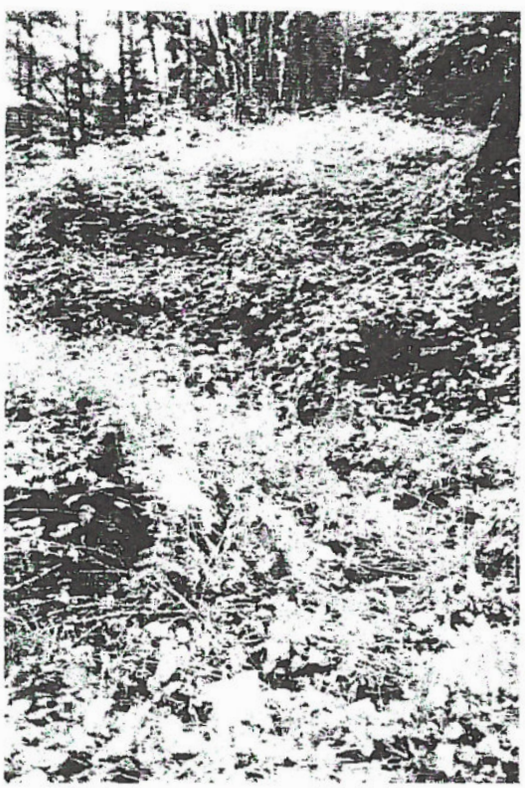


Photo 6. View of Plot R5 (in foreground) in Wetland U adjacent to right bank of southern tributary (view looking northeast).

A-472

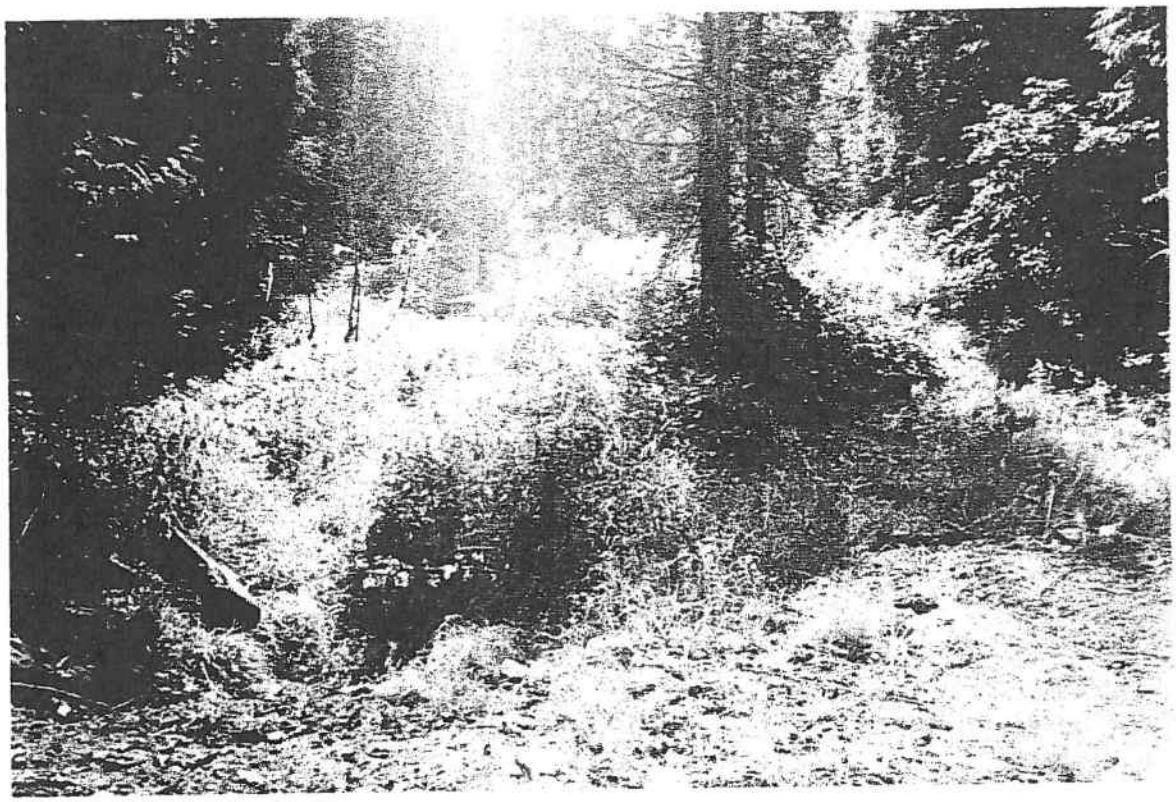


Photo 7. View from fill road looking south of upstream portions of northern tributary, Wetland U and Wetland I within the study area.

Photo 8. View of northern tributary in broad, flat floodplain Wetlands U and H dominated by reed canarygrass (view looking south).

A-473

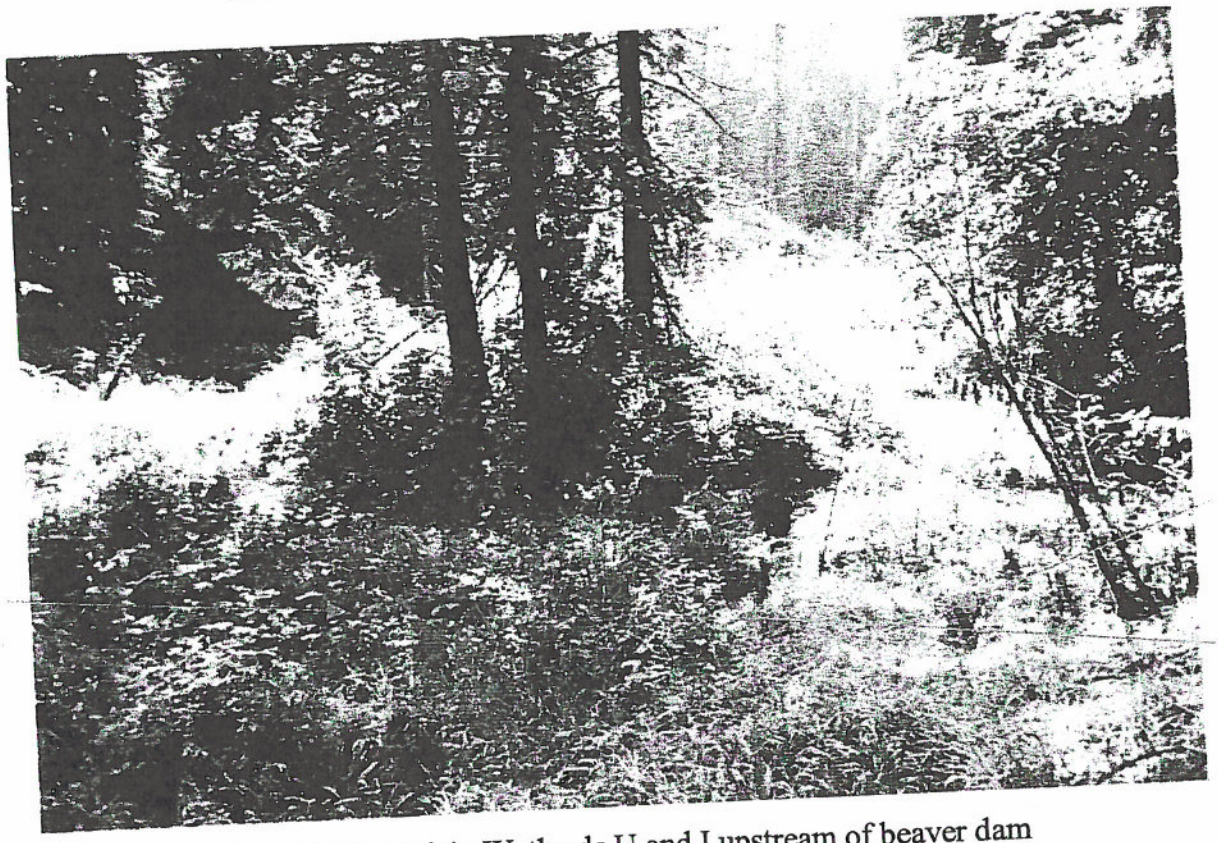


Photo 9. Floodplain Wetlands U and I upstream of beaver dam (view looking south).

Photo 10. View of transition of emergent floodplain Wetland U along left bank of northern tributary to upslope Himalayan blackberry (view looking east).

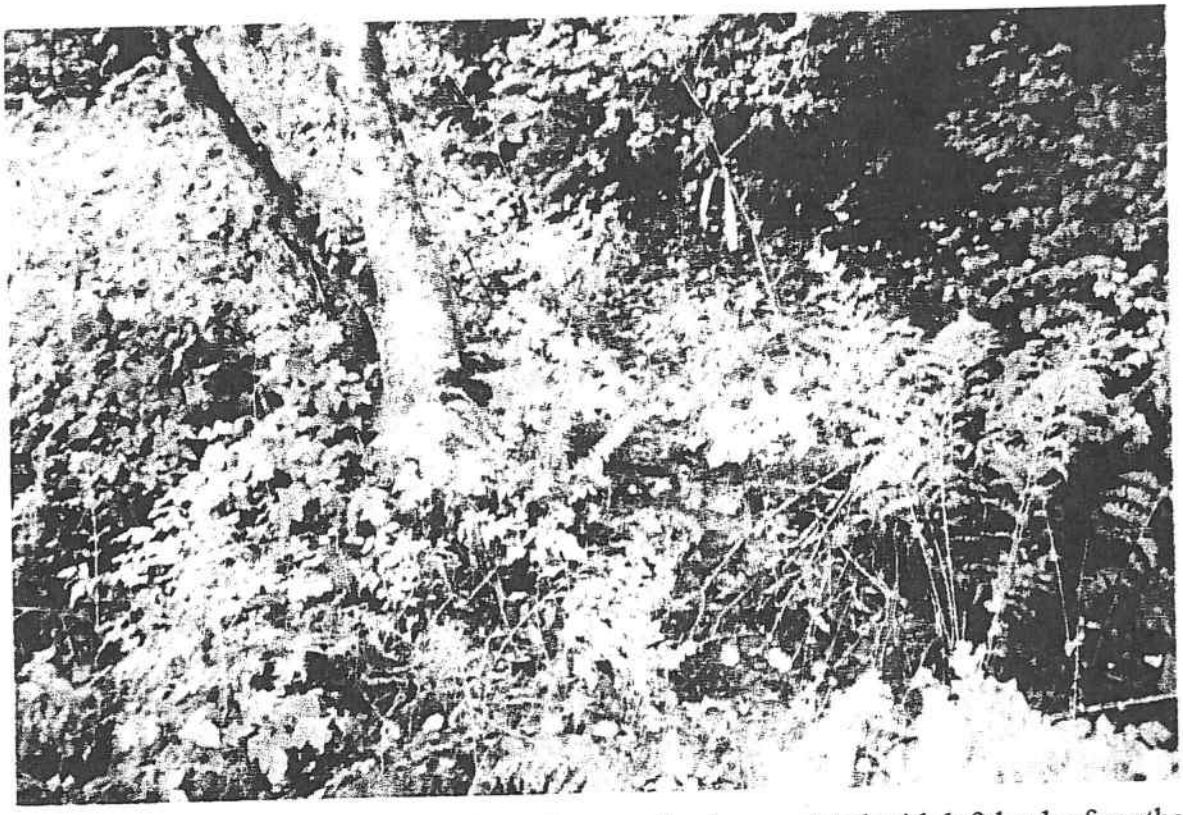


Photo 11. View of upslope seepage from slope wetlands associated with left bank of southern tributary (view looking south east).

Photo 12. View of upland plot L9 documenting forested upland upslope of Wetland G (view looking south).

APPENDIX D:

VEGETATION TABLE

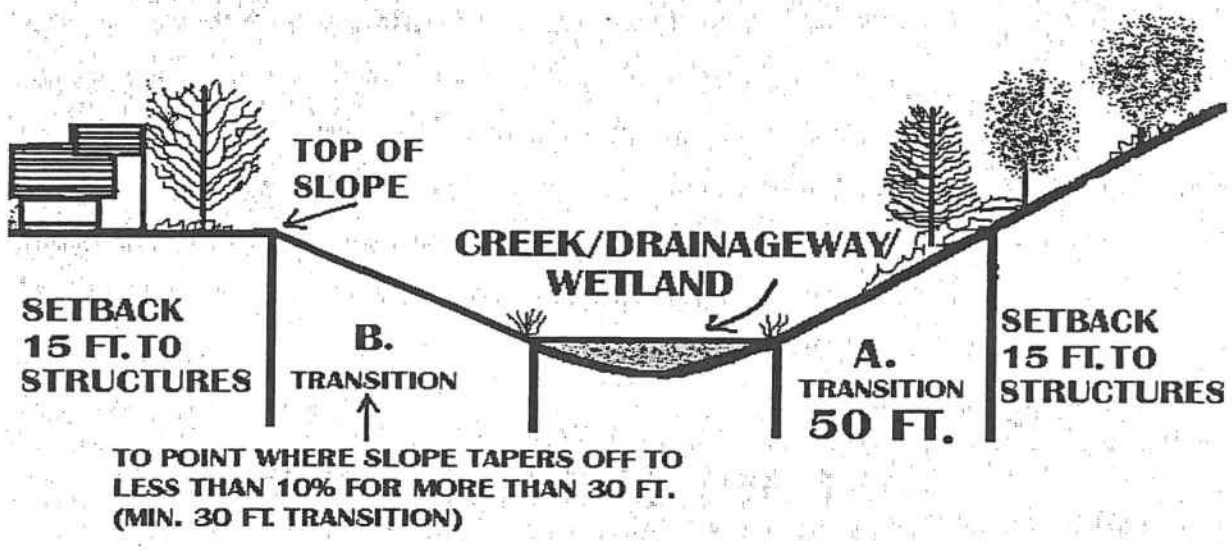
Tamarisk Drive - West Linn Wetlands and Waters Delineation September 29 and October 4, 2005			
Common Name	**Scientific Name**	**Indicator Status**	**Native/Non-native & Invasive/Noxious**
WETLAND			
vine maple	*Acer circinatum*	FAC-	native
bentgrass	*Agrostis* species	-	-
red alder	*Alnus rubra*	FAC	native
lady fern	*Athyrium filix-femina*	FAC	native
water-starwort	*Callitriche* species	probably OBL	probably native
willow-herb	*Epilobium* species	-	-
Watson's [hairy] willow-herb	*Epilobium watsonii [ciliatum]*	FACW-	native
common horsetail	*Equisetum arvense*	FAC	native
western wahoo	*Euonymus occidentalis*	UPL	native
strawberry	*Fragaria* species	-	native
tall mannagrass	*Glyceria elata*	FACW+	native
soft rush	*Juncus effusus*	FACW	native
rice cutgrass	*Leersia oryzoides*	OBL	native
lesser duckweed	*Lemna minor*	OBL	native
skunk cabbage	*Lysichitum [[Lysichiton]] americanum*	OBL	native
reed canarygrass	*Phalaris arundinacea*	FACW	invasive
black cottonwood	*Populus trichocarpa [balsamifera]*	FAC	native
Himalayan blackberry	*Rubus discolor*	FACU	**noxious**
salmonberry	*Rubus spectabilis*	FAC+	native
Pacific blackberry	*Rubus ursinus*	FACU	native
Pacific willow	*Salix lasiandra [[lucida var. lasiandra]]*	FACW+	native
willow	*Salix* species	FAC or wetter	-
small-fruited bulrush	*Scirpus microcarpus*	OBL	native
bittersweet nightshade	*Solanum dulcamara*	FAC+	**invasive**
marsh hedgenettle	*Stachys cooleyae [emersonii]*	FACW	native
western red cedar	*Thuja plicata*	FAC	native
piggy-back plant	*Tolmiea menziesii*	FAC	native
stinging nettle	*Urtica dioica*	FAC+	-
American speedwell	*Veronica americana*	OBL	native
UPLAND			
grand fir	*Abies grandis*	FACU-	native
vine maple	*Acer circinatum*	FAC-	native
big-leaf maple	*Acer macrophyllum*	FACU	native
northern maidenhair fern	*Adiantum pedatum [[aleuticum]]*	FAC	native
red alder	*Alnus rubra*	FAC	native
lady fern	*Athyrium filix-femina*	FAC	native
tall Oregon grape	*Berberis [[Mahonia]] aquifolium*	UPL	native
Henderson's sedge	*Carex hendersonii*	FAC	native
beaked hazelnut	*Corylus cornuta*	FACU	native
Watson's [hairy] willow-herb	*Epilobium watsonii [ciliatum]*	FACW-	native
Oregon avens	*Geum macrophyllum*	FACW-	native
Pacific waterleaf	*Hydrophyllum tenuipes*	UPL	native
nipplewort	*Lapsana communis*	UPL	non-native
Indian plum	*Oemleria cerasiformis*	FACU	native
sword fern	*Polystichum munitum*	FACU	native
Douglas fir	*Pseudotsuga menziesii*	FACU	native
bracken fern	*Pteridium aquilinum*	FACU	native
Himalayan blackberry	*Rubus discolor*	FACU	**noxious**
salmonberry	*Rubus spectabilis*	FAC+	native
Pacific blackberry	*Rubus ursinus*	FACU	native
red elderberry	*Sambucus racemosa*	FACU	native
elderberry species	*Sambucus* species	FACU	native
snowberry	*Symphoricarpos albus*	FACU	native
western red cedar	*Thuja plicata*	FAC	native
piggy-back plant	*Tolmiea menziesii*	FAC	native
American speedwell	*Veronica americana*	OBL	native

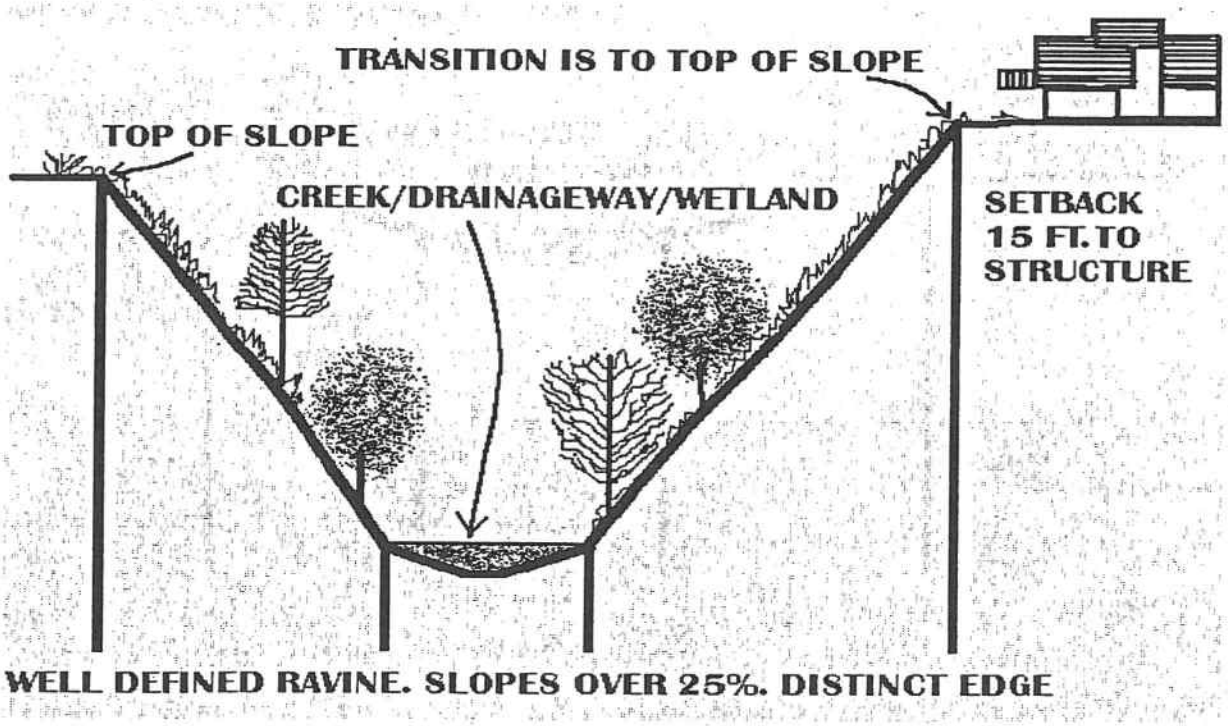
APPENDIX E:

CITY OF WEST LINN TRANSITION AREA BOUNDARY CODE

A-478

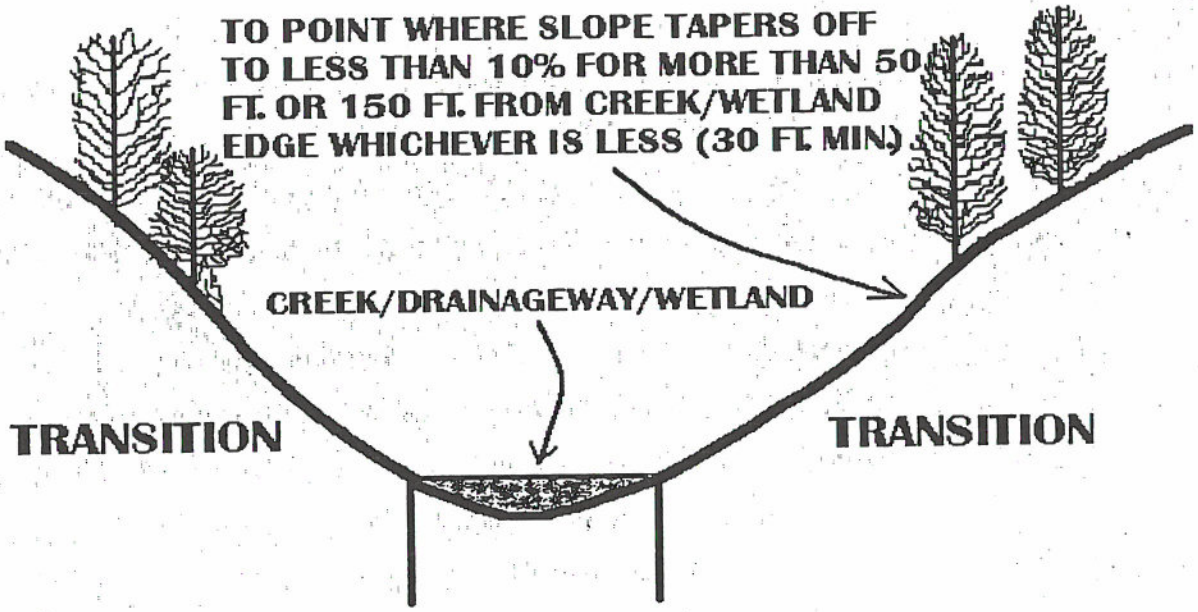
DRAINAGEWAY SLOPE IS 10 -25% TRANSITION A OR B (SEE BELOW) SHALL APPLY, WHICHEVER IS LESS





WELL DEFINED RAVINE. SLOPES OVER 25%. DISTINCT EDGE

A-479



ILL-DEFINED DRAINAGEWAY WITH NO DISTINCT EDGE
SLOPE IS OVER 25%

APPENDIX F:

TRANSITION AREA ENHANCMENT PLAN

Tamarisk Drive, West Linn: Enhancement Plan for "Unhealthy" Transition Area Buffer

Planting Specifications for vegetative improvement of the 16,428 square foot "unhealthy" transition area buffer (planting area shown on Figure 6):

Scientific Name	Common Name	Size	Spacing/ Seed rate	Quantity
Trees				
Acer macrophyllum	big-leaf maple	2 gallon	10 feet on center	82
Thuja plicata	Western red cedar	2 gallon	10 feet on center	82
Shrubs				
Almelanchier alnifolia	serviceberry	1 gallon	5 feet on center	123
Symphoricarpos albus	snowberry	1 gallon	5 feet on center	123
Corylus cornuta	beaked hazelnut	1 gallon	5 feet on center	123
Holodiscus discolor	oceanspray	1 gallon	5 feet on center	123
Seed mix				
Bromus carinatus	native California brome	seed	10 lbs pls/acre	As needed for bare soil areas >25 sq ft following invasive species removal
Elymus glaucus	blue wildrye	seed	10 lbs pls/acre	
Festuca rubra var. rubra	native red fescue	seed	5 lbs pls/acre	

Planting Notes (consistent with purposes of the City of West Linn's Community Development Code, Chapter 30):

1) Himalayan blackberry is an invasive vegetation species and is present in the transition area buffer. Low impact invasive and non-native species control is necessary prior to installing native plantings.

2) Plantings should preferably be installed between February 1 and May 1 or between October 1 and November 15. Plants may be installed at other times of the year; however, additional measures may be necessary to ensure plant survival. Irrigation or other water practices (i.e. polymer, plus watering) shall be used during the two-year maintenance period. Watering shall be provided at a rate of at least one inch per week between June 15 and October 15.

3) Plantings (trees, shrubs, and groundcovers) shall be mulched a minimum of three inches in depth and 18 inches in diameter to retain moisture and discourage weed growth around newly installed plant material.

Maintenance Plan:

1) It is recommended that invasive species control be conducted twice per year; by June 1st and by September 30th based upon the site inspection, for a two-year period.

2) The transition area landscaping should be monitored annually in the spring or fall to assess survival of tree and shrub plantings. If any mortality is noted on the site, the factor likely to have caused mortality of plantings is to be determined and corrected if possible. If survival falls below 80% at any time during the two-year maintenance period, the plantings shall be replaced, and other corrective measures, such as additional mulching or irrigation, may need to be implemented.

1-482

Appendix 3—Preliminary Stormwater Analysis

Memorandum

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

To:	Mike Peebles, PE
From:	Scott J. Ferre, EIT
Copies:	File
Date:	December 28, 2005
Subject:	Tamarisk Property
Project No.:	13458

Introduction

The following is a preliminary stormwater management plan for the proposed Tamarisk Development. Otak conducted a site visit on October 10, 2005. A downstream analysis of the one-quarter mile reach of Fritchie Creek downstream of the proposed development follows this report.

The proposed site is 15.5-acres and is located within the City of West Linn, Oregon at the end of Tamarisk Drive. The site is bounded to the east by Interstate 205 (I-205). The site includes tax lots 00600, 00690, and 00700. Under proposed conditions, stormwater runoff from the developed site will be collected and conveyed by a series of catch basins and pipes to a water quality facility then to an outfall which will discharge into a proposed culvert-crossing on Fritchie Creek. A base map of the proposed site is included as Figure 1.

Floodplain

The entire site is designated as Zone C according to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) for Clackamas County, Oregon Panel 135 (August 4, 1987). The Zone C designation is defined as an area of minimal flooding.

Soil Survey

There were three soil types identified on the property according to the NRCS Soil Survey of Clackamas County, Oregon (1982), and they are presented in Table 1. Site soils are in Hydrologic Group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure.

A-484

Table 1: Soil Types

Soil Name	SCS Symbol	Hydrologic Group
Woodburn Silt Loam	91B	C
Cascade Silt Loam	13C	C
Xerochrept/Haploxerolls	92F	n/a

Existing Storm Sewer

According to GIS maps viewed on the official website for the City of West Linn, existing stormwater and sanitary sewer lines extend to the end of Tamarisk Drive, but none are currently located on the Tamarisk property. There have been no documented complaints of drainage issues or flooding issues reported by neighboring developments or property owners, according to the City of West Linn.

Hydrology

Under existing conditions four sub-basins were identified within the project boundary. These sub-basins are labeled A, B, C, and D and are shown on Figure 1. Sub-basin A drains offsite and will not be developed and should not receive increased flows as a result of the proposed development. Sub-basins B and C drain to Fritchie Creek and sub-basin D drains to an unnamed tributary of Fritchie Creek. All the sub-basins drain to the Tualatin River.

Portions of sub-basins B, C, and D are proposed for development. Increased flows resulting from development in these three sub-basins will be collected and conveyed to a stormwater treatment facility then conveyed to an outfall into Fritchie Creek. The unnamed creek draining sub-basin D should not receive increased flows as a result of the proposed development.

Water Quantity

The total Fritchie Creek drainage basin was delineated using the Oregon Water Resources Department's web based auto delineation tool and is approximately 332-acres. The total proposed project area is approximately 15.5-acres. Therefore the project area comprises less than five percent of the total Fritchie Creek drainage basin area. The project site is located approximately 1560-feet upstream from the confluence of Fritchie Creek and the Tualatin River.

Due to the site location at the downstream end of the Fritchie Creek drainage basin near the Tualatin River, and the project's small contribution to Fritchie Creek, no detention is proposed with this project. Based on observations documented in the downstream analysis, Fritchie Creek is expected to be able to convey future flows. If deficiencies are identified during design, the project will either remove obstructions in Fritchie Creek or provide stormwater detention.

A-485

Water Quality

The City of West Linn refers to the BES stormwater manual for water quality requirements. Due to the low infiltration rates expected for the site, water quality facilities recommended for use include a biofiltration swale, wet pond, vault, or possibly a proprietary device.

Stormwater Outfall

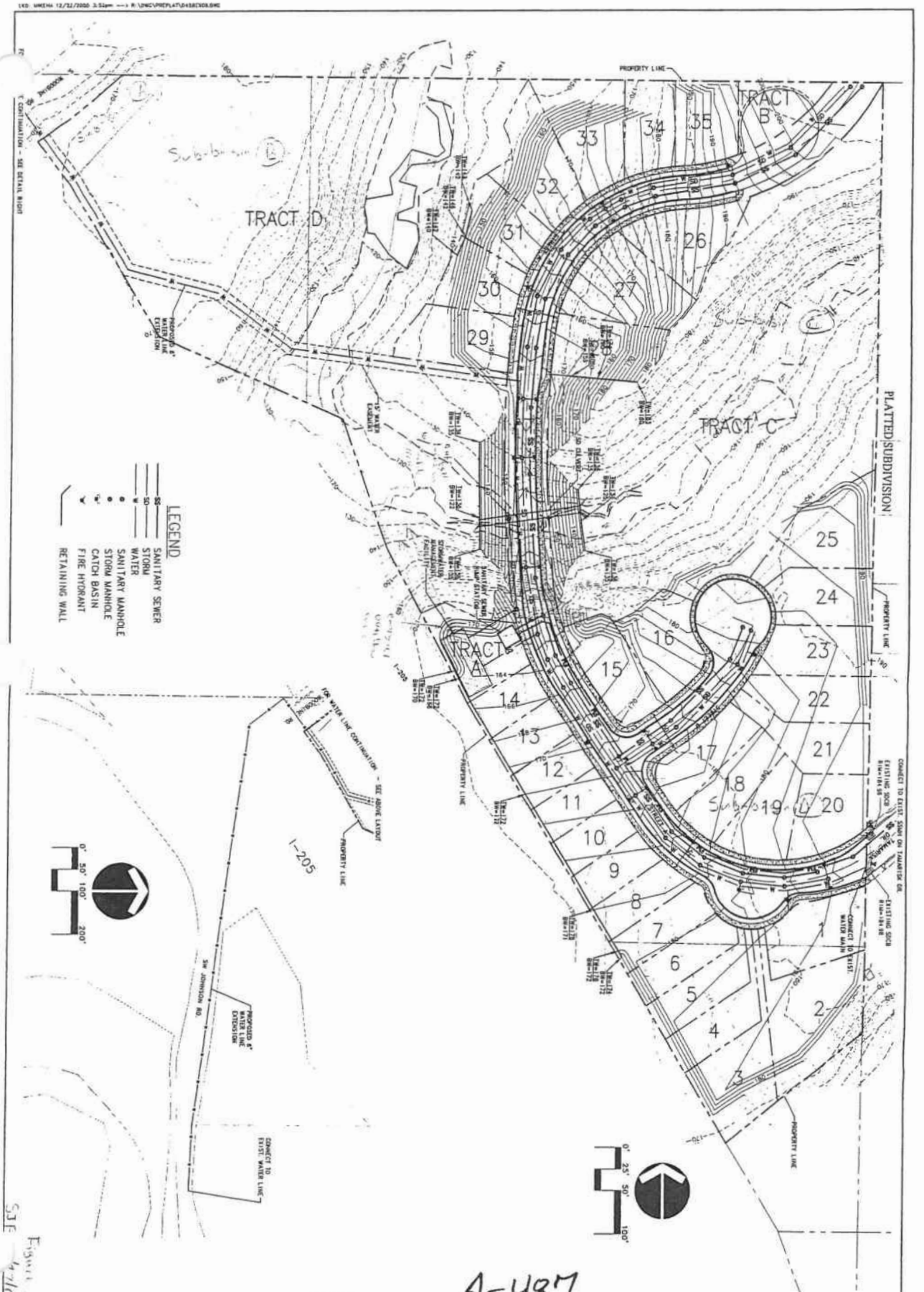
Stormwater runoff will discharge to the culvert-crossing proposed for construction in Fritchie Creek. The culvert will be designed to safely convey upstream flows and the stormwater flows discharged from the project site. This design will allow energy from the stormwater discharge to be dissipated within the culvert, and minimize erosion in Fritchie Creek. This design also eliminates the need for the construction of an additional outfall structure, reducing impacts to the Creek. The culvert design will provide maintenance access to the outfall and an emergency overflow structure at the water quality facility will be designed should the outfall into the culvert become blocked.

A weir designed to safely pass the 100-year flow will be constructed as the emergency overflow structure, and will discharge overland to Fritche Creek downstream of the proposed culvert crossing. Figure 1 shows the proposed location of the emergency overflow weir.

Recommendations and Summary

This report describes the preliminary stormwater management plan for the proposed Tamarisk development. Stormwater will be collected and conveyed by a series of catchbasins and pipes to a water quality facility, then conveyed to an outfall into Fritchie Creek. An emergency over flow weir will be constructed at the water quality facility should the primary outfall become blocked.

A-486



A-487

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Design	Drawn	Checked	Date	Initial Issue Date:
			KK/04December 22nd, 2005	

EX08

Down Stream Analysis

Introduction

There are four drainage basins on the Tamarisk Property, referred to as Basins A, B, C, and D. See Figure A. Basin A is a 0.26-acre area that drains to an unnamed stream that is located off-site to the north. Basin B is a 4.36-acre area that drains to Fritchie Creek, the stream crossing the northern portion of the property. Basin C is an 8.27-acre area drained by unnamed tributary of Fritchie Creek that traverses the middle portion of the property. Basin D is a 3.12-acre area that drains south to an unnamed stream located off-site. The basin locations, culverts, and other structures mentioned in this analysis are shown on the map in Figure A., following this report.

Review of Downstream System

Basin A

Basin A is located at the northwest corner of the project site and drains north toward an unnamed tributary that flows near the intersection of Johnson and Wisteria Roads and contributes to the Tualatin River. At 0.26 acres, this basin is a small portion of the Tamarisk site and it is situated along the relatively flat portion of the ridge top. This portion of the site is not expected to generate flow rates significant enough to affect the receiving drainage channel.

Basin B

The 4.36-acres of Basin B drain directly to Fritchie Creek. Fritchie Creek enters the Tamarisk Property at the northern boundary and exits the property through a 48-inch culvert (B-3) under I-205. The Fritchie Creek channel meanders through a moderately flat, large floodplain. The adjacent slopes to the floodplain range from 37 percent on the north side of the stream to 35 percent on the south side.

Fill, which appears to be a future road crossing, has been placed across Fritchie Creek approximately 300 feet upstream of the Tamarisk Property boundary. A 36-inch Corrugated Metal Pipe (CMP) culvert (B-1) was installed to convey stream flows through this fill.

A defined channel has been recently excavated Downstream of culvert B-1 in the Fritchie Creek floodplain. This channel conveys outflows from Culvert B-1 downstream to another fill placement and culvert crossing (B-2). It is unknown if this channel is a re-alignment or mitigation resulting from the construction of culvert B-1 in Fritchie Creek. Large woody debris and excavated fill were placed along the newly excavated channel.

Table A.1 - Structures along Fritchie Creek

Structure	Type	Dimensions
B-1 (off-site)	Single Barrel CMP Culvert	36-inch diameter
B-2 (off-site)	Triple Barrel CPP Culvert	15-inch diameter /barrel
B-3	Single Barrel CMP Culvert	48-inch diameter
B-4 (off-site)	Single Barrel CMP Culvert	48-inch diameter
B-5 (off-site)	Trapezoidal Box Culvert	10-foot width

Culvert B-2 is located approximately 240 feet downstream of culvert B-1. Culvert crossing B-2 consists of three, 15-inch corrugated plastic pipes placed under fill that also appears to be a future road crossing providing access to the Tamarisk project site. These culverts convey flows from the upstream excavated channel, under the placed fill, and discharge into the wetland.

During the field visit at the inlet for culvert B-2, only one of the pipes was conveying flows. The two other pipes are higher and were dry. Examination of the culvert outlets revealed that the submerged pipe had significant amounts of sedimentation within the pipe. It appeared that the two exposed pipes will properly convey water only under high flow conditions. An analysis may be necessary to determine conveyance capacity of this culvert design.

The section of Fritchie Creek from culvert B-2 downstream to Culvert B-3 is primarily wetland. There are small trees and ground vegetation along the banks with no apparent sign of erosion. The 40-foot section of Fritchie Creek upstream of culvert B-3 has experienced erosion that has widened parts of the channel bottom to approximately 10 feet. There was also significant aggradation of soil materials immediately upstream of culvert B-3, where Fritchie Creek converges with the unnamed tributary from Basin C.

Approximately 700 feet downstream from culvert B-3, there is a 48-inch CMP culvert (B-4) under a driveway entrance located on Johnson Road. Approximately 60 feet downstream from culvert B-4 is culvert B-5, which is a 10-foot wide trapezoidal box culvert passing under Johnson Road. This culvert is embedded and appears to be a stream simulation design. Culverts B-4 and B-5 appeared to be recently improved and well maintained.

Basin C

Basin C is the 8.5-acre central portion of the Tamarisk Property that is drained by an unnamed tributary to Fritchie Creek. The side slopes adjacent to the channel range from 40 percent to 45 percent and are vegetated with medium sized trees, but sparse ground cover. The stream channel itself is thickly vegetated with blackberry and hard-stemmed species. The channel has an average longitudinal slope of 4.8 percent and flows from the eastern boundary of the site to a fill structure

(C-1) designed as a road crossing. This structure has a 15-inch CMP culvert to convey the streamflow. There did not appear to be any significant erosion upstream or downstream of culvert C-1. This culvert is located approximately 250 feet upstream of the confluence with Fritchie Creek. The last 30 feet of the channel upstream from the Fritchie Creek confluence has experienced severe widening and aggradation of fine sediments. The confluence with Fritchie Creek is eight feet upstream of the inlet to the 48-inch culvert under I-205 (B-3).

Table A.2 - Structure within Basin C

Structure	Type	Dimensions
C-1	Single Barrel CMP Culvert	15-inch diameter

Basin D

The off-site stream to the south of the Tamarisk Property that receives runoff from Basin D has side slopes of approximately 15 percent, and a longitudinal slope of approximately 3.8 percent. The upland slopes are well forested and have good ground cover with no evidence of erosion; however, the stream channel is incised and has heavily eroded banks. This unnamed stream is conveyed under I-205 through a 30-inch CMP culvert (D-1). There was little aggradation of eroded material near the inlet of culvert D-1; therefore, the eroded channel material is apparently transported downstream.

Culvert D-1 discharges into a heavily vegetated detention facility (D-2) that has thick splays of aggraded soil material fanning out from the stream channel, causing the channel to migrate laterally within the facility. There is a 24-inch diameter riser that serves as the outlet structure from facility D-2, which is located approximately 200 feet downstream from the culvert D-1 outlet. The outlet of the detention facility discharges to the natural channel and flows another 600 feet to Johnson Road. At Johnson Road the stream enters an 18-inch roadside culvert (D-3), then is conveyed 120 feet and discharges to Fritchie Creek at the inlet of the Johnson Road culvert (B-5). From this confluence, the combined streamflow enters the 10-foot wide trapezoidal box culvert (B-5), which is a cobble-stone-lined stream simulation culvert that flows under Johnson Road.

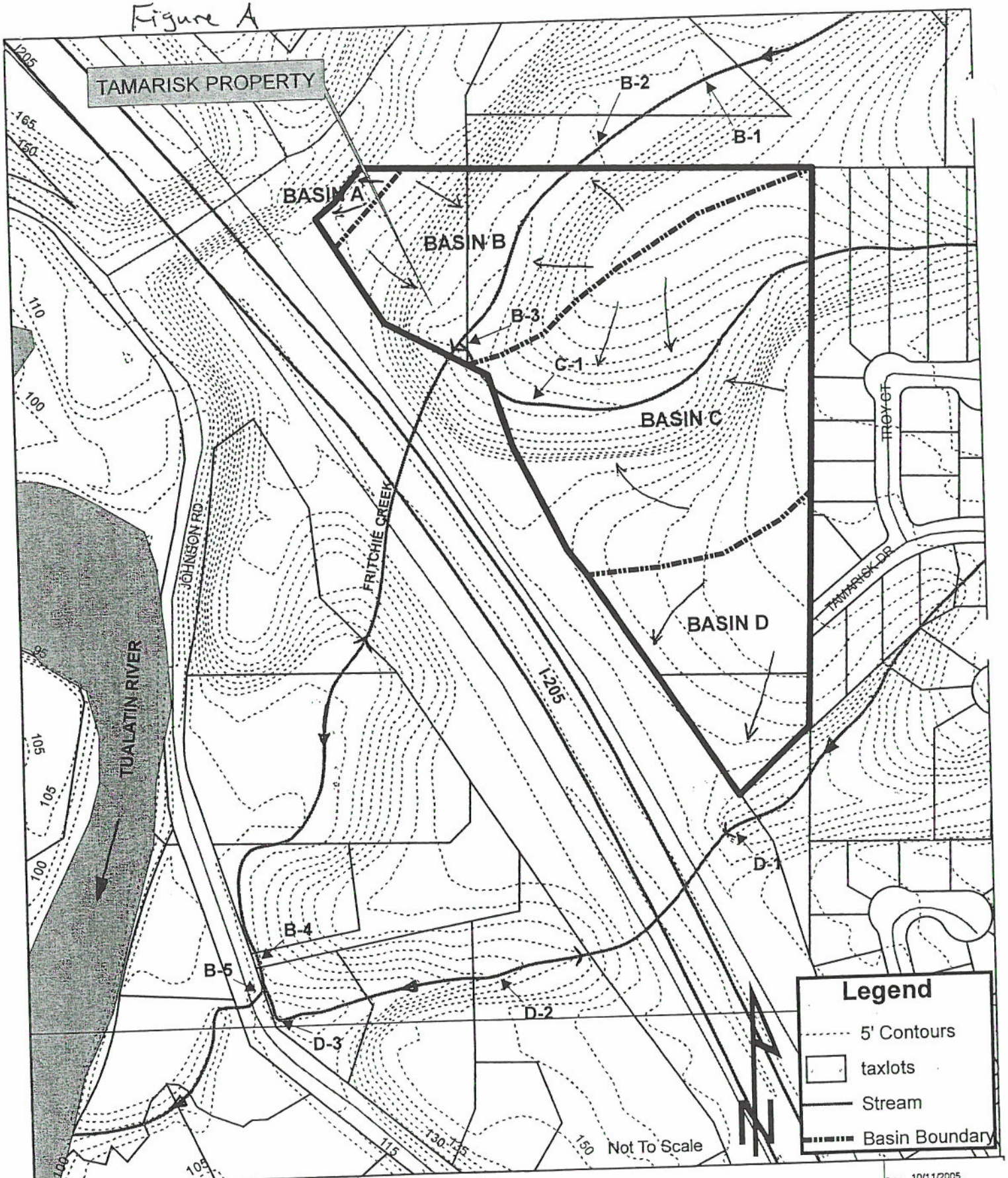
Table A.3 - Structures Downstream of Basin D

Structure	Type	Dimensions
D-1 (off-site)	Single Barrel CMP Culvert	30-inch diameter
D-2 (off-site)	CMP Flow Control Riser	24-inch diameter
D-3 (off-site)	Single Barrel Roadside Culvert	18-inch diameter

Conclusion

The relief across the Tamarisk Property varies greatly between the relatively flat ridge tops to the steep terrain adjacent to the stream channels. All drainage from Basins B, C, and D are transported under I-205 through two separate ODOT culverts, culverts B-3 and D-1. The streams then converge at the inlet of the Johnson Road culvert (B-5). The channel downstream of culvert B-5 has exposed scour surfaces that appear to be actively eroding the right outer bank. There is also undercutting that appears to be undermining the root systems of large trees on the right outer bank. A photographic journal is also available but not included with this report.

Figure A



otak

Otak, Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: 503.635.3618
Fax: 503.635.5395

TAMARISK PROPERTY

Location State

Downstream Analysis

Date: 10/11/2005
Drawn: AJS Checked:
Project No.: 13458
File No.:
Sheet No.:

A-492

Appendix 4—Neighborhood Meeting Information

NEIGHBORHOOD MEETING
AFFIDAVIT OF MAILING

STATE OF OREGON)
) ss
County of Clackamas)

I, Theresa D. Lassise, being duly sworn, depose and say that the 19th day of October, 2005, I caused to have mailed to each of the persons on the attached list a notice of a meeting to discuss a proposed development at West Linn Tamarisk Develop., a copy of which notice so mailed is attached hereto and made a part of hereof.

I further state that said notices were enclosed in envelopes plainly addressed to said persons and were deposited on the date indicated above in the United State Post Office with postage prepaid thereon.

Signature Theresa D. Lassise

Subscribed and sworn to, or affirmed, before me this 21st day of Nov, 2005.

Notary Public for the State of Oregon
County of Clackamas
My Commission Expires: Jan 23, 2007
Cynthia J Waggener

OFFICIAL SEAL
CYNTHIA J WAGGENER
NOTARY PUBLIC–OREGON
COMMISSION NO. 364962
MY COMMISSION EXPIRES JAN 23, 2007

A-494

AFFIDAVIT OF POSTING NOTICE

I, Jerry Offer, do swear or affirm that on the 19th of October, 2005 I personally posted the notice indicating that the site is the subject of Subdivision Review ~~SB 04.07~~. The sign was posted at:

Terminus of Tamarisk Drive 21E34A Tax lots 600, 690, & 700
(state property location)

This 22nd day of December, 2005

Jerry D. Offer
Signature

Subscribed and sworn to, or affirmed, before me this 22nd day of December, 2005 (5 CW)

OFFICIAL SEAL
CYNTHIA J WAGGENER
NOTARY PUBLIC-OREGON
COMMISSION NO. 364962
MY COMMISSION EXPIRES JAN 23, 2007

Cynthia J Waggener
Notary Public for the State of Oregon
My Commission Expires: Jan. 23, 2007

A-495

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or the front if space permits.

1. Article Addressed to:

Jody Carson
1296 12th St.
West Linn, OR
97068

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Kirk Bertram
C. Date of Delivery 10-24-05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 7188 5776

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

A-496

NEIGHBORHOOD MEETING
AFFIDAVIT OF MAILING

STATE OF OREGON)
) ss
County of Clackamas)

I, Theresa D. Lassise, being duly sworn, depose and say that the 17th day of November, 2005, I caused to have mailed to each of the persons on the attached list a notice of a meeting to discuss a proposed development at 21E34A TL 600690-700 _____, a copy of which notice so mailed is attached hereto and made a part of hereof.

I further state that said notices were enclosed in envelopes plainly addressed to said persons and were deposited on the date indicated above in the United State Post Office with postage prepaid thereon.

Theresa D. Lassise
Signature

Subscribed and sworn to, or affirmed, before me this 18 day of November, 2005.

M. Sharp
Notary Public for the State of Oregon
County of Clackamas

My Commission Expires: May 23, 2009

OFFICIAL SEAL
M SHARP
NOTARY PUBLIC-OREGON
COMMISSION NO. 393325
MY COMMISSION EXPIRES MAY 23, 2009

A-497

Letter of Transmittal

COPY

Transmitted By...
X Mail
☐ Courier
☐ Will Call
☐

Date: November 18, 2005
Project No.: 13458
Project: Tamarisk Property Development
To: Jody Carson
Address: Willamette Neighborhood Association
1296 12th Street
West Linn, OR 97068

otak
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

We Are Sending You...
☐ Drawings ☐ Prints
☐ Specifications ☐ Plans
☐ Copy of Letter ☐ Samples
☐ Change Order X Other

Transmitted...
X For Approval
☐ As Requested
☐ For Your Use
X For Comment

Copies	Page No.	Description
1		***Meeting Minutes from November 9, 2005***

Items Are...
X Attached ☐ Under Separate Cover via

Jody,
Thank you for allowing us time to present our proposal to the neighborhood association. Personally, I think you run a very organized meeting. I appreciate that. I am attaching a copy of the minutes that we were able to glean off of the recording we made that night. The City requires that I send the meeting minutes to you for review and approval. As you can see, my recording was not as good as I had hoped, but I do believe that the concerns raised by the neighbors are well represented. Nevertheless, I would appreciate it very much if I could supplement my meeting minutes with a copy of your meeting minutes with our application.

If you have any questions, please call me at (503)699-2495.

From Brad Kilby, AICP
CC: File 13458 Meetings

A-498

Meeting Minutes

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

Meeting:	Tamarisk Property Meeting with Willamette River Neighborhood Association
Project No.:	13458
Meeting Date:	November 9, 2005
Meeting Time:	7:00 p.m.
Location:	Willamette School Library
Attendees:	Otak: Brad Kilby, Mike Peebles See Attached Attendees List
Minutes By:	Brad Kilby

Project Site Overview

This meeting is regarding development discussed with the City of West Linn at a pre-application meeting, which is approximately 15.05 acres: 14.5 acres are zoned R-15 and the remaining is zoned R-10. There is a drainageway that comes down through here and a drainageway that comes down through here. As you follow the topography, there are steep slopes over here and steep slopes here. Tamarisk Drive is here.

Our proposal is to locate 48 homes on the 15.05-acre site. Due to the physical and natural constraints of the site, we would be focusing our attention and lots on the areas that are buildable and preserving the drainageways, greenways, and this corner over here. We would go through this process as a planned development, and since it is a planned development, we would be required to have 7,000 square-foot lots along the perimeter of the property, then within the interior of the property, we can vary our lot sizes based on our ability to preserve the resources onsite. We are looking at, per the City's direction, stubbing this road out here. We cannot extend it to Woodbine because it is outside the city limits and the urban growth boundary, which requires a Goal 5 exception to the state process. Steep slopes also present a major obstacle to this alignment. We are not considering that at all right now. Still, the City does want a stubbed street to that location for planning for future expansion of the urban growth boundaries and then development on those adjacent parcels which are currently in Clackamas County.

Before this meeting, I spoke to a few people on the phone so I'm quite aware of some of your concerns; obviously, traffic is going to be a big concern because it was addressed to me a couple of times. We have a traffic engineer looking at Tamarisk, Blankenship, and the whole 10th Street

corridor. My guess is he is going to look at that, see what we have to add, then give us recommendations on how to mitigate the impacts that we are creating at those intersections and on those streets. To that end, that is all we can do right now with the traffic.

The property is zoned for residential and we are proposing residential. Another question posed was about trees. The City requires us to preserve the majority of the trees, so we walked the site with an arborist, a tree pathologist, and the City arborist. Primarily, we've identified the trees that are the more pristine trees, the trees that have more value from a natural, environmental standpoint. Those trees fall within the drainageways and up and along here, and will be preserved. Again, this corner won't be touched at all and we won't go over that way unless we are required to by the fire district in order to provide an alternate second emergency access. We are trying to avoid that area and go with other alternatives that the fire district might have, or offer to us, such as sprinkling the houses or extending hydrants down into the development.

Questions-Comments/Answers-Responses

Q. There're some significant waterways that are going down to those low points of those things. What are your plans for those?

A. They're not developed if that's what you're asking. There's an existing logging road and we would be following the existing alignment of that logging road and we would obviously… *[attendees talking at the same time]* this is one of the drainageways right here and we would have to cross that drainageway. There's an existing road on that drainageway and… *[attendees talking at the same time]* this is where one of the drainageways comes down in and there's no lots in that area. The other drainageway comes in from this way and were not proposing to do anything here. If you follow this topography along here, we're not proposing to develop in those drainageways.

The only thing that would happen in the drainageways is a crossing and a culvert expansion. The Oregon Department of Fish and Wildlife and Division of State Lands will require us to upsize that culvert to make it fish friendly if it is deemed there are fish that are traveling up and down them. Our development will be focused on this hillside here, and on the crown of the hill, and then over here on the termination of Tamarisk, the remaining portion which isn't steep before you go down and cross that.

Q. Will houses be constructed on slopes?

Houses will probably be a daylight basement type so will have a high front, which drops down on the back. We'll have to look at and identify building envelopes on those lots. We obviously aren't going to spend thousands and thousands of dollars putting in pilings down the slope to create buildable areas. We're going to look at the most functional one that will work for us.

A-500

Q. We assume that stream is right in the middle of that area. How far away from the stream are you building?

A. I don't know, but our designers are aware of the City-required setbacks, so they're probably at that distance. I want to say 50 feet, but I'm not positive.

Q. What are the costs associated with constructing a through road to Woodbine?

A. I don't know the costs. I do know the other challenge we have with that, though, is the slope down here will probably exceed anything that the City or County would allow us to build, anyhow. I'm thinking the slopes would be upward of 20 to 23 percent for a road. You could maybe... *[attendees talking at the same time]* you run into the same thing and then we would be crossing the drainageways again. I'm not sure. Like I say, our traffic engineer is obviously going to look at issues like that and we'll look at them as well. At this point in time, I don't think we'll be looking to put a street connection down to Woodbine from here. For that matter, the way our street is stubbed out up here is that it follows this ridge line right here, which would ultimately somehow connect to Woodbine. That's the City's goal, to connect to Woodbine or some other street that's up along that ridge line.

Q. Could you point out where Woodbine Road is located?

A. Woodbine Road is kind of hard to see, but there is a line of shade right there; that's Woodbine Road. It crosses under I-205.

Q. You just mentioned stubbing a road over here or some kind of future deal off of that point?

A. Yes. You're required any time you develop property, whether the adjacent property is developed or not, to accommodate or provide future access to that property so when they develop, the infrastructure can be extended.

Q. So, you extend the roads to the property you don't own? I'm looking at your future plans, per se, and the slope going in that direction is feasible.

A. That's what I'm saying. When you develop adjacent to vacant/underdeveloped property most anywhere in the Metro area, you're going to be required to stub a street out. Whether they intend to develop or not, you have to provide them with that opportunity to eventually extend the infrastructure through their property.

Q. You didn't answer my question. *[attendees talking at the same time]* …your plans where you scope it out so you're actually backing it up to existing property owners, so you're saying that even though somebody owns that, that you can plan on using… *[attendees talking at the same time]* ?

A. Yes, you're planning for future infrastructure expansion.

Q. You're stubbing the road to that property?

A. Right, this landowner right here.

Q *[attendees talking at the same time]* …outside city limits.

A. Right now it is; you're right. We have to accommodate for future… *[attendees talking at the same time]*

That opens a whole other category because that's how that land is considered rural and outside city limits.

But city limits may expand; the urban growth boundary may expand. Those are the logical areas where it's going to expand—at the edge of those. So when they expand, they're going to expand to the outside because there's no room inside; those are the areas that are adjacent to current urban infrastructure and those are the areas where Metro plans to accommodate those additional million people, not exactly necessarily on this property, but everybody within the Metro area is going to have to accommodate some of that population. That population has to go somewhere so they're going to look at expanding urban growth boundaries or increasing densities inside existing urban growth boundaries.

Q. I know that woods very well; I walk through it on a regular basis. It looks like you're going to start to stub a road out at this foot path and this would take quite a bit of work to go ahead and continue on and bring that thing onto Woodbine.

A. Right, and you're entitled to your opinion; I understand that; I understand your concern, but you look at the topography here and it goes back up the hill, up the ridge line. It's not as steep down here.

Q. You're correct. It does go back up the hill to the ridge line. *[attendees talking at the same time]* …ridge line to get to Woodbine or back over to Debauch or some place right in there. You still have the same problem.

A. Those roads are going to have to expand some day, and they're going to look at the best alignment. What we're trying to do is propose the alignment that's going to be the least destructive to the hillsides and won't compromise the stability of those slopes. So we're looking at directing those roads to areas where it's not as steep.

Q. Will condemnation of property be required?

A. No, … *[attendees talking at the same time]* They have to plan for future growth, whether it's in the county or in the city because those are the logical areas for the urban growth boundary to expand.

Q. How many units would be allowable under the current zoning?

A. Under the current zoning, I believe that it is around 48.

Q. That's not what I calculate. I mean, how many units are *buildable* under the current zoning?

A. We're proposing 48 at this meeting. The likelihood that we'll get 48 we don't know yet. We will have to delineate the area here and we'll have to deduct those areas from that. Yes, you're right. It might be 43, but we're proposing 48 based on the gross site acreage.

Q. Obviously not all the acreage is buildable, so you're proposing increased density under the current zoning.

A. No, we're proposing to transfer density from the non-buildable areas to the buildable areas though.

Q. But increasing the density.

A. No, we're not increasing the density of the site. For argument's sake, if I have an acre and my property was zoned R-4, which is four units to the acre and half of my property was in wetlands, drainageways, steep slopes, or something like that, the City would allow me to shrink the lot sizes on a half acre and let me accommodate four units on that half acre as long as I protect the other half acre which is the wetlands and steep slopes. So that's the density transfer; we're not requesting a density bonus or an increase in density on this site.

C. Those would have been unbuildable anyway.

A. Right. It is a tool that most jurisdictions use to protect resources.

A-503

C. Basically, *[attendees talking at the same time]* …45 homes or 48 homes in that same area that they can only do it within this much area instead of using that much area: smaller lot sizes, houses closer together so they can get all the units in that area.

C. The issue is, there's 48 units there; that's at least 100 cars every day in and out of there—one separate road, not counting the construction ruining our road; the speed of people coming through the area; and the police are not patrolling, we patrol ourselves as citizens. The other is, we already wait now when we get off of 10th Street because of one traffic light and now another traffic light; you already wait 15 minutes to get onto 10th Street.

A. I understand your concerns.

Q. Where are the utilities?

A. We would be extending them down Tamarisk; they might already be stubbed at the property, which is probably the likely case.

Q. First of all, do you have any idea on the size of the houses as far as putting a house on a 7,000 square-foot lot; how big is the house? Do you have any idea how many square feet the houses are going to be? Second, when you extend that street, there's that huge cedar tree right there. Are you planning on splitting the street so it will go around that, does anybody know, or are you going to be allowed to take out that huge cedar tree?

A I don't know whether or not we would work around that cedar. I can't answer that question right now.

C. *[attendee discussion, talking at the same time]* …My request would be that they would split the street and put it around the tree. I mean it would look better than… *[attendees talking at the same time]* it's a huge, huge tree.

C. Are the houses going to be four-bedroom houses, 2,500 square feet/3,600 square feet? What are you going to do with a 7,000 square-foot lot? How many people are going to be living in these houses? Are they going to be big families or small families?

A. There will be varied home sizes, probably around the range of 1,800 to 3,000 square feet, two-story houses.

C. They're not very big houses then.

A-504

A. That's your opinion; I live in a 1,200 square-foot house; I think it's big enough *(laughter)*.

C. *[attendees talking at the same time]* …with a 7,000 square-foot lot, the only thing to do is go up with the houses. To build a 3,000 square-foot home, it will be multiple levels…

Q. *[attendees talking at the same time]* …you don't know that; you don't know the price range or anything like that?

A No, I don't know the price range, but the price range is going to be dictated by the current market at that time, as is the construction type, I think. If four-bedroom houses are selling well at that time, they'll probably build four-bedroom houses.

C. Please consider improvements for bicycles and walking.

A. Okay.

C. We have two concise concerns. One is sound barriers. We have a natural sound barrier with the trees. A concern is if you're going to take out the entire tree section off of Tamarisk Road. My other concern is if you look O'Neil Court today, which is a feeder off of Tamarisk Drive, eight years ago my son started roller hockey in O'Neil Court and it was level. Today, O'Neal Court looks like this; you could not play roller hockey on it today because all of the water off the hill is running down into that property. It's still draining today, but it is draining at an angle beneath the properties *[attendees talking at the same time]* …you're not going to change the water flow… *[attendees talking at the same time]*

A. If I can speak to that. We have hired an acoustical engineer to look at a sound barrier along I-205. If we destroy Tamarisk Road, we'll rebuild it.

C. Several of us live on the east boundary of your property. Because of that, the problem with that house is sliding; they had to bring in about 10 or 20 loads (interjection of another attendee, "about 45"). There were about 40 for my backyard and over a 100 for his backyard, so my request is that we make sure that we address that and the trees.

C. More people are more concerned about preserving the trees on the north/northeast corner of the property… *[attendees talking at the same time]*

A-505

A I'm not sure I can answer your question to your satisfaction. Why don't we get together after this meeting and I'll try and discuss it with you. I just don't know that I can answer the question to your satisfaction… *[attendees talking at the same time]*

C. *[attendees talking at the same time]* …a better long-term plan for what they think is going to be an egress out of that neighborhood… *[attendees talking at the same time]* …I don't agree with a developer coming in here with the thought of that happening without having all those boxes checked… *[attendees talking at the same time]*

C I understand the portion where you said can't go off towards Woodbine; instead of having it go off to the right, taking it off that way that's a huge wetlands down there… *[attendees talking at the same time]*

A. We do have a traffic engineer onboard that will be looking at where we would be stubbing our road out.

C. Would you address the number of units along this road *[attendees talking at the same time]* …the situation where… *[attendees talking at the same time]* ?

A. We're proposing 48 and that's based off a gross-acreage calculation; it does not include deductions for right-of-way or deductions of those areas.

C. The density calculation looks flawed.

C. I'd much rather see road to your property going to Woodbine than stubbing out to the north of property and leaving that problem in somebody else's backyard.

A. Your point is noted. We will take a look at that.

C. Can you put another culvert and new lot… *[attendees talking at the same time]* (interjection by another attendee, "completed done, completed done") *[attendees talking at the same time]* …and solve the problem today and alleviate… *[attendees talking at the same time]*

A. But it won't solve the problem like you're thinking it's going to solve the problem.

C. *[attendees talking at the same time]* …No, no, no. I don't think it's going to solve a problem, but I think you're going see the same challenges if you want to extend a stub out. I don't think that stub out is the answer.

A. Your concerns are noted.

C. *[attendees talking at the same time]* ...I'm not saying I have the answer. I'm just saying, knowing the topography of the land, I don't recognize that that as the answer either.

C. Okay. It seems to reason, there are other options... *[attendees talking at the same time]* have some foresight in if we're going to stub it out here because, you know, we see there is a way for them to make it out whatever... *[attendees talking at the same time]*

C. *[attendees talking at the same time]* ...where we'd like to see it, would be a cross between residential and the rural here... *[attendees talking at the same time]* ...the other thing is with some preservation of trees and with that size of lots, there is not going to be a lot of footprints for a building so, therefore, you're not going to have a big buffer between residential and rural at the north end of the property... *[attendees talking at the same time]*

C. In the past that property was zoned R-15. Still, I don't know what happened in the interim between then.

A. The property is still zoned R-15.

C. So that's our benchmark that we need to be speaking from. So any adjustments of tens, sevens, and fives are all actually related to the R-15... *[attendees talking at the same time]*

C. I've a concern that's kind of resource related. I was just wondering if there's been a fairly good or appropriate assessment of the geology in the field work in that area? It goes back to one of the questions or concerns. During a flooding event of two years ago, the soils obviously rolled away—the fill just went out the window. I understand the impervious surface is going to be way down in a fairly concentrated area. Do you have some degree of confidence that it is going to hold if that area does have erosion of soil up against that creek?

A. I will by the time we apply. We didn't know that was an issue, but we'll have a geotech engineer look at the site.

C. *[attendees talking at the same time]* ...For an observation, you can come by our property, but the point is that we have fill, and they filled it in and packed it down and it took over two years before our property settled to where we could put that dirt in... *[attendees talking at the same time]*

A. We will review that issue.

Summary of Main Concerns

- Street extension
- Traffic
- Trees
- Sound barrier
- Stormwater

Mrs. Carson adjourned the meeting with regards to this proposal.

This information has been recorded in accordance with our applicable standard of professional care. If we do not receive any comments within five days of receipt, we will finalize these minutes as drafted for the project file.

A-508

From Jody Carson

Willamette Neighborhood Association Minutes....November 9, 2005

Jody Carson called the meeting to order at 7pm in the Willamette Primary School Library. After introductions, the minutes of the October 13,2005 meeting were read and approved.
The treasury has a balance of $3,198.27, which represents $1118.00 for the yoga class and $2,080.27 for the WNA.

New Business:

1. Premier Property Group represented by Joe and Mike Mitchoff are proposing a development of 12 townhouses on 13th street behind Albertson's. They are applying for re-zoning from Transitional to R2.1. They showed graphics of the townhouse layouts and facades. The ingress and egress will be from a privately maintained road. They plan to rent out the homes for several years and eventually sell them. West Linn planners have agreed in principle with their concept. They plan to improve and retain a duplex and a home already on the property. Discussion centered on the added traffic to Blankenship and the need for an overall traffic plan for the area.

2. An application for a 15 acre development at the terminus of Tamarisk Drive was presented by Brad Kilby of OTAK. The land is zoned R10 with 48 homes proposed. The steepest portions and drainage areas will preserved as greenways with 7,000 square foot lots on the perimeter and clustered housing on the crown and sides of the ridges with various sized lots. The city has required them to save as many trees as possible and the city arborist has walked the property and made recommendations. A traffic engineer is studying Tamarisk Drive and its future impact to find the best options. The City is requiring the street to be stubbed out.

Many neighbors were present to ask questions among which were:
Question: What is the intent of the stub road abutting private property outside the UGB?
Answer: City requires infrastructure and access to be available should that property be included in the UGB eventually.
Question: There are some significant waterways – what are the plans for those?
Answer: They won't be developed, a road will have to cross one drainage way and the culvert enlarged, the other drainage way won't be developed. The development will be on the hillsides and crown of the hills.
Question: How many units would be allowed under the current zoning?
Answer: There are 48 lots proposed, with a transfer of density from the non-buildable land to the buildable areas.

Based on the questions and concerns raised, the following requests are made by the WNA to the Planning Department in reviewing the application prior to deeming it to be a complete application:

1. Address the traffic impact and potential damage to existing and adjacent roads during construction and after.
2. Clear definition of what size houses and size lots are proposed and where on the site they will be located
3. Determining the impact on adjacent homes of the utilities, water line, etc coming from Tamarisk Drive.
4. Need to save the very large cedar tree at the entrance by building a split road around tree.
5. Ensure amenities for pedestrians and bikes are included.

6. Save significant trees on the north/northeast corner and trees that serve as a buffer providing screening for adjacent homes and save trees that help prevent erosion of the hillside.
7. Complete an analysis to identify wetlands, drainageways, stream beds, storm water areas and address areas that need to be stabilized during and after construction.
8. Ask City to address the future use of adjacent vacant land abutting the stubbed street and determine if it is required. Explore options for other locations for stubbed street.
9. Require a geology study and a soil survey because history has shown soil to slip when saturated.
10. Be alert to critical concerns for sound barrier and a green buffer.

3.The Dollar Street property will be accepting bids soon. Randy Sebastian of Renaissance Homes will bid on the 23 acres. The WNA requests that the point of land nearest the river of approximately 1 acre be set aside for possible connection to Fields Bridge Park and for the historic resources there. A new bridge is planned and that may affect the immediate area. Randy said the land is zoned R10 and he might plan a PUD which would allow a more flexible distribution of the land and allow for open spaces. Townhomes are another option since there seems to be a big demand. Walking paths around the perimeter and a consideration of access to Tualatin River Nursery were other concerns raised.

Old Business:

4. Police Update: Officer Brad says the speed blinkers are portable and can be moved as needs change. Also a meth lab was uncovered in West Linn so he asks that residents be alert to any odd occurrences in the neighborhood. A question arose about sex offenders. Brad said West Linn Police know that each convicted offender is registered but they do not have any local program or list. They request parents to encourage the buddy system when children go out.

5. The West Linn Old Time Fair has a theme for 2006: "Jumping Jubilee- Our Fair is Fifty". A poster contest is planned early next year.

6. The Willamette main street plan needs a task force. The local merchants will be joined by: Steve Peake, Jerry Offer, Stefanie Becker and Stephanie Nicoletti

7.West Linn Chamber Tourism Development Plan. Franny was stunned to learn which projects were included for the distribution of the $30,000 grant to West Linn. We need to come up with a tool for marketing Willamette and make a plus and minus inventory of our tourist assets. The Chamber board makes the final decision so we must prioritize our requests. One option could be solar powered or butane lighting for the median strip. The following people will help Franny and report next month: Charles Awalt, Diane Awalt, Reena Heijdeman and Stefanie Becker.

8. Ken Worchester would like some help choosing play equipment for Fields Bridge Park. Reena, Stefanie Becker, and Vicki Handy have been volunteered.

9. Jerry Offer said that the Park Dept will pick up and plant in our parks living Christmas trees from residents. He is coming up with a list of nurseries as resources.

10. Jody read a letter from Mike Gates who is proposing that West Linn form a sister city relationship with Pascagoula Mississippi that suffered severely during hurricane Katrina.

The meeting was adjourned at 9pm
Respectfully submitted

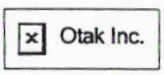
Elizabeth Rocchia for Stephanie Nicoletti

Brad Kilby

From: jodycarson@comcast.net
Sent: Wednesday, November 30, 2005 5:05 AM
To: Brad Kilby
Subject: RE: WNA minutes for Nov. 9, 2005 meeting

Brad - I did - thank you. Would you mind sending an electronic version that I can share with folks if they would like a copy or I can refer them to you - let me know which will work better for you - Jody

---------- Original message ----------
Thank you Jody. Did you receive a copy of my draft meeting minutes?



Brad Kilby, AICP | Planner
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.2495 | f: 503.635.5395
www.otak.com

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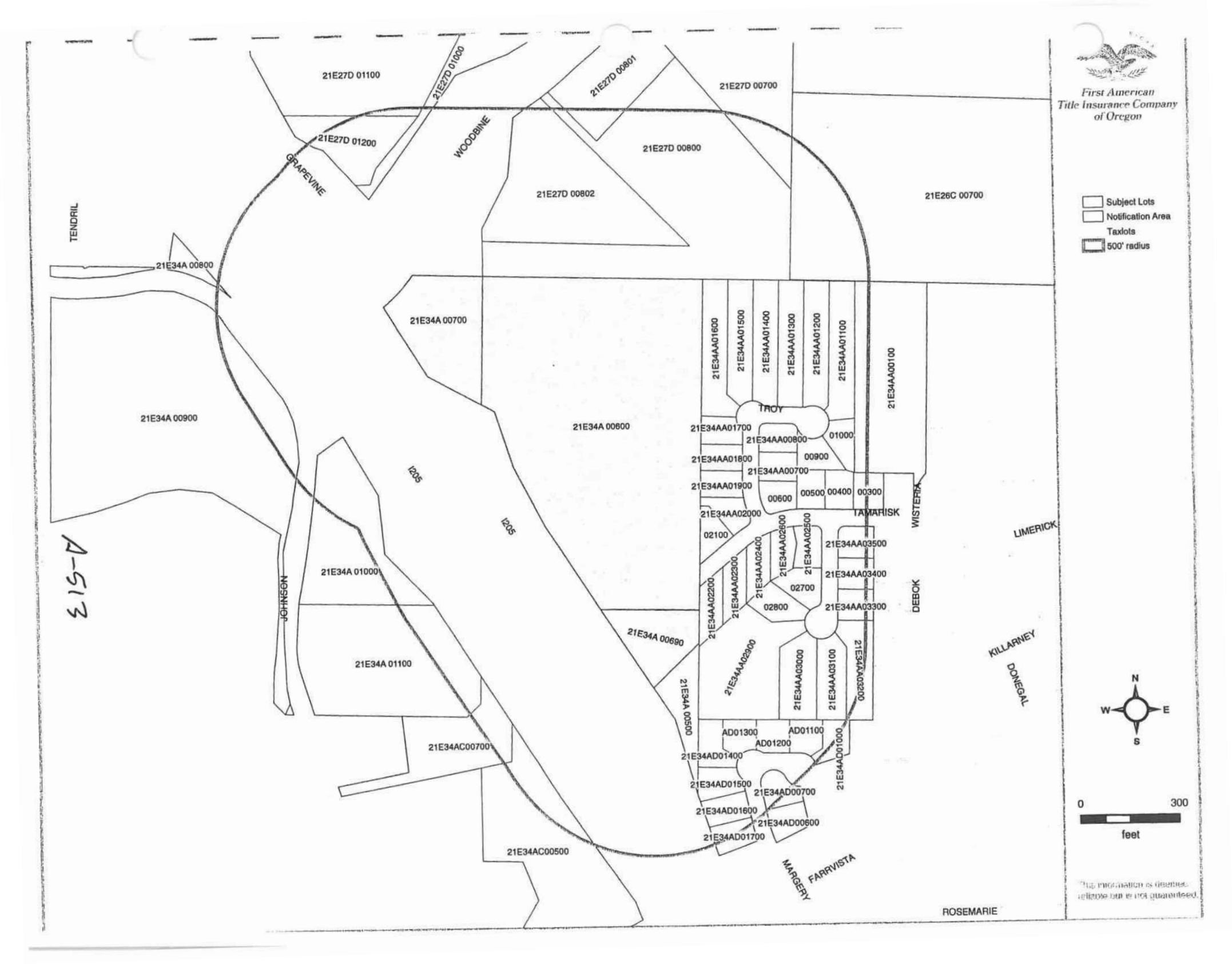
From: jodycarson@comcast.net [mailto:jodycarson@comcast.net]
Sent: Tuesday, November 29, 2005 5:34 AM
To: Joe Mitchoff; Brad Kilby; Bryan Brown; John Atkins
Subject: WNA minutes for Nov. 9, 2005 meeting

Greetings - attached are the minutes from the Willamette Neighborhood Association meeting and the sign-in sheets for the meeting. Please note that two applications were discussed, the Tamarisk Property and the townhouses on 13th Street. If you can't open the sign-in sheets let me know - Jody Carson

3

A-512


First American Title Insurance Company of Oregon
Subject Lots
Notification Area
Taxlots
500' radius
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21E27D 01100
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21E27D 00901
21E27D 00700
21E27D 01200
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GRAPEVINE
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21E27D 00802
21E26C 00700
TENDRIL
21E34A 00800
21E34A 00700
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21E34A 00600
21E34AA01600
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MARGERY
FARRVISTA
ROSEMARIE
S15-D
This information is deemed reliable but is not guaranteed.

Parcel #	First Name	Last Name	Mail Address	Mail City	State	Zip	Site Address
21E26C 00700	ROSEMONT SEVEN LLC		1099 Cherry Cir	Lake Oswego	OR	97034-6206	*no Site Address*
21E27D 00700	Kenneth H	Fisher	1190 S Woodbine Rd	West Linn	OR	97068-9232	1190 S Woodbine Rd
21E27D 00800	Don	Burke	15604 SE Ruby Dr	Milwaukie	OR	97267-3707	1090 S Woodbine Rd
21E27D 00801	Gary D	May	1110 S Woodbine Rd	West Linn	OR	97068-9232	1110 S Woodbine Rd
21E27D 00802	Richard B	Grenier	1080 S Woodbine Rd	West Linn	OR	97068-7240	1080 S Woodbine Rd
21E27D 01000	CLACKAMAS COUNTY		9101 SE Sunnybrook Blvd	Clackamas	OR	97015-6666	*no Site Address*
21E27D 01100	FOX CAPITAL CORP		9860 SW Hall Blvd #C2	Portland	OR	97223-8896	22580 S Grapevine Rd
21E27D 01200	John J & Ellen E	Valachovic	22666 S Grapevine Rd	West Linn	OR	97068-9211	22666 S Grapevine Rd
21E34A 00500	STATE OF OREGON	Highway Divison	Transportation Bldg	Salem	OR	97310	*no Site Address*
21E34A 00600	Edwin L	Fritchie	21929 S Clear Creek Rd	Estacada	OR	97023-8653	*no Site Address*
21E34A 00690	Edwin L	Fritchie	21929 S Clear Creek Rd	Estacada	OR	97023-8653	*no Site Address*
21E34A 00700	Edwin L	Fritchie	21929 S Clear Creek Rd	Estacada	OR	97023-8653	*no Site Address*
21E34A 00800	STATE OF OREGON	Highway Divison	Transportation Bldg	Salem	OR	97310	*no Site Address*
21E34A 00900	Laura K	Wellons	5055 Lakeview Blvd	Lake Oswego	OR	97035-5460	*no Site Address*
21E34A 01000	Juan & Marta	Matias	PO Box 8142	Glendale	AZ	85312-8142	23020 Johnson Rd
21E34A 01100	David R & Lori J	Staten	23212 Johnson Rd	West Linn	OR	97068-9730	23212 Johnson Rd
21E34AA00100	Vladimir	Tkach	2590 Debok Rd	West Linn	OR	97068-7301	2590 Debok Rd
21E34AA00300	Matthew J & Elizabeth J	Baasten	1372 Tamarisk Dr	West Linn	OR	97068-7308	1372 Tamarisk Dr
21E34AA00400	Gary N & Linda G	Brown	1360 Tamarisk Dr	West Linn	OR	97068-7308	1360 Tamarisk Dr
21E34AA00500	Linda L	Quinn	2105 Peregrine Ct	West Linn	OR	97068-2825	1346 Tamarisk Dr
21E34AA00600	Tom A	Murtagh	2551 Troy Ct	West Linn	OR	97068-7306	2551 Troy Ct
21E34AA00700	Patricia J	Dunn	2559 Troy Ct	West Linn	OR	97068-7306	2559 Troy Ct
21E34AA00800	Curt M & Cheryl S	Douma	2567 Troy Ct	West Linn	OR	97068	2567 Troy Ct
21E34AA00900	David E	Rood	2571 Troy Ct	West Linn	OR	97068-7306	2571 Troy Ct
21E34AA01000	Aaron R & Nicole M	Howard	2579 Troy Ct	West Linn	OR	97068-7306	2579 Troy Ct
21E34AA01100	Curtis T & Jeanne K	Neilson	2585 Troy Ct	West Linn	OR	97068-7306	2585 Troy Ct
21E34AA01200	Rodney C	Zeeb	2587 Troy Ct	West Linn	OR	97068-7306	2587 Troy Ct
21E34AA01300	Dan A	Razdik	2591 Troy Ct	West Linn	OR	97068-7306	2591 Troy Ct
21E34AA01400	David E & Amy Sue	Zilk	2595 Troy Ct	West Linn	OR	97068-7306	2595 Troy Ct
21E34AA01500	Edmund M & Susie W	Tweeddale	2597 Troy Ct	West Linn	OR	97068-7306	2597 Troy Ct
21E34AA01600	Wayne E & Lori K	Aus	2574 Troy Ct	West Linn	OR	97068-7306	2574 Troy Ct
21E34AA01700	William D & Toni L	Maxwell	2570 Troy Ct	West Linn	OR	97068-7306	2570 Troy Ct
21E34AA01800	Gilbert J & Cynthia J	Amestoy	2564 Troy Ct	West Linn	OR	97068-7306	2564 Troy Ct
21E34AA01900	Joseph A & Bj E	Cerny	2558 Troy Ct	West Linn	OR	97068-7306	2558 Troy Ct
21E34AA02000	Jack	Ofelt Jr.	23535 SW Gage Rd	Wilsonville	OR	97070-9721	1306 Tamarisk Dr
21E34AA02100	Edith C	Miller	1300 Tamarisk Dr	West Linn	OR	97068-7305	1300 Tamarisk Dr
21E34AA02200	Roy S & Linda L	Mann	1301 Tamarisk Dr	West Linn	OR	97068-7304	1301 Tamarisk Dr

A-514

Parcel #	First Name	Last Name	Mail Address	Mail City	State	Zip	Site Address
21E34AA02300	Robert M & Linda J	Henderson	1307 Tamarisk Dr	West Linn	OR	97068-7304	1307 Tamarisk Dr
21E34AA02400	Jerry D & Nadine I	Nicodemus	1327 Tamarisk Dr	West Linn	OR	97068-7304	1327 Tamarisk Dr
21E34AA02500	Erik & Beth R	Lange	1337 Tamarisk Dr	West Linn	OR	97068-7304	1337 Tamarisk Dr
21E34AA02600	Christen	Murray	1347 Tamarisk Dr	West Linn	OR	97068-7304	1347 Tamarisk Dr
21E34AA02700	Yolette	Davidson	2530 Hillcrest Dr	West Linn	OR	97068-1405	2534 Oneal Ct
21E34AA02800	James W	Hilsheimer	2530 Oneal Ct	West Linn	OR	97068-7303	2530 Oneal Ct
21E34AA02900	Keith H & Deleen M	Baker	2522 Oneal Ct	West Linn	OR	97068-7303	2522 Oneal Ct
21E34AA03000	Tamara J	Williams	2518 Oneal Ct	West Linn	OR	97068-7303	2518 Oneal Ct
21E34AA03100	Eric J & Kathleen P	Deberry	2504 Oneal Ct	West Linn	OR	97068-7303	2504 Oneal Ct
21E34AA03200	Keith B & Mary Anne	Pettingill	2215 O Neal	West Linn	OR	97068	2515 Oneal Ct
21E34AA03300	Ruhollah & G Roshanai	Piroozmandi	2535 Oneal Ct	West Linn	OR	97068-7303	2535 Oneal Ct
21E34AA03400	Randy L & Kathy A	Clark	2541 Oneal Ct	West Linn	OR	97068	2541 Oneal Ct
21E34AA03500	John V	Snively	2549 Oneal Ct	West Linn	OR	97068	2549 Oneal Ct
21E34AC00500	Ralph H & Linda L	Inman	23580 Johnson Rd	West Linn	OR	97068-9799	23580 Johnson Rd
21E34AC00700	David H & Vicky	Leslie	23400 Johnson Rd	West Linn	OR	97068-9723	23400 Johnson Rd
21E34AD00600	Lori E	Randall	2413 Margery St	West Linn	OR	97068-3919	2413 Margery St
21E34AD00700	James F & Melody Jo	Hobbs	2419 Margery St	West Linn	OR	97068-3919	2419 Margery St
21E34AD01000	Terry L	McCall	2448 Margery St	West Linn	OR	97068-3919	2448 Margery St
21E34AD01100	Kenneth M	Thompson Jr.	2442 Margery St	West Linn	OR	97068-3919	2442 Margery St
21E34AD01200	Max J	Beutz Trustee	2438 Margery St	West Linn	OR	97068	2438 Margery St
21E34AD01300	Richard M	Hill	2432 Margery St	West Linn	OR	97068-3919	2432 Margery St
21E34AD01400	Teri F & Franklynn M	Day	2428 Margery St	West Linn	OR	97068-3919	2428 Margery St
21E34AD01500	Frank W	Maynard Jr.	2424 Margery St	West Linn	OR	97068-3919	2424 Margery St
21E34AD01600	Albert	Tekander	466 SW Alderwood Dr	West Linn	OR	97068-9132	2420 Margery St
21E34AD01700	Mark A & Navarat	Schweizer	2416 Margery St	West Linn	OR	97068-3919	2416 Margery St

SIS-A

Appendix 5—Pre-application Conference Notes

CITY OF WEST LINN
PRE-APPLICATION CONFERENCE

DATE OF CONFERENCE 10-20-05 TIME OF CONFERENCE 1:30 PM
FEE $250.00 PROJECT # PA0534 STAFF CONTACT GORDON HOWARD
(This section to be filled in by staff)

Pre-application conferences occur on the first and third Thursdays of each month. In order to be scheduled for a conference, this form, the pre-application fee, and accompanying materials must be submitted at least 14 days in advance of the conference date. Twenty-four-hour notice is required to reschedule.

APPLICANT'S NAME Stearns/Marnella Communities PHONE NO. (503) 654-6642

ADDRESS (or map/tax lot) OF SUBJECT PROPERTY 21E34A Tax lots 600, 690, & 700

APPLICANT'S MAILING ADDRESS 18318 SE Abernethy Lane, Milwaukie, OR 97267

BRIEF DESCRIPTION OF PROPOSAL: See Attached Letter. Please contact Brad Kilby of Otak Inc. at (503) 699-2495 For Any additional Information

RECEIVED
OCT 06 2005
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

Please attach additional materials relating to your proposal. Of most importance is information regarding existing conditions on or adjacent to the property. Detailed project design is discouraged at this level--it is important to remain open as to future project design. The most useful submittal for staff in reviewing your proposal would be a site plan on paper up to 11 x 17 inches in size depicting the following items:

- North arrow
- Scale
- Property dimensions
- Streets abutting the property
- Conceptual design (non-engineered)
- Access to and from the site, if applicable
- General location of existing trees
- Location of creeks and/or wetlands
- Location of existing utilities (water, sewer, etc.)
- Easements (access, utility, all others)

While this material is not required, the more detail you can provide about existing conditions of your site, the better input you will receive from city staff at the pre-application conference. Submittal of this material must occur at least 14 days prior to the pre-application conference, or the conference will be re-scheduled.

By my signature below, I verify that all of the material submitted is true to the best of my knowledge, and I grant city staff right of entry onto the subject property in order to prepare for the pre-application conference.

Brad Kilby for Tony Marnella
Property owner's signature

10/5/05
Date

Same as above
Mailing address (if different from above)

A-517

815-D

West Linn

RECEIPT NO.
928232

22500 Salamo Rd.
West Linn, Oregon 97068
503 656-4211

CERT. _____
CASH _____

DATE 1/6/05 ☐ Cash ☒ Check No. 5765

AMOUNT RECEIVED 250-

NAME [illegible]

TELEPHONE [illegible]

ADDRESS [illegible]

ZIP CODE 97035

BUILDING PERMIT # _____

PERMIT FEES
State Surcharge

PERMIT TYPE: DAC571

Business License Fee		BL
Home Occupation Fee		HO
Development Review Fees		LA
		DR 250-
Water Connection Fee (DIG-IN) (DROP-IN) ⅝", ¾", 1", 1½"		WC
Sewer Connection Fee		SC
SYSTEM DEVELOPMENT FEES		
Engineering Inspection Fee		EI
Engineering Street Cut Fee		ES
Engineering PIP Deposit		ED
Engineering Vacation Easement		EE
Engineering Final Plat		EF
Engineering Admin.		EP
Engineering Misc.		ME
Refundable Deposit		RD
Building Misc.		MB
Miscellaneous Charges & Fees		MG
Miscellaneous – Special		MS

Address of Site (Meter) _____

Legal Description LOT & BLOCK SUBDIVISION _____

☐ Single Family ☐ Multiple Family • No. of M/F Units _____

☐ Commercial ☐ [illegible]rtment • No. of Apartment Units _____

Meter Size _____ ☐ Inside City Limits ☐ Outside City Limits

REMARKS:

RECD OCT 26 2005

City of West Linn

PRE-APPLICATION CONFERENCE MEETING SUMMARY NOTES

October 20, 2005

SUBJECT: Proposed subdivision at the west end of Tamarisk Street and east of Woodbine Street..

ATTENDEES: Tony Marnella, Brad Kilby, Mike Peelbes (applicant and representatives); Peter Spir, Gordon Howard (planning staff); Dennis Wright (engineering staff), Julia Simpson, Willamette Neighborhood representative

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The following is a summary of the meeting discussion, provided to you from staff meeting notes. Additional information may be provided to address any "follow-up" items identified during the meeting. These comments are PRELIMINARY in nature. Please contact the Planning Department with any questions regarding approval criteria, submittal requirements or any other planning-related items. Please note disclaimer statement below.

Project Details

The site is over 14 acres in size. Most is zoned R-15 (one dwelling per 15,000 square feet), with a small portion zoned R-10 (one dwelling per 10,000 square feet). The site is at the west end of Tamarisk Street, and is east of Woodbine Street. The southern boundary is the Interstate 205 freeway. To the north is rural land in Clackamas County. The site is bisected by two major natural drainageways, and has large areas of steep slopes.

The applicant's preliminary concept is a 47-lot residential planned unit development, with single-family homes on lots from 6,000 square feet and up.

The proposal faces many significant issues, most notably as follows:

1. The preliminary proposal shows access from Tamarisk to the west for most of the lots, with a few lots accessing Woodbine to the east. There is no through route proposed. The City's Transportation System Plan shows a local street connection between Tamarisk and Woodbine. The North Willamette neighborhood along DeBok Road has only two access points in and out, a primary one at Debok and Blankenship and a secondary one connecting Killarney Drive to the east with Alpine Drive and Bland Circle. All residences north of Killarney Drive in this neighborhood have only one access in and out. Thus, a local connection from Tamarisk to Woodbine is eseential.

   Unfortunately, this site provides unique and formidable impediments to such a street connection. A roadway through this property must pass through two

significant natural drainageways, which appear to contain wetlands, and then go through a significant hill to reach Woodbine on the east. The applicant's and the city's options can be categorized as:

a. Do not allow a direct connection. This will require a variance to the city's connectivity standards for local roadways. It will also exacerbate and perpetuate the existing access issues for the North Willamette neighborhood.

b. Make a direct connection, through the subject property. This would most likely require a bridge across one or both of the natural drainageways on the site, and analysis of any wetland impacts. It would also require a large amount of grading to reduce the hill between the easterly natural drainageway and Woodbine Street to allow a street connection meeting public road standards for grade.

c. Make no direct connection at this time, but "stub out" the streets from Tamarisk at a location where the street can eventually continue to Woodbine off-site. There are two possibilities; an existing culverted crossing to the north of this site heading into the property to the north, and along the ridgeline beween the two natural drainageways trending northeast. The former option may not be feasible given the fact that new rural home construction has occurred on the lots immediately north of this site. The latter option would result in a street parallel to Woodbine, and any connection would have to occur much further north at the head of the natural drainageway involved.

2. Existing water service to this site poses difficulties. The existing water line from Tamarisk Drive is 6-inch in diameter, and inadequate to serve the proposal. The applicant must thus upgrade this line off-site to a point where the water line is adequate. Alternatively, the applicant may choose to connect to the Johnson Street water line on the south side of I-205. This would require placing a water line under I-205, most likely adjacent to Woodbine Street. There may be issues with the utility line going outside of the urban growth boundary, which runs along Woodbine Street.

3. Sewer service to the site is also an issue. The applicant must either pump sewage up to the sewer lines in Tamarisk and Debok Streets, or must take the sewage under Johnson Road and then build a pump station and line along Johnson Road to the existing line at Ryan Court.

4. Any utility lines crossing the natural drainageways may have to cross on a bridge structure. If so, then the project should combine these utilities with a road or, alternatively, with a pedestrian connection from the project to Woodbine Street.

5. The proposed access road across the easterly drainageway appears to require significant amounts of grading and tree removal. The applicant must demonstrate that any road crossing of the drainageway has the least possible impacts upon the drainageway and its natural features. A more westerly crossing would appear to have fewer impacts upon this drainageway.

6. The applicant will need to provide a tree survey of all significant trees on the site, and comply with the provisions of CDC 55.100(B)(2) regarding tree protection. It was noted that there are many significant trees in the area where the applicant's preliminary proposal shows a road crossing of the easterly drainageway.

7. The lots proposed from Woodbine Street would appear to be difficult to justify under the city's protection requirements for steep slopes and drainageway protection.

8. The 10th Street-I-205 interchange is the subject of considerable discussion and controversy at this time. A project on this site, especially if there is no through access to Woodbine, will incrementally add to this problem. The applicant must prepare a traffic analysis studying this impact, and also look closely at the options for providing through access to Woodbine Street at this time. Such an action may actually improve the 10th Street-I-205 interchange, by siphoning off some traffic from the North Willamette neighborhood to the west.

9. Please coordinate with ODOT regarding traffic issues, and also the issue of the adjacent ODOT freeway right of way. The contact person is Sonya Kazen.

10. The applicant indicated that sound walls would be used to shield the site as much as possible from I-205 freeway noise.

11. The Planned Unit Development Standards of Chapter 24 speak to the issue of overall allowed density, transfer of density of constrained lands, and appropriate buffering. All lots along the easterly boundary adjacent to an existing neighborhood must be at least 7,000 square feet in size.

Process

Community Development Code (CDC) Chapter 85 regulates subdivisions, Chapter 24 regulates Planned Unit Developments, and Chapter 75 regulates variances (if necessary). All the submittal requirements must be addressed. The application must include a narrative addressing each approval criteria in CDC Section 85.200. If some of the approval criteria do not apply to the proposed partition, then the applicant needs to briefly explain in the narrative why the criteria are not applicable (NA is not an acceptable response).

The applicant must conduct a neighborhood meeting pursuant to CDC Section 99.038. Follow the instructions exactly.

The applicant indicated that he will submit a standard subdivision, not an expedited land division.

Prepare the application and submit to the Planning Department with deposit fees. The City has 30 days to determine if the application is complete or not (most applications are incomplete). The applicant has 180 days to make it complete, although usually it is complete within three months of the original submittal. Once complete, the City has 120 days to render a decision.

Staff prepares public notice and schedules the Planning Commission hearing. The Commission's decision may be appealed to City Council. Subsequent appeals go to the Land Use Board of Appeals. Once approved, the applicant has three years before approval lapses and is void.

Typical land use applications can take 6-10 months from beginning to end. Street improvements typically increase the amount of time required.

DISCLAIMER: This summary discussion covers issues identified to date. It does not imply that these are the only issues. The burden of proof is on the applicant to demonstrate that all approval criteria have been met. These notes do not constitute an endorsement of the proposed application. Staff responses are based on limited material presented at this pre-application meeting. New issues, requirements, etc. could emerge as the application is developed.

The following comments were provided by the City Engineering Department:

Public Works Engineering

Memorandum:

To: Planning

From: Dennis Wright

Subj: PA-05-54, 48-Unit Planned Unit Development at end of Tamarisk Drive

Streets:

- Frontage improvements: Full road section and frontage improvements required on all interior roads, 52-foot ROW (28-foot paved section, 6-foot sidewalk and 6-foot planter strip on each side). Road entering from Tamarisk must match existing sections and all frontage improvements to match existing.
- Right-of-way (ROW), width: Interior street ROW should match that of Tamarisk.
- Problem as the proposed layout is essentially one long cul-de-sac. Exceeds planning criterion. Other looping is problematic due to two deep drainageways crossing properties. Possibility of bridging over to connect to Woodbine.
- Traffic study required to determine impact on 10th Street Corridor.
- Street lighting plan required.
- Street SDC based upon Trip Generation Manual

Storm:

- For more than 5,000 SF new impervious area, treatment and detention required.
- Public stormwater facility shall be constructed by developer to treat and detain stormwater to City standards.
- For stormwater discharge location after treatment and detention are the two natural drainageways traversing the properties. Engineering analysis must be presented to show that discharge will not adversely affect the natural drainageways or downstream property owners.
- Capacity of existing pipes transmitting flow must be analyzed to ensure sufficient pipe capacity exists.
- ODOT must review stormwater drainage plan to ensure no negative impact to ODOT facilities.
- Stormwater design and construction criteria contained in City's Public Works Standards available on line.
- Stormwater SDC

Water:

- Water pressure zone: Willamette
- Water storage capacity currently available to serve site but build-out capacity not in-place so available capacity used on a first come first serve basis.
- Water service available in Tamarisk Drive via 6-inch ductile iron water line. Water service available from this line is insufficient to serve an additional 48 homes.

Looping with water line in Johnson Road required. Options of boring under I-205 or running waterline up Woodbine and connecting across through northern portion of development. Service to property accessed from Woodbine may be problematic but would be solved by loop.

- Water SDC $$

Sanitary Sewer:

- System capacity sufficient to serve development; however, if plan will include a pumping station to tie into the Tamarisk Drive line, developer must analyze to ensure sufficient capacity in lines receiving flow.
- Sanitary Sewer Master Plan includes an SDC eligible project for 2nd Johnson Road pump station. Site could conceivably drain gravity to new pump station and connect into system at that point. If this connection preferred, application could not be approved until commitment in place to build the pump station and connecting system lines. SDC credits and possibility of an Advanced Finance Agreement could offset costs.
- SS SDC $$

Other Utilities:

- No new overhead utility poles may be installed. If additional poles required, utility lines must be undergrounded. All new utilities shall be undergrounded.

p:/devrvw/preapps/pre app sumry.Tamarisk 10-20-05

Meeting Minutes

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

Meeting:	Tamarisk Pre-App
Project No.:	13458
Meeting Date:	10/20/05
Meeting Time:	1:30 pm
Location:	City of West Linn
Attendees:	Tony Marnella, Nick Stearns, Brad Kilby, Mike Peebles, Gordon Howard, Dennis Wright, Peter Spir, and Julia Simpson
Minutes By:	Brad Kilby

Although we will be getting a written copy of the notes from the City of West Linn, I just wanted to pass on the highlights that were discussed in the meeting to keep them fresh in everybody's mind.

- We will be subject to Chapter 85 Land Divisions, Chapter 24 Planned Unit Development, Chapter 75 Variances (if applicable), Chapter 32 Drainageway Permits, Chapter 30 Wetlands, and for tree issues, Chapter 55 Design Review.
- The lots on the perimeter of the development need to be a minimum of 7,000 SF adjacent to developable properties. This does not apply to the lots along I-205.
- We can have private streets, but they have to be built to public standards.
- We can reduce the width of our crossing over the drainageway to a minimum paved width of 20 feet with a 4 foot sidewalk on one side.
- City staff indicated that they would support a crossing of the drainageway in the location of the current logging road over a new bridge crossing higher up on the property. They were concerned with all of the mature trees that would have to be removed higher up on the property.
- According to the City Arborist, there are more mature and preferred trees located within the drainageways than on the tops of the hills where we are proposing to locate the lots.
- Providing a roadway stub to the perimeter of the property would eliminate a need for a variance to the maximum cul-de-sac length standards. A temporary fire department turn around would still be required at the dead end street.

Utilities are discussed in the attached notes from the City Engineer's office. To summarize:

A-525

- The six-inch water line located within Tamarisk Drive will have to be upsized to an eight-inch waterline. Mike was going to look into the distance we would have to go and determine a rough cost.
- We are in the Willamette Water zone, and there may be capacity issues. Dennis felt that the current system could accommodate anywhere between two and four hundred additional connections. They will be permitted on a first come, first serve basis. Connections are issued with the building permits.
- Sewer will have to be accommodated through a pump station on our property or somewhere south of I-205 on Johnson Street. The benefit of building the pump station south of I-205 is that it would be TIF creditable, but the downside is that we would have to somehow get a line from our property, across the freeway to the Johnson Street pump station and extend a sewer line from that pump station to the next pump station. There are also concerns with the processes needed to either bore beneath I-205, and extending urban services outside of the Urban Growth Boundary. According to the client, a pump station on our property is preferred. Individual pumps for each lot will not be allowed.
- We will be required to conduct a Traffic study of our development and the impacts that it would have on the local streets, and primarily the entire 10th Street Corridor. Nick is going to contact Brian Dunn of Dunn Traffic Engineering. This is really the only issue raised by Julia Simpson of the Neighborhood Association.
- On-site water detention is preferred by the City for the development. Otak will conduct a downstream analysis to decide whether or not it would be more beneficial to move the water off site as opposed to detaining it due to the amount of detention upstream. Dennis indicated that he would look at what we come up with.
- If street connectivity to Woodbine at the corner of the site is proven to be infeasible, the City may still evaluate the need for pedestrian connectivity through the site to Woodbine.

This information has been recorded in accordance with our applicable standard of professional care. If we do not receive any comments within five days of receipt, we will finalize these minutes as drafted for the project file.

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PROJECT FACT SHEET

- The Subdivision will be a proposal for a 48-lot subdivision/planned development on the 15.05-acre property located at the end of Tamarisk Drive.

- Engineering and Planning services for the project are provided by Otak, an Engineering, Architecture, and Planning firm based out of Lake Oswego.

- The project owner will be developed by Stearns/Marnella Communities. Stearns Marnella will act as the developer/builder for the site.

- Of the 15.05 acres, approximately 14.5 acres are zoned R-15. The remaining acre is zoned R-10.

DIMENSIONAL REQUIREMENTS

Due to the proximity of steep slopes, drainageways, and wet areas, the property will be developed as a Planned Development. The PD allows lot sizes to be smaller in size to recapture the units that are lost as a result of protecting the natural features on site. Lots adjacent to single-family homes are required to maintain a minimum lot size of 7,000 SF for this development. No other lots can be smaller than 4,000 SF

SWCA/Fishman Environmental Svcs. – Environmental Consultant
Dunn Traffic Associates – Traffic Engineer
Otak Inc. – Planning/Civil Engineering/Surveying Services

The proposed density for the site is approximately 48 units.

Project Contact: Brad Kilby, Planner **(503) 699-2495**
City Contact: Peter Spir, Planner **(503) 656-4211**

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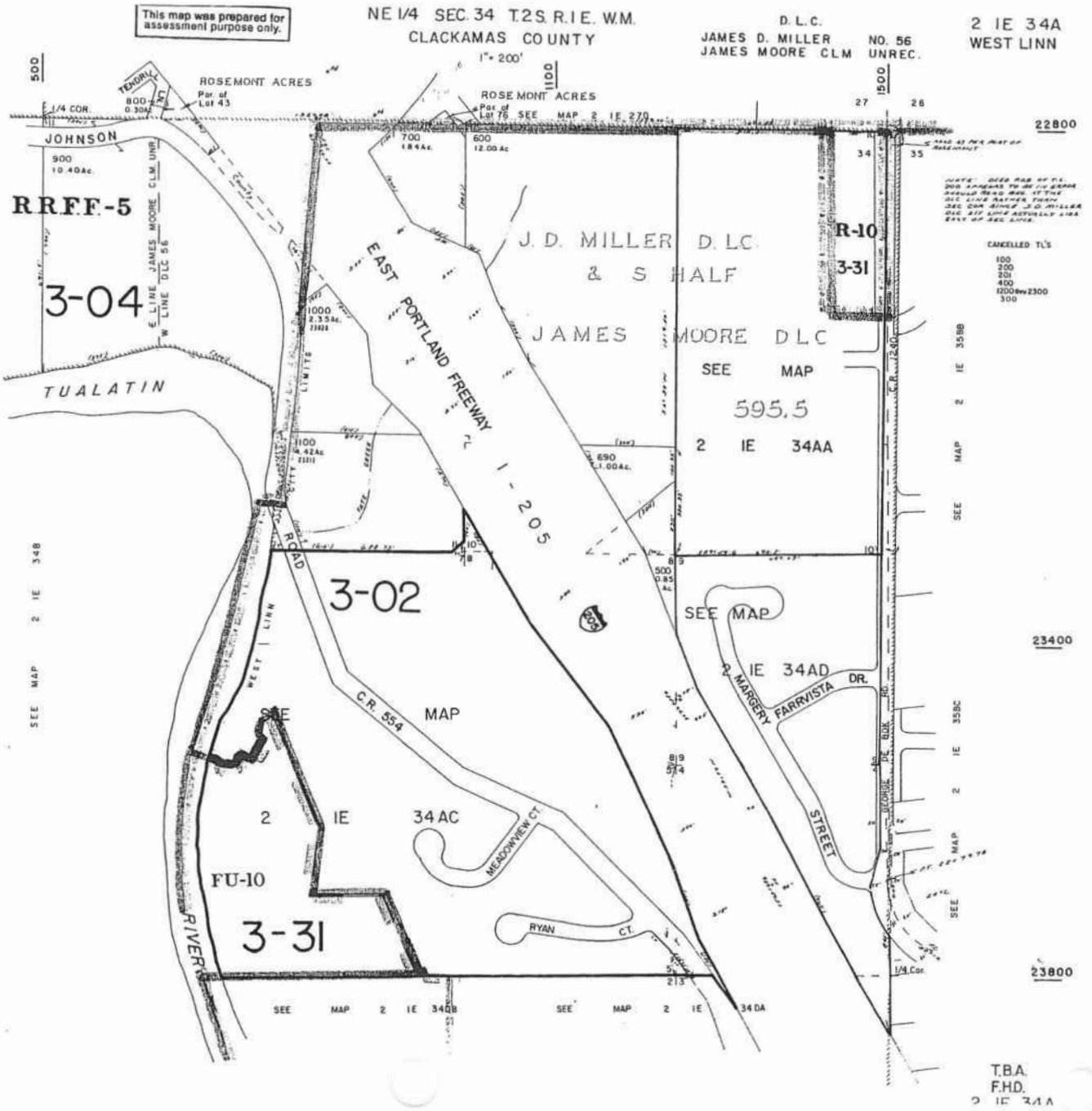
Appendix 6—Clackamas County Tax Map


This map was prepared for assessment purpose only.
NE 1/4 SEC. 34 T.2S. R.1E. W.M.
CLACKAMAS COUNTY
1" = 200'
D.L.C.
JAMES D. MILLER NO. 56
JAMES MOORE CLM UNREC.
2 1E 34A
WEST LINN
ROSEMONT ACRES
Par. of Lot 43
ROSEMONT ACRES
Par. of Lot 76 SEE MAP 2 1E 27D
1/4 COR.
JOHNSON
TENGRILL
800
0.30Ac.
900
10.40Ac.
700
1.84Ac.
600
12.00Ac.
R.R.F.F.-5
3-04
E. LINE JAMES MOORE CLM UNR.
W. LINE DLC 56
J. D. MILLER D.L.C.
& S. HALF
JAMES MOORE D.L.C.
SEE MAP
595.5
2 1E 34AA
R-10
3-31
EAST PORTLAND FREEWAY
I-205
1000
2.35Ac.
23828
100
4.42Ac.
23311
690
1.00Ac.
500
0.85Ac.
TUALATIN
RIVER
3-02
SEE MAP
2 1E 34AD
MARGERY DR.
FARRVISTA
C.R. 554
SEE MAP
2 1E 34AC
MEADOWVIEW CT.
RYAN CT.
FU-10
3-31
STREET
1/4 Cor.
SEE MAP 2 1E 34DB
SEE MAP 2 1E 34DA
SEE MAP 2 1E 34B
SEE MAP 2 1E 35B
SEE MAP 2 1E 35C
SEE MAP 2 1E 34B
22800
23400
23800
CANCELLED TL'S
100
200
201
400
1200 thru 2300
300
T.B.A.
F.H.D.
2 1E 34A

A-529

Appendix 7—Title Report

First American

First American Title Insurance Company of Oregon
222 SW Columbia Street, Suite 400
Portland, OR 97201
Phn - (503) 222-3651
Fax - (503) 790-7858

James Welch, Title Officer
Toll Free: (800) 929-3651
Direct: (503) 795-7669
Email: jwelch@firstam.com

First American Title Insurance Company of Oregon
4650 SW Griffith
Beaverton, OR 97005-8799

Order No.: 7031-662367
August 26, 2005

Attn: Amanda Walsh
Phone No.: (503) 641-7000 - Fax No.: (503) 627-0921
Email: ajwalsh@firstam.com

Preliminary Title Report

ALTA Owners Standard Coverage	Liability	$ 1,900,000.00	Premium	$	3,455.00
ALTA Owners Extended Coverage	Liability	$	Premium	$	
ALTA Lenders Standard Coverage	Liability	$	Premium	$	
ALTA Lenders Extended Coverage	Liability	$	Premium	$	
Endorsement 100, 116 & 8.1			Premium	$	50.00
Govt Service Charge			Cost	$	50.00
Other			Cost	$	

We are prepared to issue Title Insurance Policy or Policies in the form and amount shown above, insuring title to the following described land:

The land referred to in this report is described in Exhibit A attached hereto.

and as of August 16, 2005 at 8:00 a.m., title vested in:

Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004)

Subject to the exceptions, exclusions, and stipulations which are ordinarily part of such Policy form and the following:

1. Taxes for the fiscal year 2005-2006 a lien due, but not yet payable.

2. The assessment roll and the tax roll disclose that the premises herein described were specially assessed as Forest Land pursuant to O.R.S. 321.358 to 321.372. If the land becomes disqualified for the special assessment under the statute, an addition tax may be levied for the last five (5) or lesser number of years in which the land was subject to the special land assessment.

This report is for the exclusive use of the parties herein shown and is preliminary to the issuance of a title insurance policy and shall become void unless a policy is issued, and the full premium paid.

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3. City liens, if any, of the City of West Linn.

   Note: There are no liens as of August 16, 2005. All outstanding utility and user fees are not liens and therefore are excluded from coverage.

4. Rights of the public and of governmental bodies in and to that portion of the premises herein described lying below the high water mark of Tate Creek.

5. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:
   Recording Information: September 11, 1902 in Book 74, Page 452
   (Affects Parcel III)

6. Easement, including terms and provisions contained therein:
   Recording Information: August 20, 1935 in Book 228, Page 486
   In Favor of: Portland General Electric Company, an Oregon Corporation
   For: Electrical transmission lines
   Affects: Over Parcel III

7. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: December 18, 1967
   Recording No.: 67003687
   From: Zella M. Jones, a widow
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel III)

8. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: January 26, 1968
   Recording No.: 68001596
   From: Duane A. Zacher and Bonnie M. Zacher, husband and wife; Nellie Fordyce, a widow
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel II)

9. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: January 29, 1968
   Recording No.: 68001666
   From: Earl E. Loney and Lalah M. Loney, husband and wife
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel II)

10. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:
    Recording Information: April 3, 1984 as Fee No. 84010842
    (Affects Parcel II)

11. In order to insure a transaction involving the herein named trust, we will need to be provided a Certification of Trust pursuant to ORS 128.232 through ORS 128.246.

12. The following pertain to Lender's Extended Coverage only:
    a. Parties in possession, or claiming to be in possession, other than the vestees shown herein.
    b. Statutory liens for labor and/or materials, including liens for contributions due to the State of Oregon for employment compensation and for workman's compensation, or any rights thereto, where no notice of such liens or rights appears of record.

- END OF EXCEPTIONS -

NOTE: This Preliminary Title Report does not include a search for Financing Statements filed in the Office of the Secretary of State, or in a county other than the county wherein the premises are situated, and no liability is assumed if a Financing Statement is filed in the Office of the County Clerk covering Timber on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and block.

NOTE: We find no judgments or United States Internal Revenue liens against Stearns Marnella Construction LLC and Edwin L. Fritchie

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $62.41
Map No.: 21E34A-00600
Property ID: 00400391
Tax Code No.: 003.002 (Affects Parcel I)

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $5.20
Map No.: 21E34A-00690
Property ID: 00400408
Tax Code No.: 003.002 (Affects Parcel II)

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $9.56
Map No.: 21E34A-00700
Property ID: 00400417
Tax Code No.: 003.002 (Affects Parcel III)

NOTE: According to the public record, the following deed(s) affecting the property herein described have been recorded within 12 months of the effective date of this report: Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077362 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L.

Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077363 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077365 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).

Situs Address as disclosed on Clackamas County Tax Roll:

Not Assigned, West Linn, OR 97023

THANK YOU FOR CHOOSING FIRST AMERICAN TITLE!
WE KNOW YOU HAVE A CHOICE!

RECORDING INFORMATION

Filing Address: **Clackamas County**
2051 Kaen Road
Oregon City, OR 97045

Recording Fees:
$ **5.00** per page
$ **10.00** per document (Public Land Corner Preservation Fund)
$ **11.00** per document (OLIS assessment & Taxation Fee)
$ **5.00** for each additional document title
$ **20.00** non-standard fee

cc: Stearns Marnella Construction LLC
cc: Edwin L. Fritchie
cc: Anthony Marnella, Stearns/Marnella Communities
18318 SE Abernethy Lane, Milwaukie, OR 97267

A-534

First American Title Insurance Company of Oregon

SCHEDULE OF EXCLUSIONS FROM COVERAGE

ALTA LOAN POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
   (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

ALTA OWNER'S POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

SCHEDULE OF STANDARD EXCEPTIONS

The ALTA standard policy form will contain in Schedule B the following standard exceptions to coverage:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceeding by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records, unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose.

NOTE: A SPECIMEN COPY OF THE POLICY FORM (OR FORMS) WILL BE FURNISHED UPON REQUEST

TI 149 Rev. 5-99

Exhibit "A"

Real property in the County of Clackamas, State of Oregon, described as follows:

Parcel I

A tract of land in the Northeast quarter of Section 34, T. 2S., R. 1E., W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

Beginning at the Northwest corner of Tract 10 of the Subdivision of the J. D. Miller D.L.C. and South Half of James M. Moore D.L.C. in Township 2 South, Range 1 East of the Willamette Meridian, as shown on the map recorded in Clackamas County Deed Book 75, pages 250 to 253; thence South 89°34' East along the North line of said Tract 10 for a distance of 667.22 feet, more or less, to an iron pipe at the Northwest corner of that 20.87 acre tract deeded to Charles Shields, et ux by deed dated October 7, 1926; thence South 0°30' West along the West line of said 20.87 acre tract, 988.57 feet, more or less, to the Northeast corner of the tract described as Parcel II in the Deed to the State of Oregon by and through the State Highway Commission, recorded under Fee No. 68-1596; thence West along the North line of said State of Oregon parcel 300 feet, more or less, to an intersection with the Easterly line of the right of way acquired by said State of Oregon for use as a part of the East Portland Freeway (I-205); thence Northwesterly along said right of way line 545 feet, more or less, to its intersection with the West line of said Tract 10; thence North along the West line of said Tract 10 for a distance of 385 feet, more or less, to the Northwest corner thereof and the point of beginning.

Parcel II

A parcel of land lying in the James D. Miller, D.L.C. No. 56, Township 2 South, Range 1 East, W.M., in the City of West Linn, Clackamas County, State of Oregon, and being that property designated as Parcel 2 and described in that deed to the State of Oregon, by and through its State Highway Commission, recorded as Recorder's Fee No. 68-1596 Film Records of Clackamas County, containing 1.0 acre, more or less.

Parcel III

A portion of the J.D. Miller D.L.C. in T. 2S., R.IE. of the W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

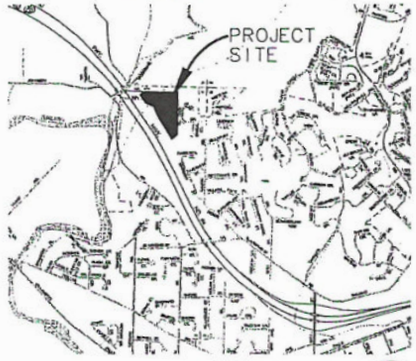
That portion of Tract II, as shown on the Plat of the J.D. Miller D.L.C. lying Southeasterly of Woodbine Road and Northeasterly of the Tract conveyed to the State of Oregon as Parcel I, in deed recorded as Clackamas County Fee No. 67-3687. Also that portion of Tract 76, Rosemont Acres in Section 27, T. 2S., R.IE., of the W.M., lying Southerly of Woodbine Road and Westerly of the tract conveyed to the State of Oregon as Parcel III in Deed filed as Clackamas County Fee No. 67-3687.

Tax Parcel Number: 00400391 and 00400408 and 00400417

Plans

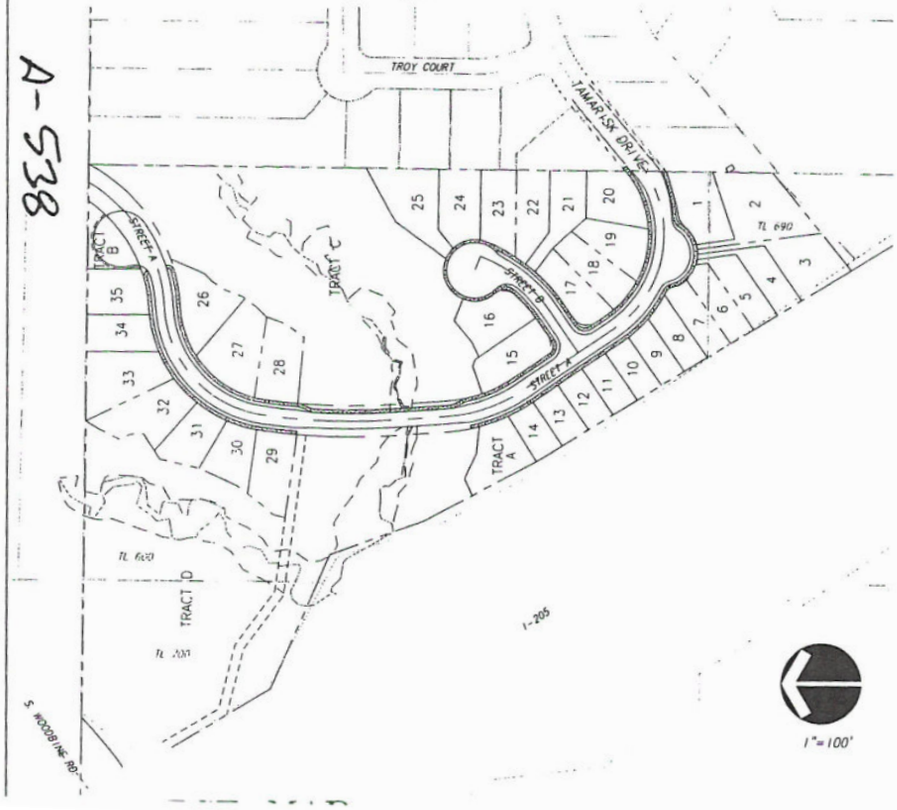
A-537

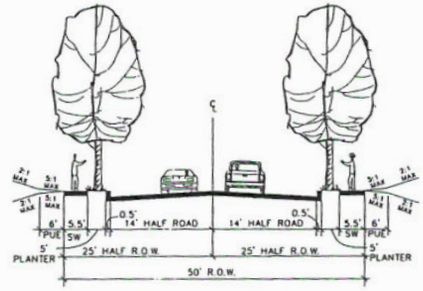
TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
(PLANNED UNIT DEVELOPMENT)
WEST LINN, OREGON



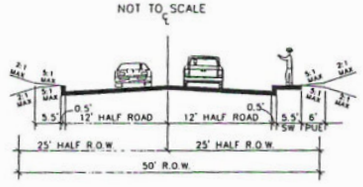
VICINITY MAP

N.T.S.





TYPICAL LOCAL ROAD SECTION
STREET A: STA. 11+82 to 16+58, STA. 19+13 to 23+46
STREET B: STA. 30+00 to 31+47
NOT TO SCALE



DRAINAGE CROSSING SECTION
STREET A: STA. 16+80 to 18+92
NOT TO SCALE

BENCH MARK
ODOT Benchmark M631
Elevation: 187.09
Location: I-205 NE Corner of a Northbound structure of Woodbine Road

SHEET INDEX

EX01	COVER SHEET
EX02	VICINITY TRANSPORTATION NETWORK MAP
EX03	EXISTING CONDITIONS MAP
EX04	EXISTING SLOPE ANALYSIS & DRAINAGE MAP
EX05	TENTATIVE SUBDIVISION PLAT
EX06	TREE PRESERVATION PLAN
EX06A	TREE PRESERVATION PLAN
EX07	TENTATIVE GRADING & EROSION CONTROL PLAN
EX08	TENTATIVE UTILITY PLAN
EX09	STREET A (TAMARISK DR.) PROFILE
EX10	STREET A (TAMARISK DR.) AND STREET B PROFILE
EX11	STREET TREE PLAN

OWNER

Name/Contact: Edwin L Fritchie/
Gloria Fritchie Trustee
Address: 21929 S. Clear Creek Road
Estacada, OR 97023

APPLICANT/DEVELOPER

Name: Stearns Marnella Communities, LLC
Contact: Nick Stearns or Tony Marnella
Address: 18318 SE Abernethy Lane
Milwaukie, OR 97267
Phone: (503) 654-6642

PLANNER

Name: Otak Incorporated
Contact: Brad Kilby, AICP
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

ENGINEER

Name: Otak Incorporated
Contact: Mike Peebles, PE
Phone: (503) 635-3618
Fax: (503) 635-5395
Address: 17355 SW Boones Ferry Rd.
Lake Oswego, Oregon 97035

SITE INFORMATION

Tax Map: 21E34A in Clackamas County, Oregon
Tax Lot: 600, 690, and 700
Area: 15.35 Acres

NO | DATE | BY | REVISION COMMENTS
Design: Drawn: Checked: Date: Initial Issue Date: December 22nd, 2005

Stearns Marnella Communities

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
COVER SHEET

otak
Incorporated
17355 SW Boones Ferry Rd
Lake Oswego, OR 970
Phone: (503) 6
FAX: (503) 6
Internet: www.o

13458 088
Project No. Drw

EX0
Exhibit No.

Copyright 200

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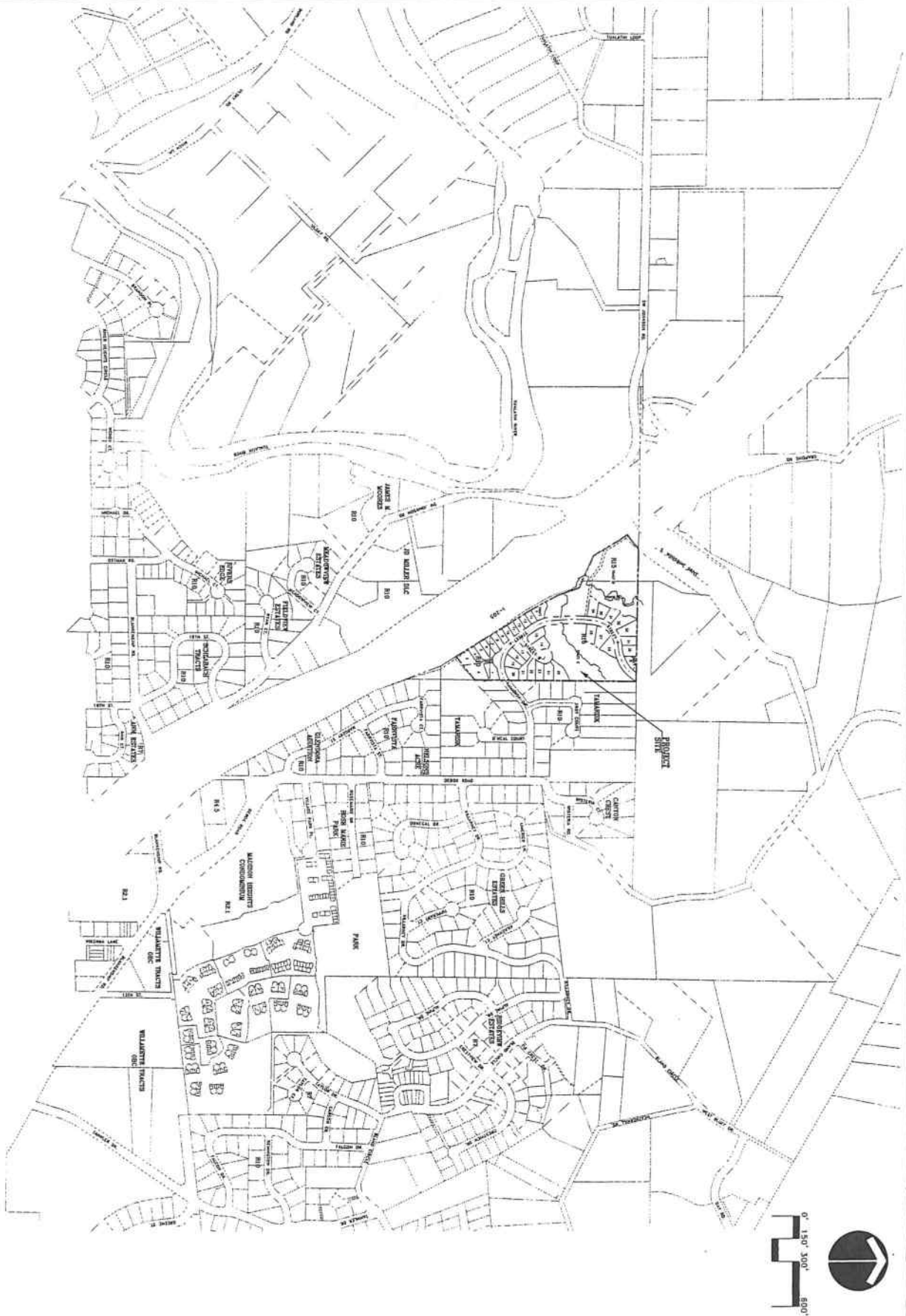

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
VICINITY TRANSPORTATION NETWORK MAP

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Design	Drawn	Checked	Date	Initial Issue Date:
				December 22nd, 2005

Incorporated
19300 SW Boones Ferry Rd.
Lake Oswego, OR 97035-3017
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 Project No.
EX02 Drawing No.
Exhibit Map Designer 2002 ©

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UNPLATTED

PROPERTY LINE

FIR TREE THICKET 200 TREES 6" TO 12"

APPROXIMATE LOCATION OF I-5 NOISE/PRICE EASEMENT

TL 1201 1.71 AC.

TL 600 12.67 AC.

WETLANDS

EXIST. TAMARISK SUBDIVISION

PROPERTY LINE

I-205

PARCEL (TL 600, 690, 700) 15.35 AC.

SEE DETAIL BELOW

TL 600 12.67 AC.

TL 690 0.97 AC.

PROPERTY LINE

NOTE: OTAK TREE AND TOPOGRAPHIC SURVEY

0' 25' 50' 100'

LEGEND

HATCH	LAND TYPE	AREA (AC)
	TYPE I SLOPES>35%	3.92
	WETLANDS TYPE II SLOPES 25-35%	2.33
	TYPE III SLOPES 15-25%	1.51
	TYPE IV SLOPES 0-15%	7.59

TAMARISK DRIVE DETAIL

PROPERTY LINE

TROY CT.

EXIST. SSMH RIM 190.80 8" PVC OUT NE I.E. 181.00 8" PVC OUT W I.E. 181.35 8" PVC IN NW I.E. 181.30

EXIST. WATER METERS

EXIST. SSMH RIM 188.50 8" PVC OUT NE I.E. 181.98 8" PVC IN W I.E. 182.08 8" PVC IN SE I.E. 182.08

EXIST. CB RIM 185.50

TL 600 12.67 AC.

EXIST. DRIVEWAY APRON (TYP.)

EXIST. LIGHT POST, WATER METERS, AND TELEPHONE BOX

EXIST. SIDEWALK

EXIST. WATER VALVE

EXIST. CB RIM 184.90

EXIST. SHED

PROPERTY LINE

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
EXISTING CONDITIONS MAP

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Design	Drawn	Checked	Date	Initial Issue Date:
				December 22nd, 2005

otak Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5077
Phone: (503) 635-3618
FAX: (503) 635-5395
http://www.otak.com

13458 Project No. D458EX03 Drawing No.
EX03 Exhibit No.
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A-5th

PROPERTY LINE

PLATTED SUBDIVISION

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

LEGEND

DRAINAGE ARROW

SLOPE ANALYSIS LEGEND

HATCH	RANGE BEG. (%)	RANGE END (%)	AREA (AC)
	0.00	5.00	3.32
	5.00	15.00	4.27
	15.00	25.00	1.51
	25.00	35.00	2.33
	35.00	50.00	1.35
	50.00	100.00	2.57

0' 25' 50' 100'

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

EXISTING SLOPE ANALYSIS & DRAINAGE MAP

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Design | Drawn | Checked | Date (Initial Issue Date): December 22nd, 2005

Exhibit No. EX04

Project No. 04.058.004

oak Incorporated
1205 SW Monroe Ave. Ste. 201
Bend, Oregon 97702
Phone: (541) 633-3818
FAX: (541) 633-3819
Website: www.oakinc.com

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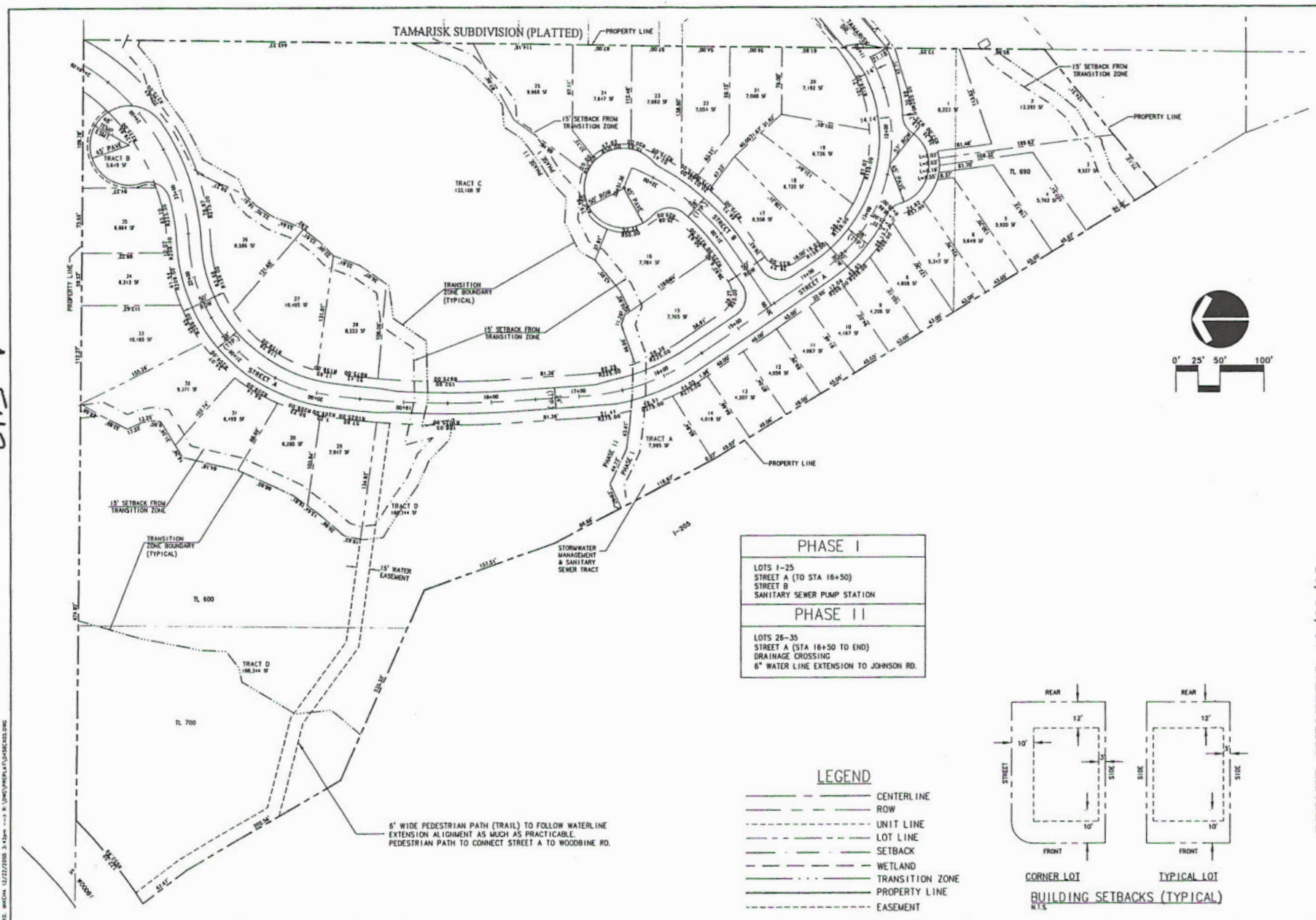

PHASE I
LOTS 1–25 STREET A (TO STA 18+50) STREET B SANITARY SEWER PUMP STATION
PHASE II
LOTS 26–35 STREET A (STA 18+50 TO END) DRAINAGE CROSSING 6" WATER LINE EXTENSION TO JOHNSON RD.

6' WIDE PEDESTRIAN PATH (TRAIL) TO FOLLOW WATERLINE EXTENSION ALIGNMENT AS MUCH AS PRACTICABLE. PEDESTRIAN PATH TO CONNECT STREET A TO WOODBINE RD.

LEGEND

- CENTERLINE
- ROW
- UNIT LINE
- LOT LINE
- SETBACK
- WETLAND
- TRANSITION ZONE
- PROPERTY LINE
- EASEMENT

BUILDING SETBACKS (TYPICAL)
N.T.S.

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE SUBDIVISION PLAT

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS
Design	Drawn	Checked	Date: Initial Issue Date: December 22nd, 2005

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5219
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 D458EX05
Project No. Drawing No.
EX05
Exhibit No.

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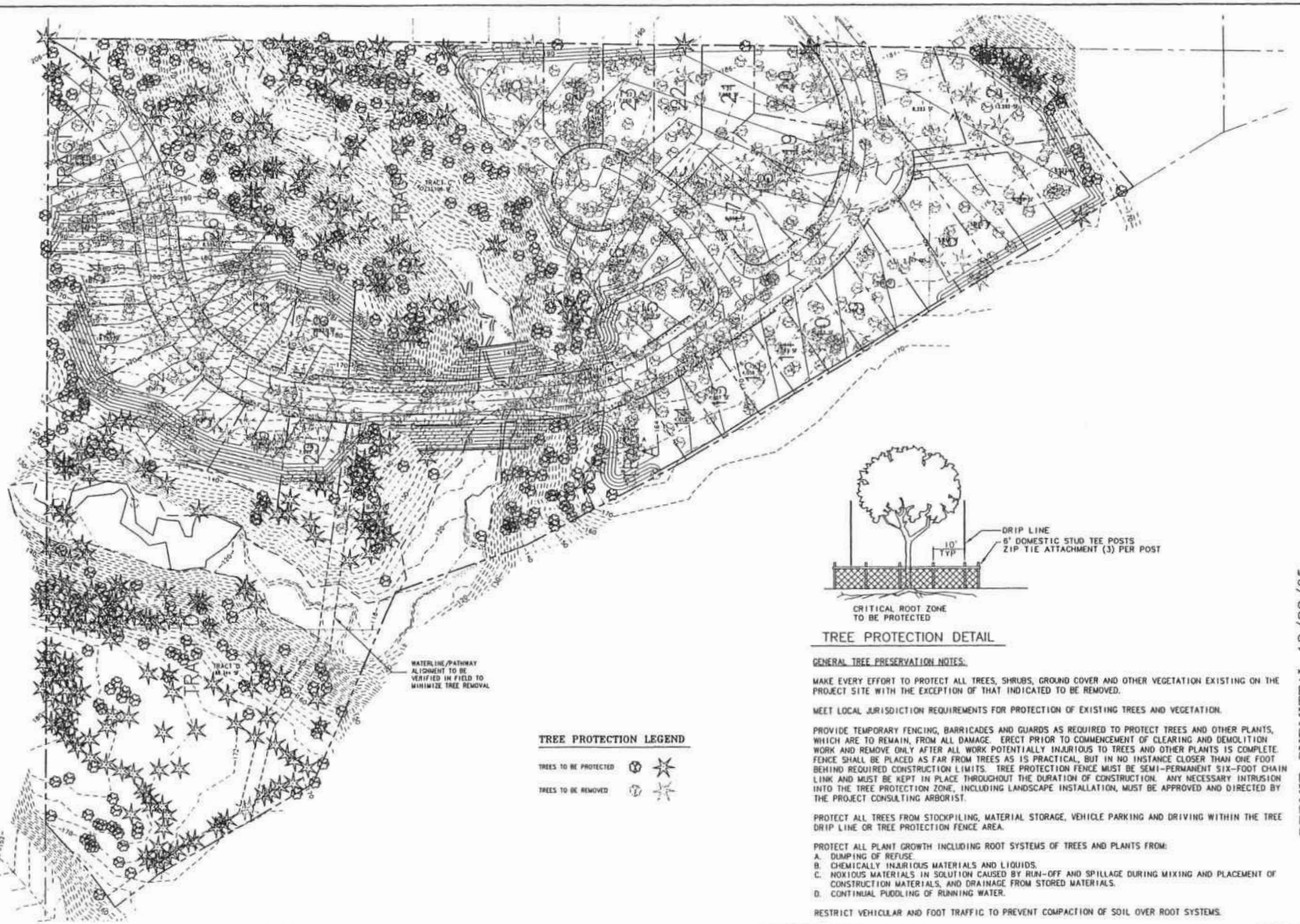

TREE PROTECTION LEGEND

TREES TO BE PROTECTED

TREES TO BE REMOVED

TREE PROTECTION DETAIL

GENERAL TREE PRESERVATION NOTES:

MAKE EVERY EFFORT TO PROTECT ALL TREES, SHRUBS, GROUND COVER AND OTHER VEGETATION EXISTING ON THE PROJECT SITE WITH THE EXCEPTION OF THAT INDICATED TO BE REMOVED.

MEET LOCAL JURISDICTION REQUIREMENTS FOR PROTECTION OF EXISTING TREES AND VEGETATION.

PROVIDE TEMPORARY FENCING, BARRICADES AND GUARDS AS REQUIRED TO PROTECT TREES AND OTHER PLANTS, WHICH ARE TO REMAIN, FROM ALL DAMAGE. ERECT PRIOR TO COMMENCEMENT OF CLEARING AND DEMOLITION WORK AND REMOVE ONLY AFTER ALL WORK POTENTIALLY INJURIOUS TO TREES AND OTHER PLANTS IS COMPLETE. FENCE SHALL BE PLACED AS FAR FROM TREES AS IS PRACTICAL, BUT IN NO INSTANCE CLOSER THAN ONE FOOT BEHIND REQUIRED CONSTRUCTION LIMITS. TREE PROTECTION FENCE MUST BE SEMI-PERMANENT SIX-FOOT CHAIN LINK AND MUST BE KEPT IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION. ANY NECESSARY INTRUSION INTO THE TREE PROTECTION ZONE, INCLUDING LANDSCAPE INSTALLATION, MUST BE APPROVED AND DIRECTED BY THE PROJECT CONSULTING ARBORIST.

PROTECT ALL TREES FROM STOCKPILING, MATERIAL STORAGE, VEHICLE PARKING AND DRIVING WITHIN THE TREE DRIP LINE OR TREE PROTECTION FENCE AREA.

PROTECT ALL PLANT GROWTH INCLUDING ROOT SYSTEMS OF TREES AND PLANTS FROM:

A. DUMPING OF REFUSE.
B. CHEMICALLY INJURIOUS MATERIALS AND LIQUIDS.
C. NOXIOUS MATERIALS IN SOLUTION CAUSED BY RUN-OFF AND SPILLAGE DURING MIXING AND PLACEMENT OF CONSTRUCTION MATERIALS, AND DRAINAGE FROM STORED MATERIALS.
D. CONTINUAL PUDDLING OF RUNNING WATER.

RESTRICT VEHICULAR AND FOOT TRAFFIC TO PREVENT COMPACTION OF SOIL OVER ROOT SYSTEMS.

PERMIT SUBMITTAL 12/22/05

Stearns Marnella Communities

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

TREE PRESERVATION PLAN

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5017
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 04586.X06
Project No. Drawing No.

EX06
Exhibit No.

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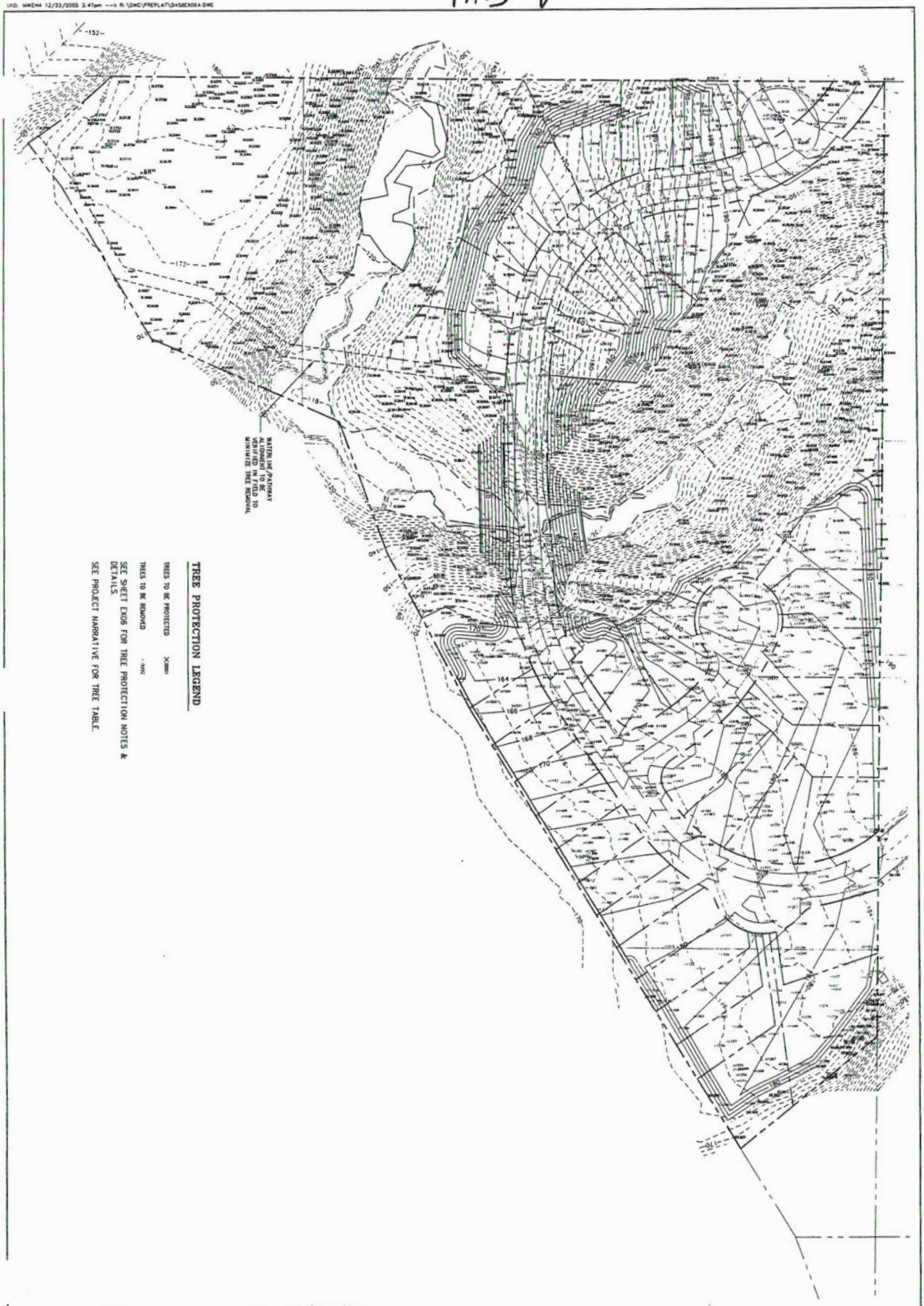
A-544



PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TREE PRESERVATION PLAN

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Design	Drawn	Checked	Date	Initial Issue Date:
				December 22nd, 2005

Exhibit No. EX06A
Project No. 13458 D-458EX06A
Drawing No.
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oak Incorporated
13755 SW Roscoe Farm Rd
Lake Oswego, OR 97035-3217
Phone: (503) 635-3618
Fax: (503) 635-5585
Email: 3175 Oak.COM

A-545

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

TENTATIVE GRADING & EROSION CONTROL PLAN

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Design | Drawn | Checked | Date | Initial Issue Date: December 22nd, 2005

otak

Incorporated

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: www.otak.com

13458 | 04-586.107
Project No. | Drawing No.

Exhibit No. EX07

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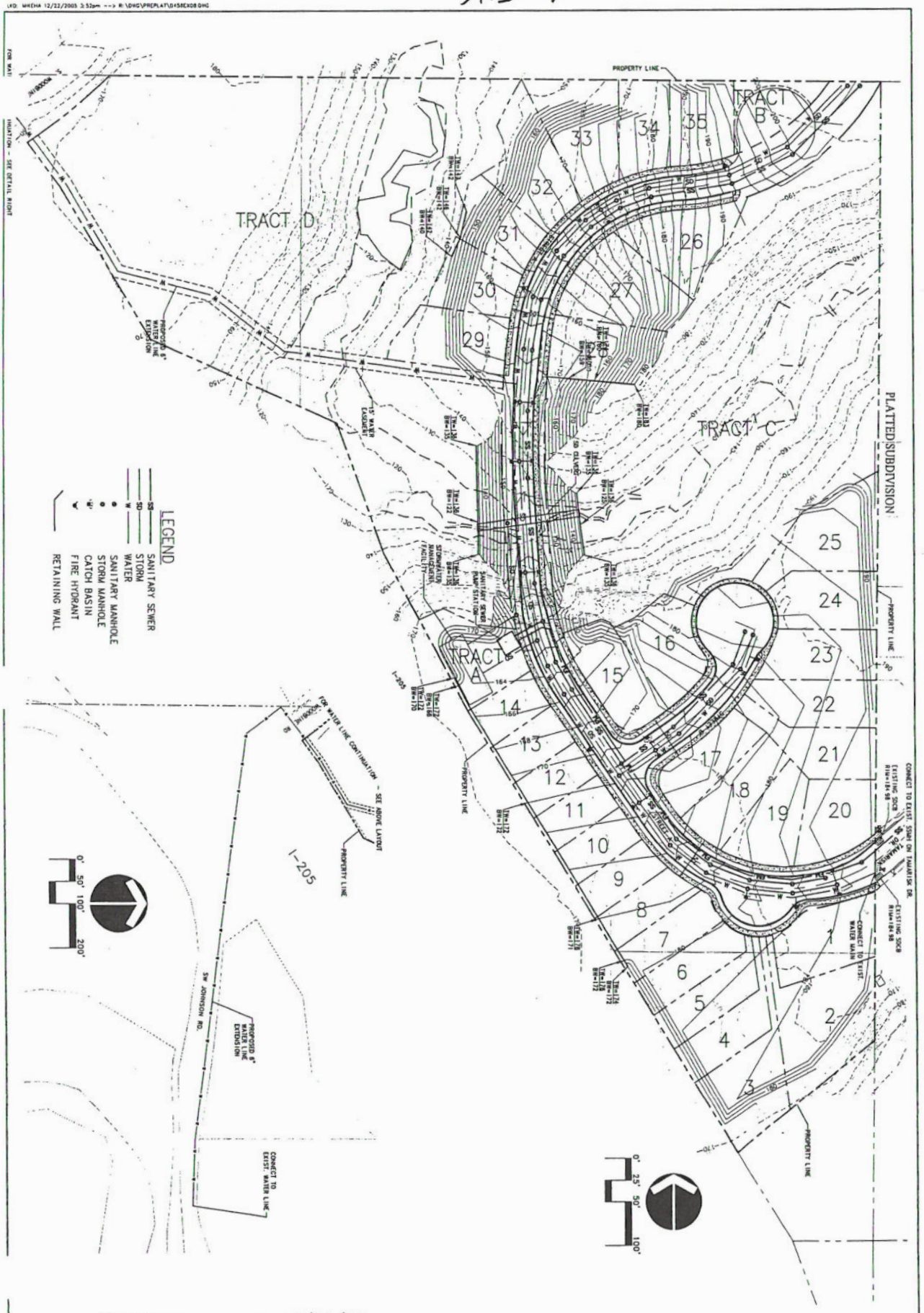

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

Stearns Marnella Communities

NO	DATE	BY	REVISION COMMENTS

Design	Drawn	Checked	Date	Initial Issue Date:
			XX/04	December 22nd, 2005

otak Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5211
PHONE: (503) 635-3511
FAX: (503) 635-5395
Internet: WWW.OTAK.COM

13458 Project No. D458EX08 Drawing No. EX08 Sheet No.

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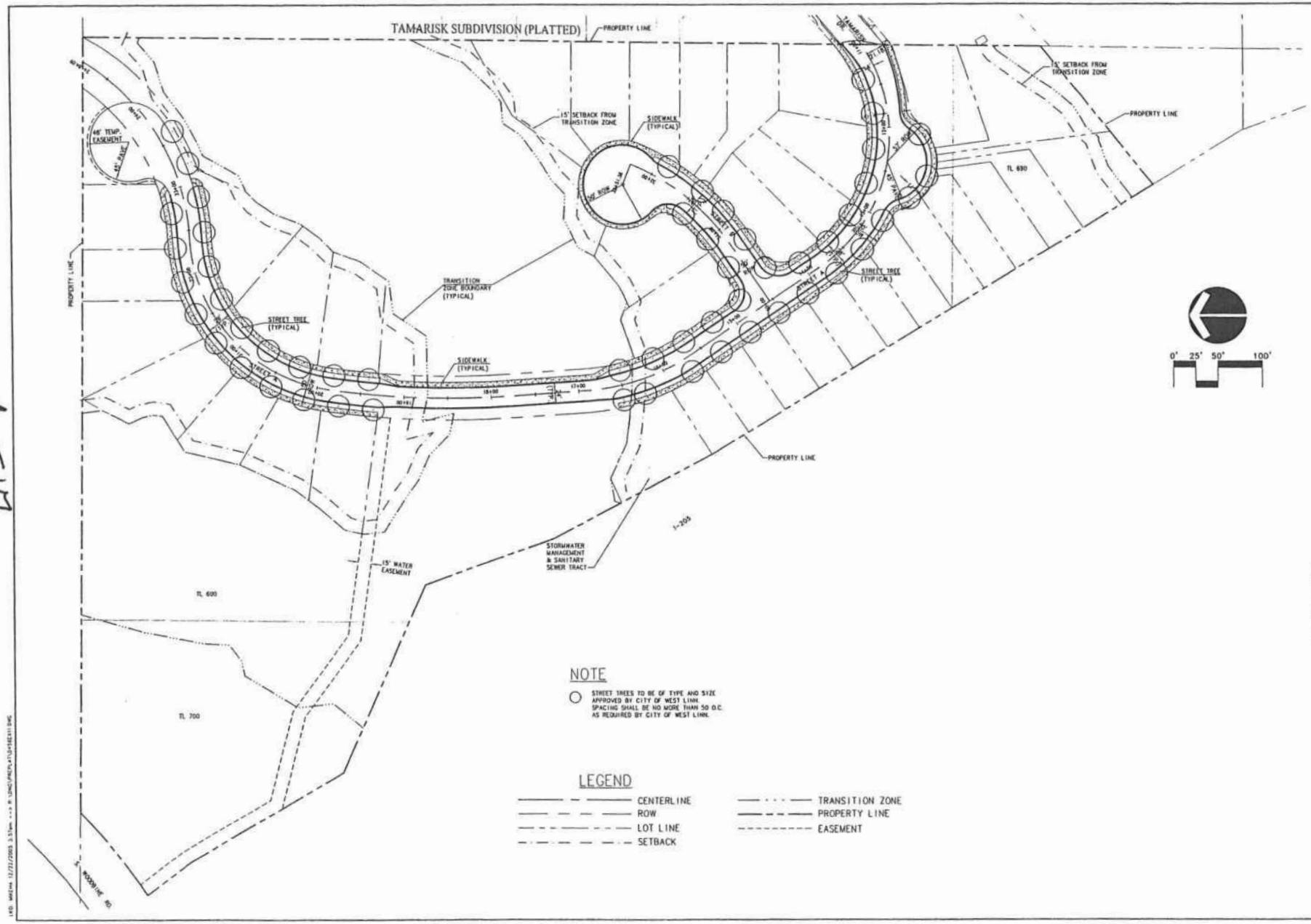

PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN

STREET TREE PLAN

Stearns Marnella Communities

Otak Incorporated
17355 SW Boones Ferry Rd
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 D458EX11
Project No. Drawing No.

EX11
Exhibit No.

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L125-D

Application Form

A-548

West Linn

DEVELOPMENT REVIEW APPLICATION

TYPE OF REVIEW (Please check all boxes that apply):

- [ ] Annexation
- [ ] Appeal and Review
- [ ] Conditional Use
- [ ] Design Review
- [ ] Easement Vacations
- [ ] Flood Management Area
- [ ] Historic District Review
- [ ] Home Occupation – Type II
- [ ] Legislative Plan or Change
- [ ] Lot Line Adjustment
- [ ] Minor Partition
- [X] Natural Drainageway Protection
- [ ] Non-Conforming Lots, Uses & Structures
- [X] Planned Unit Development
- [ ] Quasi-Judicial Plan or Zone Change
- [ ] Street Vacation
- [X] Subdivision
- [ ] Temporary Uses
- [ ] Tualatin River Greenway
- [ ] Variance
- [X] Wetland
- [ ] Willamette River Greenway
- [ ] Other/Misc.

TOTAL FEES/DEPOSIT #21,980 –

Edwin L. and Gloria D. Fritchie, Trustee	21929 S. Clearcreek Road	Estacada, OR	97023	
OWNER	**ADDRESS**	**CITY**	**ZIP**	**PHONE(res.& bus.)**
Stearns Marnella Communities, LLC	18318 SE Abernethy Lane	Milwaukie, OR	97267	(503)
APPLICANT	**ADDRESS**	**CITY**	**ZIP**	**PHONE(res.& bus.)**
Otak, Inc. Attn: Brad Kilby, AICP	17355 SW Boones Ferry Rd.	Lake Oswego, OR	97035	(503) 699-2495
CONSULTANT	**ADDRESS**	**CITY**	**ZIP**	**PHONE (bus.)**

SITE LOCATION The properties are located at the current terminus of Tamarisk Drive in West Linn

Assessor's Map No.: 21E34A **Tax Lot(s):** 600, 690, and 700 **Total Land Area:** approx. 14.84 Acres

1. All application fees are non-refundable (excluding deposit).
2. The owner/applicant or their representative should be present at all public hearings.
3. A denial or grant may be reversed on appeal. No permit will be in effect until the appeal period has expired.

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application.

SIGNATURE OF PROPERTY OWNER(S)

X Edwin L Fritchie Date 12-1-05

SIGNATURE OF APPLICANT(S)

X Date 12-7-05

BY SIGNING THIS APPLICATION, THE CITY IS AUTHORIZED REASONABLE ACCESS TO THE PROPERTY.
ACCEPTANCE OF THIS APPLICATION DOES NOT INFER A COMPLETE SUBMITTAL.
COMPLETENESS WILL BE DETERMINED WITHIN 30 DAYS OF SUBMITTAL.

PLANNING AND BUILDING; 22500 SALAMO RD #1000; WEST LINN, OR 97068
PHONE: 503-656-4211 FAX: 503-656-4106

First American

First American Title Insurance Company of Oregon
222 SW Columbia Street, Suite 400
Portland, OR 97201
Phn - (503) 222-3651
Fax - (503) 790-7858

James Welch, Title Officer
Toll Free: (800) 929-3651
Direct: (503) 795-7669
Email: jwelch@firstam.com

First American Title Insurance Company of Oregon
4650 SW Griffith
Beaverton, OR 97005-8799

Order No.: 7031-662367
August 26, 2005

Attn: Amanda Walsh
Phone No.: (503) 641-7000 - Fax No.: (503) 627-0921
Email: ajwalsh@firstam.com

Preliminary Title Report

ALTA Owners Standard Coverage	Liability $	1,900,000.00	Premium $	3,455.00
ALTA Owners Extended Coverage	Liability $		Premium $	
ALTA Lenders Standard Coverage	Liability $		Premium $	
ALTA Lenders Extended Coverage	Liability $		Premium $	
Endorsement 100, 116 & 8.1			Premium $	50.00
Govt Service Charge			Cost $	50.00
Other			Cost $	

We are prepared to issue Title Insurance Policy or Policies in the form and amount shown above, insuring title to the following described land:

The land referred to in this report is described in Exhibit A attached hereto.

and as of August 16, 2005 at 8:00 a.m., title vested in:

Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004)

Subject to the exceptions, exclusions, and stipulations which are ordinarily part of such Policy form and the following:

1. Taxes for the fiscal year 2005-2006 a lien due, but not yet payable.

2. The assessment roll and the tax roll disclose that the premises herein described were specially assessed as Forest Land pursuant to O.R.S. 321.358 to 321.372. If the land becomes disqualified for the special assessment under the statute, an addition tax may be levied for the last five (5) or lesser number of years in which the land was subject to the special land assessment.

This report is for the exclusive use of the parties herein shown and is preliminary to the issuance of a title insurance policy and shall become void unless a policy is issued, and the full premium paid.

A-550

3. City liens, if any, of the City of West Linn.

   Note: There are no liens as of August 16, 2005. All outstanding utility and user fees are not liens and therefore are excluded from coverage.

4. Rights of the public and of governmental bodies in and to that portion of the premises herein described lying below the high water mark of Tate Creek.

5. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:
   Recording Information: September 11, 1902 in Book 74, Page 452
   (Affects Parcel III)

6. Easement, including terms and provisions contained therein:
   Recording Information: August 20, 1935 in Book 228, Page 486
   In Favor of: Portland General Electric Company, an Oregon Corporation
   For: Electrical transmission lines
   Affects: Over Parcel III

7. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: December 18, 1967
   Recording No.: 67003687
   From: Zella M. Jones, a widow
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel III)

8. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: January 26, 1968
   Recording No.: 68001596
   From: Duane A. Zacher and Bonnie M. Zacher, husband and wife; Nellie Fordyce, a widow
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel II)

9. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.
   Recorded: January 29, 1968
   Recording No.: 68001666
   From: Earl E. Loney and Lalah M. Loney, husband and wife
   To: State of Oregon, by and through its State Highway Commission
   (Affects Parcel II)

10. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:
    Recording Information: April 3, 1984 as Fee No. 84010842
    (Affects Parcel II)

11. In order to insure a transaction involving the herein named trust, we will need to be provided a Certification of Trust pursuant to ORS 128.232 through ORS 128.246.

12. The following pertain to Lender's Extended Coverage only:
    a. Parties in possession, or claiming to be in possession, other than the vestees shown herein.
    b. Statutory liens for labor and/or materials, including liens for contributions due to the State of Oregon for employment compensation and for workman's compensation, or any rights thereto, where no notice of such liens or rights appears of record.

- END OF EXCEPTIONS -

NOTE: This Preliminary Title Report does not include a search for Financing Statements filed in the Office of the Secretary of State, or in a county other than the county wherein the premises are situated, and no liability is assumed if a Financing Statement is filed in the Office of the County Clerk covering Timber on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and block.

NOTE: We find no judgments or United States Internal Revenue liens against Stearns Marnella Construction LLC and Edwin L. Fritchie

NOTE: Taxes for the year 2004-2005 PAID IN FULL

Tax Amount:	$62.41
Map No.:	21E34A-00600
Property ID:	00400391
Tax Code No.:	003.002 (Affects Parcel I)

NOTE: Taxes for the year 2004-2005 PAID IN FULL

Tax Amount:	$5.20
Map No.:	21E34A-00690
Property ID:	00400408
Tax Code No.:	003.002 (Affects Parcel II)

NOTE: Taxes for the year 2004-2005 PAID IN FULL

Tax Amount:	$9.56
Map No.:	21E34A-00700
Property ID:	00400417
Tax Code No.:	003.002 (Affects Parcel III)

NOTE: According to the public record, the following deed(s) affecting the property herein described have been recorded within 12 months of the effective date of this report: Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077362 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L.

Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077363 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077365 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).

Situs Address as disclosed on Clackamas County Tax Roll:

Not Assigned, West Linn, OR 97023

THANK YOU FOR CHOOSING FIRST AMERICAN TITLE!
WE KNOW YOU HAVE A CHOICE!

RECORDING INFORMATION

Filing Address: **Clackamas County**
2051 Kaen Road
Oregon City, OR 97045

Recording Fees:
$ **5.00** per page
$ **10.00** per document (Public Land Corner Preservation Fund)
$ **11.00** per document (OLIS assessment & Taxation Fee)
$ **5.00** for each additional document title
$ **20.00** non-standard fee

cc: Stearns Marnella Construction LLC
cc: Edwin L. Fritchie
cc: Anthony Marnella, Stearns/Marnella Communities
18318 SE Abernethy Lane, Milwaukie, OR 97267

First American Title Insurance Company of Oregon

SCHEDULE OF EXCLUSIONS FROM COVERAGE

ALTA LOAN POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
   (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

ALTA OWNER'S POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

SCHEDULE OF STANDARD EXCEPTIONS

The ALTA standard policy form will contain in Schedule B the following standard exceptions to coverage:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceeding by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records, unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose.

NOTE: A SPECIMEN COPY OF THE POLICY FORM (OR FORMS) WILL BE FURNISHED UPON REQUEST

TI 149 Rev. 5-99

Exhibit "A"

Real property in the County of Clackamas, State of Oregon, described as follows:

Parcel I

A tract of land in the Northeast quarter of Section 34, T. 2S., R. 1E., W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

Beginning at the Northwest corner of Tract 10 of the Subdivision of the J. D. Miller D.L.C. and South Half of James M. Moore D.L.C. in Township 2 South, Range 1 East of the Willamette Meridian, as shown on the map recorded in Clackamas County Deed Book 75, pages 250 to 253; thence South 89°34' East along the North line of said Tract 10 for a distance of 667.22 feet, more or less, to an iron pipe at the Northwest corner of that 20.87 acre tract deeded to Charles Shields, et ux by deed dated October 7, 1926; thence South 0°30' West along the West line of said 20.87 acre tract, 988.57 feet, more or less, to the Northeast corner of the tract described as Parcel II in the Deed to the State of Oregon by and through the State Highway Commission, recorded under Fee No. 68-1596; thence West along the North line of said State of Oregon parcel 300 feet, more or less, to an intersection with the Easterly line of the right of way acquired by said State of Oregon for use as a part of the East Portland Freeway (I-205); thence Northwesterly along said right of way line 545 feet, more or less, to its intersection with the West line of said Tract 10; thence North along the West line of said Tract 10 for a distance of 385 feet, more or less, to the Northwest corner thereof and the point of beginning.

Parcel II

A parcel of land lying in the James D. Miller, D.L.C. No. 56, Township 2 South, Range 1 East, W.M., in the City of West Linn, Clackamas County, State of Oregon, and being that property designated as Parcel 2 and described in that deed to the State of Oregon, by and through its State Highway Commission, recorded as Recorder's Fee No. 68-1596 Film Records of Clackamas County, containing 1.0 acre, more or less.

Parcel III

A portion of the J.D. Miller D.L.C. in T. 2S., R.IE. of the W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

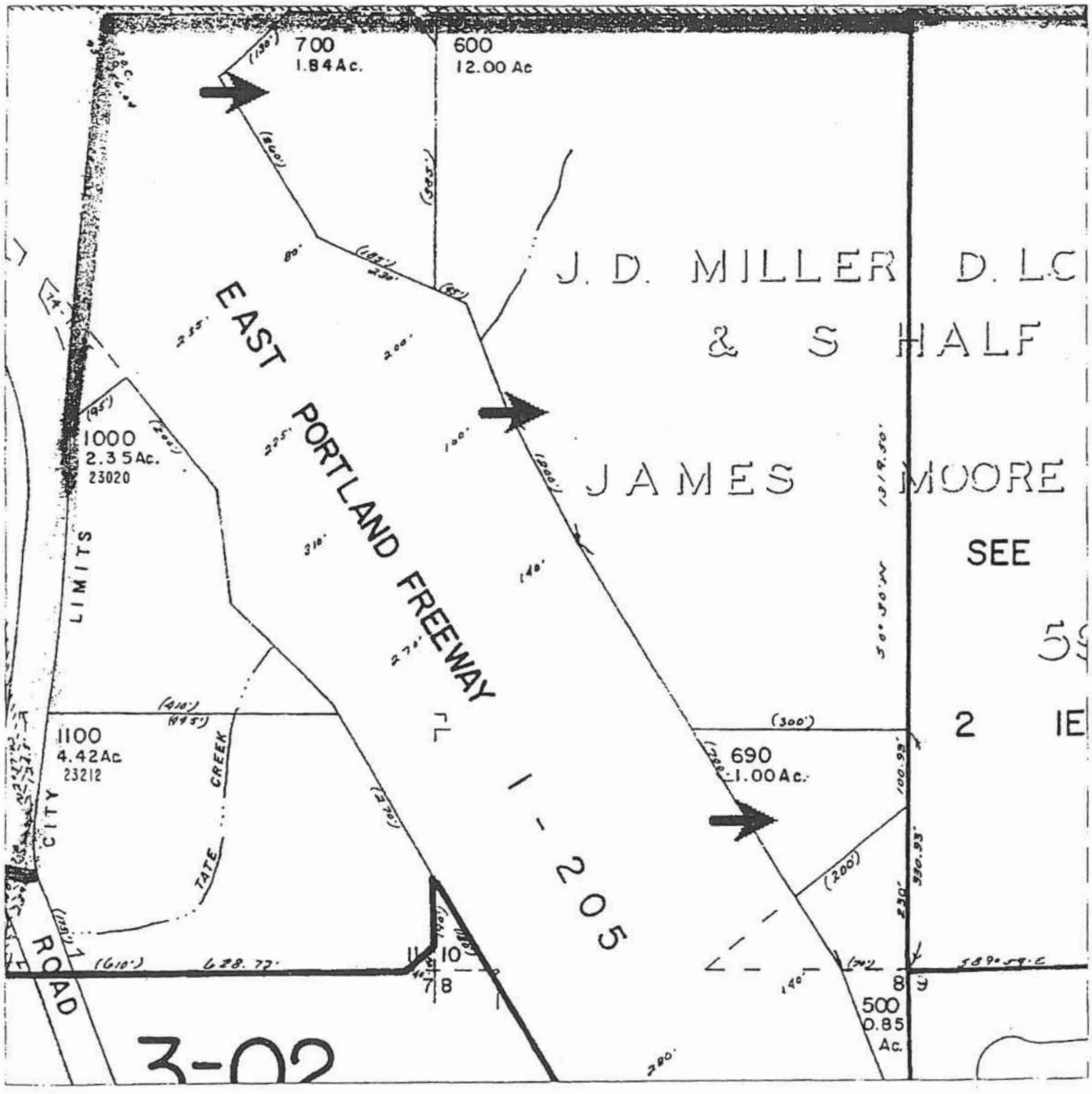
That portion of Tract II, as shown on the Plat of the J.D. Miller D.L.C. lying Southeasterly of Woodbine Road and Northeasterly of the Tract conveyed to the State of Oregon as Parcel I, in deed recorded as Clackamas County Fee No. 67-3687. Also that portion of Tract 76, Rosemont Acres in Section 27, T. 2S., R.IE., of the W.M., lying Southerly of Woodbine Road and Westerly of the tract conveyed to the State of Oregon as Parcel III in Deed filed as Clackamas County Fee No. 67-3687.

Tax Parcel Number: 00400391 and 00400408 and 00400417

First American Title Insurance Company of Oregon
An assumed business name of TITLE INSURANCE COMPANY OF OREGON

This map is provided as a convenience in locating property
First American Title Insurance Company assumes no liability for any variations as may be disclosed by an actual survey

Reference Parcel Number 21E34A 00690



A-556

PC EXHIBIT 8

DON BURKE & KATIE DANIEL

RECEIVED
AUG 2 2 2006
PLANNING/BUILDING
CITY OF WEST LINN
INT.

August 16, 2006

West Linn Planning Commission
22500 Salamo Road
West Linn, OR 97068

Michael Babbitt, Commissioner
Michael Bonoff, Commissioner
John Kovash, Comminnion Chair
Paul Fisher, Commissioner
Gary Stark, Commissioner
Gary Hitesman, Commissioner
Michael Jones, Vice Chair

Re: File NOS. SUB-05-06/AC-05-09/VAR 05-10/MISC-05-56

Dear Sirs;

I am writing to you regarding a grave concern over the proposed plan to develope the Tamerisk property. I do support the development. I have concerns however, with the proposed plan. Specifically lots 33, 34 & 35.

Please refer to the Overlay Zones—Chapter 24.00. In section 24.010 items B,C,F— there is discussion that the purpose of a PUD is to " preserve, to the greatest extent possible, the existing landscape features and amenities…" "encourage developments which will provide a desirable, attractive, and stable environment in harmony with that of the surrounding area." "develop projects that are compatible with neighboring development in terms of architecture, massing, and scale. Where that cannot be accomplished, appropriate transitions should be provided that are deferential or sympathetic to existing development."

The existing plan attempts to conform to the PUD requirements, but falls short where required to either be compatible with existing developments or provide appropriate transitions to existing developments along the north property lines of lots 33, 34 & 35.

Single family residential 6200 SF lots clearly do not conform with acreage zoned RRFF5 (see attached description). The developer did a great job conforming to all other surrounding developments—except along the north property line.

I understand the property to the north is considered Clackamas County—but it is within the Urban Growth Boundary and it is just a matter a time before it is included in the City of West Linn. It would be prudent on the part of the Planning Commission to look at the future expansion of the city limits.

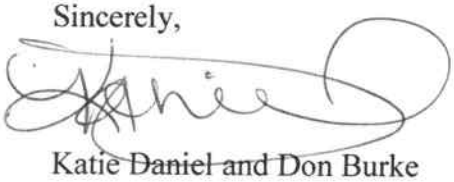
1090 S. Woodbine Road, West Linn, OR 97068
Phone (503) 652-0175 Fax (503) 513-6254

I pray the Planning Commission requires an impact mitigation buffer along the North property line that measures no less that 25' in width on lots 33, 34 & 35.

I pray that the Planning Commission requires additional tree planting in the mitigation buffer to reduce the disturbance and disruption the new development will have on the existing Farm/Forest land.

I may be contacted for questions or comment on my cell (503) 519-6521.

Sincerely,



Katie ~~Daniel~~ and Don Burke

309 RURAL RESIDENTIAL FARM/FOREST 5- ACRE DISTRICT (RRFF-5) (4/13/06)

309.01	PURPOSE
309.02	AREA OF APPLICATION
309.03	PRIMARY USES
309.04	ACCESSORY USES
309.05	USES SUBJECT TO REVIEW BY THE PLANNING DIRECTOR
309.06	CONDITIONAL USES
309.07	PROHIBITED USES
309.08	DIMENSIONAL STANDARDS
309.09	DEVELOPMENT STANDARDS

309.01 PURPOSE

This section is adopted to implement the policies of the Comprehensive Plan for Rural areas.

309.02 AREA OF APPLICATION

Property may be zoned RRFF-5 when the site has a Comprehensive Plan designation of Rural; the criteria in Policy 11.2 of the Rural section of Chapter 4 of the Comprehensive Plan are satisfied; and the criteria in Section 1202 are satisfied. (4/13/06)

309.03 PRIMARY USES

A. One detached single-family dwelling, residential home, or manufactured dwelling. A manufactured dwelling shall be subject to Section 824; (4/13/06)
B. Current employment of land for general farm uses, including:
    1. Raising, harvesting, and selling of crops; (4/13/06)
    2. Feeding, breeding, selling, and management of livestock, poultry, fur-bearing animals, or honeybees; (4/13/06)

3. Selling of products of livestock, poultry, fur-bearing animals, or honeybees; (4/13/06)
4. Dairying and the selling of dairy products; (4/13/06)
5. Preparation and storage of the products raised on such lands for man's use and animal use; (4/13/06)
6. Distribution by marketing or otherwise of products raised on such lands; and (4/13/06)
7. Any other agricultural use, horticultural use, animal husbandry, or any combination thereof; (4/13/06)

C. The propagation or harvesting of a forest product; (4/13/06)
D. Public and private conservation areas and structures for the conservation of water, soil, forest, or wildlife habitat resources; (4/13/06)
E. Fish and wildlife management programs; (4/13/06)
F. Public and private parks, campgrounds, playgrounds, recreational grounds, hiking and horse trails, pack stations, corrals, stables, and similar casual uses provided that such uses are not intended for the purpose of obtaining a commercial profit; (4/13/06)
G. Bus shelters under the ownership and/or control of a city, county, state, or municipal corporation, subject to Section 823; (4/13/06)
H. Utility carrier cabinets, subject to Section 830; (4/13/06)
I. Wireless telecommunication facilities listed in Subsection 835.04, subject to Section 835. (3/14/02)

309.04 ACCESSORY USES

A. Uses and structures customarily accessory and incidental to a primary use; (4/13/06)
B. Home occupations, including bed and breakfast homestays, subject to Section 822; (4/13/06)
C. Produce stands, subject to the parking requirements of Section 1007 ; (4/13/06)
D. Signs, subject to Section 1010; (4/13/06)
E. Guest houses, subject to Section 833; (4/13/06)
F. Family daycare providers. (5/22/03)

309.05 USES SUBJECT TO REVIEW BY THE PLANNING DIRECTOR (3/14/02)

The following use may be approved by the Planning Director pursuant to Subsection 1305.02: (3/14/02)

A. Wireless telecommunication facilities listed in Subsections 835.05(A)(2) and (3), subject to Section 835. (3/14/02)

309.06 CONDITIONAL USES

A. A. The following conditional uses may be allowed subject to review by the Hearings Officer pursuant to Section 1300. Approval shall not be granted unless the proposal complies with Section 1203 and any applicable provisions of Section 800. (5/22/03)

1. Churches, subject to Section 804; (5/22/03)
2. Schools, subject to Section 805, except as restricted by Subsection 309.07(E); (4/13/06)
3. Daycare facilities, subject to Section 807; (5/22/03)
4. Cemeteries, subject to Section 808; (5/22/03)
5. Service and recreational uses that exceed the limits of Subsection 309.03(F), subject to Section 813; (5/22/03)
6. Operations conducted for the exploration, mining, and processing of geothermal resources, aggregate and other mineral resources, or other subsurface resources, subject to Section 818; (5/22/03)
7. Sanitary landfills and debris fills, subject to Section 819; (5/22/03)
8. Hydroelectric facilities, subject to Section 829; (5/22/03)
9. Bed and breakfast residences and inns, subject to Section 832; (5/22/03)
10. Composting facilities, subject to Section 834; (5/22/03)
11. Wireless telecommunication facilities listed in Subsection 835.06(A), subject to Section 835; (5/22/03)
12. Kennels, provided that the portion of the premises used is located a minimum of 200 feet from all property lines; (5/22/03)
13. Aircraft land uses ; (4/13/06)
14. Commercial recreational uses that exceed the limits of Subsection 309.03(F); (5/22/03)
15. Commercial or processing activities that are in conjunction with timber and farm uses. (5/22/03)

309.07 PROHIBITED USES

A. Uses of s tructures and land not specifically permitted ; (4/13/06)
B. Except as approved pursuant to Subsection 902.01(B)(4), a subdivision or partition within the urban growth boundaries of Sandy, Molalla, Estacada, and Canby resulting in the creation of one or more lots or parcels of less than 5 acres in size; (4/13/06)
C. A subdivision or partition within the Portland Metropolitan Urban Growth Boundary resulting in the creation of one or more lots or parcels of less than 20 acres in size; (4/13/06)
D. Subdivisions in areas defined as Future Urban in Chapter 4 of the Comprehensive Plan ; (4/13/06)
E. Schools within the areas identified as Employment, Industrial, and Regionally Significant Industrial on the Metro Region 2040 Growth Concept Map. (4/13/06)

309.08 DIMENSIONAL STANDARDS

A. Purpose: The dimensional standards are intended to: (4/13/06)
    1. Provide for and protect the unique character, livability, and scenic quality of rural areas of the C ounty; (4/13/06)
    2. Provide for fire safety and protection of all structures;
    3. Protect the privacy and livability of dwellings and yard areas; and
    4. Preserve, within urban growth boundaries, large parcels of land for future development at urban densities.
B. Minimum Lot Size: New lots of record shall be a minimum of 5 acres in size, except as restricted by Subsections 309.07(B) through (D) or as modified by Section 902, 1013, or 1014. For the purpose of complying with the

minimum lot size standard, lots that front on existing county or public roads may include the land area between the front property line and the middle of the road right-of-way. (4/13/06)

C. Minimum Front Yard Setback: 30 feet; however, there shall be no minimum front yard setback for bus shelters and roadside stands of no more than 400 square feet in area and no more than 16 feet in height . (4/13/06)
D. Minimum Side Yard Setback: 10 feet. (4/13/06)
E. Minimum Rear Yard Setback: 30 feet; however, accessory structures shall have a minimum rear yard setback of 10 feet. (4/13/06)
F. Corner Vision: No sight-obscuring structures or plantings exceeding 30 inches in height shall be located within a 20 - foot radius of the lot corner nearest the intersection of two public, county, or state roads, or from the intersection of a private driveway, access drive, or private road and a public, county, or state road. Trees located within a 20 - foot radius of such an intersection shall be maintained to allow 8 feet of visual clearance below the lowest- hanging branches. (4/13/06)
G. Scenic Roads: Structures built on lots adjacent to roads designated as s cenic on Map V-5 of the Comprehensive Plan should be set back a sufficient distance from the right- of- way to permit a landscaped or natural buffer area. (4/13/06)
H. Exceptions: Dimensional standards are subject to modification pursuant to Section 900 . (4/13/06)
I. Variances: The requirements of Subsections 309.08(B) through (F) may be modified pursuant to Section 1205. (4/13/06)

309.09 DEVELOPMENT STANDARDS

A. General: Development shall be subject to the applicable provisions of Sections 1000 and 1100 . (4/13/06)
B. Future Urban Areas: A partitions in an area defined as Future Urban by Chapter 4 of the Comprehensive Plan shall be approved only if the applicant demonstrates that proposed locations of improvements, including easements, dedications, structures, wells, and on-site sewage disposal systems are consistent with the orderly development of the property at appropriate urban densities on the basis of the criteria in Subsection 301.02. (4/13/06)
C. Manufactured Dwelling Parks: Existing manufactured dwelling parks shall not be redeveloped with a different use until a plan for relocation of the existing tenants is submitted and approved by the Planning Director. (4/13/06)

(LAST TEXT REVISION 7/18/06)

PC EXHIBIT 9

TO: Planning Commission
Peter Spir
Bryan Brown
David Rittenhouse
Roberta Schwarz
Willamette Neighborhood Association

FROM: Jack and Julia SIMPSON, 1671 Killarney Drive, 97068

SUBJECT: Tamarisk Subdivision (SUB-05-06, et al)

Ref (1): P Spir Memo dtd 18 AUG 06 re: above-cited PUD
Ref (2): Staff Report, Findings and Approval Criteria dtd 24 AUG 06 re: above-cited PUD

DATE: 23 AUG 06

1. We request that this E-mail be entered into the record of the COWL Planning Commission deliberations on this PUD as our testimony regarding this subject.

2. We will state from the beginning that we oppose this PUD, and urge the Commission to deny applicants' requests as set forth in Ref (2) above.

3. Foremost among our objections to this application are the constraints imposed by trees, traffic access and egress (especially under emergency conditions) and ecological protections.

4. There are numerous examples of staff's efforts to bend ordinances to accommodate this development and to justify its recommendation of approval. The most egegious instance is the matter of traffic impacts, not only near the development itself, but also reflecting onto more distant problematic traffic patterns. As implied by Mr. Spir, there is no magic wand to wave over the 10th/Blankenship/Tannler/Salam corridor. This development, as proposed, does not address the traffic impacts that will result. The solution proposed by staff in Condition of Approval #5 (Ref 1, p. 3) is unsatisfactory. It amounts to giving the developer carte blanche to increase the traffic impact on an already failing set of intersections and streets, with the vague promise of dedicated developer funds "in the amount proportionate to the anticipated impacts ***identified in the applicant's traffic study.***"

5. Were there to be a large fire within the development or along DeBok before its intersection with Blankenship, emergency vehicles and the emergency itself would severely hinder, if not prevent, regular traffic movement or any kind of escape route. We call your attention to the recent attic fire in the Manzana Restaurant in Lake Oswego.

6. Mr. Spir states that applicant's drawing of "*Proposed Mitigation for Blankenship Intersection*" at Tannler Drive is "*a best guess–nothing more*" A "best guess" is not, in our opinion, adequate for approval.

7. Should the Commission, despite these and other glaring insufficiencies, approve this PUD, it should include the condition that developer abide by the 20% Rule regarding tree preservation by requiring elimination of proposed Lot #20 and preservation of the three identified significant trees thereon. Conditions also should be imposed to insure continued health of the trees during and after development, with protective fencing as stated in the working version of the Tree Technical Manual, already adopted *de facto*.

PC EX 10

To: **West Linn Planning Commission**

From: **Ken Pryor**
Vice President
Tanner Basin Neighborhood Association

Date: **August 24, 2006**

Subject: 34-Lot Subdivision, Planned Unit Development (PUD), Class II Variance and Natural Drainageway Permit at North-west End of Tamarisk Drive
File No.: SUB-05-06/MISC-05-56/VAR-05-10/ZC-05-09

INTRODUCTION

Commissioners, city staff, and West Linn residents, my name is Ken Pryor. I live at 2119 Greene Street in West Linn. At a special meeting of the Tanner Basin Neighborhood Association held on August 23, 2006, the assembled members unanimously voted to request that the Planning Commission deny the Tamarisk PUD application as currently submitted. I have been chosen as the designated representative of the Tanner Basin Neighborhood Association. Tonight, I would like to summarize some of the reasons behind this vote.

First, however, Tanner Basin Neighborhood Association requests that the Planning Commission hearing on this proposal be held over until the next regularly scheduled Planning Commission meeting so that we may elaborate on the many code noncompliance issues that we have identified with this development. We ask this because the Tanner Basin Neighborhood Association was given no contact by the applicant in direct violation of Community Development Code 99.038, "Neighborhood Contact," which requires that "...the applicant shall contact and discuss the proposed development with any affected neighborhood as provided in this section." Thus, we have not had sufficient time to adequately review this proposal.

Second, The Neighborhood Association is exploring the possibility of having a geotechnical engineer evaluate this proposal. We need additional time for this, as we only learned of this application one week ago through channels other than the applicant.

If you refuse our request to hold over this item until the next Planning Commission meeting, then we request, under ORS 197.763(6)(a), an opportunity to present additional evidence, arguments or testimony regarding the application for a minimum of the next seven days from today.

In the short period of time we have had to review this application, we have already identified several code noncompliance issues. The CDC chapter sections that we are concerned with include, but are not limited to, the following, 24 (Planned Unit Development), 30 (Wetland and Riparian Area), 32 (Natural Drainageway Protection, 33 (Stormwater Quality and Detention), 55 (Design Review), and 99 (Procedures for Decision Making: Quasi-Judicial). We will be elaborating on these non-compliance issues at the hearing in two weeks if our earlier request is granted, or in writing within the next 7 days if it is not.

One among the many issues we have identified can be found on page A-318 through A-320 of your packet. A potential traffic mitigation listed is that people driving down Tannler Drive to Blankenship not be allowed to make a left turn on onto Blankenship. There will be a concrete

median placed on Blankenship to prevent left-hand turns from Tannler. We expect that people coming down Tannler Drive will turn right onto Blankenship, then take an immediate left into the Albertson's parking lot, drive through the parking lot and exit by turning right onto Blankenship at the intersection with Tannler. Thus, they will essentially accomplish the left turn onto Blankenship from Tannler but will do it by going through the Albertson's parking lot—causing a significant amount of extra traffic to pass by the front of Albertson's.

Just as with the recent Tannler East proposal, we feel that the Tannler/Blankenship intersection should be looked at as a part of the entire 10th Street corridor traffic problem. This proposed mitigation is not an acceptable solution—in fact, it will create more problems than it solves.

Due to our lack of notice from the applicant we have had no time to gather petitions and signatures from our neighbors who are also concerned about this project. However, our Neighborhood Association vote was unanimous in opposition to this application and we believe, had we been given the proper notice, we would have had signatures on petitions opposing this application and many letters from West Linn residents stating their opposition to this application. Indeed, you are already in possession of a letter from Jack and Julia Simpson stating their concerns which include trees, traffic access and egress, emergency services access, and ecological protections.

In a previous Planning Commission meeting you expressed your appreciation of brevity in presentations so we have tried to keep tonight's presentation as short as possible. We hope that, given the lack of notice that we mentioned above, you will hold over this proposal for consideration at the next Planning Commission meeting where we will be fully ready to delineate all of the Neighborhood Association's concerns with this application.

I thank you for your time and attention.

PC EX 11

To: West Linn Planning Commission

From: Lynn Fox
President
Hidden Springs Neighborhood Association

Date: August 24, 2006

Re: 34 Lot subdivision, Planned Unit Development (PUD), Class II Variance & Natural Drainageway P
Permit at NW End of Tamarisk Drive
File No.: SUB05-06/MISC-05-56/VAR-05-10/ZC-05-09

To: Planning Commissioners and West Linn City Staff

Please be advised that the Board of Hidden Springs Neighborhood Association met and unanimously voted to send Lynn Fox, President on behalf of Hidden Springs Neighborhood Association to this meeting of the Planning Commission and obtain standing regarding the following issues:

1.) Hidden Springs Neighborhood Association could be impacted by traffic created by the proposed development.

2.) Apparently, an insufficient number of trees will be retained if this PUD is allowed as currently proposed, and is therefore not in compliance with West Linn City Code.

3.) Members of HSNA are concerned that the number of lots being requested violates City code.

4.) Members are concerned regarding a lack of appropriate soil stability studies, placing current tax payers and the City at possible risk of future litigation.

5.) Members of HSNA received no notification regarding issues that impact their quality of life and have not had sufficient time to research and evaluate this proposal.

6.) HSNA has been unable to determine the benefit that is supposed to accrue to the common good if a PUD is allowed.

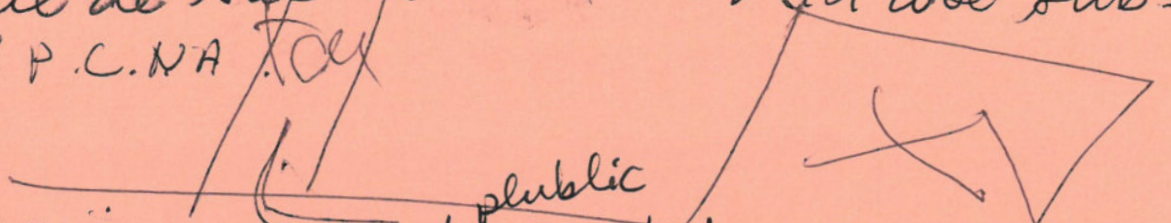
As representative for HSNA, I respectfully request that the Planning Commission hearing on this proposal be held over until the next regularly scheduled Planning Commission meeting so that HSNA may evaluate code noncompliance issues, traffic issues and issues that negatively impact quality of life in Hidden Springs and West Linn at the next HSNA meeting on September 19, 2006.

If you choose not to hold this item over to the next planning commission meeting, then we request under ORS 197.763(6)(a), an opportunity to present additional evidence, arguments or testimony retarding the application for a minimum of the next seven days from today.

Respectfully submitted,

Lynn Fox, President
Hidden Springs Neighborhood Association
PO Box 236
Marylhurst, Oregon 97036

a long cul de sac exist in the Wildrose sub-division of P.C.N.A



a cul de sac is a round public court type serving a collective driveway—
a barred street is just that meaning a dead-end!

Although I am in favor of this project
I do appreciate the right turn on Solano into
this project HOWEVER The left turn issue from Tamarack
onto Blankenship towards traffic for the I-205 freeway ~~and up the hill~~ ~~it's~~ ~~Marsh's Hill~~ Wayne
will need passport if I have to be going around about when I could go just 500 ft.

- Tree. if my memory serves me right. ~~It's~~ when I was a member of the late tree committee we'd said 20% trees to save within in general but any or all significant tree shall be all saved. unless proven unhealthy or hazardous —
- In considaration to the left turn be there. We don't have to deny this project's application
- I agree with the applicant ~~Hortman~~ on condition 3

Alice Richmond

EX PC 12

8-24-06
PC
Ex
18

Tamarisk Subdivision

Design Team Introductions
Brad Kilby – project planner
Tony Marnella – client
Mike Peebles – project engineer
Walt Knapp – project arborist
Mike Robinson – legal counsel

Absent Members
Jim Imbrie – geotechnical engineer (Geo Pacific Engineering)
Mirth Walker – Environmental Consultant, Wetland Scientist (SWCA Consulting)

The Tamarisk Development is proposed as a planned unit development due to the trees, slopes, and resource areas on the site. Planned Developments are excellent tools used by planning bodies to balance the preservation of both natural resources and an individual's right to private property rights.

Tonight you are going to hear about the impacts from this development and how it will affect the adjacent neighborhoods. I believe that you will hear about concerns related to traffic, density, and tree removal.

Density –

The proposal before you tonight is a 34 lot, two-phase subdivision on 15.35 acres.

Although the lots are smaller than the 10,000SF lots or 15,000SF lots prescribed by the R-10 and R-15 zones respectively, the overall density of the site is not exceeded.

As proposed the development provides for 2.2 units to the acre for the overall site or an average of 19,666 square feet of land for each unit. The difference here is that the developer has transferred the proposed density from the non-buildable portions of the site to the buildable portions of the site.

This is truly a balance that allows the landowner to realize his right to develop the property while preserving half of the site for natural resource preservation.

Traffic-

The proposed development is forecasted to add a total of 325 average daily trips to the local street system over a 24-hour period.

During the AM peak hour, it is forecasted that there will be a total of 30 trips in or out of the development.

During the PM peak hour it is forecasted that there will be a total of 40 trips in and out of the development.

According to the traffic engineer, the proposed development will add trips constituting 2% of the current number of trips to the Blankenship Road/Tannler Drive intersection.

The proposed development will add trips constituting .2% to the 10th Street/8th Street/8th Court intersection.

The intersections with I-205 in the 10th Street corridor are operating within the acceptable levels of service for ODOT intersections and are consistent with the State Highway Systems Plan. The developer is willing to contribute a proportional share to the intersection improvements.

Assuming a cost of $250,000 dollars to signalize each of the intersections, we propose the following modifications to Condition #5.

- **The applicant shall contribute $5,000 towards future improvements at the Blankenship Road/Tannler Drive intersection. This amount is proportional to the site traffic impacts and represents 2.0 percent of an assumed future intersection improvement cost of $250,000.**

- **The applicant shall also contribute $500 towards future improvements at the 10th Street/8th Street/8th Court intersection. This amount is proportional to the site traffic impacts and represents 0.2 percent of an assumed future intersection improvement cost of $250,000.**

The impact was determined by dividing the number of site-generated trips passing through the intersection by the total number of vehicles entering the intersection during peak hour periods of the build-out condition.

Trees –

As indicated throughout this process, the owner has indicated that where trees can be saved in the process of construction, they will be.

There are no clear and objective standards to follow in the designation of significant trees and there appear to be trees located elsewhere in the site that have similar characteristics as those being deemed significant.

Section 55.100(B)(2) calls for up to 20% of the type III and IV lands to be set aside to protect significant and heritage trees. The code goes on to say that, "It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant."

Staff indicated to the applicant in a recent meeting that 20% would not necessarily be required as long as the applicant made a good faith effort to save as many of the trees deemed significant by the City arborist as possible.

In a good faith effort, the originally proposed mass grading was eliminated, grading was pulled back from the east property line to save more of the trees located along the adjacent property lines, and the applicant has committed to save more trees in the course of development where at all possible.

To that end, we propose a modification to condition #2 that would modify the condition to require review of the grading by City staff on lots 1,2,6,7,8,18,20, and 21 as opposed to all 25 lots within phase 1 of the proposed development.

The condition would read as follows:

- **Except for grading directly associated with the construction of Tamarisk Drive/Street A, no grading shall be allowed on lots 1, 2, 6, 7, 8, 18, 20, and 21 without prior approval from the City of West Linn Staff. Requests to grade and remove trees will be reviewed by the City arborist on a lot-by-lot basis and through the tree permit process at time of submittal for building permits.**

Other Conditions

Condition 1 - we do not oppose having to construct the eight-foot pedestrian and bicycle trail requested within the condition, and proposed that with the application, but it should be noted that the Pathway through Tract D will require significant tree removal. Also preliminary alignment options indicate that the trail will require significant switchbacks and cut/fill banks to construct the pathway to a 15% grade.

Condition 3 – Staff is requesting that the applicant convey the open-space areas to the City of West Linn. This condition is not consistent with CDC Section 55.190, and the applicant would like to have the option of dedication to the homeowner's association maintained.

Condition 4 – The condition proposed in the staff report is not clear, we propose the following modification to clarify the condition:

- **Public right-of-way shall be dedicated for future extension of paved street to NE corner of the project site. The interim turnaround shall comply with the preliminary site plan presented in the planning application. The Developer shall provide an in-lieu of fee for the final ~100 feet of street construction.**

This modification will allow a tree/vegetative buffer with the adjacent property until the future roadway extension is needed.

Condition 6 – The proposed development is phased, and in an effort to minimize costs, we would request the following modification to clarify the condition.

- **Waterline improvements to service the site shall be constructed in accordance with the City of West Linn Standards. Offsite waterline extension/waterline looping shall be installed prior to final approval of Phase 2, or prior to Phase 1 if required to provide minimum service flow and pressure for Phase 1 development. (Other offsite improvements may be constructed to provide minimum flow and pressure for Phase 1 development instead of the offsite looping).**

Condition 9 – We propose that this condition be eliminated because the issue is already addressed in Condition 4.

Conclusion:

When we first met with the neighborhood in November, we were looking at a plan that would have provided 48 homes with density bonuses within the development. After refining the plans and looking at all of the approval criteria we reduced the number of lots to 35 and ultimately now to 34 lots. We submitted the application on December 27, 2005 and over the course of the last nine months worked diligently to satisfy all staff and neighborhood concerns. The proposal before you tonight satisfies the applicable approval criteria or can be conditioned to satisfy the criteria, and we respectfully request your approval on this application.

City of West Linn
PLANNING & BUILDING DEPT.
MEMORANDUM

TO: West Linn Planning Commission

FROM: Peter Spir, Associate Planner

DATE: August 18, 2006

SUBJECT: Planned Unit Developments, Tree Protection, Traffic Plans and Bike Path at Tamarisk Subdivision (SUB-05-06, et al)

Planned Unit Developments

Tamarisk is just one of many subdivisions being developed as a Planned Unit Development (PUD). PUD's are intended to direct residential, commercial or industrial development towards areas best suited for development and away from areas poorly suited for development.

Community Development Code (CDC) Chapter 24: PUD explains this ambition and then lays out the formulas to be used in calculating allowable densities on constrained lands versus flat buildable areas. Generally speaking, the greater the constraints, the lower the density; and the lower the constraints, the higher the allowable density.

For example, flat buildable lands may be developed at 100% of their allowable density. Conversely, constrained lands may be allowed to have either partial or no development at all depending on the severity of the constraint. Thus a 34% sloped hillside may be developed at 50% of its normal density but development of a wetlands area is prohibited.

Instead of trying to develop these areas, most developers choose density transfer. CDC 24.130(B) explains that the density from these constrained areas may be transferred to flatter buildable areas at rates of 50-100% of allowable density. The rationale for only a 50 percent transfer is that these lands have marginal development value (e.g., wetlands, 52 percent slopes, etc.); so to say those lands should have the same 100 percent development value and potential as less constrained lands, would be wrong since they are tougher to build on and they are generally appraised at a lower land value than flatter, more developable sites.

Thus, a ten-acre parcel may see five of its acres set aside and protected as wetlands while the other five acres are developed with housing at a higher density per acre than the underlying zoning would normally allow. So, for example, instead of just 20 lots on the flat area, because of the 50% density transfer from the wetlands, ten more lots can be transferred from the wetlands area so the total the allowable number of lots goes up to 30.

Significant Trees

Once the city arborist has identified the significant trees on site, the applicant is required to save all the significant trees in the constrained lands (type I and II). That's 100% unless a road or utility has to go through that area.

At the Tamarisk site 7.3 acres or 47.9% of the entire Tamarisk site, are set aside as constrained type I and II lands in tracts C and D. Hundreds of trees and all the significant ones within tracts C and D are protected.

Where things get tricky is the requirement that up to 20% of the buildable non-type I and II lands shall be set aside for protection of significant trees. Since most or all of the development potential of a total site is transferred to these lands there is tension between the need to save this 20% figure and the need to fit in all the roads, utilities, detention ponds, not to mention a reasonable number of lots.

Given the hundreds of trees at this site there is an understandable expectation that all or most are significant. Not true. Only a relative few are significant. Mike Perkins, City Arborist, found that there are only 65 significant trees on the eight acres of non-type I and II lands. With an average square footage of 1,500 square feet (canopy plus 10 feet) the 65 trees yields 97,500 square feet (1,500 X 65). CDC Chapter 24 allows a waiver of the 20% rule for needed roads, utilities and to allow reasonable access to lots. Approximately 12 significant trees fall within the ROW and the detention pond area. Another nine significant trees act as barriers to proposed lots. The remaining 44 or 67% of the significant trees can be saved with a revised grading plan per condition of approval number two.

> *"Except for grading directly associated with the construction of Tamarisk Drive/Street A, no grading shall be allowed of lots 1-25 in the side and rear setback areas to avoid damage to significant trees in those setback areas. Requests to grade and remove trees will be reviewed by the City on a lot-by-lot basis and through the tree permit process at time of submittal for building permits."*

(Its important to pay attention to these grading plans because they may seem so benign on paper but can radically change the site once the bulldozers arrive. Thus the grading proposed at the rear of lots 2-6 and lots 23-25 needs to be prohibited in order to save 20 significant trees, avoid fill in the drainageway setback area behind lots 2-6 and respect the concerns of neighbors on Troy Court about erosion on lots 23-25.)

Staff finds that the 44 trees cover 18.8% of the site. If the applicant can save three more significant trees for a total of 47 then 20.1% of the site will be set aside for tree protection and the criteria will be met.

Lot 20 at the entrance to the site could be eliminated. A concentration of eight mature significant cedars populate this lot so setting it aside would (a) contribute to the 20% standard and (b) create an attractive natural entry to the subdivision.

Traffic Plans

Staff was contacted by Roberta Schwarz and David Rittenhouse regarding the applicant's traffic study. On page A-319 of the staff report a figure shows a raised median at the Tannler and Blankenship intersection. It shows right turn only for traffic heading south on Tannler Drive. The figure is titled "*Proposed Mitigation for Blankenship Intersection*" and dated December 2005. This configuration will not be allowed.

Staff noted that in December 2005 when this study proposed this design, City Engineering staff, Tannler East's engineers and ODOT engineers were meeting and neither party had any idea at that time how the intersection would be configured. This drawing should be taken for what it is: a best guess- nothing more. That point is underscored on page A-327 of the report where the heading reads "***Potential*** *Mitigation Measures for Blankenship Road/Tannler Drive Intersection*".

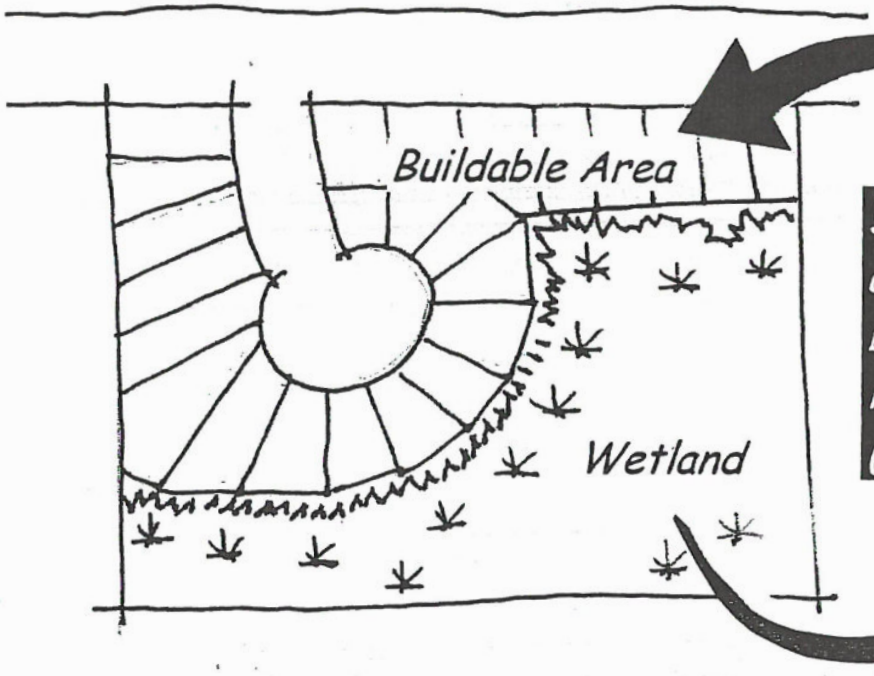
Even as of this writing, eight months later, City Engineering, Planning and ODOT have no firm plans as to how traffic in the 10th Street corridor and nearby streets should be dealt with. At this point it is sufficient to rely upon condition of approval number five as the appropriate means of addressing the area's ongoing and future traffic problems.

5. *Applicant shall contribute monies toward improvements at 8th Ave/8th Ct/10th St and Blankenship Rd/Tannler Dr intersections in the amount proportionate to the anticipated impacts identified in the applicant's traffic study.*

Bike and Pedestrian Path to Woodbine Road

Staff strongly supports the Transportation Planning Rule and creating opportunities for less reliance upon the automobile. This trail serves that interest. There had been concerns expressed that the trail will require a 35% slope. That is not what staff proposed. Staff's COA calls for a maximum 15% grade. Obviously that cannot be accomplished by attacking the slopes in the west portion of the site "head on". The trail would have to angle across the slope per standard trail construction techniques. Trails should never follow the "fall line" because that can cause erosion. It would also be painfully unclimbable without stairs, which would defeat the concept of a bike path.

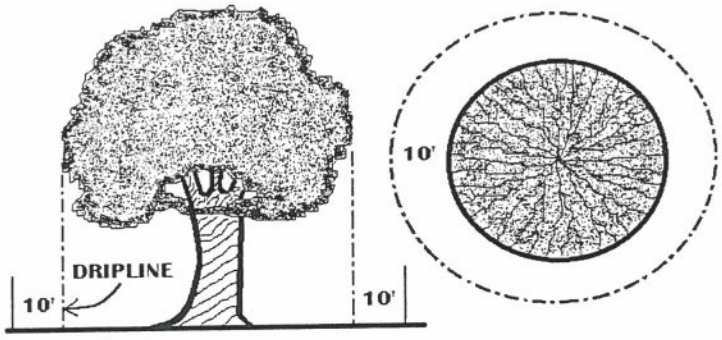
Normal density of "buildable" area per underlying zone (e.g.: 4 units per acre) is increased to 6 units per acre by transfer of density from wetland (per CDC 24.130)



50% of density of wetlands area can be transferred to buildable area with resultant increase in density in that area (per CDC 24.130)

tree or tree cluster, the City Arborist's findings shall prevail. It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant.

a. Non-residential and residential projects on Type I and II lands shall protect all heritage trees and all significant trees and tree clusters by either the dedication of these areas or establishing tree conservation easements. Development of Type I and II lands shall require the careful layout of streets, driveways, building pads, lots, and utilities to avoid heritage trees and significant trees and tree clusters, and other natural resources pursuant to this code. The method for delineating the protected trees or tree clusters ("dripline + 10 feet") is explained in subsection (b) below. Exemptions of subsections (c), (e), and (f) below shall apply.



PROTECTED AREA = DRIPLINE + 10 FEET

b. Non-residential and residential projects on non-Type I and II lands shall set aside up to 20 percent of the area to protect trees and tree clusters that are determined to be

significant, plus any heritage trees. Therefore, in the event that the City Arborist determines that a significant tree cluster exists at a development site, then up to 20 percent of the non-Type I and II lands shall be devoted to the protection of those trees, either by dedication or easement. The exact percentage is determined by establishing the driplines of the trees or tree clusters that are to be protected. In order to protect the roots which typically extend further, an additional 10-foot measurement beyond the dripline shall be added. The square footage of the area inside this "dripline plus 10 feet" measurement shall be the basis for calculating the percentage (see figure below). The City Arborist will identify which tree(s) are to be protected. Development of non-Type I and II lands shall also require the careful layout of streets, driveways, building pads, lots, and utilities to avoid significant trees, tree clusters, heritage trees, and other natural resources pursuant to this code. Exemptions of subsections (c), (e), and (f) below shall apply. Please note that in the event that more than 20 percent of the non-Type I and II lands comprise significant trees or tree clusters, the developer shall not be required to save the excess trees, but is encouraged to do so.

do not grade
lot for sake of
of flat site
when there is only
2-4 lots

Need by Tuesday Aug 8

otak

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

RECEIVED
JUL 20 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

July 20, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Peter:

I am writing in response to your earlier indication that West Linn staff would be recommending denial of the Tamarisk application to the Planning Commission. As you already know, we asked that the hearing be postponed to allow the design team time to review your issues and modify the application in an effort to change your recommendation. I have been unable to reach you over the past week and a half, so with this letter, I am providing a modified proposal for 34 lots as opposed to 35.

First, I would like to let you know that although the application was originally filed on behalf of Stearns/Marnella Communities, the partnership that made up that company has since dissolved, and the property is now in the control of Tony Marnella. Tony's company is "550 Investments LLC." Therefore, the proposal is now filed on behalf of "550 Investments LLC."

From your letter, it appears that there are three primary concerns with this application. If I understand you correctly, you are concerned with the amount of significant trees being removed from the type III and IV lands, comments made by GeoPacific Engineering Inc. in their report dated December 14, 2006, and with four lots within the development not meeting West Linn Community Development Code Section 24.130.

With regard to tree retention, we have reviewed your original comments and made adjustments to the grading within proposed Lots 20 through 25 in an attempt to save additional trees. The applicant has indicated that where trees can be saved in the process of construction, they will be. While we realize the value in preserving trees in new development, we often err on the side of caution in preliminary design in order to meet the engineering challenges of providing adequate access and utilities that function properly. In short, we do not want to tell you that we will be saving trees that

creativity, integrity, and skill • strengthening our communities • performing exciting work • serving our clients

we will be unable to save during actual construction, but if we are working within the site, and find that we will be able to save more trees, we will. It adds value to each one of the lots. Unfortunately, few locations in western Oregon have the benefit of a flat site to work with. With these challenges in mind, it falls upon the designers and engineers to preserve as many trees as possible while ensuring that all other aspects of the development function properly. As a result of the modified proposal, more trees will be preserved along the back and side property lines of Lots 20 through 25; unfortunately, the 25 feet you request in your staff report would not provide a large enough building envelope for construction on these lots.

As you stated in your staff report, it has been extremely difficult to get a timely response from the City Arborist as to what constitutes a significant tree, and the last bit of information that we obtained from him was a list of 117 trees that he wanted physically tagged. We tagged the trees, and never heard back. While there are no clear and objective standards to follow, and his designation of the trees he chose arbitrary, we have made every attempt to save as many trees on this site as possible. Of the 117 trees that he listed, 1 is located on a neighboring parcel, 20 are being removed to construct the public rights-of-way, and 59 are being removed to accommodate construction of the water quality facility and the proposed lots. Of the 117 trees asked to be tagged by Mike Perkins, we are saving 33 or 28 percent on non type III and IV lands. I am providing you with an exhibit that identifies the 117 trees Mike asked to be tagged, and the preliminary lot layout to demonstrate where the trees fall within the proposed development. The trees you are asking to be protected on proposed Lots 4, 6, 7, 8, and 11 cannot be saved due to the amount of grading that needs to occur in that area. I urge you to reconsider your position on these trees. The 20 percent retention is not mandated, and the design of this development does preserve the majority of natural physical features that are inherent to the site.

The second concern that you raised pertains to the provision in CDC Section 24.130. According to your report, "when over 50% of a lot comprises slopes in the 25-35% slope range, then the lot must be twice the size of the lots in the underlying zone. Since the underlying zone is R-15, lots such as 27, 28, 33, and 34 must be 30,000 square feet in size." In reviewing all of the lots within the development, only proposed Lots 33 and 34 met the threshold. To mitigate for that circumstance, we eliminated Lot 35 and made Lots 33 and 34 larger in size. The lots no longer have 50 percent of their lot areas comprised of slopes over 25 percent. In reviewing slope areas on Lots 27 and 28, it was determined that as proposed, the lots did not exceed the 50 percent threshold.

The third concern you raised was the geotechnical report provided by Jim Imbrie of GeoPacific Engineering Inc., and some of the concerns raised in his initial report. It should be noted that the original report was written and responded to by the proposed design without being modified. As a result, we met with Jim and asked that he review the proposed changes, modified plan, and submit a

revised report that responds specifically to the currently proposed design. Mr. Imbrie's report is provided as an attachment to this letter, and he is available to discuss the report should you have additional concerns. In my most recent conversation with you, you mentioned that your concern was that the report stated that six or seven lots within the development are prone to creep and shallow sliding. I mentioned this concern to Mr. Imbrie, and he stated that creep and shallow sliding is common on the majority of sloped sites in Oregon, and they raise the concern to ensure that a geotechnical engineer reviews the design and construction of the foundations in these areas to minimize the likelihood that creeping or sliding would occur. He added that shallow sliding is often times mitigated by grading. I have asked Mr. Imbrie to appear at any future hearings on this matter to explain the report.

In summary, the proposal has been revised by modifying the grading for additional tree protection, one additional lot has been eliminated to meet CDC Section 24.130, and the geotechnical issues raised in your report have been reviewed and responded to by the revised geotechnical report. In reviewing the original narrative and your report, it appears that your original findings would still be applicable with the exception of those pertaining to the three issues discussed in this letter.

I am providing you with three copies of a modified proposal with the amended tree removal/save spreadsheet, a revised geotechnical report, and a revised plan set for your review. Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby

Brad Kilby, AICP

BK:sjs
Enclosures: Revised Plan Set (3 copies)
Amended Tree Removal/Save Spreadsheet (3 Copies)
Revised Geotechnical Report (3 Copies)

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

July 17, 2006

Project No. 05-9541

Stearns Marnella Construction LLC
18318 SE Abernathy Lane
Milwaukie, Oregon 97267

Attention: Tony Marnella
CC: OTAK

GEOTECHNICAL INVESTIGATION
TAMARISK DEVELOPMENT
WEST LINN, OREGON

This report presents our geotechnical engineering report based on 12 exploratory test pits that were excavated at select locations on the above-referenced property. Logs of the test pits and borings are presented in Appendix A. Their locations are shown on a project plan. The purpose of this report is to present the subsurface information and our preliminary geotechnical interpretation to aid in assessment of the potential impacts of these conditions on site development and to assist in project planning and preliminary budgeting.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The approximately 15-acre site is located northwest of the West Linn 10th Street exit off the East Portland 205 Freeway. The proposed development is accessed from the west terminus of Tamarisk Drive. The site is shaped like a right triangle with an irregular longer side bordering the north side of Freeway 205 for a distance of about 1,400 feet. A 100 to 200 foot wide buffer zone separates the freeway from the portion of the site to be developed. The 90 degree angle of the triangle is located in the extreme northeast portion of the site, about 900 feet from the freeway. The site is wooded with a mix of Douglas fir, cedar, alder, and maple. The topography in the southern portion of the site is gentle with grades of between 2 and 8 percent. The northeastern portion of the site has some ridge top grades ranging between 16 and 24 percent, with a very limited area of 10 percent grade. The northern site area is dissected by an "U"-shaped drainage that is deeply incised between 40 and 60 feet and has side slopes averaging between about 62 and 42 percent grade. These steep slopes are characterized by trees with locally severe trunk warping as a result of creep, and benching as a result of soil slumping; however, no deep-seated landslides have been observed on the site. Based on our twelve, widely spaced, exploratory test pits to a maximum depth of 10 feet, the site soils consist of tan micaceous silt that underlies the entire site throughout the exposed topographic section between elevations of 130 and 200 feet. No significant rock was found in any of the test pits.

7312 SW Durham Road
Portland, Oregon 97224

Tel (503) 598-8445
Fax (503) 598-8705

Project No. 05-9541
Tamarisk Development

The currently proposed plan for development includes 34 lots for single-family homes and associated improvements; including about 1,800 lineal feet of a new main-street extension with two cul-de-sacs. A water quality facility and two large retaining walls are proposed. The wall designs are not a part of this report.

SITE GEOLOGY

Based on our initial site reconnaissance and test pit exploration, the site is underlain by at least 70 feet of flood deposits consisting of tan silt deposited some 13,000 years ago during the last of the Catastrophic Flood event, which inundated the Portland and Willamette Valley areas to an elevation of about 400 feet. The flood deposits found thorough the site consists of micaceous silt with occasional traces of fine sand and clay and no significant rock. The silt is overlain by brown clayey silt colluvial soil and topsoil that generally ranged in thickness between 4 to 6 feet. The silt below 4 to 6 feet depth is stiff to very stiff and contains little groundwater, often becoming dry in test pits below depths of 9 to 10 feet.

SUBSURFACE EXPLORATIONS

The subject site was explored on December 12, 2005 by excavating 12 widely-spaced test pits to depths ranging between 7 and 10 feet. The subsurface conditions and material types observed on the subject site are summarized below.

Topsoil

Topsoil consisted primarily of 6 to 9 inches of gray-brown to light brown silt with traces of clay and fine sand. Fine organic debris was generally limited to the initial 4 to 5 inches. The near-surface soils, including topsoil, were hard and dry at the time of our exploration as a result of desiccation.

Colluvial Soils

Typical colluvial soil at this site generally consists of brown silt with some clay and brown clayey silt. This soil was typically soft and moist at the date of our exploration. These soils are prone to downslope creep and shallow sliding in the upper 4 to 6 feet of slopes steeper than 30 percent.

Catastrophic Flood Deposits

The catastrophic flood deposit at the consisted of light brown to tan micaceous silt with some to traces of clay and occasionally very fine sand. This soil was typically stiff to very stiff and moist to damp, or dry at depth.

Soil Moisture and Groundwater

At the time of out site investigation during mid-December, the near-surface soils of the site were generally moist in the upper 5 to 6 feet but lost moisture with increased depth so that it was not uncommon for the silt soil to be dry and powdery at depths of 9 to 10 feet. No groundwater was encountered in any of the exploratory test pits.

Project No. 05-9541
Tamarisk Development

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed residential development is geotechnically feasible provided our recommendations are followed during final design and construction. The proposed lots are outside of any areas of soil creep or shallow sliding. Spread foundations are expected to be appropriate for construction of the single-family homes. The upper 4 to 6 feet of the site soils are relatively soft and easily disturbed.

The potential for encountering rock of any size during both shallow and deep site excavations and grading is very low. The potential for encountering shallow or deep groundwater is very low with the exception of in or adjacent to wetland areas. Stripping of topsoil is expected to be minimal, less than 6 to 9 inches in most areas, however large root removal should be expected in the upper two feet of cuts.

The existing topography shows little signs of slope instability with the exception of the steep side slopes within the incised creek drainages. Deformed tree trunks and pistol-butt root masses are evidence of rapid creep on the steep slopes above drainages. Benching on these same slopes give clear evidence of shallow soil slumping; however, no deep-seated landslides appear to have occurred during the recent past. Downslope creep and shallow sliding appears to be limited to the upper 4 to 6 feet on slopes steeper than 30 percent. Tree clearing on steep slopes is not recommended because trees maintain stable slopes and remove excess moisture.

Soil erosion on steep slopes, once initiated, appears to progress rapidly in the fine silt soil, forming V-shaped side channels and gullies. The site slopes and soil types are such that the site will be susceptible to erosion and likely slow to grow vegetation after grading. Stripped surface soils should be saved for redistribution over the site. Erosion prevention will require careful planning and protection on fill and cut slopes during earthwork projects. Due to the very fine nature of the site soils, piping along buried drains and utilities could be an issue if groundwater is encountered.

Slope Stability and Setbacks

The steep slopes in the drainages that bisect the property have up to a 42 to 62 percent grade and is densely vegetated with tall Douglas fir trees and under story native plants. Dense vegetation, combined with moderate-strength flood deposted silt soils reduces the likelihood for deep seated landslides; however some small slumping and continued soil creep is likely to occur. The potential for shallow sliding and continued soil creep can be reduced by preventing uncontrolled runoff over the slope and by not allowing placement of fill on or near these slopes. Houses closer than 20 feet horizontal from the top of natural slopes steeper than 40 percent will require further geotechnical review and recommendations. Outside of the drainages, no other areas of potential shallow slope instability were noted at the site.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Inorganic debris should be removed from the site. Organic materials from clearing should be removed from the site or placed as landscape fill in areas not planned for structures. Organic-rich topsoil should be stripped from construction areas of the site or where engineered fill is to be placed. The estimated depth of removal due to organic soils is estimated to be about 9 inches; however, root removal in treed areas is likely to be up to 2 feet. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/ excavation has been performed. Stripped topsoil should be stockpiled only in

designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Once stripping of a particular area is approved, the area must be proofrolled and additional removals performed as necessary. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. We anticipate that the upper 1 foot after stripping may need to be tilled, moisture conditioned and recompacted over a large portion of the site. Where large trees are present, over-excavation and root-picking will be required. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition or over-excavated and replaced with engineered fill, as described below. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill and Grading

All grading for the proposed development should be performed as engineered grading in accordance with Appendix J of the Oregon Structural Specialty Code, (OSSC) with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95% of the maximum dry density determined by AASHTO T99 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Wet Weather Earthwork

The on-site soils are moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;

- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Bales of straw and/or geotextile silt fences and temporary storm water conveyance and storage systems should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

Excavating Conditions and Utility Trenches

We anticipate that on-site soils can be excavated using conventional heavy equipment such as scrapers and trackhoes. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Heath Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing shallow native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. Saturated soils and perched groundwater may be encountered in utility trenches during the wet season.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that trench backfill be compacted to at least 95% of the maximum dry density obtained by Standard Proctor ASTM D698 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Typical Pavement Design

For design purposes, we used an estimated resilient modulus of 6,000 for compacted native soil. Table 1 presents our recommended minimum pavement section for dry weather construction. This design was formulated using the Crushed Base Equivalent method, a traffic index of 4.0, and is in general accordance with flexible pavement design methods prescribed by AASHTO for light-duty pavement with a design life of 20 years.

Table 1 - Recommended Minimum Dry-Weather Pavement Section

Material Layer	Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	91%/ 92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	24 in.	95% of Standard Proctor ASTM T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw bales and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Anticipated Foundations

The subject site is suitable for shallow foundations bearing on competent native soil and/or engineered fill. Foundation design, construction, and setback requirements should conform to the 2000 Oregon One and Two Family Dwelling Specialty Code. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 18 inches below exterior grade. Based on our test pits, adequate bearing soils were generally encountered at a depth of about 4 feet. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story homes. Minimum reinforcement consisting of two, horizontal, No. 4 bars in the footing and one in the stem wall is recommended for footings founded on

medium stiff to stiff soils. Reinforcement is suggested for foundations founded on very stiff to hard native soils or engineered fill.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft^2 for footings bearing on competent, native soil and/or engineered fill. A maximum chimney and column load of 30 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.45, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for construction incorporating raised wood floors and conventional spread footing foundations. If buildings will incorporate basements or slab-on-grade foundations, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Drainage

The site is sloping and well drained. Any retaining wall or perimeter footing drains should consist of 3-inch diameter, perforated, plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining sand and gravel or 1 ½"-3/4" drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. Water collected from the footing drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the foundation drains in order to reduce the potential for clogging. The footing drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building. Footing drains are recommended to prevent detrimental effects of groundwater on retaining walls and foundations, and should not be expected to eliminate all potential sources of water entering a crawlspace or basement. An adequate grade to a low point outlet drain in the crawlspace is required by code. Slabs-on-grade in living spaces should be minimized, where possible.

Seismic Design

Structures should be designed to resist earthquake loading in accordance with the methodology described in section 1615 of the State of Oregon 2004 Structural Specialty Code (OSSC) Amendments to the 2003 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 second period spectral response may be determined from map Figures 1615(1) and 1615(2) of the State of Oregon 2004 Structural Specialty Code (OSSC) or the 2003 National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council. We recommend Site Class D be used for design per the OSSC, Table 1615.1.1. Using this information, the structural engineer can select the

appropriate site coefficient values (F_a and F_v) from Tables 1615.1.2(1) and 1615.1.2(2) of the 2003 IBC to determine the maximum considered earthquake spectral response acceleration for design of the project.

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The native stiff fine-grained silt soils with some clay encountered in the test pits are not considered highly susceptible to damaging liquefaction.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER
14743
OREGON
JAN. 23, 1990
JAMES D. IMBRIE
Exp 6-30-07

JEP

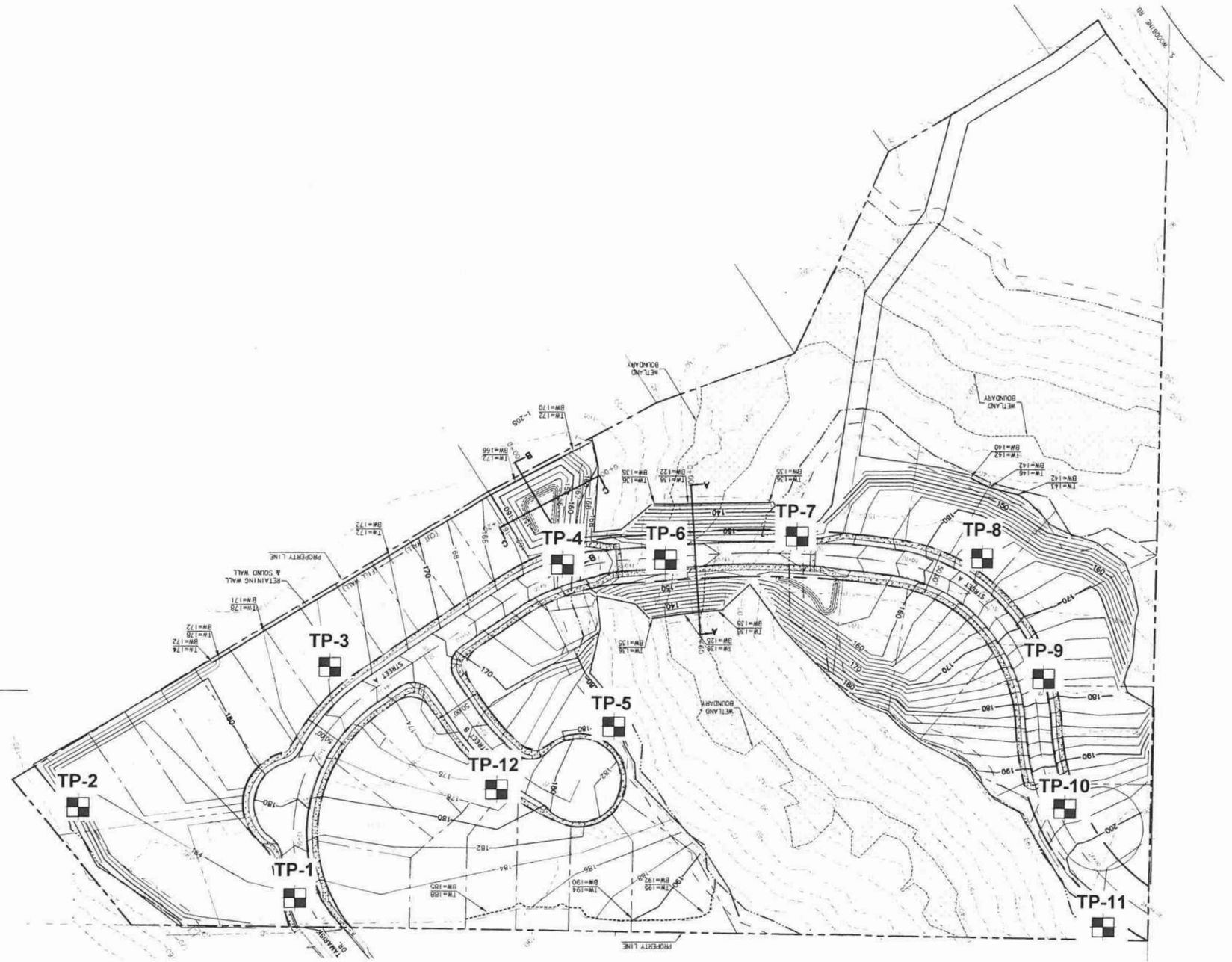
James E. Pyne
Registered Geologist

James D. Imbrie, P.E.
Principal Geotechnical Engineer

Attachments:

Figure 1 – Site and Exploration Plan
Appendix A - Test Pit Logs
Appendix B - Checklist of Recommended Geotechnical Testing and Observation

SITE AND EXPLORATION PLAN



NORTH

0 120

APPROXIMATE SCALE 1"=120'

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: 503.598.8445 Fax: 503.598.8705

Legend

TP-1 Test Pit Designation and Approximate Location

Date: 07/17/06
Drawn by: EJK

Project: Tamarisk Property
West Linn, Oregon
Project No. 05-9541

FIGURE 1

APPENDIX A

LOGS OF EXPLORATORY TEST PITS

Project No. 05-9541
Tamarisk Development

APPENDIX B

CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
3	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
4	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
5	Street Subgrade Compaction (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
6	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
7	AC Compaction (91% (bottom lift) / 92% (top lift) of Rice)	During paving, tested every 200 lineal feet	Soil Technician	
8	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	

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TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-1

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0						Dark brown organic silt, some clay, abundant roots, soft, moist (12" Topsoil - ML).
1	0.75					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	1.5					
2	1.5					
	1.5					Rust brown clayey silt, micaceous. soft, moist (Colluvial Soil - ML).
3	1.5					Below 3.5' with some fine fragments of weathered basalt, stiff to very stiff, moist (Colluvial Soil - ML).
	3.5					
4	4.5					
5						Light tan silt with some clay, micaceous, stiff, less moist than above. (Catastrophic Flood deposits - ML).
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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Portland, Oregon 97224
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TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP- 2

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, fine organic debris, roots, soft, moist (8" Topsoil - ML).
1	2.25					Brown clayey silt, medium stiff to soft, moist (Colluvial Soil - ML).
	1.5					
2	1.75					
	2.25					Rust-brown silt with some clay, stiff, moist (Colluvial Soil - ML).
3	2.0					
	2.0					
4	2.5					
5						Light brown to tan silt, trace to some clay in zones, porous, very fine root fibers throughout, dry and powdery at depth (Catastrophic Flood deposit - ML).
6						
7						
8						
9						
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. **TP- 3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	1.5					Dark brown silt, some clay, abundant roots, fine organic debris, soft, moist (11" Topsoil - ML).
2	1.5 1.75					Brown silt with some clay, some charcoal inclusions, medium stiff, moist (Colluvial Soil - ML).
3	2.5 3.5					At 2.5 feet, zone of black charcoal fragments, some fine, highly weatherred basalt fragments (Colluvial Soil - ML)., stiff below 3 feet.
4	3.0 3.5					
5	3.5					Rust-brown silt with traces of clay and fine sand. stiff, moist (Catastrophic Flood deposit - ML).
6						
7						Light tan silt, micaceous, stiff, damp (Catastrophic Flood deposit - ML).
8						
9						Silt is dry and powdery below 9 feet.
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-4

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, trace of clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Brown clayey silt, medium stiff, moist (Colluvial Soil - ML).
	1.25					
2	2.0					
	1.75					
3	2.0					Brown silt with some clay , medium stiff to stiff, moist (Colluvial Soil - ML).
	1.75					
4	2.0					
	2.0					
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood Deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
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Portland, Oregon 97224
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TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-5

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					
	1.5					Mottled light gray, rust, and brown clayey silt, medium stiff, moist (Disturbed soil located in old dozer trail (Fill - ML).
2	1.5					
	2.5					
3	2.0					Brown silt with some clay; stiff, moist (Colluvial Soil or Disturbed Soil - ML).
	2.0					
4	2.5					
	3.0					Light tan silt, trace of clay, micaceous, stiff damp (Catastrophic Flood deposit - ML).
5	3.25					
6						
7						Test pit terminated at 7 feet, No Groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-6

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5 2.0					Brown clayey silt with charcoal fragments, soft to stiff (Disturbed soil in old dozer trail - ML).
2	3.25 3.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					
4	2.75 2.5 4.0					Light brown to tan silt, some clay, micaceous, stiff to very stiff (Catastrophic Flood deposit - ML).
5	3.75 4.5					
6	4.5					
7						Test pit terminated at 7 feet, No groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-7

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Dark brown silt with fine organic debris, abundant roots, soft, moist (18" Topsoil - ML).
	~~0.5~~					
2	0.75					Brown clayey silt, moist, soft (Colluvial Soil - ML).
	~~0.75~~					
3	0.5					Light tan silt with some clay, soft, very moist (Catastrophic Flood deposit - ML).
	1.25					
4	1.5					
	~~1.5~~					
5						Light tan silt, micaceous, some clay, medium stiff, moist (Catastrophic Flood deposit - ML).
6						
7						
8						
9						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-8

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris and roots, soft, moist (11" Topsoil - ML).
1	1.25					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	1.0					
2	0.75					
	1.0					Brown and light rust mottled clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	2.5					
4	3.5					
	3.0					Light tan micaceous silt, lightly iron-stained in near-horizontal patterns, stiff, damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-9

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Dark gray-brown organic silt, soft, moist (local area of disturbed topsoil - ML).
	0.5					
2	0.5					Rust brown silt with some sand and clay, soft, moist (Colluvial Soil - ML).
	1.0					
3	1.25					
	1.0					Light brown clayey silt, soft, moist (Colluvial Soil - ML).
4	3.0					
	3.5					Light tan micaceous silt with some clay, some light rust mottling, stiff, moist (Catastrophic Flood deposit - ML).
5						
6						
7						Tan micaceous silt with a trace of clay, some light rust mottling, stiff, damp (Catastrophic Flood deposit - ML).
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-10

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0						Dark brown silt, some clay and fine organic debris, soft, moist (9" Topsoil - ML).
1	1.0 1.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	1.25					
	2.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	~~3.5~~					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	3.75					
4	~~2.75~~					
	3.75					Light tan silt, micaceous, very stiff, wet to damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-11

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Brown silt, some clay, soft, moist (7" Topsoil - ML).
1	0.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
	~~1.5~~					
2	1.0					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	~~0.5~~					
3	2.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
	4.0					
4						Brown silt with a trace of clay, micaceous, stiff , moist (Catastrophic Flood deposit - ML).
5						Light tan micaceous silt, stiff, damp (Catastrophic Flood deposit - ML).
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

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TEST PIT LOG

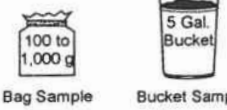
Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-12

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, organic, roots, soft, moist (9" Topsoil - ML).
1	3.5					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	0.75					
2	2.5					Brown silt with some fine sand, trace of clay , stiff, moist (Colluvial Soil - ML).
	2.75					
3	1.0					Brown silt with some clay, medium stiff, moist (Colluvial Soil - ML).
	1.5					
4	3.5					
	4.5					Light rust-brown silt with some clay, stiff, moist (Catastrophic Flood deposit - ML).
5						
						Light tan micaceous silt, stiff, moist to damp (Catastrophic Flood deposit - ML).
6						
7						
8						
9						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND



Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1138	Cedar-24	Type 4	Remove
1140	Cedar-10	Type 4	Save
1141	Cedar-8	Type 4	Save
1142	Cedar-30	Type 4	Save
1143	Cedar-18	Type 4	Remove
1144	Maple-24	Type 4	Remove
1145	Maple-9x6-10	Type 4	Save
1146	Maple-12	Type 4	Remove
1147	Maple-3x6-12	Type 4	Save
1148	Alder-2x8-10	Type 4	Remove
1149	Elm-2x8	Type 4	Remove
1150	Cedar-24	Type 4	Remove
1151	Maple-8x6-8	Type 4	Remove
1152	Cedar-18	Type 4	Remove
1153	Maple-24	Type 4	Remove
1154	Maple-2x6-8	Type 4	Remove
1155	Maple-5x6-10	Type 4	Remove
1156	Cedar-10	Type 4	Remove
1157	Cedar-16	Type 4	Remove
1158	Cedar-36	Type 4	Remove
1159	Maple-8	Type 4	Remove
1160	Fir-6	Type 4	Remove
1161	Alder-6	Type 4	Remove
1162	Alder-14	Type 4	Remove
1163	Alder-10	Type 4	Remove
1164	Alder-8	Type 4	Remove
1165	Alder-8	Type 4	Remove
1166	Maple-14	Type 4	Remove
1167	Maple-12	Type 4	Remove
1168	Maple-10	Type 4	Remove
1169	Elm-8	Type 4	Remove
1170	Fir-10	Type 4	Remove
1171	Fir-8	Type 4	Remove
1173	Maple-18	Type 4	Remove
1174	Maple-3x6-12	Type 4	Remove
1175	Maple-5x6-8	Type 4	Remove
1178	Maple-24	Type 4	Remove
1179	Maple-6	Type 4	Remove
1180	Fir-12	Type 4	Remove
1181	Maple-27	Type 1	Save
1182	Maple-18	Type 1	Save
1183	Cedar-12001	Type 1	Save
1184	Maple-18	Type 1	Save
1185	Fir-8	Type 1	Save
1186	Fir-8	Type 1	Save
1187	Maple-2x6	Type 1	Save
1188	Fir-8	Type 1	Save
1189	Maple-2x6-15	Type 1	Save
1190	Fir-8	Type 1	Save
1191	Maple-24	Type 1	Save
1192	Fir-10	Type 1	Save
1193	Fir-8	Type 1	Save
1194	Maple-2x30	Type 1	Save
1195	Fir-6	Type 1	Save
1196	Fir-6	Type 1	Save
1197	Maple-6	Type 4	Remove
1198	Maple-2x10-12	Type 1	Save
1199	Fir-8	Type 1	Save
1200	Fir-6	Type 1	Save
1201	Fir-12	Type 1	Save
1202	Maple-18	Type 1	Save
1203	Fir-18	Type 1	Remove
1204	Fir-18	Type 4	Remove
1205	Fir-15	Type 4	Remove
1206	Fir-6	Type 1	Remove
1207	Maple-18	Type 1	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1208	Maple-2x12	Type 1	Save
1209	Maple-24	Type 1	Save
1210	Fir-8	Type 1	Save
1212	Cedar-30	Type 4	Remove
1213	Maple-4x6-12	Type 4	Remove
1214	Maple-5x6-8	Type 4	Remove
1215	Maple-6	Type 4	Remove
1216	Cedar-24	Type 4	Remove
1217	Cedar-2x10-15	Type 4	Remove
1236	Maple-7x6-10	Type 4	Remove
1237	Alder-12	Type 4	Remove
1238	Fir-24	Type 4	Remove
1239	Cedar-24	Type 4	Remove
1240	Maple-5x6-8	Type 4	Remove
1241	Maple-8x6-12	Type 4	Remove
1242	Cedar-18	Type 4	Remove
1243	Maple-8x6-8	Type 4	Remove
1244	Maple-6	Type 4	Remove
1245	Maple-3x8-12	Type 4	Remove
1246	Maple-6x6-10	Type 4	Remove
1247	Maple-2x6-8	Type 4	Remove
1248	Maple-8	Type 4	Remove
1249	Maple-8	Type 4	Remove
1251	Maple-6x6-8	Type 4	Remove
1257	Maple-30	Type 1	Save
1261	Maple-10	Type 4	Save
1262	Maple-5x10-20	Type 4	Save
1263	Maple-10	Type 4	Save
1264	Alder-10	Type 4	Remove
1265	Alder-12	Type 4	Save
1266	Fir-6	Type 4	Remove
1267	Alder-2x6	Type 4	Remove
1268	Maple-8	Type 4	Remove
1269	Maple-6x6-10	Type 4	Remove
1270	Maple-6	Type 4	Remove
1271	Maple-2x6-8	Type 4	Remove
1274	Maple-2x8-10	Type 4	Remove
1275	Maple-8	Type 4	Remove
1276	Maple-6x6-12	Type 4	Remove
1277	Maple-6x6-10	Type 4	Remove
1278	Maple-4x8-10	Type 4	Remove
1280	Maple-8	Type 4	Remove
1281	Maple-10x6-12	Type 4	Remove
1282	Maple-9x6-14	Type 4	Remove
1283	Maple-3x6-8	Type 4	Remove
1284	Maple-2x6	Type 4	Remove
1285	Fir-30	Type 4	Remove
1286	Maple-30	Type 4	Remove
1306	Maple-14	Type 4	Remove
1307	Maple-18	Type 4	Remove
1308	Maple-14	Type 4	Remove
1310	Maple-14	Type 4	Remove
1311	Cedar-18	Type 4	Remove
1312	Cedar-26	Type 4	Remove
1313	Maple-24	Type 4	Remove
1314	Maple-9x6-12	Type 4	Remove
1315	Maple-9x6-8	Type 4	Remove
1316	Alder-5x6-10	Type 4	Remove
1317	Cedar-12	Type 4	Remove
1318	Maple-7x6-8	Type 4	Remove
1319	Maple-10x6-8	Type 4	Remove
1320	Maple-5x6-10	Type 4	Remove
1321	Maple-8x6-10	Type 4	Remove
1322	Maple-10	Type 4	Remove
1323	Maple-5x6	Type 4	Remove
1324	Maple-12x6-8	Type 4	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1325	Maple-10x6-10	Type 4	Remove
1326	Cedar-36	Type 4	Remove
1327	Maple-6	Type 4	Remove
1328	Maple-6	Type 4	Remove
1329	Maple-2x8-10	Type 4	Remove
1330	Maple-6	Type 4	Remove
1331	Maple-10x6-10	Type 4	Remove
1332	Alder-12	Type 4	Remove
1333	Alder-8	Type 4	Remove
1334	Fir-8	Type 4	Remove
1335	Fir-8	Type 4	Remove
1336	Alder-8	Type 4	Remove
1337	Fir-8	Type 4	Remove
1338	Fir-10	Type 4	Remove
1339	Fir-8	Type 4	Remove
1340	Fir-10	Type 4	Remove
1341	Maple-10	Type 4	Remove
1342	Maple-6	Type 4	Remove
1343	Maple-6	Type 4	Remove
1344	Alder-12	Type 4	Remove
1345	Alder-10	Type 4	Remove
1346	Alder-6	Type 4	Remove
1347	Alder-3x6-8	Type 4	Remove
1348	Alder-2x10-12	Type 4	Remove
1349	Maple-12	Type 4	Remove
1350	Fir-6	Type 4	Remove
1351	Fir-10	Type 4	Remove
1352	Fir-6	Type 4	Remove
1353	Fir-6	Type 4	Remove
1354	Alder-8	Type 4	Remove
1355	Fir-2x6-8	Type 4	Remove
1356	Alder-6	Type 4	Remove
1357	Fir-6	Type 4	Remove
1358	Fir-8	Type 4	Remove
1359	Fir-8	Type 4	Remove
1360	Maple-2x10-18	Type 4	Remove
1361	Maple-6x6-8	Type 4	Remove
1362	Cedar-18	Type 4	Remove
1363	Maple-5x6-8	Type 4	Remove
1364	Maple-8x6-8	Type 4	Remove
1365	Maple-2x6	Type 4	Remove
1366	Cedar-36	Type 4	Remove
1367	Alder-2x10	Type 4	Remove
1368	Maple-14	Type 4	Remove
1369	Maple-5x6-10	Type 4	Remove
1370	Maple-8x6-8	Type 4	Remove
1371	Maple-6x6	Type 4	Remove
1372	Maple-14	Type 4	Remove
1373	Maple-7x6-12	Type 4	Remove
1374	Cedar-30	Type 4	Remove
1375	Maple-4x8-10	Type 4	Remove
1376	Maple-10x6-8	Type 4	Remove
1377	Maple-10x6-8	Type 4	Remove
1378	Maple-7x6-8	Type 4	Remove
1379	Maple-6	Type 4	Remove
1380	Maple-8	Type 4	Remove
1381	Maple-2x6-8	Type 4	Remove
1382	Maple-2x6	Type 4	Remove
1383	Maple-6	Type 4	Remove
1384	Maple-14	Type 4	Remove
1385	Hawthorne-10	Type 4	Remove
1386	Hawthorne-10	Type 4	Remove
1387	Hawthorne-8	Type 4	Remove
1388	Hawthorne-6	Type 4	Remove
1389	Hawthorne-6	Type 4	Remove
1390	Hawthorne-8	Type 4	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1391	Hawthorne-6	Type 4	Remove
1392	Cedar-18	Type 4	Remove
1393	Hawthorne-8	Type 4	Remove
1394	Hawthorne-6	Type 4	Remove
1395	Maple-2x6-8	Type 4	Remove
1396	Hawthorne-10	Type 4	Remove
1397	Cedar-18	Type 4	Remove
1398	Maple-8	Type 4	Remove
1399	Maple-10	Type 4	Remove
1400	Cottonwood-18	Type 4	Remove
1401	Cottonwood-3x14-18	Type 4	Remove
1402	Maple-2x8-10	Type 4	Remove
1403	Alder-10	Type 4	Remove
1404	Cedar-30	Type 4	Remove
1405	Cedar-26	Type 4	Remove
1406	Maple-6x6-8	Type 4	Remove
1407	Maple-4x6-8	Type 4	Remove
1408	Maple-12	Type 4	Remove
1409	Maple-3x6-14	Type 4	Remove
1410	Maple-6	Type 4	Remove
1411	Maple-10	Type 4	Remove
1412	Maple-6	Type 4	Remove
1413	Maple-6	Type 4	Remove
1414	Maple-8	Type 4	Remove
1415	Maple-8	Type 4	Remove
1416	Maple-8	Type 4	Remove
1417	Maple-10	Type 4	Remove
1418	Cedar-18	Type 4	Remove
1419	Maple-10	Type 4	Remove
1420	Maple-8	Type 4	Remove
1421	Cedar-24	Type 4	Remove
1422	Fir-10	Type 4	Remove
1423	Fir-6	Type 4	Remove
1424	Fir-8	Type 4	Remove
1425	Fir-10	Type 4	Remove
1426	Fir-6	Type 4	Remove
1427	Fir-10	Type 4	Remove
1428	Fir-8	Type 4	Remove
1429	Fir-8	Type 4	Remove
1430	Maple-5x6-8	Type 4	Remove
1431	Maple-10x6-10	Type 4	Remove
1440	Maple-3x6-8	Type 4	Remove
1441	Maple-4x6-8	Type 4	Remove
1442	Maple-16	Type 4	Remove
1443	Alder-8	Type 4	Remove
1444	Alder-12	Type 4	Remove
1445	Maple-16	Type 4	Remove
1446	Maple-8	Type 4	Remove
1447	Alder-12	Type 4	Remove
1448	Alder-2x8-10	Type 4	Remove
1449	Alder-8	Type 4	Remove
1450	Maple-6x6-8	Type 4	Remove
1451	Maple-2x6-8	Type 4	Remove
1452	Maple-2x6-8	Type 4	Remove
1453	Maple-10	Type 4	Remove
1454	Cedar-28	Type 4	Remove
1455	Cedar-24	Type 4	Remove
1456	Maple-6x6-8	Type 4	Remove
1457	Maple-6	Type 4	Remove
1458	Maple-12	Type 4	Remove
1459	Fir-6	Type 4	Remove
1460	Maple-6	Type 4	Remove
1461	Fir-6	Type 4	Remove
1462	Maple-6	Type 4	Remove
1463	Maple-8	Type 4	Remove
1464	Maple-3x6	Type 4	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1465	Maple-9x6-10	Type 4	Remove
1466	Maple-8	Type 4	Remove
1467	Alder-10	Type 4	Remove
1468	Maple-18	Type 4	Remove
1469	Maple-6x6-8	Type 4	Remove
1471	Maple-5x6-12	Type 4	Remove
1472	Alder-12	Type 4	Remove
1473	Maple-18	Type 4	Remove
1474	Maple-10	Type 4	Remove
1478	Maple-4x6-8	Type 4	Remove
1479	Maple-5x6-10	Type 4	Remove
1480	Alder-12	Type 4	Remove
1481	Alder-12	Type 4	Remove
1482	Alder-2x10	Type 4	Remove
1483	Alder-10	Type 4	Remove
1484	Cedar-18	Type 4	Remove
1485	Maple-10	Type 4	Remove
1486	Maple-12	Type 4	Remove
1487	Alder-16	Type 4	Remove
1488	Alder-8	Type 4	Remove
1489	Alder-8	Type 4	Remove
1490	Alder-8	Type 4	Remove
1491	Maple-8	Type 4	Remove
1492	Alder-6	Type 4	Remove
1493	Alder-10	Type 4	Remove
1494	Alder-10	Type 4	Remove
1495	Alder-8	Type 4	Remove
1496	Alder-6	Type 4	Remove
1497	Alder-12	Type 4	Remove
1498	Alder-6	Type 4	Remove
1499	Maple-3x6-8	Type 4	Remove
1500	Alder-6	Type 4	Remove
1501	Alder-2x8-10	Type 4	Remove
1502	Maple-18	Type 4	Remove
1503	Cedar-18	Type 4	Remove
1504	Cedar-12	Type 4	Remove
1505	Maple-6	Type 4	Remove
1506	Maple-8	Type 4	Remove
1507	Alder-6	Type 4	Remove
1508	Cottonwood-18	Type 4	Remove
1509	Cottonwood-18	Type 4	Remove
1510	Cottonwood-18	Type 4	Remove
1511	Maple-6x6-8	Type 4	Remove
1512	Maple-12x6-8	Type 4	Remove
1513	Maple-2x6-8	Type 4	Remove
1514	Maple-5x6-8	Type 4	Remove
1515	Alder-8	Type 4	Remove
1516	Maple-3x6-8	Type 4	Remove
1517	Maple-6	Type 4	Remove
1518	Maple-8	Type 4	Remove
1519	Maple-8	Type 4	Remove
1520	Alder-14	Type 4	Remove
1521	Maple-2x6	Type 4	Remove
1522	Alder-12	Type 4	Remove
1523	Alder-10	Type 4	Remove
1524	Alder-8	Type 4	Remove
1525	Cottonwood-14	Type 4	Remove
1526	Alder-2x12	Type 4	Remove
1527	Alder-2x12	Type 4	Remove
1528	Cedar-18	Type 4	Remove
1529	Maple-8	Type 4	Remove
1530	Alder-12	Type 4	Remove
1531	Maple-4x6-10	Type 4	Remove
1533	Maple-2x12-18	Type 4	Remove
1534	Maple-18	Type 4	Remove
1535	Maple-18	Type 4	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
1536	Maple-18	Type 4	Remove
1537	Alder-12	Type 4	Remove
1538	Alder-8	Type 4	Remove
1539	Alder-10	Type 4	Remove
1540	Alder-8	Type 4	Remove
1541	Alder-8	Type 4	Remove
1542	Maple-5x6	Type 4	Remove
1543	Alder-10	Type 4	Remove
1544	Alder-6	Type 4	Remove
1545	Alder-14	Type 4	Remove
1546	Alder-14	Type 4	Remove
1547	Alder-12	Type 4	Remove
1548	Maple-10	Type 4	Remove
1549	Alder-2x8	Type 4	Remove
1550	Maple-14	Type 4	Remove
1551	Fir-18	Type 4	Remove
1552	Fir-18	Type 4	Remove
1553	Maple-5x6	Type 4	Remove
1554	Maple-2x6	Type 4	Remove
1555	Alder-14	Type 4	Remove
1556	Alder-2x10-12	Type 4	Remove
1557	Alder-8	Type 4	Remove
1558	Cedar-24	Type 4	Remove
1559	Alder-10	Type 4	Remove
1560	Alder-10	Type 4	Remove
1561	Alder-3x6-8	Type 4	Remove
1562	Alder-12	Type 4	Remove
1563	Alder-14	Type 4	Remove
1564	Alder-6	Type 4	Remove
1565	Alder-6	Type 4	Remove
1566	Alder-10	Type 4	Remove
1567	Alder-8	Type 4	Remove
1568	Alder-8	Type 4	Remove
1569	Maple-2x6	Type 4	Remove
1570	Alder-12	Type 4	Remove
1571	Alder-10	Type 4	Remove
1572	Alder-14	Type 4	Remove
1573	Maple-8	Type 4	Remove
1574	Alder-6	Type 4	Remove
1575	Maple-2x6-8	Type 4	Remove
1576	Maple-5x6-8	Type 4	Remove
1577	Maple-7x6-8	Type 2	Remove
1578	Alder-8	Type 4	Remove
1579	Alder-10	Type 4	Remove
1580	Cedar-30	Type 4	Remove
1581	Maple-4x6-8	Type 2	Remove
1582	Alder-8	Type 4	Remove
1583	Alder-4x6-8	Type 4	Remove
1584	Alder-2x6-10	Type 4	Remove
1585	Maple-2x6-10	Type 4	Remove
1586	Alder-8	Type 4	Remove
1587	Maple-3x6	Type 4	Remove
1588	Alder-6	Type 4	Remove
1589	Maple-8	Type 4	Remove
1590	Maple-6x6-10	Type 4	Remove
1591	Maple-8	Type 4	Remove
1592	Elm-10	Type 4	Remove
1593	Alder-6	Type 4	Remove
1594	Cedar-18	Type 4	Remove
1595	Maple-12	Type 4	Remove
1596	Maple-2x8-10	Type 4	Remove
1610	Alder-6	Type 4	Remove
1611	Alder-2x10-12	Type 4	Remove
1612	Maple-15x6-10	Type 4	Remove
1613	Maple-2x6-8	Type 4	Remove
1614	Maple-20	Type 4	Remove

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Tree Number	Description	Land Type	
1617	Fir-12	Type 4	Remove
1618	Maple-20	Type 4	Remove
1619	Maple-20	Type 4	Remove
1620	Maple-18	Type 4	Remove
1621	Fir-8	Type 4	Remove
1622	Fir-8	Type 4	Remove
1623	Alder-16	Type 4	Remove
1624	Alder-14	Type 4	Remove
1625	Fir-6	Type 4	Remove
1626	Alder-14	Type 4	Remove
1627	Alder-10	Type 4	Remove
1628	Alder-6	Type 4	Remove
1629	Alder-8	Type 4	Remove
1630	Alder-8	Type 4	Remove
1631	Fir-8	Type 4	Remove
1632	Fir-8	Type 4	Remove
1633	Fir-6	Type 4	Remove
1634	Alder-5x10	Type 4	Remove
1635	Alder-2x6-12	Type 4	Remove
1636	Alder-8	Type 4	Remove
1637	Alder-12	Type 4	Remove
1638	Alder-8	Type 4	Remove
1639	Alder-12	Type 4	Remove
1640	Alder-8	Type 4	Remove
1641	Alder-10	Type 4	Remove
1642	Alder-6	Type 4	Remove
1643	Alder-8	Type 4	Remove
1644	Alder-10	Type 4	Remove
1645	Alder-10	Type 4	Remove
1646	Alder-10	Type 4	Remove
1649	Cedar-36	Type 4	Remove
1650	Maple-8	Type 4	Remove
1651	Cedar-14	Type 4	Save
1652	Maple-8x6-10	Type 4	Save
1667	Maple-5x6-10	Type 4	Remove
1668	Maple-7x6-8	Type 4	Remove
1669	Maple-6x6-8	Type 4	Remove
1670	Maple-4x6-8	Type 4	Remove
1671	Maple-4x6-10	Type 4	Remove
1672	Alder-18	Type 4	Remove
1673	Alder-12	Type 4	Remove
1674	Alder-10	Type 4	Remove
1675	Alder-2x6-8	Type 4	Remove
1676	Alder-10	Type 4	Remove
1677	Alder-12	Type 4	Remove
1678	Alder-10	Type 4	Remove
1679	Alder-8	Type 4	Remove
1680	Maple-2x6-8	Type 4	Remove
1681	Maple-18	Type 4	Remove
1682	Maple-24	Type 4	Save
1683	Maple-12	Type 4	Save
1684	Maple-18	Type 4	Save
1685	Maple-30	Type 4	Save
1686	Maple-14	Type 4	Save
1687	Maple-18	Type 4	Save
1688	Maple-18	Type 4	Save
1689	Maple-3x6	Type 4	Remove
1690	Alder-8	Type 4	Save
1691	Maple-5x6-8	Type 4	Remove
1692	Maple-6	Type 4	Remove
1693	Maple-18	Type 4	Save
1694	Maple-10	Type 4	Save
1695	Maple-10	Type 4	Save
1696	Cedar-30	Type 4	Save
1697	Maple-24	Type 4	Save
1698	Maple-4x14-30	Type 4	Save

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Tree Number	Description	Land Type	
1699	Maple-20	Type 4	Save
1700	Maple-12	Type 4	Remove
1701	Maple-18	Type 4	Remove
1702	Maple-20	Type 4	Remove
1703	Maple-10	Type 4	Remove
1704	Alder-14	Type 4	Remove
1705	Alder-10	Type 4	Remove
1706	Alder-6	Type 4	Remove
1707	Alder-12	Type 4	Remove
1708	Alder-6	Type 4	Remove
1709	Alder-10	Type 4	Remove
1710	Alder-12	Type 4	Remove
1711	Alder-10	Type 4	Remove
1712	Alder-12	Type 4	Remove
1713	Alder-14	Type 4	Remove
1714	Alder-6	Type 4	Remove
1715	Alder-10	Type 4	Remove
1716	Alder-14	Type 4	Remove
1717	Cedar-14	Type 4	Remove
1718	Alder-6	Type 4	Remove
1719	Alder-10	Type 4	Remove
1720	Alder-6	Type 4	Remove
1721	Alder-2x8	Type 4	Remove
1722	Alder-14	Type 3	Remove
1723	Maple-2x6	Type 4	Remove
1724	Maple-4x8-14	Type 4	Remove
1725	Alder-8	Type 4	Remove
1726	Alder-2x10-14	Type 4	Remove
1727	Alder-12	Type 4	Remove
1728	Alder-10	Type 4	Remove
1729	Alder-14	Type 4	Remove
1730	Alder-14	Type 4	Remove
1731	Alder-10	Type 4	Remove
1732	Alder-10	Type 4	Remove
1733	Alder-12	Type 4	Remove
1734	Alder-6	Type 4	Remove
1735	Alder-10	Type 4	Remove
1736	Alder-8	Type 4	Remove
1737	Alder-8	Type 4	Remove
1738	Alder-10	Type 4	Remove
1739	Alder-6	Type 4	Remove
1740	Maple-2x6	Type 4	Remove
1741	Maple-6	Type 4	Remove
1742	Maple-8	Type 4	Remove
1743	Alder-8	Type 4	Remove
1744	Alder-10	Type 4	Remove
1745	Alder-8	Type 4	Remove
1746	Alder-10	Type 4	Remove
1747	Alder-12	Type 4	Remove
1748	Alder-12	Type 4	Remove
1749	Alder-8	Type 4	Remove
1750	Alder-6	Type 4	Remove
1751	Alder-8	Type 4	Remove
1752	Alder-8	Type 4	Remove
1753	Alder-8	Type 4	Remove
1754	Alder-6	Type 4	Remove
1755	Maple-12	Type 4	Remove
1756	Alder-5x6-16	Type 4	Remove
1757	Maple-24	Type 4	Remove
1758	Alder-10	Type 4	Remove
1759	Alder-2x12	Type 4	Remove
1760	Alder-14	Type 4	Remove
1761	Alder-8	Type 4	Remove
1762	Alder-8	Type 4	Remove
1763	Alder-14	Type 4	Remove
1764	Alder-6	Type 4	Remove

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Tree Number	Description	Land Type	
1765	Alder-6	Type 4	Remove
1766	Alder-8	Type 4	Remove
1767	Alder-14	Type 4	Remove
1768	Alder-12	Type 4	Remove
1769	Alder-3x12	Type 4	Remove
1770	Alder-8	Type 4	Remove
1771	Alder-6	Type 4	Remove
1772	Alder-6	Type 4	Remove
1773	Alder-10	Type 4	Remove
1774	Alder-12	Type 4	Remove
1775	Alder-4x6-14	Type 4	Remove
1776	Alder-14	Type 4	Remove
1777	Alder-8	Type 4	Remove
1778	Alder-8	Type 4	Remove
1779	Alder-6	Type 4	Remove
1780	Alder-2x8	Type 4	Remove
1781	Alder-6	Type 4	Remove
1782	Alder-2x8	Type 3	Remove
1783	Alder-2x6-8	Type 3	Remove
1784	Alder-10	Type 2	Remove
1785	Alder-8	Type 3	Remove
1786	Alder-10	Type 4	Remove
1787	Alder-6	Type 3	Remove
1788	Alder-8	Type 4	Remove
1789	Alder-6	Type 3	Remove
1790	Alder-14	Type 3	Remove
1791	Alder-12	Type 3	Remove
1792	Alder-4x6-8	Type 3	Remove
1793	Alder-10	Type 4	Remove
1794	Alder-8	Type 4	Remove
1795	Cedar-24	Type 4	Remove
1796	Alder-8	Type 3	Remove
1797	Alder-12	Type 3	Remove
1798	Maple-18	Type 4	Remove
1821	Maple-2X8	Type 3	Save
1822	Maple-8	Type 3	Save
1823	Maple-4X6-8	Type 3	Save
1824	Maple-8	Type 3	Save
1825	Maple-8	Type 2	Remove
1826	Maple-8	Type 2	Remove
1827	Alder-6	Type 3	Remove
1828	Alder-6	Type 3	Remove
1829	Alder-2X6-8	Type 3	Save
1830	Alder-8	Type 3	Save
1831	Cottonwood-16	Type 3	Remove
1832	Maple-2X6	Type 3	Save
1833	Maple-3X6-8	Type 4	Save
1834	Maple-2X6-10	Type 2	Save
1835	Cedar-24	Type 2	Save
1836	Cedar-14	Type 4	Save
1837	Maple-30	Type 1	Save
1838	Alder-8	Type 2	Remove
1839	Cedar-20	Type 1	Save
1840	Maple-30	Type 1	Save
1841	Cedar-10	Type 1	Save
1842	Cedar-12	Type 1	Save
1844	Alder-8	Type 2	Save
1845	Alder-6	Type 2	Save
1858	Cottonwood-14	Type 1	Save
1859	Cedar-24	Type 1	Save
1860	Cottonwood-3X10-14	Type 1	Save
1861	Alder-6	Type 1	Save
1862	Cottonwood-16	Type 1	Save
1863	Cottonwood-16	Type 1	Save
1864	Cottonwood-16	Type 1	Save
1865	Maple-2X6-12	Type 1	Save

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Tree Number	Description	Land Type	
1866	Cottonwood-16	Type 1	Save
1867	Cottonwood-10	Type 1	Save
1868	Cottonwood-26	Type 1	Save
1869	Cottonwood-12	Type 1	Save
1870	Maple-2X8	Type 1	Save
1872	Maple-4X6-10	Type 1	Save
1873	Maple-14	Type 1	Remove
1875	Maple-5X6	Type 2	Remove
1876	Cedar-6	Type 4	Remove
1877	Maple-12	Type 4	Remove
1878	Cottonwood-2X10-18	Type 4	Remove
1879	Cedar-38	Type 4	Remove
1880	Fir-14	Type 4	Save
1881	Fir-10	Type 4	Save
1882	Fir-10	Type 4	Save
1883	Fir-8	Type 4	Save
1884	Maple-2X18-36	Type 3	Save
1885	Maple-3X6-18	Type 3	Save
1886	Fir-40	Type 3	Save
1887	Fir-6	Type 4	Remove
1888	Maple-2X14-24	Type 3	Remove
1889	Cedar-12	Type 3	Remove
1890	Alder-2X6-8	Type 4	Remove
1891	Alder-3X6-8	Type 3	Remove
1892	Alder-6	Type 3	Remove
1893	Alder-2X6	Type 3	Remove
1894	Alder-8	Type 3	Remove
1895	Maple-16	Type 2	Remove
1896	Cottonwood-14	Type 2	Remove
1897	Cottonwood-6	Type 2	Remove
1898	Cottonwood-10	Type 2	Remove
1899	Maple-16	Type 2	Remove
1905	Maple-12	Type 1	Save
1906	Maple-12	Type 1	Save
1907	Cedar-30	Type 1	Save
1908	Maple-26	Type 1	Save
1909	Maple-10	Type 3	Save
1910	Maple-20	Type 3	Save
1919	Alder-2X6-10	Type 1	Save
1920	Maple-10	Type 1	Save
1921	Maple-2X14	Type 1	Save
1922	Maple-4X4-6	Type 1	Save
1923	Maple-6	Type 1	Save
1924	Maple-16	Type 1	Save
1925	Maple-36	Type 1	Save
1926	Maple-4X6-8	Type 1	Save
1932	Alder-8	Type 1	Save
1936	Maple-5X12-18	Type 1	Save
1937	Maple-3X6-8	Type 1	Save
1938	Maple-8	Type 1	Save
1939	Maple-14	Type 1	Save
1941	Maple-4X8-12	Type 1	Save
1942	Maple-3X6	Type 1	Save
1943	Cedar-8	Type 1	Save
1944	Cedar-2X10-24	Type 1	Save
1945	Maple-40	Type 1	Save
1950	Alder-8	Type 1	Save
1951	Maple-12	Type 1	Save
1952	Maple-2X18-22	Type 1	Save
1953	Cedar-12	Type 1	Save
1954	Maple-16	Type 1	Save
1955	Maple-12	Type 1	Save
1956	Maple-8	Type 1	Save
1957	Cedar-10	Type 1	Save
1958	Cedar-28	Type 1	Save
1959	Maple-12	Type 1	Save

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Tree Number	Description	Land Type	
1960	Maple-16	Type 1	Save
1961	Maple-10	Type 1	Save
1962	Cedar-28	Type 1	Save
1963	Cedar-18	Type 1	Save
1964	Maple-10	Type 1	Save
1965	Maple-18	Type 1	Save
1966	Maple-10	Type 1	Save
1967	Maple-2X6-14	Type 1	Save
1968	Maple-12	Type 1	Save
1969	Cedar-18	Type 1	Save
1970	Cedar-10	Type 1	Save
1971	Maple-15	Type 1	Save
1972	Maple-20	Type 1	Save
2084	Alder-8	Type 2	Remove
2085	Alder-10	Type 2	Remove
2086	Alder-10	Type 2	Remove
2087	Alder-12	Type 2	Remove
2101	Maple-12	Type 4	Remove
2102	Maple-8	Type 1	Save
2103	Maple-2X6	Type 1	Save
2104	Maple-16	Type 1	Save
2105	Maple-8X8-14	Type 1	Save
2106	Maple-12	Type 1	Save
2107	Maple-3X8-12	Type 1	Save
2108	Maple-5X8-12	Type 1	Remove
2109	Maple-4X8-14	Type 1	Remove
2110	Maple-2X8-12	Type 1	Remove
2111	Maple-10	Type 3	Remove
2112	Maple-2X8-10	Type 3	Remove
2113	Maple-8	Type 3	Remove
2114	Maple-2X6	Type 1	Remove
2115	Maple-5X6-10	Type 1	Remove
2116	Maple-3X8-12	Type 1	Remove
2117	Maple-24	Type 1	Remove
2118	Maple-12	Type 1	Remove
2119	Maple-22	Type 1	Remove
2120	Maple-6X6-8	Type 1	Remove
2121	Maple-8	Type 1	Remove
2122	Cedar-16	Type 2	Remove
2123	Maple-16	Type 1	Remove
2124	Maple-2X6	Type 1	Remove
2125	Maple-2X6-8	Type 1	Remove
2126	Maple-8	Type 1	Remove
2127	Maple-10	Type 1	Remove
2128	Maple-2X6-10	Type 1	Remove
2129	Maple-3X6-14	Type 1	Save
2130	Maple-4X6-10	Type 1	Save
2131	Maple-3X10-12	Type 1	Save
2132	Maple-10	Type 1	Save
2133	Maple-10	Type 1	Save
2134	Maple-10	Type 1	Save
2137	Maple-8	Type 1	Save
2138	Maple-3X6-8	Type 1	Save
2140	Maple-12	Type 1	Save
2141	Maple-12	Type 1	Save
2142	Maple-14	Type 1	Save
2143	Maple-8	Type 1	Save
2144	Maple-6X6-12	Type 1	Save
2207	Maple-8	Type 1	Remove
2209	Alder-10	Type 1	Remove
2210	Alder-8	Type 1	Remove
2213	Alder-8	Type 1	Remove
2214	Alder-6	Type 1	Remove
2215	Alder-6	Type 1	Remove
2217	Maple-5X8	Type 1	Remove
2219	Alder-10	Type 1	Save

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Tree Number	Description	Land Type	
2221	Maple-3X6-12	Type 1	Remove
2223	Maple-8	Type 1	Save
2224	Maple-3X6-12	Type 1	Save
2225	Maple-6	Type 1	Save
2226	Maple-2X6-8	Type 1	Save
2227	Maple-3X6	Type 1	Save
2228	Maple-3X6	Type 1	Save
2229	Maple-8	Type 1	Save
2230	Maple-12	Type 1	Save
2231	Maple-2X6	Type 1	Save
2232	Maple-6	Type 1	Save
2234	Maple-3X8	Type 1	Save
2235	Maple-6	Type 1	Save
2236	Maple-3X8	Type 1	Save
2237	Maple-2X6-8	Type 1	Save
2238	Maple-6	Type 1	Save
2245	Maple-3X8	Type 1	Remove
2246	Maple-5X6	Type 1	Remove
2248	Maple-6	Type 2	Remove
2249	Maple-6	Type 1	Remove
2250	Maple-10	Type 1	Remove
2251	Alder-12	Type 2	Remove
2256	Maple-5X6-12	Type 1	Save
2258	Maple-8	Type 1	Save
2259	Maple-10	Type 1	Save
2260	Maple-22	Type 1	Save
2261	Maple-8	Type 1	Save
2263	Cedar-18	Type 1	Save
2264	Maple-20	Type 1	Remove
2265	Alder-6	Type 1	Remove
2269	Alder-10	Type 2	Remove
2274	Alder-12	Type 1	Remove
2348	Alder-12	Type 2	Save
2349	Maple-2*14-18	Type 1	Save
2359	Cedar-10	Type 1	Save
2378	Cedar-12	Type 1	Save
2379	Cedar-28	Type 1	Save
2380	Alder-20	Type 1	Save
2386	Cedar-36	Type 1	Save
2398	Cedar-12	Type 1	Save
2400	Cedar-12	Type 1	Save
2404	Cedar-12	Type 2	Save
2427	Cedar-10	Type 1	Save
2428	Maple-2*18-20	Type 1	Save
2430	Maple-14	Type 1	Save
2431	Alder-22	Type 1	Save
2433	Cedar-20	Type 1	Save
2435	Alder-18	Type 1	Save
2436	Cedar-20	Type 1	Save
2437	Maple-10	Type 1	Save
2440	Cedar-20	Type 1	Save
2441	Maple-Alder-10	Type 1	Save
2442	Maple-Alder-10	Type 1	Save
2445	Maple-8	Type 1	Save
2446	Maple-10	Type 1	Save
2447	Maple-8	Type 1	Save
2448	Cedar-20	Type 1	Save
2449	Cedar-14	Type 1	Save
2450	Maple-12	Type 1	Save
2451	Maple-12	Type 1	Save
2452	Maple-8	Type 1	Save
2453	Maple-12	Type 1	Save
2454	Maple-22	Type 1	Save
2455	Cedar-16	Type 1	Save
2456	Maple-12	Type 1	Save
2457	Maple-2*12-14	Type 1	Save

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Tree Number	Description	Land Type	
2459	Maple-18	Type 1	Save
2460	Fir-40	Type 3	Save
2461	Fir-40	Type 3	Save
2464	Maple-20	Type 1	Save
2466	Maple-20	Type 1	Save
2467	Maple-2*10-16	Type 1	Save
2468	Cedar-12	Type 1	Save
2469	Cedar-14	Type 1	Save
2470	Alder-18	Type 1	Save
2471	Cedar-6	Type 1	Save
2472	Cedar-14	Type 1	Save
2473	Alder-18	Type 1	Save
2479	Alder-2*10-18	Type 1	Save
2490	Cedar-18	Type 2	Save
2505	Alder-18	Type 3	Remove
2508	Maple-8	Type 2	Remove
2513	Maple-10	Type 2	Save
2554	Alder-10	Type 2	Save
2556	Alder-12	Type 2	Remove
2631	Maple-8X6	Type 2	Save
2638	Cottonwood-48	Type 2	Save
2639	Cottonwood-30	Type 3	Save
2640	Fir-10	Type 3	Save
2641	Fir-10	Type 3	Save
2642	Fir-6	Type 3	Save
2643	Fir-10	Type 3	Save
2644	Fir-6	Type 3	Save
2645	Fir-8	Type 3	Save
2646	Cottonwood-36	Type 3	Save
2647	Fir-6	Type 3	Save
2648	Fir-10	Type 3	Save
2649	Cedar-12	Type 2	Save
2651	Cedar-18	Type 2	Save
2719	Fir-40	Type 1	Save
2766	Cedar-14	Type 1	Save
2767	Cedar-30	Type 1	Save
2769	Cedar-36	Type 1	Save
2808	Cedar-18	Type 2	Save
2809	Cedar-12	Type 2	Save
2810	Cedar-18	Type 2	Save
2811	Fir-30	Type 1	Save
2812	Maple-8X6	Type 1	Save
2813	Cedar-16	Type 1	Save
2814	Cedar-16	Type 1	Save
2815	Cedar-18	Type 1	Save
2816	Maple-5X6-8	Type 1	Save
2822	Maple-6	Type 2	Remove
2823	Maple-5X6-8	Type 2	Save
2824	Maple-6	Type 2	Save
2825	Maple-5X6-8	Type 2	Save
2829	Maple-2X12-18	Type 3	Save
2830	Maple-3X6-8	Type 3	Save
2832	Maple-2X8	Type 3	Remove
2855	Maple-6X6-12	Type 1	Save
2856	Cedar-10	Type 1	Save
2857	Cedar-20	Type 1	Save
2858	Cedar-20	Type 1	Save
2859	Cedar-20	Type 1	Save
2860	Cedar-18	Type 1	Save
2861	Cedar-16	Type 1	Save
2862	Cedar-24	Type 1	Save
2863	Cedar-18	Type 1	Save
2864	Maple-4X6-12	Type 1	Save
2865	Cedar-20	Type 1	Save
2866	Cedar-12	Type 2	Save
2867	Cedar-18	Type 2	Save

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Tree Number	Description	Land Type	
2868	Maple-7X6-12	Type 2	Save
2869	Fruit-8	Type 3	Save
2870	Alder-6	Type 3	Save
2871	Alder-8	Type 3	Save
2872	Alder-10	Type 3	Save
2873	Maple-4X6-8	Type 3	Save
2874	Alder-3X6-10	Type 4	Save
2875	Alder-8	Type 4	Save
2876	Alder-10	Type 4	Save
2877	Alder-6	Type 3	Remove
2878	Alder-6	Type 3	Save
2879	Alder-6	Type 3	Remove
2880	Alder-6	Type 3	Remove
2881	Alder-3X6-10	Type 3	Remove
2882	Fir-8	Type 2	Save
2883	Fir-12	Type 2	Save
2884	Fir-8	Type 2	Save
2885	Fir-12	Type 4	Remove
2886	Fir-12	Type 3	Remove
2887	Maple-3X6-8	Type 3	Remove
2888	Alder-8	Type 3	Remove
2889	Maple-12X6	Type 4	Remove
2890	Fir-6	Type 4	Remove
2891	Fir-10	Type 4	Remove
2892	Fir-6	Type 4	Remove
2893	Fir-6	Type 4	Remove
2894	Alder-8	Type 4	Save
2895	Alder-10	Type 4	Remove
2896	Fir-12	Type 4	Remove
2897	Maple-12X6-8	Type 4	Remove
2898	Cottonwood-36	Type 3	Remove
2900	Maple-2X8	Type 2	Remove
2901	Maple-6	Type 2	Remove
2902	Alder-3X8-10	Type 3	Remove
2903	Cottonwood-18	Type 3	Remove
2904	Cottonwood-12	Type 3	Remove
2905	Alder-8	Type 3	Save
2906	Alder-8	Type 3	Save
2907	Alder-8	Type 2	Remove
2908	Alder-8	Type 2	Remove
2909	Alder-8	Type 2	Remove
2910	Maple-6X6-8	Type 2	Save
2911	Maple-5X6-10	Type 2	Remove
2912	Maple-12X6-10	Type 2	Remove
2913	Maple-10	Type 2	Save
2914	Maple-10X6-8	Type 2	Remove
2915	Maple-5X6-8	Type 3	Remove
2916	Maple-8X6-10	Type 3	Remove
2917	Alder-8	Type 3	Remove
2918	Cottonwood-8	Type 3	Remove
2919	Cottonwood-12	Type 3	Remove
2920	Cottonwood-10	Type 3	Remove
2921	Cottonwood-8	Type 3	Remove
2922	Cottonwood-12	Type 3	Remove
2923	Cottonwood-10	Type 3	Remove
2924	Cottonwood-8	Type 4	Remove
2925	Cottonwood-12	Type 3	Remove
2926	Cottonwood-14	Type 3	Remove
2927	Cottonwood-14	Type 4	Remove
2928	Maple-2X6	Type 4	Remove
2929	Maple-4X6-8	Type 4	Remove
2930	Cottonwood-8	Type 4	Remove
2931	Maple-3X6-8	Type 4	Remove
2932	Fruit-8	Type 4	Remove
2933	Maple-10X6-10	Type 3	Remove
2934	Maple-5X6-8	Type 3	Remove

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Tree Number	Description	Land Type	
2935	Maple-4X6	Type 3	Remove
2936	Fir-10	Type 3	Remove
2937	Maple-15X6-12	Type 3	Remove
2938	Maple-5X6-8	Type 3	Remove
2939	Maple-7X6-8	Type 3	Remove
2940	Maple-4X6-8	Type 3	Remove
2941	Maple-5X6-10	Type 3	Remove
2942	Maple-5X6-10	Type 2	Remove
2943	Fir-6	Type 3	Remove
2944	Fir-6	Type 3	Remove
2945	Cottonwood-4X6-14	Type 3	Remove
2946	Maple-15X6-12	Type 3	Remove
2947	Maple-8	Type 3	Remove
2948	Fir-2X6	Type 3	Remove
2952	Alder-12	Type 2	Remove
2955	Maple-5X6-8	Type 1	Remove
2956	Fir-10	Type 1	Save
2957	Fir-12	Type 1	Save
2958	Alder-6	Type 4	Save
2960	Fir-10	Type 4	Save
2967	Alder-12	Type 3	Remove
2968	Fir-6	Type 3	Remove
2969	Alder-8	Type 3	Remove
2970	Fir-6	Type 3	Remove
2972	Maple-6x8-10	Type 3	Save
2973	Maple-2x6-12	Type 1	Save
2974	Maple-8X6-10	Type 1	Save
2975	Fir-12	Type 1	Save
2976	Maple-4x18	Type 1	Save
2977	Maple-5x8	Type 1	Save
2979	Fir-8	Type 1	Save
2980	Cedar-18	Type 2	Save
2981	Cedar-30	Type 3	Save
2982	Cedar-24	Type 2	Save
2983	Fir-6	Type 3	Remove
2984	Fir-6	Type 4	Remove
2985	Maple-4x8-10	Type 4	Remove
2986	Maple-2x6-8	Type 3	Remove
2987	Fir-8	Type 3	Save
2988	Fir-8	Type 3	Save
2989	Fir-12	Type 4	Remove
2990	Fir-10	Type 4	Remove
2991	Fir-6	Type 4	Save
2992	Alder-6	Type 4	Save
2993	Maple-8	Type 4	Save
2994	Alder-12	Type 4	Remove
2995	Alder-8	Type 4	Save
2996	Alder-8	Type 4	Remove
2997	Alder-10	Type 4	Save
2998	Fir-8	Type 3	Save
2999	Maple-8	Type 2	Save
3009	Maple-20	Type 1	Save
3010	Maple-12	Type 1	Save
3013	Maple-3X6	Type 1	Save
3014	Maple-12	Type 1	Save
3016	Maple-2X6	Type 1	Save
3017	Cedar-36	Type 1	Save
3018	Cedar-36	Type 1	Save
3019	Cedar-36	Type 1	Save
3020	Cedar-12	Type 1	Save
3021	Cedar-6	Type 1	Save
3022	Maple-5X6-12	Type 1	Save
3023	Cedar-10	Type 1	Save
3024	Cedar-15	Type 1	Save
3025	Cedar-15	Type 1	Save
3026	Maple-4X6	Type 1	Save

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Tree Number	Description	Land Type	
3027	Maple-4X6-10	Type 1	Save
3029	Maple-5X6-8	Type 1	Save
3030	Cedar-6	Type 1	Save
3031	Maple-15	Type 1	Save
3032	Maple-3X6-12	Type 1	Save
3033	Maple-7X6-10	Type 1	Save
3034	Cedar-18	Type 1	Save
3035	Cedar-22	Type 1	Save
3036	Cedar-22	Type 1	Save
3037	Maple-7X6-8	Type 1	Save
3038	Cedar-24	Type 1	Save
3039	Maple-2X6-8	Type 1	Save
3040	Cedar-20	Type 1	Save
3041	Cedar-15	Type 1	Save
3042	Maple-2X8	Type 1	Save
3043	Maple-2X8	Type 1	Save
3044	Cedar-15	Type 1	Save
3045	Cedar-36	Type 1	Save
3046	Cedar-24	Type 1	Save
3047	Cedar-18	Type 1	Save
3049	Maple-3X6	Type 1	Save
3050	Maple-12	Type 1	Save
3051	Maple-6	Type 1	Save
3052	Maple-5X3-6	Type 1	Save
3053	Maple-2X18	Type 1	Save
3056	Maple-18	Type 1	Save
3058	Maple-5X4-8	Type 1	Save
3059	Maple-10	Type 4	Save
3060	Maple-12	Type 4	Save
3063	Maple-4X3-6	Type 4	Save
3064	Maple-3X4-8	Type 4	Save
3065	Maple-3X4-8	Type 3	Remove
3066	Maple-8X4-10	Type 4	Remove
3067	Maple-4X4-6	Type 4	Save
3068	Maple-4X4-8	Type 3	Remove
3069	Maple-4X4-6	Type 4	Remove
3070	Maple-4X4-10	Type 1	Save
3071	Maple-8X3-8	Type 1	Save
3072	Maple-3X8-12	Type 1	Save
3073	Maple-6	Type 1	Save
3074	Maple-3X4-6	Type 1	Save
3079	Maple-4X6	Type 4	Remove
3080	Maple-8X6	Type 4	Remove
3081	Maple-2X6	Type 4	Remove
3082	Cedar-10	Type 4	Remove
3083	Maple-8X6-10	Type 4	Remove
3084	Maple-11X6	Type 4	Remove
3085	Maple-9X6	Type 4	Remove
3086	Maple-8X6	Type 1	Save
3087	Maple-4X6	Type 1	Save
3088	Maple-10	Type 1	Save
3089	HL8	Type 1	Save
3090	Fir-8	Type 4	Remove
3091	Maple-5X6	Type 4	Remove
3092	Fir-8	Type 4	Remove
3093	Maple-6	Type 4	Remove
3094	Fir-6	Type 4	Remove
3095	Fir-6	Type 4	Remove
3096	Fir-6	Type 4	Remove
3097	Fir-12	Type 4	Remove
3098	Maple-7X4-10	Type 4	Save
3099	Maple-11X4-10	Type 4	Remove
3100	Cedar-12	Type 4	Remove
3101	Cedar-15	Type 4	Save
3102	Maple-5X4-8	Type 4	Save
3103	Maple-36	Type 4	Remove

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Tree Number	Description	Land Type	
3105	Cedar-22	Type 4	Save
3106	Maple-6X4-8	Type 4	Remove
3107	Maple-12	Type 4	Remove
3108	Maple-4X6	Type 4	Remove
3109	Maple-8	Type 4	Remove
3110	Fir-6	Type 4	Remove
3111	Maple-6	Type 4	Remove
3112	Maple-8	Type 4	Remove
3113	Maple-8	Type 4	Remove
3114	Maple-32	Type 4	Remove
3115	Maple-30	Type 4	Remove
3116	Maple-6	Type 4	Remove
3117	Maple-12	Type 4	Remove
3118	Maple-10	Type 4	Remove
3119	Maple-10	Type 3	Remove
3120	Maple-6X4-8	Type 3	Remove
3121	Maple-12	Type 4	Remove
3122	Alder-2X8	Type 4	Remove
3123	Maple-15	Type 4	Remove
3124	Maple-12	Type 4	Remove
3125	Maple-12	Type 4	Remove
3126	Maple-2X18-24	Type 4	Remove
3127	Maple-4X6-18	Type 4	Remove
3128	Maple-4X6-18	Type 4	Remove
3129	Cedar-3X6-18	Type 4	Remove
3130	Maple-5X6	Type 4	Remove
3131	Maple-6	Type 4	Remove
3132	Alder-8	Type 4	Remove
3133	Alder-8	Type 4	Remove
3134	Alder-2X6	Type 4	Remove
3135	Alder-6	Type 4	Remove
3136	Alder-6	Type 4	Remove
3143	Alder-3*6	Type 4	Remove
3144	Cedar-24	Type 4	Remove
3148	Cedar-6	Type 4	Remove
3149	Cedar-6	Type 4	Remove
3150	Maple-3*6	Type 4	Remove
3151	Maple-8*10-12	Type 4	Remove
3152	Maple-5*4-8	Type 4	Remove
3153	Maple-12	Type 4	Remove
3154	Maple-6*6	Type 4	Remove
3155	Maple-6*4-8	Type 4	Remove
3156	Maple-8	Type 4	Remove
3157	Alder-10	Type 4	Remove
3159	Maple-14*4-6	Type 4	Remove
3160	Maple-10*8	Type 3	Remove
3161	Cedar-6*6	Type 4	Remove
3162	Maple-6*4-6	Type 3	Remove
3163	Maple-4*4-8	Type 3	Remove
3164	Maple-4*4-8	Type 3	Remove
3165	Maple-7*3-10	Type 2	Remove
3166	Maple-7*3-10	Type 2	Remove
3167	Maple-6*3-8	Type 3	Remove
3168	Maple-2*2-10	Type 3	Remove
3169	Maple-8	Type 3	Remove
3170	Maple-12	Type 3	Remove
3171	Maple-10	Type 2	Remove
3174	Maple-104-6	Type 2	Remove
3175	Maple-10*6-10	Type 2	Remove
3176	Maple-10*6-10	Type 2	Remove
3177	Maple-8*6-12	Type 4	Remove
3178	Maple-8*6-12	Type 4	Remove
3179	Maple-3*6	Type 4	Remove
3181	Maple-10*6-10	Type 4	Remove
3182	Maple-12	Type 4	Remove
3183	Maple-12	Type 4	Remove

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Tree Number	Description	Land Type	
3185	Maple-36	Type 4	Remove
3186	Maple-12	Type 4	Remove
3187	Maple-12	Type 4	Remove
3188	Cedar-14	Type 3	Remove
3189	Maple-8	Type 4	Remove
3190	Maple-10	Type 3	Remove
3191	Maple-8	Type 1	Save
3192	Maple-8	Type 1	Save
3193	Maple-8	Type 1	Save
3194	Maple-12	Type 1	Save
3195	Maple-8	Type 1	Save
3196	Cedar-12	Type 1	Save
3197	Maple-8*6	Type 4	Remove
3198	Cedar-12	Type 1	Save
3199	Maple-2*12	Type 1	Save
3200	Cedar-6	Type 4	Remove
3201	Cedar-2*6	Type 1	Save
3202	Maple-4*6-10	Type 1	Save
3203	Cedar-14	Type 1	Save
3204	Cedar-14	Type 1	Save
3205	Cedar-12	Type 1	Save
3206	Cedar-2*10	Type 1	Save
3207	Maple-12	Type 1	Save
3209	Cedar-24	Type 1	Save
3210	Cedar-24	Type 1	Save
3211	Cedar-26	Type 1	Save
3212	Maple-8*4-8	Type 1	Save
3213	Cedar-28	Type 1	Save
3214	Cedar-20	Type 1	Save
3215	Cedar-28	Type 1	Save
3216	Cedar-18	Type 1	Save
3217	Cedar-14	Type 1	Save
3218	Maple-18	Type 1	Save
3219	Maple-4*6	Type 1	Save
3220	Cedar-12	Type 1	Save
3221	Cedar-16	Type 1	Save
3224	Cedar-24	Type 1	Save
3225	Cedar-28	Type 1	Save
3226	Cedar-26	Type 1	Save
3227	Cedar-42	Type 1	Save
3228	Cedar-12	Type 1	Save
3229	Cedar-26	Type 1	Save
3230	Maple-6*3-8	Type 1	Save
3231	Maple-10*3-12	Type 1	Save
3232	Maple-10*3-12	Type 1	Save
3233	Maple-10*3-12	Type 1	Save
3234	Maple-2*6	Type 1	Save
3235	Maple-12*3-12	Type 1	Save
3236	Maple-12	Type 4	Save
3237	Maple-10*3-12	Type 4	Save
3238	Maple-2X8-12	Type 2	Remove
3239	Maple-2X6	Type 2	Remove
3240	Maple-3X6	Type 2	Remove
3241	Cedar-18	Type 2	Save
3242	Cedar-24	Type 1	Save
3243	Cedar-20	Type 1	Save
3244	Maple-2X6	Type 1	Save
3245	Cedar-8	Type 1	Save
3246	Maple-5X6	Type 1	Save
3247	Maple-5X6-12	Type 1	Save
3248	Cedar-15	Type 1	Save
3249	Maple-5X4-10	Type 1	Save
3250	Cedar-15	Type 1	Save
3251	Cedar-15	Type 1	Save
3252	Cedar-12	Type 1	Save
3253	Cedar-30	Type 1	Save

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Tree Number	Description	Land Type	
3254	Maple-3X6-8	Type 1	Save
3255	Maple-10	Type 1	Save
3256	Maple-5X6	Type 1	Save
3257	Cedar-12	Type 1	Save
3258	Cedar-12	Type 1	Save
3259	Cedar-12	Type 1	Save
3260	Cedar-10	Type 1	Save
3261	Maple-15	Type 1	Save
3262	Maple-12	Type 1	Save
3263	Maple-10	Type 1	Save
3264	Cedar-18	Type 1	Save
3265	Cedar-18	Type 1	Save
3266	Cedar-2X10	Type 1	Save
3267	Maple-3X6-8	Type 3	Remove
3268	Maple-8X4-8	Type 3	Remove
3279	Cedar-18	Type 1	Save
3280	Cedar-18	Type 1	Save
3281	Maple-18	Type 1	Save
3282	Cedar-24	Type 1	Save
3283	Cedar-18	Type 1	Save
3284	Cedar-10	Type 1	Save
3285	Maple-2X24	Type 1	Save
3286	Cedar-12	Type 1	Save
3287	Cedar-8	Type 1	Save
3288	Maple-18	Type 1	Save
3289	Cedar-8	Type 1	Save
3290	Maple-7X6-12	Type 1	Save
3291	Cedar-15	Type 1	Save
3292	Cedar-12	Type 1	Save
3293	Maple-12	Type 1	Save
3294	Cedar-20	Type 1	Save
3295	Cedar-12	Type 1	Save
3296	Cedar-30	Type 1	Save
3297	Cedar-10	Type 1	Save
3298	Cedar-18	Type 1	Save
3299	Cedar-24	Type 1	Save
3302	Cedar-15	Type 1	Save
3303	Maple-7X6-12	Type 1	Save
3304	Cedar-30	Type 1	Save
3305	Maple-6X6-8	Type 1	Save
3306	Cedar-12	Type 1	Save
3307	Cedar-24	Type 1	Save
3308	Fir-20	Type 1	Save
3309	Cedar-8	Type 1	Save
3310	Cedar-8	Type 1	Save
3311	Maple-10X6-10	Type 1	Save
3312	Maple-3X3-6	Type 1	Save
3313	Maple-6X4-6	Type 1	Save
3314	Maple-7X6-10	Type 1	Save
3315	Cedar-18	Type 1	Save
3316	Maple-6X6	Type 1	Save
3317	Maple-11X6-10	Type 1	Save
3319	Fir-10EDGE	Type 4	Save
3320	Maple-8	Type 2	Save
3321	Maple-7X8-12	Type 2	Save
3322	Maple-6X6	Type 4	Save
3323	Maple-3X6	Type 4	Save
3324	Maple-4X6	Type 4	Save
3325	Cedar-20	Type 4	Save
3326	Maple-2X12	Type 4	Save
3327	Fir-6EDGE	Type 4	Save
3328	Fir-8EDGE	Type 4	Save
3329	Alder-3X6-10EDGE	Type 4	Save
3330	Fir-18	Type 1	Save
3331	Fir-18	Type 1	Save
3332	Fir-10	Type 1	Save

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Tree Number	Description	Land Type	
3333	Maple-6X8	Type 1	Save
3334	Cedar-24	Type 1	Save
3335	Alder-8	Type 1	Save
3336	Cedar-15	Type 1	Save
3337	Cedar-12	Type 1	Save
3338	Cedar-24	Type 1	Save
3339	Cedar-18	Type 1	Save
3340	Cedar-2X15-22	Type 1	Save
3341	Cedar-22	Type 1	Save
3342	Cedar-24	Type 1	Save
3343	Cedar-2X18	Type 1	Save
3344	Fir-24	Type 1	Save
3345	Cedar-18	Type 1	Save
3346	Fir-10	Type 4	Save
3349	Fir-10	Type 4	Save
3350	Fir-12	Type 4	Save
3352	Fir-10	Type 4	Save
3353	Fir-12	Type 4	Save
3354	Fir-8	Type 4	Save
3355	Fir-8	Type 4	Save
3356	Fir-10	Type 4	Save
3357	Fir-10	Type 4	Save
3358	Fir-6	Type 4	Save
3359	Maple-24	Type 4	Save
3361	Maple-12	Type 4	Save
3362	Maple-4*3-8	Type 4	Save
3363	Maple-7*3-8	Type 4	Save
3364	Maple-4*3-8	Type 4	Save
3366	Fir-4EDGE	Type 4	Save
3367	Fir-4EDGE	Type 4	Save
3368	Maple-5*6-10	Type 4	Save
3369	Maple-2*8-14	Type 4	Save
3371	Fir-10	Type 4	Save
3372	Fir-8	Type 4	Save
3373	Fir-10	Type 4	Save
3374	Fir-12	Type 4	Save
3375	Fir-10	Type 4	Save
3376	Fir-14	Type 4	Save
3377	Fir-8	Type 4	Save
3380	Fir-8EDGE	Type 4	Save
3381	Fir-12EDGE	Type 4	Save
3382	Fir-8EDGE	Type 4	Save
3383	Fir-8EDGE	Type 4	Save
3384	Fir-8EDGE	Type 4	Save
3385	Fir-10EDGE	Type 4	Save
3390	Fir-10	Type 4	Save
3391	Fir-10	Type 4	Save
3392	Fir-10	Type 4	Save
3393	Fir-10	Type 4	Save
3394	Maple-12	Type 4	Save
3397	Fir-8EDGE	Type 4	Save
3398	Fir-8EDGE	Type 4	Save
3399	Fir-8EDGE	Type 4	Save
3400	Maple-18	Type 4	Save
3401	Cedar-34	Type 4	Save
3402	Cedar-3*6-24	Type 2	Save
3403	Maple-7*4-8	Type 2	Save
3404	Cedar-8EDGE	Type 4	Save
3405	Maple-7*3-10	Type 1	Save
3406	Maple-7*3-10	Type 1	Save
3407	Maple-7*3-10	Type 1	Save
3408	Cedar-32	Type 1	Save
3409	Maple-2*10-14	Type 1	Save
3410	Fir-20	Type 1	Save
3412	Fir-18	Type 1	Save
3413	Maple-7*8-12	Type 1	Save

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Tree Number	Description	Land Type	
3414	Maple-3*6-12	Type 1	Save
3415	Maple-10*4-10	Type 1	Save
3416	Maple-5*4-12	Type 1	Save
3417	Maple-4*4-8	Type 1	Save
3418	Cedar-12	Type 1	Save
3420	Maple-30	Type 1	Save
3425	Cedar-16	Type 2	Save
3426	Maple-16	Type 3	Save
3427	Maple-3*8	Type 4	Save
3500	Alder-8	Type 2	Remove
3501	Fir-8	Type 3	Remove
3502	Fruit-8	Type 2	Remove
3503	Fir-8	Type 3	Save
3504	Fir-8	Type 2	Save
3505	Alder-10	Type 2	Save
3506	Alder-8	Type 3	Save
3507	Fir-6	Type 3	Save
3508	Cedar-20	Type 2	Save
3509	Alder-10	Type 3	Save
3510	Cedar-18	Type 2	Save
3511	Maple-5X6-10	Type 2	Save
3512	Cedar-24	Type 2	Save
3513	Maple-5X6-10	Type 2	Remove
3518	Alder-10	Type 4	Save
3519	Alder-6	Type 4	Save
3520	Alder-10	Type 4	Remove
3521	Alder-6	Type 4	Remove
3522	Fir-6	Type 4	Remove
3523	Fir-6	Type 4	Remove
3524	Alder-12	Type 4	Remove
3525	Fir-6	Type 4	Remove
3526	Maple-4x8-12	Type 4	Remove
3527	Alder-6	Type 4	Save
3528	Alder-12	Type 4	Save
3529	Alder-8	Type 4	Remove
3530	Maple-2x10-12	Type 1	Remove
3531	Maple-7X6-8	Type 1	Remove
3532	Maple-12X6-16	Type 1	Remove
3533	Cedar-30	Type 2	Remove
3534	Maple-8	Type 3	Remove
3535	Maple-5X8-12	Type 3	Remove
3536	Fir-10	Type 4	Remove
3537	Maple-6	Type 4	Remove
3538	Fir-6	Type 3	Remove
3539	Fir-6	Type 3	Remove
3540	Maple-7X6-8	Type 3	Remove
3541	Maple-7X6-8	Type 4	Remove
3542	Maple-3X6	Type 2	Remove
3543	Maple-3X6	Type 3	Remove
3544	Maple-8	Type 2	Remove
3545	Maple-3X6	Type 2	Remove
3546	Maple-6 6-10	Type 1	Remove
3547	Maple-6 6-10	Type 1	Remove
3548	Maple-6	Type 1	Remove
3549	Maple-36	Type 1	Remove
3550	Maple-6	Type 1	Remove
3551	Maple-9X6-10	Type 1	Remove
3552	Cedar-24	Type 1	Remove
3553	Maple-6X6-8	Type 1	Remove
3554	Cedar-18	Type 1	Remove
3555	Maple-6X6-10	Type 1	Remove
3556	Maple-4X6	Type 1	Remove
3557	Maple-5X6-10	Type 1	Remove
3558	Fruit-3X6	Type 4	Remove
3559	Fruit-6	Type 4	Remove
3560	Alder-6	Type 4	Remove

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Tree Number	Description	Land Type	
3564	Cedar-24	Type 4	Remove
3565	Fir-10	Type 4	Remove
3566	Fir-8	Type 4	Remove
3567	Fir-6	Type 4	Remove
3568	Maple-2X8-10	Type 4	Remove
3569	Fir-6	Type 4	Remove
3570	Fir-12	Type 4	Remove
3571	Fir-8	Type 4	Remove
3572	Fir-6	Type 4	Remove
3573	Fir-8	Type 4	Remove
3574	Fir-10	Type 4	Remove
3575	Fir-6	Type 4	Remove
3576	Fir-10	Type 3	Remove
3577	Fir-10	Type 4	Remove
3578	Fir-8	Type 4	Remove
3579	Fir-6	Type 3	Remove
3580	Fir-8	Type 4	Remove
3581	Maple-7 6-10	Type 4	Remove
3582	Maple-12X6	Type 4	Remove
3583	Maple-8	Type 4	Remove
3584	Fir-10	Type 4	Remove
3585	Maple-5X6-10	Type 4	Remove
3586	Fir-10	Type 4	Remove
3587	Fir-10	Type 4	Remove
3588	Fir-8	Type 4	Remove
3589	Cedar-12	Type 4	Remove
3590	Maple-6X6	Type 1	Remove
3591	Cedar-14	Type 4	Remove
3592	Maple-10X6-10	Type 1	Remove
3593	Maple-12X6-12	Type 2	Remove
3594	Fir-12	Type 2	Remove
3595	Maple-14	Type 2	Remove
3598	Cottonwood-3X6-12	Type 3	Remove
3599	Cottonwood-8	Type 3	Remove
3600	Cottonwood-12	Type 3	Remove
3601	Maple-2x6	Type 4	Remove
3602	Cottonwood-8	Type 4	Remove
3603	Cottonwood-6	Type 4	Remove
3604	Cottonwood-10	Type 3	Remove
3605	Fir-10	Type 3	Remove
3606	Fir-8	Type 3	Remove
3607	Fir-8	Type 3	Remove
3608	Fir-6	Type 3	Remove
3609	Fir-8	Type 3	Remove
3610	Cottonwood-14	Type 3	Remove
3611	Cottonwood-12	Type 3	Remove
3612	Cottonwood-12	Type 3	Remove
3613	Cottonwood-12	Type 3	Remove
3614	Cottonwood-6	Type 3	Remove
3615	Cottonwood-12	Type 3	Remove
3616	Cottonwood-8	Type 3	Remove
3617	Cottonwood-12	Type 4	Remove
3618	Cottonwood-8	Type 3	Remove
3619	Cedar-12	Type 3	Remove
3620	Maple-6X6-10	Type 3	Remove
3621	Maple-12X6-12	Type 3	Remove
3622	Maple-4X6-8	Type 2	Remove
3623	Cedar-22	Type 3	Remove
3624	Maple-6X6-12	Type 3	Remove
3625	Cottonwood-10	Type 3	Remove
3626	Maple-10X6-10	Type 4	Remove
3627	Fir-10	Type 3	Remove
3628	Fir-8	Type 3	Remove
3629	Fir-8	Type 3	Remove
3630	Fir-8	Type 3	Remove
3631	Fir-6	Type 3	Remove

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
3632	Maple-10X6-10	Type 3	Remove
3633	Maple-10X6-10	Type 2	Remove
3634	Maple-4X6-12	Type 2	Remove
3635	Maple-10X6-12	Type 2	Remove
3637	Maple-5X6-10	Type 3	Remove
3638	Maple-6X6-8	Type 3	Remove
3639	Maple-6X6-8	Type 3	Remove
3640	Fir-6	Type 3	Remove
3641	Alder-6	Type 3	Remove
3642	Alder-8	Type 3	Remove
3643	Alder-10	Type 3	Remove
3644	Fir-6	Type 3	Remove
3645	Fir-8	Type 3	Remove
3646	Alder-8	Type 3	Remove
3649	Fir-10	Type 3	Remove
3654	Fir-6	Type 3	Remove
3655	Maple-6X6-12	Type 3	Remove
3656	Fir-6	Type 3	Remove
3657	Cedar-2X12	Type 1	Save
3658	Cedar-14	Type 1	Save
3659	Cedar-10	Type 1	Save
3660	Maple-10X6-14	Type 1	Save
3664	Fir-6	Type 4	Remove
3665	Fir-6	Type 4	Save
3666	Fir-6	Type 4	Save
3667	Fir-6	Type 4	Save
3668	Fir-8	Type 4	Save
3669	Fir-8	Type 4	Save
3670	Fir-8	Type 4	Save
3671	Fir-8	Type 4	Save
3672	Fir-8	Type 4	Save
3673	Fir-8	Type 4	Save
3674	Fir-8	Type 4	Save
3675	Fir-10	Type 4	Save
3676	Fir-10	Type 4	Save
3677	Fir-8EDG	Type 4	Save
3678	Fir-10EDG	Type 4	Save
3679	Fir-12EDG	Type 4	Save
3680	Fir-12EDG	Type 4	Save
3681	Fir-14EDG	Type 4	Save
3682	Fir-14EDG	Type 4	Save
3683	Fir-8EDG	Type 4	Save
3684	Fir-16EDG	Type 4	Save
3685	Fir-10EDG	Type 4	Remove
3686	Fir-16EDG	Type 4	Remove
3687	Fir-6EDG	Type 4	Save
3688	Fir-12EDG	Type 4	Save
3689	Fir-12EDG	Type 4	Save
3690	Fir-12EDG	Type 4	Save
3691	Fir-6EDG	Type 4	Save
3692	Fir-10EDG	Type 4	Save
3693	Fir-8EDG	Type 4	Save
3694	Fir-10	Type 4	Save
3695	Fir-12	Type 4	Save
3696	Fir-14	Type 4	Save
3697	Fir-8	Type 4	Save
3710	Maple-5X12-20	Type 4	Save
3711	Alder-12	Type 4	Save
3712	Alder-12	Type 4	Save
3713	Maple-30	Type 4	Save
3714	Maple-36	Type 4	Save
3715	Cedar-6	Type 4	Save
3716	Alder-10	Type 4	Save
3717	Alder-6	Type 4	Save
3718	Alder-10	Type 4	Save
3719	Maple-12X6-12	Type 4	Save

Tamarisk Property Tree Survey Data 7/17/2006

Tree Number	Description	Land Type	
3720	Alder-12	Type 4	Save
3721	Alder-10	Type 4	Save
3722	Alder-8	Type 4	Save
3723	Alder-14	Type 4	Save
3724	Alder-12	Type 4	Save
3725	Alder-12	Type 4	Save
3726	Maple-3X24-30	Type 4	Save
3728	Alder-2X14-16	Type 4	Save
3729	Maple-16	Type 4	Save
3730	Alder-12	Type 4	Save
3732	Alder-10	Type 4	Save

CITY OF WEST LINN

PLANNING AND DEVELOPMENT

PLANNING COMMISSION HEARING
July 13, 2006

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **35-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

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STAFF ANALYSIS AND RECOMMENDATION

TO: West Linn Planning Commission

FROM: West Linn Planning Staff (Peter Spir, Associate Planner)

HEARING DATE: July 13, 2006

FILE NO: SUB 05-06/MISC-05-56/ZC-05-09/VAR-05-10

SUBJECT: 35-lot subdivision, PUD, Class II variance, and Natural Drainageway permit at northwest end of Tamarisk Drive.

Planning Director's Initials _____
City Engineer's Initials_____

SPECIFIC DATA

OWNER: Fritchie Trustee, 21929 S. Clear Creek Road, Estacada, OR. 97023

APPLICANT: Stearns Marnella Communities LLC 18318 SE Abernethy Lane, Milwaukie, OR 97267

CONSULTANT: OTAK

SITE LOCATION: Northwest end of Tamarisk Drive

SITE SIZE: 15.35 acres.

LEGAL DESCRIPTION: Assessor's Map 2-1E-34A, Tax Lot 600, 690 and 700

COMP PLAN DESIGNATION: Low density residential

ZONING: R-15 and R-10

APPROVAL CRITERIA: Chapter 85 (Land Division,) Chapter 32 (Natural Drainageway) Chapter 75 (Variance) and Chapter 24 (PUD)

120-DAY RULE: This application was deemed complete on June 5, 2006. The City of West Linn must exhaust all local review by September 29, 2006 to meet the 120-day rule.

PUBLIC NOTICE: Public notice was mailed to property owners within 500 feet of the site on June 14, 2006. And the property was posted with a sign on June 30, 2006. Notice was also posted on the City's website. Consequently, the notice requirements of the Community Development Code have been fully satisfied.

BACKGROUND

The 15.35-acre site comprises a large flat area of orchard trees at the end of Tamarisk Drive. As one moves north, the site is bisected by two drainageways with a ridgeline between them. The south edge of the site is defined by yet another steep drainageway. There is two-acre area adjacent to Woodbine Road that could be developed but the steep grades accessing it off Woodbine combined with the extremely high noise levels of the adjacent I-205 and the lack of a connection to the remainder of the site due to intervening wetlands means that it will not be developed at this time. There are a large number of significant trees on the site.

The applicant proposes to develop the 35 lots in two phases. The zoning is predominantly R-15 with a small one acre tract at the south edge of the site zoned R-10. The minimum lot sizes of those zones are 15,000 and 10,000 square feet respectively. Because of the physical challenges of the site it is being developed as a Planned Unit Development (PUD). PUD's allow variations in lot size not typically allowed by the underlying zoning. Lots will range in size from 4,019 to 13,292 square feet.

Tamarisk Drive will be the only street accessing the site. It will stub out at the northeast end of the ridgeline with the expectation that future development will extend it, ultimately, to Wisteria and Woodbine Roads. A Class II Variance is required to allow a cul de sac to serve more than 12 homes and be over 400 feet long.

MAJOR ISSUES

Cul de sac length

The Community Development Code (CDC) limits cul de sacs to serving no more than 12 homes with a maximum length of 400 feet long. Tamarisk Drive, which will serve as the only access route to this subdivision is already a 1200-foot long cul de sac. Tamarisk Road combined with De Bok Road and other feeder cul de sacs already serve 60 homes. There is only one way in and out of the area north of the Killarney Drive and De Bok Road intersection. Extending Tamarisk Road an additional 1400 lineal feet to serve 35 more homes in the proposed subdivision increases the problem. Thus, a Class II

Variance is required. The fact that Tamarisk Drive will stub out at the northeast corner of the site and thus extend at some point in the future to Woodbine Road is a mitigating factor.

Connectivity

In addition to reducing potential, albeit remote, hazards associated with a single point of ingress/egress to a subdivision, having more than one way in or out serves the Transportation Planning Rule (TPR). The state mandated TPR seeks to reduce consumption of fossil fuels, reduce pollution, reduce the length of trips, and encourage multi-modal travel (walking and biking) by increasing the number of routes (roads, sidewalks, bike paths etc.) available to the public.

Whereas this site's connectivity potential is limited by I-205, wetlands and the Urban Growth Boundary (UGB), there are still options. First, Street A can be stubbed out to the northeast so that at some time in the future, Street A can connect with Wisteria Road and Woodbine Road.

In the short term, a pedestrian/bicycle route can be provided connecting Street A with Woodbine Road. Such a route would be entirely within the project boundary and would not extend outside the UGB. There would be design challenges in terms of negotiating the wetlands and steep slopes but it would yield a valuable and attractive link. By accessing Woodbine Road, walkers and bikers could proceed to Johnson Road and loop east to access Willamette or head west in the direction of Stafford Road. Turning north on Woodbine Road offers runners and bikers a gradual climb up to Rosemont and Hidden Springs Roads. None of these options currently exist for residents on the north side of I-205 without significant time consuming detours.

Resource Protection-Density transfers

Protection of the wetlands and drainageways is a concern that has been addressed by the applicant through conservation easements and minimal disturbance. The tree inventory revealed a large number of significant trees. Many of these trees are in the drainageway transition and setback areas. Although a large number are being protected, this application falls short of the 20% target for non-type I and II lands to be set aside to protect significant trees.

In addition, a number of lots are on steep slopes with geotechnical concerns. The geotechnical report by GeoPacific Engineering Inc., dated December 14, 2006, states on page three that up to seven lots are located on slopes over 30% that are prone to creep or shallow sliding. The report goes on to state "*the plan should be revised to avoid creating lots where extensive stabilization measures may be required.*"

A revised plan is also triggered by the provisions of the PUD chapter (CDC Chapter 24). CDC section 24.130 requires that, when developed, lots with over 50% of their square footage possessing slopes over 25% can only be developed at 50% of normal density

meaning (see footnote with two asterisks) that the lot sizes must be 30,000 square feet in size.

PUBLIC COMMENTS

Bill Maxwell of 2570 Troy Court has expressed concern about the effect of the development on the slopes at the rear of his property and the potential for erosion or slope failure. Both OTAK and Staff provided the resident with a copy of the project's geotechnical report. Although that report did not identify any problems adjacent to Mr. Maxwell's house it did express concern about other lots further north. The geotechnical report by GeoPacific Engineering Inc., dated December 14, 2006, states on page three that up to seven lots are located on slopes over 30% that are prone to creep or shallow sliding. The report goes on to state "*the plan should be revised to avoid creating lots where extensive stabilization measures may be required.*"

RECOMMENDATION

Based upon the findings 7 and 8 contained in the staff report and the geotechnical findings in the applicant's submittal, particularly first paragraph page three of that document, staff recommends **denial** of the application:

ADDENDUM

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **35-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

STAFF FINDINGS

LAND DIVISION

85.200 APPROVAL CRITERIA

No tentative subdivision or partition plan shall be approved unless the Planning Commission or Planning Director, as applicable, find that the following standards have been satisfied, or can be satisfied by condition of approval.

A. ***Streets***

1. *General. The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the generalized or reasonable layout of streets on adjacent undeveloped parcels, to topographical conditions, to public convenience and safety, to accommodate various types of transportation (automobile, bus, pedestrian, bicycle), and to the proposed use of land to be served by the streets.*

The street system shall assure an adequate traffic or circulation system with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Streets should provide for the continuation, or the appropriate projection, of existing principal streets in

surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto. To accomplish this, the emphasis should be upon a connected continuous pattern of local, collector, and arterial streets rather than discontinuous curvilinear streets and cul-de-sacs. Deviation from this pattern of connected streets should only be permitted in cases of extreme topographical challenges including excessive slopes (35 percent plus), hazard areas, steep drainageways, wetlands, etc. In such cases, deviations may be allowed but the connected continuous pattern must be reestablished once the topographic challenge is passed.

FINDING NO. 1

Staff's initial reaction to this street configuration was that it violates the aforementioned code section that calls for connectivity and the need to avoid cul de sacs. Staff also noted that the adopted Transportation System Plan (TSP) calls for a "local street connection" to connect Tamarisk with Woodbine Road. The TSP also calls for a bike and pedestrian link to Woodbine Road. These facts combine to make a strong case for a connection.

Complicating matters is the fact that the wetlands, steep slopes and I-205 make the street connection to Woodbine Road impossible at this time. A substitute route exists in the stubbing out of Tamarisk Road at the northeast corner of the site. Such a stubout makes possible the future extension of that road so that it connects with Wisteria and Woodbine Roads. That connection would satisfy the local street connector requirement. But it may however be 10 or more years before that connection is made. In the meantime, a pedestrian and bicycle link could be constructed from Tamarisk to Woodbine Road through the constrained areas with modest impacts and thus meet the TPR.

85.200(A)(1)

Streets shall also be laid out to avoid and protect clusters and significant trees, but not to the extent that it would

compromise connectivity requirements per CDC Section 85.200(A)(1), or bring the density below 70 percent of the maximum density for the developable net area. The developable net area is calculated by taking the total site acreage and deducting Type I and II lands; then up to 20 percent of the remaining land may be excluded as necessary for the purpose of protecting significant tree clusters or stands as defined in CDC Section 55.100(B)(2).

(ORD. 1408)

FINDING NO. 2

The City Arborist found that there are at least 74 significant trees in the developable areas of the site. (The arborist did not inventory trees in the type I and II lands since all significant trees are to be saved in that area.) As the code states, up to 20% of the non-type I and II portion of the site may be set aside for the protection of significant trees. The protected area is the tree dripline plus 10 feet. Even though that information had not been provided, due to delays by the City Arborist, the applicant's attorney declared on behalf of the applicant that they considered the application to be complete and that no further submittals were needed. That is their statutory right. It is also the right of the city to impose the 20% on this site if there are that many significant trees to be saved and excluding those in the ROW, etc. Staff proposes conservation easements at the rear 25 feet of lots 23, 24 and 25 and all of lot 20 which hosts 10 significant trees. These areas constitute 3.3 percent of the non-type I and II lands. That is 16.67% shy of the maximum amount. Other significant trees at the rear and side lot line of lots 4, 6, 7, 8, 11, 15, 21, 16 could be saved and would bolster the applicant's percentage to the neighborhood of 7%. Although that is well below the 20% mark, the large forested area on the type I and II lands and wetlands that will be protected more than compensates.
Thus, staff finds that the criterion is met by condition.

C. Pedestrian and Bicycle Trails

1. *Trails or multi-use pathways shall be installed, consistent and compatible with federal ADA requirements and with the Oregon Transportation Planning Rule, between subdivisions, cul-de-sacs, and streets that would otherwise not be connected by streets due to excessive grades, significant tree(s), and other constraints natural or man-made. Trails shall also accommodate bicycle or pedestrian traffic between neighborhoods and activity areas such as schools, libraries, parks, or commercial districts. Trails shall also be required where designated by the Parks Master Plan. (ORD. 1425)*
2. *The all-weather surface (asphalt, etc.) trail should be eight feet wide at minimum for bicycle use and six feet wide at minimum for pedestrian use. Trails within 10 feet of a wetland or natural drainageway shall not have an all-weather surface, but shall have a soft surface as approved by the Parks Director. These trails shall be contained within a corridor dedicated to the City that is wide enough to provide trail users with a sense of defensible space. Corridors that are too narrow, confined, or with vegetative cover may be threatening and discourage use. Consequently, the minimum corridor width shall be 20 feet. Sharp curves, twists, and blind corners on the trail are to be avoided as much as possible to enhance defensible space. Deviations from the corridor and trail width are permitted only where topographic and ownership constraints require it. (ORD. 1463)*
3. *Defensible space shall also be enhanced by the provision of a 3-4 foot high matte black chain link fence or acceptable*

alternative along the edge of the corridor. The fence shall help delineate the public and private spaces.

4. *The bicycle or pedestrian trails that traverse multi-family and commercial sites should follow the same defensible space standards but do not need to be defined by a fence unless required by the decision-making authority.*
5. *Except for trails within 10 feet of a wetland or natural drainageway, soft surface or gravel trails may only be used in place of a paved, all-weather surface where it can be shown to the*
6. *Planning Director that the principal users of the path will be recreational, non-destination oriented foot traffic, and that alternate paved routes are nearby and accessible.*

   (ORD. 1463)
7. *The trail grade shall not exceed 12% except in areas of unavoidable topography, where the trail may be up to a 15% grade for short sections no longer than 50 feet. In any location where topography requires steeper trail grades than permitted by this section, the trail shall incorporate a short stair section to traverse the area of steep grades.*

FINDING NO.3

The adopted Transportation System Plan (TSP) calls for a bike and pedestrian link to Woodbine Road. The draft Parks Master Plan also shows a link through this area to connect to Woodbine Road, which is a major trail corridor. This link would allow people in the Tamarisk/DeBok area access to the Woodbine trail corridor without backtracking to Blankenship and Johnson Roads. Meanwhile, the addition of a multi-modal trail would serve the interests of the TPR. These facts combine to make a strong case for a connection.

Thus staff proposes that the applicant provide a pedestrian/bicycle route connecting Street A with Woodbine Road. Such a route would be entirely within the project boundary and would not extend outside the UGB. There would be design challenges in

terms of negotiating the wetlands and steep slopes but it would yield a valuable and attractive link serving the TPR, TSP and the Parks Master Plan. Construction of trails and utility routing across wetlands is permitted per CDC Chapter 30. Therefore this criterion can be met

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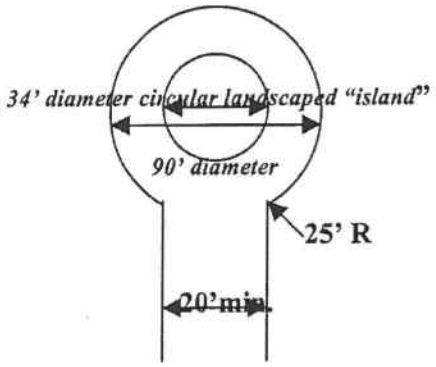
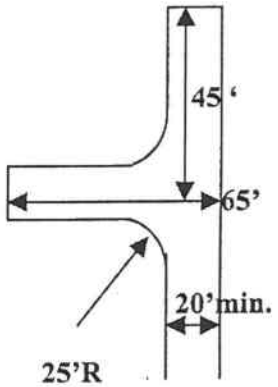
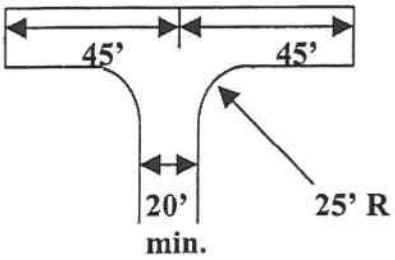
11. *Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75. All cul-de-sacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and*



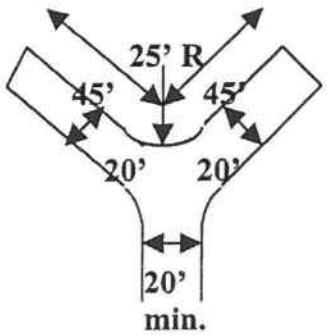
Cul-de-Sac Turnaround



Hammer Head Turnaround



"T" Turnaround



"Y" Turnaround

(ORD. 1463)

FINDING NO.4

As stated in the criteria the cul de sacs are only allowed when the applicant can demonstrate topographic, slope and site limitations. Staff agrees with the applicant that these physical limitations exist in large measure. Beyond that, staff notes that the entire area north of Blankenship Road and east of I-205 has been inexorably moving to this point where the Tamarisk/De Bok cul de sac would have to extend onto this property with no reasonable option other than an even longer cul de sac. These conditions are unique in West Linn and for that reason staff supports the applicant's associated variance. Staff also notes that that the applicant has provided a stubout at the city's request so that at some point in the future, a link to Woodbine may be facilitated and the street will cease to be a cul de sac. As an interim solution, the applicant will provide a turnaround per the standards of the CDC and TVFR.

J. ***Supplemental Provisions***

1. *Wetland and Natural Drainageways. Wetlands and natural drainageways shall be protected as required by Chapter 30, Wetland and Riparian Area Protection, and Chapter 32, Natural Drainageway Areas. Utilities may be routed through the protected corridor as a last resort, but impact mitigation is required.*

FINDING NO. 5

The Storm Water Master Plan classifies two of the four creeks that converge on this site as major storm channels with potentially erosive velocities. The other two are classed as minor drainageways. The northernmost creek is called Fritchie creek after the property owner. In addition to the drainageways, extensive wetlands are associated with these bodies of water. These drainageways and wetlands will be protected by appropriately dimensioned easements. Therefore the criterion is met.

J. *(9)* *Heritage Trees/Significant Tree and Tree Cluster Protection. All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping*

dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers, shall be saved pursuant to CDC Section 55.100(B)(2). Trees are defined per the Municipal Code as having a trunk 6" in diameter or 19" in circumference at a point five feet above the mean ground level at the base of the trunk.

FINDING NO. 6

The CDC requires that up to 20% of a site comprising non Type I and II lands can be set aside for the protection of significant trees. This application is far below the 20% mark at about 7%. Staff would note that there are not many significant trees on the non-type I and II lands so the protection of the number proposed by staff is reasonable. Off setting the modest set aside on the flatter areas is the fact that the applicant will save 40 percent of the total site for the drainageways, wetlands and with that, a very large number of significant trees on the flanks of the drainageways.

Additional discussion of significant tree protection is found in section 85.200(J)(9) and section 55.100(B)(2). For example, 55.100(B)(2) states: "*Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss. These provisions shall also apply in those cases where access, per construction code standards, to a parcel is blocked by a row or screen of significant trees or tree clusters.*"

Thus staff finds that the loss of 14 significant trees in the ROW is reasonable since the stub out of Tamarisk, the connection across a narrow logging track and the stub-out to the northeast preordains the route of Street A/Tamarisk.

PLANNED UNIT DEVELOPMENT

24.100 APPROVAL CRITERIA

A. *The approval criteria of Section 55.100, Design Review, shall apply to non-exempted projects per Section 55.025. Single-family detached, single family attached, and duplex residential units proposed shall comply with the provisions of Chapter 43.*

(Ord. 1463)

B. *The application shall also demonstrate compliance with the following criteria:*

1. *The proposal shall preserve the existing amenities of the site to the greatest extent possible by relating the type and design of the development to the topography, landscape features, and natural amenities existing on the site and in the vicinity.*

FINDING NO. 7

The Geo Pacific Engineering Inc. geotechnical report states that the six or seven lots on slopes over 30% are prone to creep and shallow sliding. The report recommends a revised site plan to avoid these slopes. Clearly this technical finding undercuts the ability of the application to properly respond to approval criteria (B)(1) above, in terms of relating the design to the topography. Staff identified lots 33,34,35,27 and 28 as being on slopes ranging from 25-50% range. Whether these are the lots GeoPacific is talking about is unclear. CDC Section 24.130 outlines the required lot sizes when constrained lands are to be developed. This could mean 30,000 square foot lots or no development at all of the sloped areas. Either way, a plan redesign is needed.

24.130 ALLOWABLE DENSITY ON TYPE I AND II LANDS

A. This table relates to the allowed density of development on Type I and II lands. Development means when the footprint of a home is placed on Type I or II lands, or when over 50 percent of the lot comprises Type I or II lands. Generally speaking, the greater the constraints, the lower the density; and the lower the constraints, the higher the allowable density.

Please note that density transfers from constrained lands generally allows a 50-100 percent transfer. The rationale for only a 50 percent transfer is that these lands have historically been of marginal development value (e.g., wetlands, 52 percent slopes, etc.); so to say those lands should have the same 100 percent development value and potential as less constrained lands, would be wrong since they are tougher to build on and they are generally appraised at a lower land value than flatter, more developable sites.

There are three categories of allowable density: 1) "building not allowed;" 2) allowable density "when developed;" and, 3) allowable density "when transferred." The first category means that no building is allowed in, for example, slopes over 50 percent or in wetlands. The prohibition is represented by an "X." The second category means that if a developer wants to develop an area, that it can only be developed at 50 percent of normal density or not at all. The third category, "when transferred," explains what percentage of the normal density of the Type I and II lands can be transferred to on-site non Type I and II lands.

B.

Type I or Type II lands	Allowable Density* Building Not Allowed	When Developed	When Transferred
Slopes			
25 - 35%		*50%***	*75%*
35 - 50%		*X*	*75%*
More than 50%	*X*	*X*	*50%*
Confirmed Land Slide Hazards	*X*	*X*	*50%*
Flood Management			
100 year flood plain	*X*	*X*	*50%*
Floodway	*X*	*X*	*50%*
Water Quality Resource Area	*X*	*X*	*50%*
Significant Natural Areas	*X*	*X*	*50%*
Significant Tree/Tree Clusters on Type I and II Lands	*X*	*X*	*50%*
Significant Tree/Tree Clusters on Non-Type I and II Lands (ORD. 1408)	*X*	*X*	*100%*
*Planned Public Open Space/ Regional Storm Treatment Facility****	*X*	*X*	*100%*

* *Development of single-family detached residences on pre-existing lots of record are exempt from this chart; most restrictive density governs in the event of conflict or overlap.*

** ***The "50 percent allowable density when developed" means that if we reduce the number of homes on constrained lands, we reduce the hazard potential which typically increases with higher density and increased site disturbance. Consequently, the density is reduced in half (50%). That means that to develop on a predominantly steep lot would require twice the minimum lot size of the underlying zone (e.g., you would need a 20,000 square foot lot in the R-10 zone). When Type I and II lands are to be developed, the 70 percent rule shall not apply to those areas; it shall only apply to the developable net area as defined in CDC Section 85.200(J)(7). (ORD. 1408)***

FINDING NO.8

These provisions dovetail with the earlier concerns about slope and slope failure. When over 50% of a lot comprises slopes in the 25-35% slope range then the lot must be twice the size of the lots in the underlying zone. Since the underlying zone is R-15, lots such as 27, 28, 33 and 34 must be at least 30,000 square feet in size. (See footnote with two asterisks for explanation of this provision.) A redesign of those lots and adjacent lots will be required to meet this code section.

Compounding the problem of this part of the application is the fact that the Geo Pacific report states that six or seven lot s are prone to creep and shallow sliding. The report does not specifically identify the lots by lot number although it reasonable to believe that these lots coincide with the lots identified above. Referring to the density transfer tables staff finds that confirmed landslide hazards cannot be developed upon at all regardless of whether the lots are increased to 30,000 square feet. Given the current plans failure to meet the criteria of CDC Chapter 24, continuing uncertainties about which lots are vulnerable, the potential need to redesign most of phase two, staff finds that the criteria is not met and recommends that the application be denied.

August 8, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road # 100
West Linn, OR 97068

Re: Tamarisk Subdivision SUB-05-06
Otak Project No. 13458

Dear Peter:

I am providing you with a revised tree report and exhibit that illustrates the amount of land being set aside for the significant trees identified by Mike Perkins at our last meeting. As we discussed in that meeting, we are providing the areas as prescribed by our arborist, Walt Knapp. According to Walt, the areas were calculated using the USDA Forest Service tree inventory coefficients and tree diameter to calculate the crown radius of the tree. We added 10 feet to the crown radius in compliance with the City of West Linn Development Code.

As it stands, we are preserving 22,663 square feet or 5 percent of area outside of type I and II lands, and outside of any rights of way for the preservation of significant trees as identified by Mike Perkins. In addition, there is approximately 13,643 square feet or 3 percent of area outside of type I and II lands where the significant trees identified by Mike Perkins falls within an area of public right-of-way. I realize that this falls short of the target that the code hopes to achieve, but we are willing to negotiate a mitigation plan, and as I have stated in previous correspondence, if we are working within the site, and find that we will be able to save more trees, we will.

In speaking with the project Engineer, and going over the tree removal/retention plan in conjunction with the grading plan, he pointed out several locations that you and I discussed that wouldn't work due to the amount of cut or fill occurring in or around the trees that would jeopardize their health.

We will work towards preservation over removal in final design, and ask that you please consider the amount of trees and significant features that are being preserved on the site as opposed to focusing in on the twenty percent standard. It is evident in past decisions made within the City that the 20 percent is a target and not a mandate. As I have suggested in the past, we realize that mature trees

provide more value to the development, and we will work diligently to keep additional trees, but we simply cannot make that type of commitment until we are in the process of physically developing the site.

I am providing you with 10 full size copies of the plans and three half size sheets as you requested. Should you have additional questions or concerns, please do not hesitate to contact me. I can be reached at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosures: Revised Plan Set (10 copies)
Amended Tree Removal/Save Spreadsheet (3 Copies)

Spir, Peter

From: Brad Kilby [brad.kilby@otak.com]
Sent: Tuesday, August 08, 2006 10:45 AM
To: Spir, Peter
Cc: Mike Peebles; mrobinson@perkinscoie.com; tony marnella
Subject: Tamarisk Trees

Peter,

I found my notes, and the large plans are on their way this afternoon (they are currently in the print room). As you requested, I am providing ten large sets of plans and three 11x17 sheet sets. I am attaching a copy of my letter and the revised tree survey with crown radius' (dripline areas) as identified by Walt Knapp to this e-mail. We added 10 feet beyond the crown radius for protection in accordance with CDC 55.100(B)(2)(a and b). The entire packet will be formally provided to you with the plan set this afternoon. Please call me if you have any questions.

Otak Inc.

Brad Kilby, AICP | Planner
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.2495 | f: 503.635.5395
www.otak.com

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Spir, Peter

From: Spir, Peter
Sent: Wednesday, June 28, 2006 9:42 AM
To: 'brad.kilby@otak.com'
Subject: tamarisk

Brad

As a courtesy, I informed you earlier today, that the Tamarisk application would be have a staff recommendation of denial.

Given the scope of modifications required (revised site plan, revised narrative, reconciling the geotech report with the new site plan, discussion of the trees),
I will not be able to accept and process the changes prior to the mailing of the staff report tomorrow.

There are two options as follows:

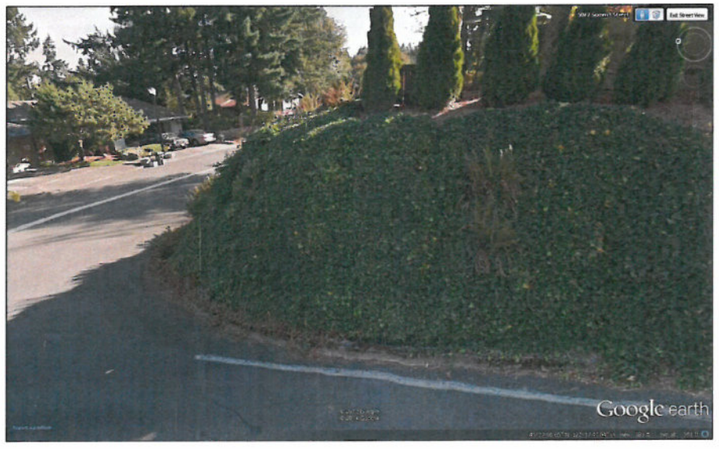
A) Proceed "as is" w/ staff recommendation of denial; or,
B) Request continuance from July 13 to August 10, grant a 30 day waiver of the 120 day rule, and submit the new design and narrative.

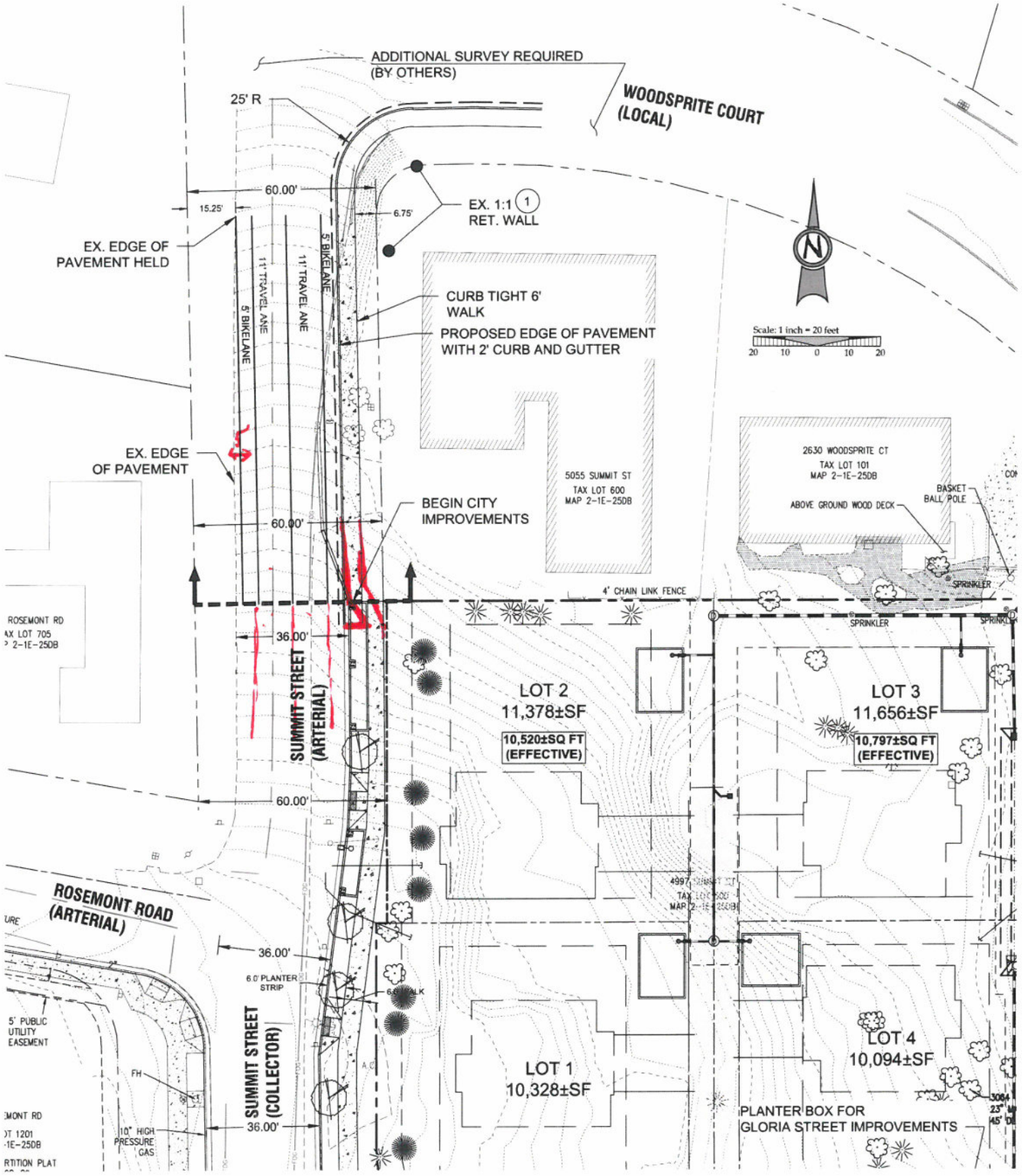
I would strongly recommend option B.
We would need to have the revised plan etc by **July 12, 2006** to review the submittal and change our report as appropriate.

Peter

CONSTRUCTION KEY NOTES/ OBSERVATIONS

(1) MUST ACCOUNT FOR ADJACENT PROPERTY OWNERS DRIVEWAY AND 1:1 RETAINING WALL ADJACENT TO EXISTING EOP. SEE PHOTOS BELOW.





PERMIT

	DATE	BY	REVISION SUMMARY
1	03/14/14		

SUMMIT STREET ROW EXHIBIT

HARPER'S TERRACE SUBDIVISION

LF 10, LLC
WEST LINN, OR

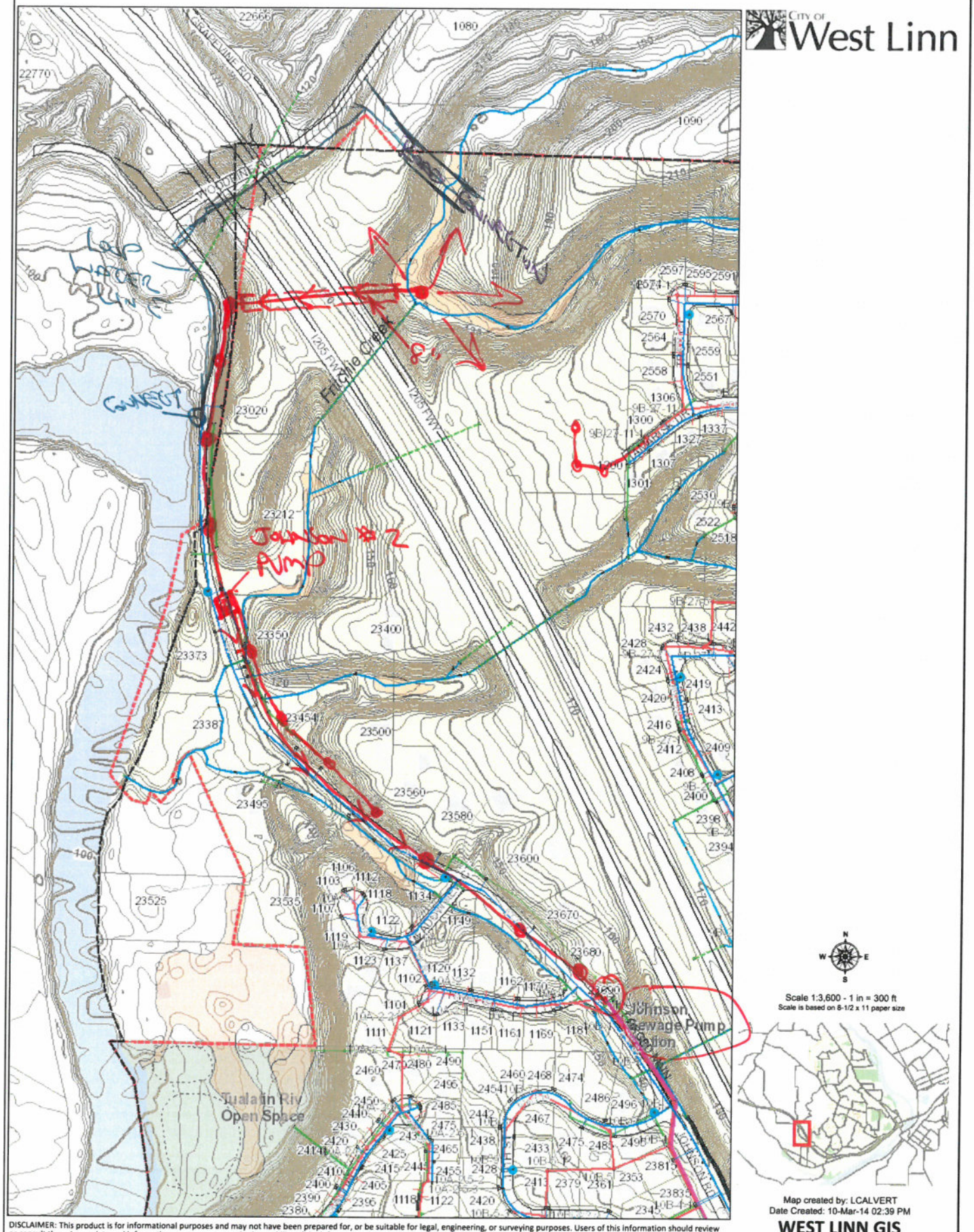
J.T. SMITH companies

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

3J JOB ID #	13123
LAND USE #	SUB-13-05
TAX LOT #	2S1E25DB 500
DESIGNED BY	CLF/BCH
CHECKED BY	BKF

SHEET TITLE
SUMMIT EXHIBIT

SHEET NUMBER
C2.1A



DISCLAIMER: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information. Source: West Linn GIS (Geographic Information System) MapOptix.

SITE STATISTICS

Size:	15.6 Acres
Jurisdiction:	City of West Linn
Address:	1200 Tamarisk Drive
Site:	21E34DC 600/900/990/1001

Dimensional Requirements:

Zoning:	R-15
Minimum Lot Size:	15,000 SF
Setbacks:	
Front:	20'
Side:	7.5'
Street Side:	15'
Rear:	20'

SITE NOTE

Site map has been prepared using data from existing tax maps and Metro's RLIS GIS Data. This map has been prepared for illustrative purposes only. All boundary and dimensional information should be verified by a professional land surveyor.

1 inch = 200FEET

0 200

Tamarisk Subdivision - Option 2

Preliminary Planned Unit Development Concept

January 2014

AFFIDAVIT OF NOTICE

We, the undersigned do hereby certify that, in the interest of the party (parties) initiating a proposed land use, the following took place on the dates indicated below:

GENERAL

File No. SUB-05-06 Applicant's Name Stearns Marnella

Development Name 35-Lot Subdivision at 1200 Tamarack

Scheduled Meeting/Decision Date July 13 '06

NOTICE: Notices were sent at least 20 days prior to the scheduled hearing, meeting, or decision date per Section 99.080 of the Community Development Code. **(check one below)**

Type A ✓

- ✓A. The applicant (date) 6/14 (signed) TB
- ✓B. Affected property owners (date) 6/14 (signed) TB
- ✓C. School District/Board (date) 6/14 (signed) TB
- ✓D. Other affected gov't. agencies (date) 6/14 (signed) TB
- ✓E. Affected neighborhood assns. (date) 6/14 PSL + COE Willamette + all (signed) TB
- F. All parties to an appeal or review (date) _____ (signed) _____

At least 10 days prior to the scheduled hearing or meeting, notice was published/posted:

Tidings (published date) 6/29 (signed) TB

City's website (posted date) 6/16 (signed) TB

Type B _____

- A. The applicant (date) _____ (signed) _____
- B. Affected property owners (date) _____ (signed) _____
- C. School District/Board (date) _____ (signed) _____
- D. Other affected gov't. agencies (date) _____ (signed) _____
- E. Affected neighborhood assns. (date) _____ (signed) _____

Notice was posted on the City's website at least 10 days prior to the scheduled hearing or meeting.

Date: _____ (signed) _____

Type C _____

- A. The applicant (date) _____ (signed) _____
- B. Affected property owners (date) _____ (signed) _____
- C. Affected neighborhood associations (date) _____ (signed) _____

Notice was posted on the City's website at least 10 days prior to the scheduled hearing or meeting.

Date: _____ (signed) _____

SIGN

At least 10 days prior to the scheduled hearing, meeting or decision date, a sign was posted on the property per Section 99.080 of the Community Development Code.

(date) _____ (signed) _____

STAFF REPORT mailed to applicant, City Council/Planning Commission and any other applicable parties 10 days prior to the scheduled hearing.

(date) _____ (signed) _____

FINAL DECISION notice mailed to applicant, all other parties with standing, and, if zone change, the County surveyor's office.

(date) _____ (signed) _____

CITY OF WEST LINN
PLANNING COMMISSION MEETING
PUBLIC HEARING NOTICE
FILE NOS. SUB-05-06/ZC-05-09/VAR 05-10/MISC-05-56

The West Linn Planning Commission, at a regular meeting on **Thursday, July 13, 2006** starting at **7:30 p.m.** in the Council Chambers of City Hall (located at 22500 Salamo Road, West Linn, OR), will hold a public hearing at the request of Stearns-Marnella Communities LLC for a 35-lot subdivision. The application also includes a Class II Variance for cul de sac serving over 12 homes and more than 400 feet long, a Planned Unit Development and a natural drainageway/wetlands permit. The property comprises 15.35 acres in size. The zoning is R-10 and R-15 meaning that the minimum lot size is 10,000 square feet in the R-10 zone and 15,000 square feet in the R-15 zone. The subdivision will access off Tamarisk Drive. The decision of the Planning Commission will be based exclusively upon Community Development Code (CDC) Chapter 85 regarding subdivisions, Chapter 24 regarding PUDs, Chapter 32 regarding Natural drainageways, Chapter 30 regarding wetlands and CDC Chapter 75 regarding variances. At the hearing it is important that comments relate specifically to the applicable criteria listed. A summary of the applicable criteria is enclosed.

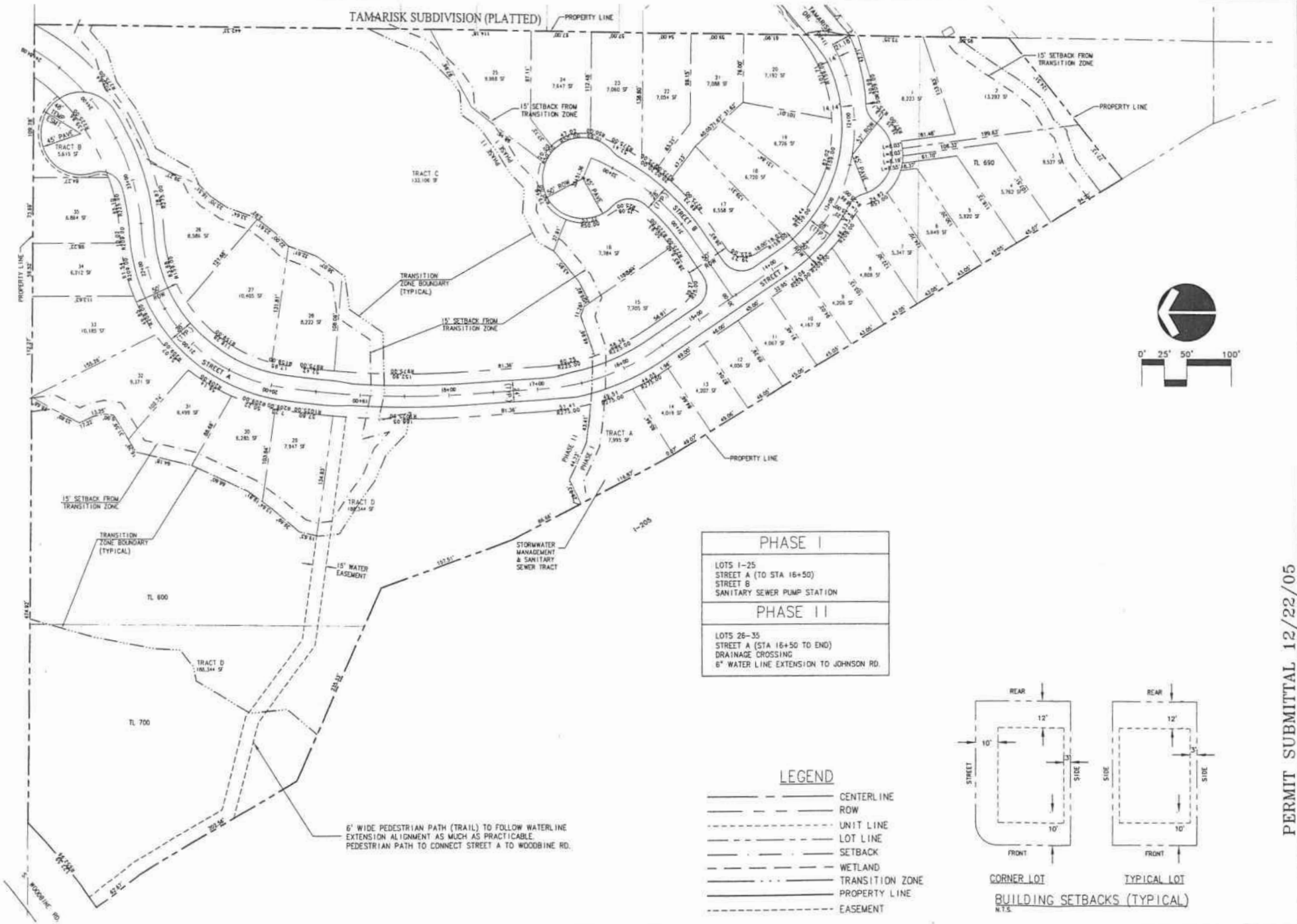
You have received this notice because you own property within 500 feet of the project site, identified as Tax Lot 600, 690, and 700 Assessor's Map 2-1E-34A.

All documents and applicable criteria in the above-noted file are available for inspection at no cost, or copies can be obtained for a minimal charge per page. At least 10 days prior to the hearing, a copy of the staff report will be available for inspection. For further information, please contact Peter Spir, Associate Planner, at City Hall, 22500 Salamo Road #1000, West Linn, OR 97068. The best way to contact staff is by e-mail at pspir@ci.west-linn.or.us ; alternately, you may call (503) 656-4211.

The hearing will be conducted in accordance with the rules of Section 99.170 of the Community Development Code, adopted December 14, 1987, Ordinance 1129. Anyone wishing to present written testimony on this proposed action may do so in writing prior to, or at the public hearing. Oral testimony may be presented at the public hearing. At the public hearing, the Planning Commission will receive a staff report presentation from the City Planner; and invite both oral and written testimony. The Planning Commission may continue the public hearing to another meeting to obtain additional information, or close the public hearing and take action on the application. If a person submits evidence in support of the application, any party is entitled to request a continuance of the hearing. If there is no continuance granted at the hearing, any participant in the hearing may request that the record remain open for at least seven days after the hearing. Failure to raise an issue in person or by letter at some point prior to the close of the hearing, or failure to provide sufficient specificity to afford the decision maker an opportunity to respond to the issue, precludes an appeal to the Land Use Board of Appeals based on that issue.

TERESA ZAK
Planning Commission Administrative Asst.

p:\devrvw\notices\pcnotic.sub-05-09tamarisk



PERMIT SUBMITTAL 12/22/05

TAMARISK PROPERTY

TENTATIVE SUBDIVISION PLAN
TENTATIVE SUBDIVISION PLAT

Stearns Marnella Communities

NO.	DATE	BY	REVISION COMMENTS

Drawn: Checked: Date: Initial Issue Date: December 22nd 2005

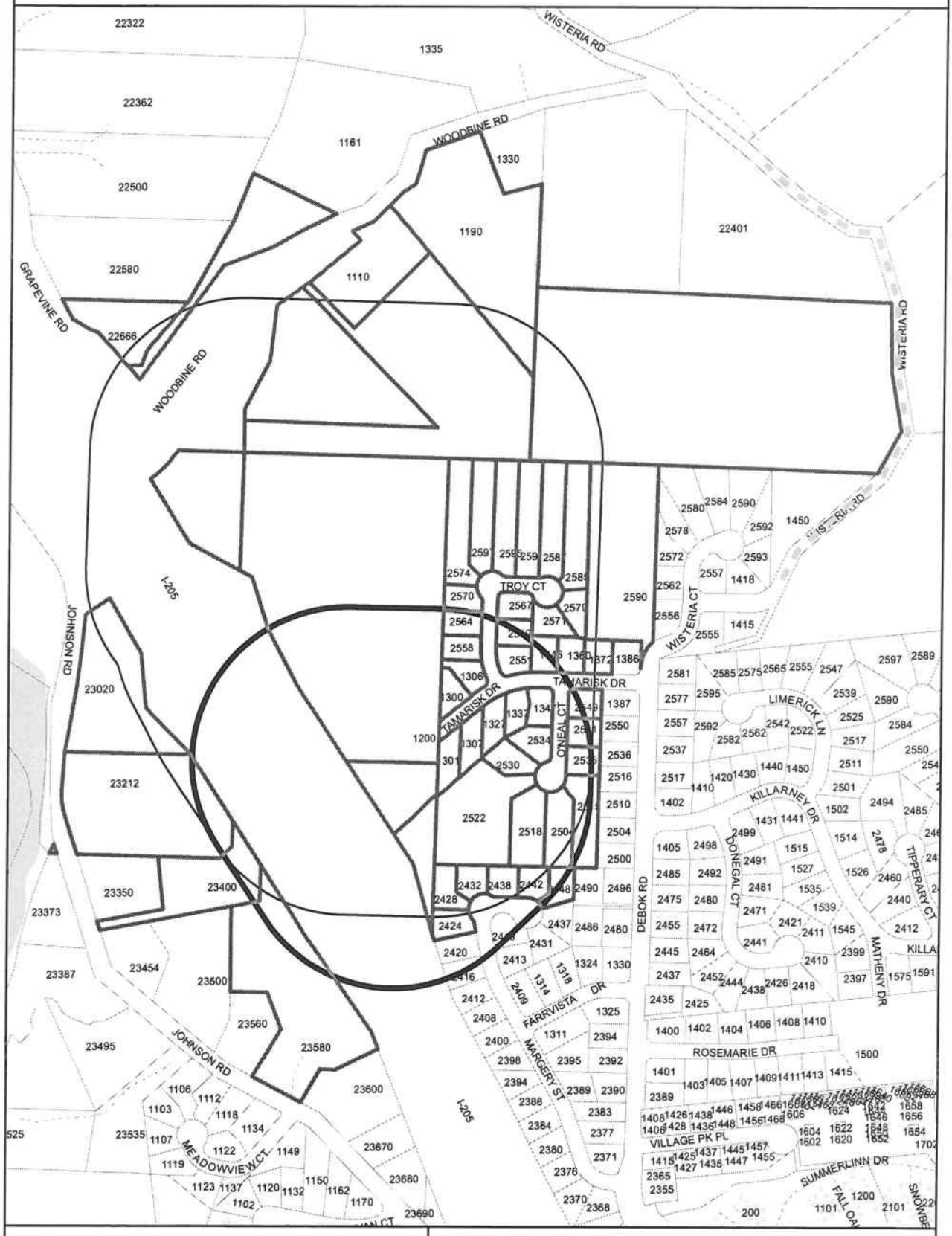
otak Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 045EX05
Project No. Drawing No.

EX05
Exhibit No.

Copyright 2005 ©

SUB-05-06



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Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Taxlot Base Source: Clackamas County GIS

SNAPNOTIF / APP 12-6-05

User Name: T Zak

Map Creation Date: Jun 13, 2006

AMESTOY GILBERT J & CYNTHIA J
2564 TROY CT
WEST LINN OR 97068

AUS WAYNE E & LORI K
2574 TROY CT
WEST LINN OR 97068

BAASTEN MATTHEW J & ELIZABETH J
1372 TAMARISK DR
WEST LINN OR 97068

BAKER KEITH H & DELEEN M
2522 ONEAL CT
WEST LINN OR 97068

BEUTZ MAX J TRUSTEE
2438 MARGERY ST
WEST LINN OR 97068

BROWN GARY N & LINDA G
1360 TAMARISK DR
WEST LINN OR 97068

BURKE DON
15604 SE RUBY DR
MILWAUKIE OR 97267

CERNY JOSEPH A & BJ E
2558 TROY CT
WEST LINN OR 97068

CLACKAMAS COUNTY
9101 SE SUNNYBROOK BLVD
CLACKAMAS OR 97015

CLARK RANDY L & KATHY A
2541 ONEAL CT
WEST LINN OR 97068

DAY TERI F & FRANKLYNN M
2428 MARGERY ST
WEST LINN OR 97068

DEBERRY ERIC J & KATHLEEN P
2504 ONEAL CT
WEST LINN OR 97068

DOUMA CURT M & CHERYL S
2567 TROY CT
WEST LINN OR 97068

DUNN PATRICIA J
2559 TROY CT
WEST LINN OR 97068

FISHER KENNETH H & SANDRA C PESKIN
1190 S WOODBINE RD
WEST LINN OR 97068

FRITCHIE EDWIN L TRUSTEE
21929 S CLEAR CREEK RD
ESTACADA OR 97023

GORDON JEFFREY M & MARGARET A
2534 ONEAL CT
WEST LINN OR 97068

GRENIER RICHARD B
1080 S WOODBINE RD
WEST LINN OR 97068

HANNA MATTHEW
2424 MARGERY ST
WEST LINN OR 97068

HENDERSON ROBERT M & LINDA J
1307 TAMARISK DR
WEST LINN OR 97068

HILL RICHARD M
2432 MARGERY ST
WEST LINN OR 97068

HILSHEIMER JAMES W
2530 ONEAL CT
WEST LINN OR 97068

HOWARD AARON R & NICOLE M
2579 TROY CT
WEST LINN OR 97068

INMAN RALPH H & LINDA L
23580 JOHNSON RD
WEST LINN OR 97068

LANGE ERIK & BETH R
1337 TAMARISK DR
WEST LINN OR 97068

LESLIE DAVID H & VICKY
23400 JOHNSON RD
WEST LINN OR 97068

MANN ROY S & LINDA L
1301 TAMARISK DR
WEST LINN OR 97068

MAXWELL WILLIAM D & TONI L
2570 TROY CT
WEST LINN OR 97068

MAY GARY D & MARY ANNE WEITZEL
1110 S WOODBINE RD
WEST LINN OR 97068

MCCALL TERRY L
2448 MARGERY ST
WEST LINN OR 97068

MILLER EDITH C
1300 TAMARISK DR
WEST LINN OR 97068

MURRAY CHRISTEN
1347 TAMARISK DR
WEST LINN OR 97068

MURTAGH TOM A
2551 TROY CT
WEST LINN OR 97068

NEILSON CURTIS T & JEANNE K
2585 TROY CT
WEST LINN OR 97068

NICODEMUS JERRY D & NADINE I
1327 TAMARISK DR
WEST LINN OR 97068

OFELT JACK JR TRUSTEE
19420 SE SEMPLE RD
CLACKAMAS OR 97015

PETTINGILL KEITH B & MARY ANNE
2515 ONEAL CT
WEST LINN OR 97068

PIROOZMANDI RUHOLLAH & G ROSHANAI
2535 ONEAL CT
WEST LINN OR 97068

QUINN LINDA L
2105 PEREGRINE CT
WEST LINN OR 97068

RAZDIK DAN A
2591 TROY CT
WEST LINN OR 97068

ROOD DAVID E TRUSTEE
2571 TROY CT
WEST LINN OR 97068

ROSEMONT SEVEN LLC
1099 CHERRY CIR
LAKE OSWEGO OR 97034

SNIVELY JOHN V
2549 ONEAL CT
WEST LINN OR 97068

STATE OF OREGON HWY DIV
TRANSPORTATION BLDG
SALEM OR 97310

STATEN DAVID R & LORI J
810 SE OAK GROVE BLVD
MILWAUKIE OR 97267

STATEN DUSTIN L & KELLY S
23020 JOHNSON RD
WEST LINN OR 97068

THOMPSON KENNETH M JR
2442 MARGERY ST
WEST LINN OR 97068

TKACH VLADIMIR
2590 S DEBOK RD
WEST LINN OR 97068

TWEEDDALE EDMUND M & SUSIE W
2597 TROY CT
WEST LINN OR 97068

VALACHOVIC JOHN J & ELLEN E
22666 S GRAPEVINE RD
WEST LINN OR 97068

WILLIAMS TAMARA J
2518 ONEAL CT
WEST LINN OR 97068

ZEEB RODNEY C
2587 TROY CT
WEST LINN OR 97068

ZILK DAVID E & AMY SUE
2595 TROY CT
WEST LINN OR 97068

ALL NEIGHBORHOOD ASSN

RTN'D

STEARNS & MARNELL
18318 SE ABERNATHY LANE
GLADSTONE, OR 97027

BRAD KILBY/OTAK
17355 BOONES FERRY ROAD
LAKE OSWEGO, OR 97035

DSL & COE

June 5, 2006

Stearns Marnella Communities LLC
18318 SE Abernathy Lane
Milwaukie, OR 97267

SUBJECT: SUB 05-06, Tamarisk Subdivision Completeness Determination

Dear Mssrs. Stearns and Marnella:

With the re-submittal of OTAK's material and the cover letter from Mr. Phil Grillo, dated June 1, 2006, the Engineering and Planning Departments find that the subdivision application for Tamarisk subdivision is **complete**. The city of West Linn now has 120 days from June 1, 2006 to exhaust all local review. That period lapses on September 29, 2006.

I will schedule your case for hearing by the Planning Commission on Thursday, July 13, 2006 at 7:30PM.

Please contact me at 656-4211 if you have any questions or, better yet, e-mail me at pspir@ci.west-linn.or.us.

Sincerely,

Peter Spir
Associate Planner

PC: Brad Kilby, OTAK, 17355 SW Boones Ferry Road, Lake Oswego, OR 97035
Phillip Grillo, 3400 US Bancorp Tower, 111 S.W. Fifth Avenue, Portland, OR 97204-3699

:/devrvw/completeness check/COMPLETE-SUB 05-06-TAMARISK

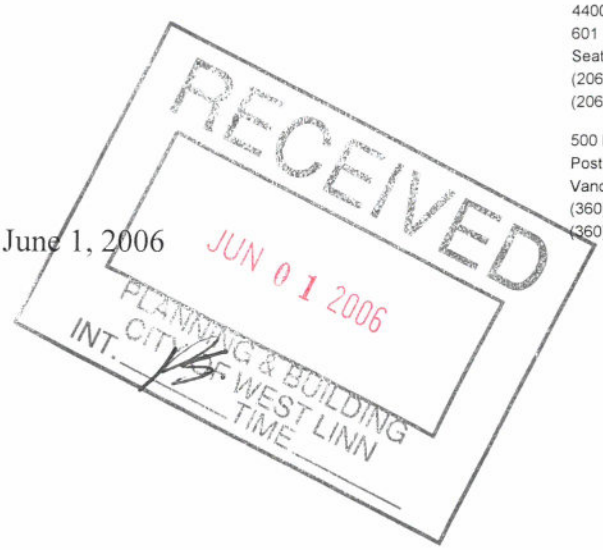
MILLER | NASH LLP
ATTORNEYS AT LAW

Miller Nash LLP
www.millernash.com
3400 U.S. Bancorp Tower
111 S.W. Fifth Avenue
Portland, OR 97204-3699
(503) 224-5858
(503) 224-0155 fax

4400 Two Union Square
601 Union Street
Seattle, WA 98101-2352
(206) 622-8484
(206) 622-7485 fax

500 E. Broadway, Suite 400
Post Office Box 694
Vancouver, WA 98666-0694
(360) 699-4771
(360) 694-6413 fax

Phillip E. Grillo
phil.grillo@millernash.com
(503) 205-2311 direct line



June 1, 2006

Mr. Peter Spir
Planner
City of West Linn
22500 Salamo Road, #1000
West Linn, Oregon 97068

Subject: Tamarisk Subdivision (SUB-05-06)

Dear Peter:

Attached is the applicant's response to the city's request for additional information concerning the Tamarisk Subdivision. As you know, we have been working with you to get this application deemed complete for some time now. In that regard, I am hereby notifying you pursuant to ORS 227.179(2)(b) that no other information will be provided. Accordingly, this application is hereby "deemed complete" under the provisions of that statute, on the date you receive this letter and the attached information. The 120-day statutory period for final action on this application will commence on that date. Thank you for your cooperation on this matter. If you have any questions, please feel free to contact me.

Very truly yours,

Phillip E. Grillo

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

May 26, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Email of May 22, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your email regarding the incompleteness of the Tamarisk Subdivision dated May 22, 2006. I am responding to each item individually below.

Planning Comment Responses

According to your telephone message on May 24, 2006, there are no outstanding planning issues.

Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 33.050

1. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

   Response: Access to the control manhole structure at the pond will be provided through a paved portion of the planter strip and back of sidewalk. Access to the pond bottom and water quality swales will be down a 4H:1V slope at the east side of the pond (no vehicular access,

creativity, integrity, and skill • strengthening our communities • performing exciting work • serving our clients

only lawn equipment access). Access to the walk-in and Phase 2 water quality swale is from the back of sidewalk (no vehicular access, only walk-in and lawn equipment access). Access to the oversized detention pipe will be from the paved street surface.

Section 85.150 and 85.200

2. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.*

   Response: As with our last response, a request for variance was added to our planning application after our first completeness review letter. This is ***not*** a completeness item, rather it is an application that has been filed for review concurrent with the Planned Unit Development application.

3. *85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision.* ***Show a sewer stub at the north end of the sanitary sewer.***

   Response: The extension of the sanitary sewer line to the north property limit was shown on the revised "Planning Resubmittal 5/5/2006." This item was previously addressed.

4. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

   Response: The preliminary storm drainage report has been revised to show the amount of required and proposed stormwater detention for the proposed development. It is illustrated in Table 4, and again in the hydrographs at the back of the report.

Section 85.160

5. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

   Response: A stamp and signature has been added to the Tentative Subdivision Plat (EX05), Tentative Grading Plan (EX07), and Tentative Utility Plan (EX08). Section 85.160 only requires that the tentative subdivision plan be signed by a registered civil engineer. It does not require that all plans be signed by a registered civil engineer. The project engineer for this

proposal has signed the three plans listed above. All other plans deal with existing onsite conditions over which the project engineer has no control over.

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

6. *Show proposed curb cuts for driveways at each lot.*

   Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

7. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

   Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

8. *The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verity that this street section is acceptable.*

   Response: This proposed street section was reviewed with City staff at the pre-application meeting and included as a design proposal as part of our Planned Unit Development (PUD) application. This item will be evaluated by City staff during their review of the application. This should not be considered a completeness item.

9. *In accordance with Section 32.050-9, vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the site to be in an unhealthy or disturbed state.*

   Response: The applicant has read and understands the provisions of the Community Development Code and will make the required improvements as necessary.

The information cited above is supported by the previous documentation provided in the narrative, previous resubmittal information, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby

Brad Kilby, AICP

BK:sjs
Enclosure: Revised Stormwater Report (3 copies)

Memorandum

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

To: Mike Peebles, PE

From: Terry Soltz, EIT

Copies: File

Date: May 26, 2006

Subject: Tamarisk Property

Project No.: 13458

Introduction

The following is a preliminary stormwater management plan for the proposed Tamarisk Development. Otak conducted a site visit on October 10, 2005. A downstream analysis of the one-quarter mile reach of Fritchie Creek downstream of the proposed development is attached in Appendix C.

The proposed site is 15.5 acres and is located within the City of West Linn, Oregon at the end of Tamarisk Drive. The site is bounded to the east by Interstate 205 (I-205). The site includes tax lots 00600, 00690, and 00700. Under proposed conditions, stormwater runoff from the developed site will be collected and conveyed by a series of catch basins and pipes to detention and water quality facilities, then to an outfall which will discharge into Fritchie Creek. A base map of the proposed site is included as Figure 1.

Floodplain

The entire site is designated as Zone C according to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) for Clackamas County, Oregon, Panel 135 (August 4, 1987). The Zone C designation is defined as an area of minimal flooding.

Soil Survey

There were three soil types identified on the property according to the NRCS Soil Survey of Clackamas County, Oregon (1982). As summarized in Table 1, site soils are in Hydrologic Group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure.

Table 1
Soil Types

Soil Name	SCS Symbol	Hydrologic Group
Woodburn Silt Loam	91B	C
Cascade Silt Loam	13C	C
Xerochrept/Haploxerolls	92F	n/a

Existing Storm Sewer

According to GIS maps viewed on the official website for the City of West Linn, existing storm-water and sanitary sewer lines extend to the end of Tamarisk Drive, but none are currently located on the Tamarisk property. There have been no documented complaints of drainage issues or flooding issues reported by neighboring developments or property owners, according to the City of West Linn.

Hydrology

The property was divided at the creek into south and north sections for the purpose of stormwater analysis and management. Runoff was calculated for existing and proposed conditions using Hydraflow Hydrographs 2004 software by Intelli*SOLVE*. Under existing conditions, the site was assumed to be completely wooded. For proposed conditions, separate hydrographs were calculated for pervious and impervious areas, then combined and subsequently routed through simulated detention facilities. Results are shown in Table 2, below, and a detailed summary is included in Appendix A.

Table 2
Predicted Peak Runoff Rates

Proposed Basin	Area (ac)	Peak Runoff Rates (cfs)			
		WQ	2-yr	10-yr	25-yr
South Impervious	2.40	0.384	1.305	1.881	2.168
South Pervious	2.49	0.020	0.590	1.109	1.383
South TOTAL	4.89	0.386	1.891	2.982	3.541
North Impervious	1.46	0.234	0.794	1.145	1.319
North Pervious	1.52	0.012	0.402	0.745	0.925
North TOTAL	2.98	0.236	1.193	1.884	2.238

Water Quantity

The proposed project area comprises less than five percent of the total Fritchie Creek drainage basin area, and is located approximately 1,560 feet upstream from the confluence of Fritchie Creek and the Tualatin River. The City of West Linn, however, requires that all new development detain water to match existing flows for the 2-, 10-, and 25-year, 24-hour design storm events. For this purpose, a combination pond and pipe storage system is proposed for the southern portion (Phase 1), and a detention pipe is proposed for the northern portion (Phase 2). These facilities reduce the predicted discharge rates so that they do not exceed current rates, as shown in Table 3. Modeling also determined the required storage volumes indicated in Table 4. These values are taken from the runoff tables included in Appendix A.

For the southern section, a five-foot deep pond with a footprint of approximately 4,000 square feet will be placed inline and at the same elevation as a 275-foot long 4-foot diameter detention pipe for a combined storage of 19,600 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with an orifice and a double-cut rectangular notch. The riser will have a 2-inch

diameter orifice at the outlet elevation with a rim 4.9 feet above. The notch will be 1.2 feet wide to a depth of 0.2 feet from the rim, and 0.6 feet wide to a depth of 0.6 feet.

Storage for the north side will consist of a 350-foot long 6-foot diameter pipe with a capacity of 9,900 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with two orifices and a rectangular notch. The riser will have a rim 5.85 feet above its outlet, with a 1.7-inch diameter orifice at the outlet elevation and a 3.8-inch diameter orifice with an invert elevation 4.8 feet above. The notch will be 1 foot wide to a depth of 0.25 feet from the rim.

Table 3
Comparison of Existing and Predicted Flows

Condition	Peak Runoff Rates (cfs)		
	2-yr	10-yr	25-yr
South Existing	0.225	0.832	1.200
South Predicted (w/ detention)	0.212	0.674	1.096
North Existing	0.163	0.575	0.829
North Existing (w/ detention)	0.162	0.544	0.781

Table 4
Required and Available Storage

Basin	Required Storage (25-yr Event, cf)	Available Storage (cf)
South (Phase I)	18,877	19,600
North (Phase II)	9,632	9,900

Water Quality

The City of West Linn refers to the Bureau of Environmental Services (BES) stormwater manual for water quality requirements. Due to the low infiltration rates expected for the site, flow-through vegetated swales will be used for treatment. These swales were sized according to the presumptive approach, and spreadsheet calculations are included in Appendix B. The swale that treats the south side runoff will be graded into the bottom of the detention pond. It will be at least 117 feet long, with a minimum depth of 0.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.8 percent, and a base width of 4 feet.

For the north side, a flow splitter will direct low flows to the swale and will bypass higher flows to the detention pipe. Outflows from the swale will also be conveyed to the detention pipe. The swale for the north side needs to be at least 117 feet long, with a minimum depth of 1.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.9 percent, and a base width of 2 feet. This depth allows the 25-year predicted outflow from the splitter to pass through the swale with at least one foot of freeboard remaining. The flow splitter will consist of a 60-inch diameter manhole with a 6-inch outlet at its base that leads to the swale, and a 12-inch bypass with its invert 0.35 feet higher than the primary invert. Freeboard calculations for the swale and stage-discharge table for the flow splitter are included in Appendix B.

Stormwater Outfall

Stormwater runoff will discharge to Fritchie Creek through a rip-rap outfall (southern basin) and a connection to the proposed culvert (northern basin). The proposed culvert will be designed to safely convey upstream flows and the stormwater flows discharged from the project site. This design will allow energy from the stormwater discharge to be dissipated within the culvert, and minimize erosion in Fritchie Creek. An in-pond weir designed to safely pass the 100-year flow will be constructed as the emergency overflow structure, and will discharge overland to Fritche Creek downstream of the proposed culvert crossing.

XREF LIST
Lscale: 1
Resolved
P458X001
P458X232
P458X432
S458X190
P458X602
TAXLOTS2
P458X332
Unresolved
P458X400
P458X502

PLATTED SUBDIVISION

PROPERTY LINE

EXIST. 8" SS

CONNECT TO EXIST. SSMH ON TAMARISK DR. FLOW TO EAST IN EXIST 8" SS

EXISTING SDCB RIM=184.98

EXIST. 6" W

EXISTING SDCB RIM=184.98

CONNECT TO EXIST. 6" WATER MAIN

RIM=205.4 IE=197.4

RIM=199.7 IE=191.7

RIM=184.9 IE=176.9

RIM=180.7 IE=172.7

TRACT A

TRACT B

TRACT C

TRACT D

WETLAND IMPACT (TYP)

SANITARY SEWER PUMP STATION

RIM=162.0 IE=150.8

SD CULVERT

WQ SWALE

STREET A

STREET B

6" W

STORMWATER TREATMENT VAULT FOR W.Q. (STORMWATER 360 STORMFILTER)

15' WATER EASEMENT

WETLAND MITIGATION AREA

WETLAND IMPACT (TYP)

PROPOSED 6" WATER LINE EXTENSION

6" W

FOR WATER LINE CONTINUATION – SEE DETAIL RIGHT

FOR WATER LINE CONTINUATION – SEE ABOVE LAYOUT

FOR WOODBINE RD.

I-205

SW JOHNSON RD.

PROPOSED 6" WATER LINE EXTENSION IN PAVEMENT AT UNDERPASS

CONNECT TO EXIST. 6" WATER LINE

0' 25' 50' 100'

0' 50' 100' 200'

PHASE I
(2006/2007)

LOTS 1–25
STREET A (TO STA 16+50)
STREET B
SANITARY SEWER PUMP STATION(TRACT A)

PHASE II
(to be determined, up to 8 years after subdivision approval)

LOTS 26–35
STREET A (STA 16+50 TO END)
DRAINAGE CROSSING
6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:

1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL
- STREETLIGHT

NO.	DATE	BY	REVISION COMMENTS	Design	Drawn	Checked	Date	Initial Issue Date: XX/04December 22nd, 2005

Stearns Marnella Communities

PLANNING RESUBMITTAL 4/28/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

otak Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 D458EX08
Project No. Drawing No.
EX08
Exhibit No.

Copyright 2005 ©

I:\O: MIKEP 05/03/2006 2:04pm ---> R:\DWG\PREP\LAT\D458EX08.DWG

Appendix A –
Runoff Computations

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.004	6	1440	38	----	------	------	SOUTH_EXT
2	SBUH Runoff	0.384	6	480	5,463	----	------	------	SOUTH_IMP
3	SBUH Runoff	0.020	6	1020	1,079	----	------	------	SOUTH_PER
4	Combine	0.386	6	480	6,541	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.081	6	924	6,518	4	157.71	2,053	Det. Pond
7	SBUH Runoff	0.002	6	1440	23	----	------	------	NORTH_EXT
8	SBUH Runoff	0.234	6	480	3,323	----	------	------	NORTH_IMP
9	SBUH Runoff	0.012	6	1014	658	----	------	------	NORTH_PER
10	Combine	0.236	6	480	3,982	8, 9	------	------	NORTH_TOT
11	Reservoir	0.063	6	624	3,961	10	0.81	803	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.221	6	492	9,131	----	------	------	SOUTH_EXT
2	SBUH Runoff	1.305	6	474	18,917	----	------	------	SOUTH_IMP
3	SBUH Runoff	0.590	6	480	10,506	----	------	------	SOUTH_PER
4	Combine	1.891	6	480	29,422	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.212	6	1404	29,399	4	161.29	16,534	Det. Pond
7	SBUH Runoff	0.163	6	486	5,564	----	------	------	NORTH_EXT
8	SBUH Runoff	0.794	6	474	11,508	----	------	------	NORTH_IMP
9	SBUH Runoff	0.402	6	480	6,413	----	------	------	NORTH_PER
10	Combine	1.193	6	480	17,921	8, 9	------	------	NORTH_TOT
11	Reservoir	0.159	6	1206	17,900	10	4.57	8,085	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.817	6	486	19,755	----	------	------	SOUTH_EXT
2	SBUH Runoff	1.881	6	474	27,589	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.109	6	480	18,169	----	------	------	SOUTH_PER
4	Combine	2.982	6	480	45,758	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.674	6	660	45,735	4	161.67	18,185	Det. Pond
7	SBUH Runoff	0.575	6	480	12,039	----	------	------	NORTH_EXT
8	SBUH Runoff	1.145	6	474	16,783	----	------	------	NORTH_IMP
9	SBUH Runoff	0.745	6	480	11,091	----	------	------	NORTH_PER
10	Combine	1.884	6	480	27,874	8, 9	------	------	NORTH_TOT
11	Reservoir	0.548	6	558	27,854	10	5.07	8,915	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	1.178	6	486	25,847	----	------	------	SOUTH_EXT
2	SBUH Runoff	2.168	6	474	31,933	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.383	6	480	22,198	----	------	------	SOUTH_PER
4	Combine	3.541	6	480	54,131	2, 3	------	------	SOUTH_TOT
5	Reservoir	1.096	6	558	54,108	4	161.83	18,877	Det. Pond
7	SBUH Runoff	0.829	6	480	15,751	----	------	------	NORTH_EXT
8	SBUH Runoff	1.319	6	474	19,426	----	------	------	NORTH_IMP
9	SBUH Runoff	0.925	6	480	13,551	----	------	------	NORTH_PER
10	Combine	2.238	6	480	32,976	8, 9	------	------	NORTH_TOT
11	Reservoir	0.826	6	534	32,956	10	5.63	9,632	N_STORAGE

Appendix B –
Water Quality Computations

SOUTH SWALE
WQ Flow

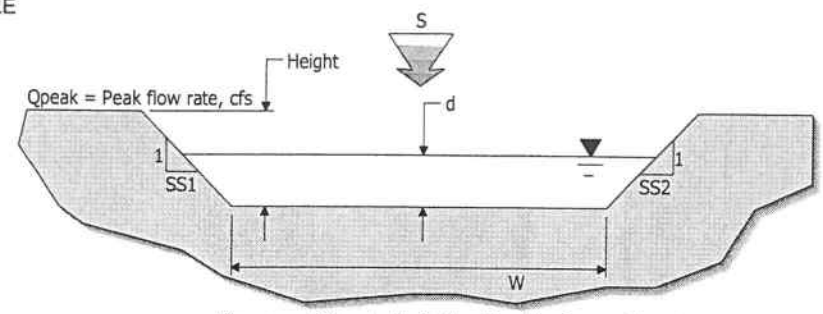


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	4	feet
Lengthwise Slope	S	0.008	feet/foot
Peak Flow Rate	Qpeak	0.386	cfs
Swale Height	Height	0.3333	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.96	inches
Cross-sectional Area	A	1.75	sf
Wetted Perimeter	WP	6.72	feet
Hydraulic Radius	R	0.26	feet
Computed Peak Flow Rate	Qpkcalc	0.38	cfs
Computed Peak Velocity	Vpkcalc	0.22	ft/sec
Computed Length	**L**	**117**	**feet**

NORTH SWALE
WQ Flow

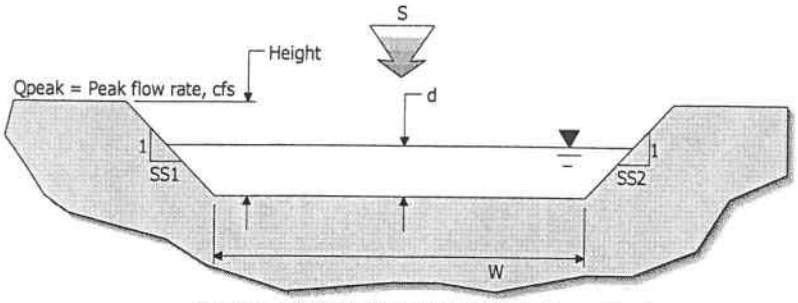


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	2	feet
Lengthwise Slope	S	0.009	feet/foot
Peak Flow Rate	Qpeak	0.236	cfs
Swale Height	Height	1.66667	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.94	inches
Cross-sectional Area	A	1.09	sf
Wetted Perimeter	WP	4.71	feet
Hydraulic Radius	R	0.23	feet
Computed Peak Flow Rate	Qpkcalc	0.23	cfs
Computed Peak Velocity	Vpkcalc	0.21	ft/sec
Computed Length	**L**	**115**	**feet**

Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, May 9 2006, 1:45 PM

Pond No. 1 - North Basin Splitter

Pond Data

Bottom LxW = 4.4 x 4.4 ft Side slope = 0.0:1 Bottom elev. = 0.00 ft Depth = 1.60 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	0.00	20	0	0
0.08	0.08	20	2	2
0.16	0.16	20	2	3
0.24	0.24	20	2	5
0.32	0.32	20	2	6
0.40	0.40	20	2	8
0.48	0.48	20	2	9
0.56	0.56	20	2	11
0.64	0.64	20	2	13
0.72	0.72	20	2	14
0.80	0.80	20	2	16
0.88	0.88	20	2	17
0.96	0.96	20	2	19
1.04	1.04	20	2	20
1.12	1.12	20	2	22
1.20	1.20	20	2	24
1.28	1.28	20	2	25
1.36	1.36	20	2	27
1.44	1.44	20	2	28
1.52	1.52	20	2	30
1.60	1.60	20	2	31

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	12.00	0.00	0.00
Span (in)	= 6.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 0.00	0.35	0.00	0.00
Length (ft)	= 20.00	20.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Stage / Storage / Discharge Table

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs	
0.00	0	0.00	0.00	0.00	---	---	---	---	---	---	---	0.00	
0.08	2	0.08	0.02	0.00	---	---	---	---	---	---	---	0.02	
0.16	3	0.16	0.07	0.00	---	---	---	---	---	---	---	0.07	
0.24	5	0.24	0.13	0.00	---	---	---	---	---	---	---	0.13	
0.32	6	0.32	0.20	0.00	---	---	---	---	---	---	---	0.20	WQ 0.24
0.40	8	0.40	0.26	0.01	---	---	---	---	---	---	---	0.27	
0.48	9	0.48	0.29	0.07	---	---	---	---	---	---	---	0.37	
0.56	11	0.56	0.36	0.18	---	---	---	---	---	---	---	0.54	
0.64	13	0.64	0.44	0.30	---	---	---	---	---	---	---	0.74	
0.72	14	0.72	0.51	0.44	---	---	---	---	---	---	---	0.95	
0.80	16	0.80	0.57	0.59	---	---	---	---	---	---	---	1.16	
0.88	17	0.88	0.62	0.74	---	---	---	---	---	---	---	1.37	
0.96	19	0.96	0.67	0.89	---	---	---	---	---	---	---	1.57	
1.04	20	1.04	0.72	1.04	---	---	---	---	---	---	---	1.76	
1.12	22	1.12	0.76	1.17	---	---	---	---	---	---	---	1.94	
1.20	24	1.20	0.81	1.28	---	---	---	---	---	---	---	2.09	
1.28	25	1.28	0.85	1.36	---	---	---	---	---	---	---	2.21	25-yr 2.24
1.36	27	1.36	0.88	1.44	---	---	---	---	---	---	---	2.32	
1.44	28	1.44	0.92	1.89	---	---	---	---	---	---	---	2.81	
1.52	30	1.52	0.95	2.25	---	---	---	---	---	---	---	3.20	
1.60	31	1.60	0.99	2.56	---	---	---	---	---	---	---	3.55	

Appendix C –
Down Stream Analysis

Down Stream Analysis

Introduction

There are four drainage basins on the Tamarisk Property, referred to as Basins A, B, C, and D. See Figure A. Basin A is a 0.26-acre area that drains to an unnamed stream that is located off-site to the north. Basin B is a 4.36-acre area that drains to Fritchie Creek, the stream crossing the northern portion of the property. Basin C is an 8.27-acre area drained by an unnamed tributary of Fritchie Creek that traverses the middle portion of the property. Basin D is a 3.12-acre area that drains south to an unnamed stream located off-site. The basin locations, culverts, and other structures mentioned in this analysis are shown on the map in Figure A., following this report.

Review of Downstream System

Basin A

Basin A is located at the northwest corner of the project site and drains north toward an unnamed tributary that flows near the intersection of Johnson and Wisteria Roads, and contributes to the Tualatin River. At 0.26 acres, this basin is a small portion of the Tamarisk site and it is situated along the relatively flat portion of the ridge top. This portion of the site is not expected to generate flow rates significant enough to affect the receiving drainage channel.

Basin B

The 4.36-acres of Basin B drain directly to Fritchie Creek. Fritchie Creek enters the Tamarisk Property at the northern boundary and exits the property through a 48-inch culvert (B-3) under I-205. The Fritchie Creek channel meanders through a moderately flat, large floodplain. The adjacent slopes to the floodplain range from 37 percent on the north side of the stream to 35 percent on the south side.

Fill, which appears to be a future road crossing, has been placed across Fritchie Creek approximately 300 feet upstream of the Tamarisk Property boundary. A 36-inch Corrugated Metal Pipe (CMP) culvert (B-1) was installed to convey stream flows through this fill.

A defined channel has been recently excavated Downstream of Culvert B-1 in the Fritchie Creek floodplain. This channel conveys outflows from Culvert B-1 downstream to another fill placement and culvert crossing (B-2). It is unknown if this channel is a re-alignment or mitigation resulting from the construction of Culvert B-1 in Fritchie Creek. Large woody debris and excavated fill were placed along the newly excavated channel.

Table A.1
Structures along Fritchie Creek

Structure	Type	Dimensions
B-1 (off-site)	Single Barrel CMP Culvert	36-inch diameter
B-2 (off-site)	Triple Barrel CPP Culvert	15-inch diameter /barrel
B-3	Single Barrel CMP Culvert	48-inch diameter

Table A.1 *(Continued)*
Structures along Fritchie Creek

Structure	Type	Dimensions
B-4 (off-site)	Single Barrel CMP Culvert	48-inch diameter
B-5 (off-site)	Trapezoidal Box Culvert	10-foot width

Culvert B-2 is located approximately 240 feet downstream of Culvert B-1. Culvert-crossing B-2 consists of three, 15-inch corrugated plastic pipes placed under fill that also appears to be a future road crossing providing access to the Tamarisk project site. These culverts convey flows from the upstream excavated channel, under the placed fill, and discharge into the wetland.

During the field visit at the inlet for Culvert B-2, only one of the pipes was conveying flows. The two other pipes are higher and were dry. Examination of the culvert outlets revealed that the submerged pipe had significant amounts of sedimentation within the pipe. It appeared that the two exposed pipes will properly convey water only under high flow conditions. An analysis may be necessary to determine conveyance capacity of this culvert design.

The section of Fritchie Creek from Culvert B-2 downstream to Culvert B-3 is primarily wetland. There are small trees and ground vegetation along the banks with no apparent sign of erosion. The 40-foot section of Fritchie Creek upstream of Culvert B-3 has experienced erosion that has widened parts of the channel bottom to approximately ten feet. There was also significant aggradation of soil materials immediately upstream of Culvert B-3, where Fritchie Creek converges with the unnamed tributary from Basin C.

Approximately 700 feet downstream from Culvert B-3, there is a 48-inch CMP culvert (B-4) under a driveway entrance located on Johnson Road. Approximately 60 feet downstream from Culvert B-4 is Culvert B-5, which is a ten-foot wide trapezoidal box culvert passing under Johnson Road. This culvert is embedded and appears to be a stream simulation design. Culverts B-4 and B-5 appeared to be recently improved and well maintained.

Basin C

Basin C is the 8.5-acre central portion of the Tamarisk Property that is drained by an unnamed tributary to Fritchie Creek. The side slopes adjacent to the channel range from 40 percent to 45 percent and are vegetated with medium-sized trees, but sparse ground cover. The stream channel itself is thickly vegetated with blackberry and hard-stemmed species. The channel has an average longitudinal slope of 4.8 percent and flows from the eastern boundary of the site to a fill structure (C-1) designed as a road crossing. This structure has a 15-inch CMP culvert to convey the stream-flow. There did not appear to be any significant erosion upstream or downstream of Culvert C-1. This culvert is located approximately 250 feet upstream of the confluence with Fritchie Creek. The last 30 feet of the channel upstream from the Fritchie Creek confluence has experienced severe widening and aggradation of fine sediments. The confluence with Fritchie Creek is eight feet upstream of the inlet to the 48-inch culvert under I-205 (B-3).

Table A.2
Structure within Basin C

Structure	Type	Dimensions
C-1	Single Barrel CMP Culvert	15-inch diameter

Basin D

The off-site stream to the south of the Tamarisk Property that receives runoff from Basin D has side slopes of approximately 15 percent, and a longitudinal slope of approximately 3.8 percent. The upland slopes are well forested and have good ground cover with no evidence of erosion; however, the stream channel is incised and has heavily eroded banks. This unnamed stream is conveyed under I-205 through a 30-inch CMP culvert (D-1). There was little aggradation of eroded material near the inlet of Culvert D-1; therefore, the eroded channel material is apparently transported downstream.

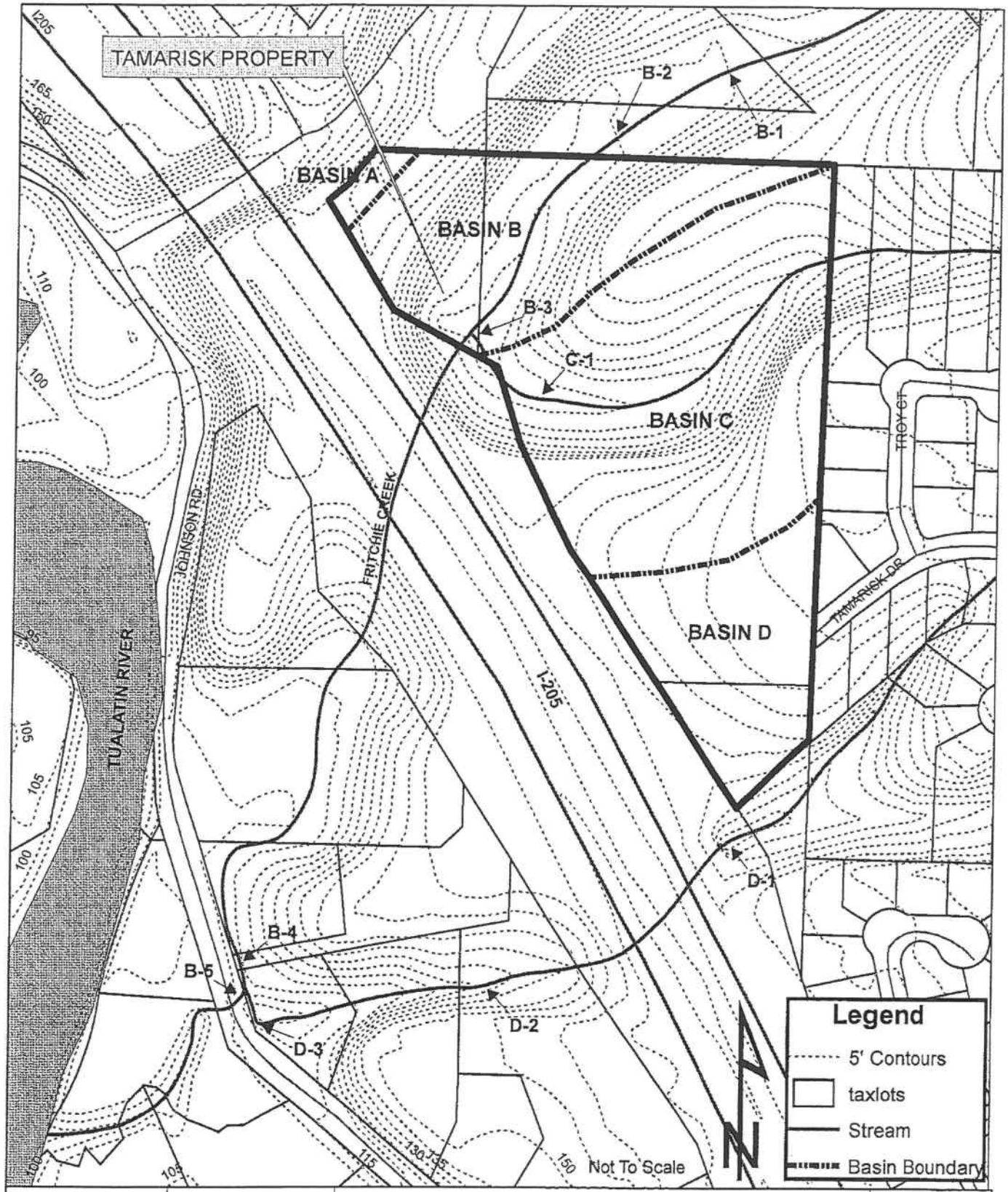
Culvert D-1 discharges into a heavily vegetated detention facility (D-2) that has thick splays of aggraded soil material fanning out from the stream channel, causing the channel to migrate laterally within the facility. There is a 24-inch diameter riser that serves as the outlet structure from facility D-2, which is located approximately 200 feet downstream from the Culvert D-1 outlet. The outlet of the detention facility discharges to the natural channel and flows another 600 feet to Johnson Road. At Johnson Road the stream enters an 18-inch roadside culvert (D-3), then is conveyed 120 feet and discharges to Fritchie Creek at the inlet of the Johnson Road culvert (B-5). From this confluence, the combined streamflow enters the ten-foot wide trapezoidal box culvert (B-5), which is a cobble-stone-lined stream simulation culvert that flows under Johnson Road.

Table A.3
Structures Downstream of Basin D

Structure	Type	Dimensions
D-1 (off-site)	Single Barrel CMP Culvert	30-inch diameter
D-2 (off-site)	CMP Flow Control Riser	24-inch diameter
D-3 (off-site)	Single Barrel Roadside Culvert	18-inch diameter

Conclusion

The relief across the Tamarisk Property varies greatly between the relatively flat ridge tops to the steep terrain adjacent to the stream channels. All drainage from Basins B, C, and D are transported under I-205 through two separate ODOT culverts, Culverts B-3 and D-1. The streams then converge at the inlet of the Johnson Road culvert (B-5). The channel downstream of Culvert B-5 has exposed scour surfaces that appear to be actively eroding the right outer bank. There is also under-cutting that appears to be undermining the root systems of large trees on the right outer bank. A photographic journal is also available but not included with this report.



otak

Otak, Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: 503.635.3618
Fax: 503.635.5395

TAMARISK PROPERTY

Location State

Figure A: Downstream Analysis

Date: 10/11/2005
Drawn: AJS Checked:
Project No.: 13458
File No.:
Sheet No.:

Kennedy/Jenks Consultants

RECEIVED
MAY 23 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. _____ TIME _____

22 May 2006

Memorandum

To: Peter Spir, City of West Linn, Planner

From: Aaron Eder AME

Subject: Tamarisk Subdivision (SUB-05-06) Application Completeness Check
K/J #0591005.00

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 33.050

1. 33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards. This was not addressed in the resubmittal.

Sections 85.150 and 85.200

2. 85.200 A11 – Per Chapter 75, cul-de-sacs shall be a maximum length of 400 feet, unless otherwise specified by variance. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.

3. 85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision. **Show a sewer stub out of the manhole at the north end of the sanitary sewer system, extending to the north property line.**

4. 85.200 H2 – Detailed water quality and detention calculations are required. The stormwater detention calculations indicate that 19,600 ft^3 of detention is being provided, but it is not clear what the required volume is. Provide calculations summarizing what the required detention volume is, similar to the Water Quality calculations in Appendix B.

Section 85.160

5. 85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan. Not all of the plans in the resubmittal were signed.

Other Concerns

Although not required for completeness, the following items will need to be addressed during design review. It is encouraged that these items be addressed prior to the subsequent submittal of this application.

Memorandum

6. Show proposed curb cuts for driveways at each lot.

7. The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.

8. The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verify that this street section is acceptable.

9. In accordance with Section 32.050-9, vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state.

cc: file

Spir, Peter

From: Aaron Eder [AaronEder@KennedyJenks.com]
Sent: Friday, May 19, 2006 9:54 AM
To: Spir, Peter
Subject: Tamarisk Subdivision Completeness Check

Hi Peter

Following up on the message I left you, the consultant's most recent submittal indicates that the following items should not be completeness items:

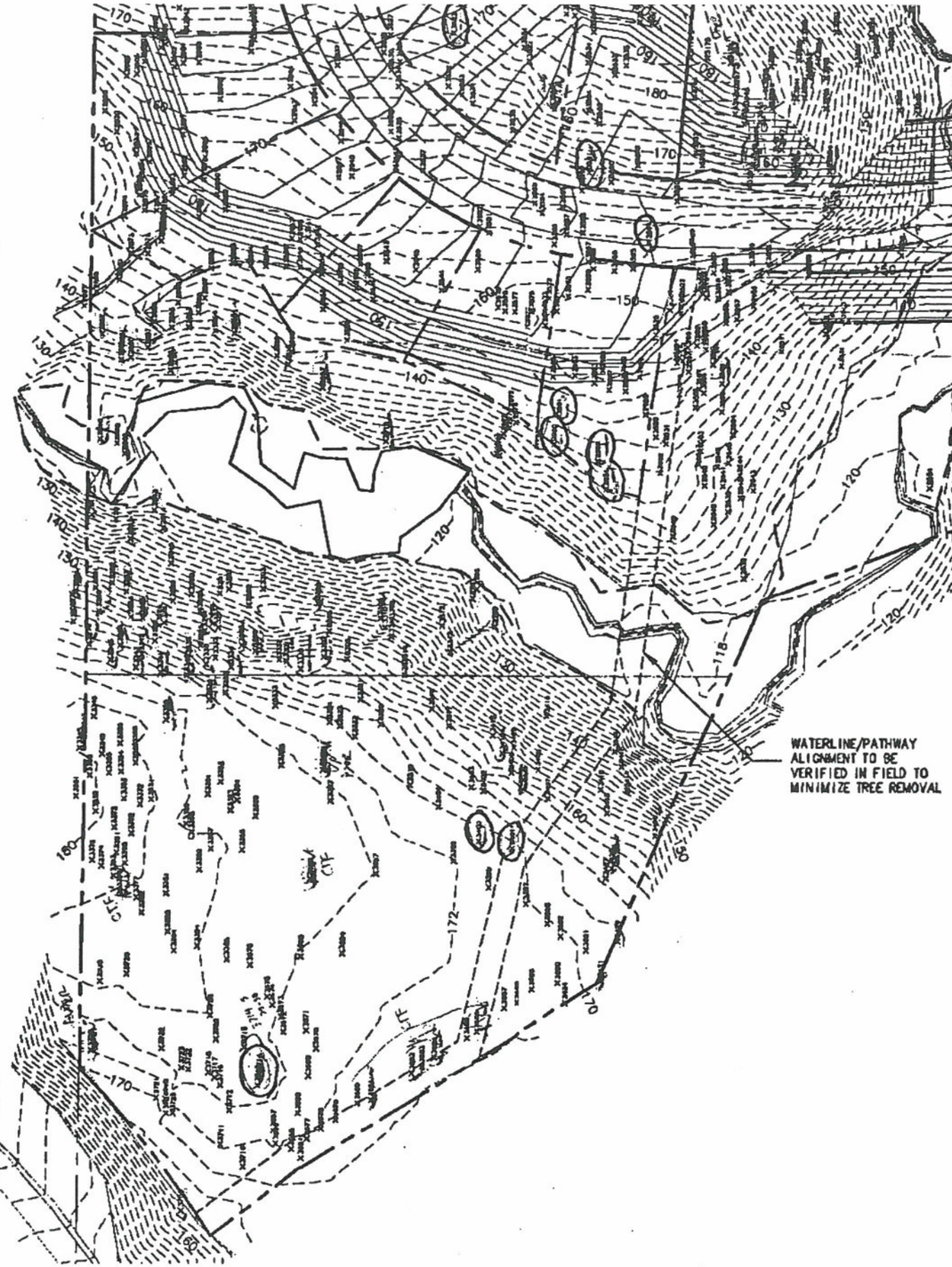
Comment 1: Vegetative improvements within the drainageway. Our comment was to verify with the City Arborist if the Site is in an unhealthy or disturbed state. Their response was that this should be addressed during the land use approval process and is not a completeness issue.

Comment 7: The drainage crossing shows sidewalk on only one side of the street. Section 92.010(H) requires sidewalks on both sides. The consultant's response is that this is not a completeness issue.

Please let me know your opinion on these items. Thanks.

Aaron Eder, P.E.
Kennedy/Jenks Consultants
200 SW Market Street, Suite 500
Portland, OR 97201
Phone: (503) 423-4016 direct
Fax: (503) 295-4901
email: AaronEder@KennedyJenks.com
web: www.kennedyjenks.com

Spoke w/ Aaron said reduced street section along SW to minimize disturbance & drainage issues



PROTECT TREES ON DOT PROPERTY

Rec'd 5-12-06

- SIGNIFICANT TREE CANDIDATES BASED ON SIZE HIGHLIGHTED IN YELLOW
- FIELD NOTES IN RED
- FINAL SIGNIFICANT TREES CIRCLED IN BLACK
- ONLY TREES ON BUILDABLE LANDS WERE INSPECTED. ALL OTHERS ON NON-BUILDABLE LANDS REQUIRED TO SAVE AS PER COC

5-11-06

TREE PROTECTION LEGEND

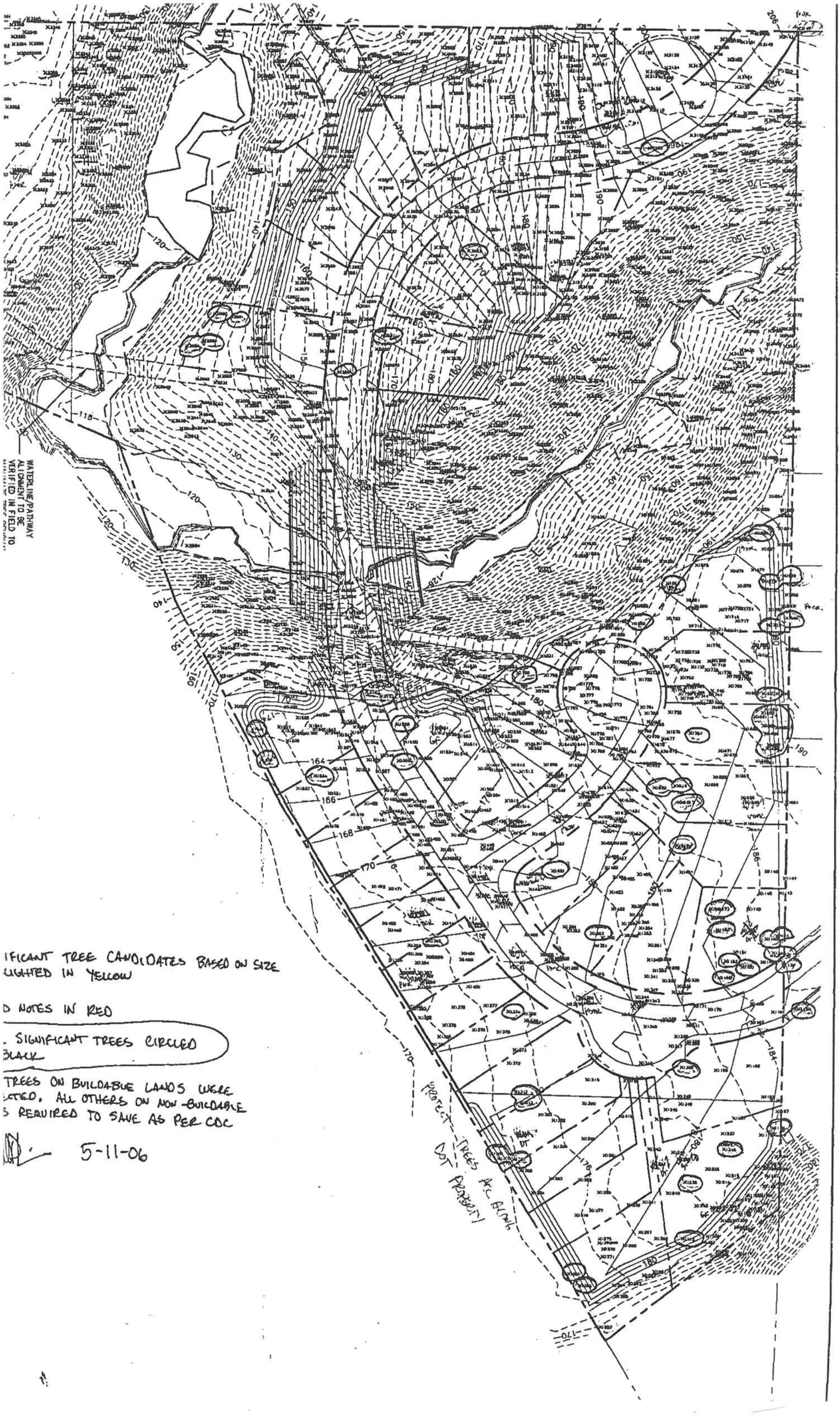
TREES TO BE PROTECTED ×0001

TREES TO BE REMOVED ×0002

SEE SHEET EX06 FOR TREE PROTECTION NOTES & DETAILS.

SEE PROJECT NARRATIVE FOR TREE TABLE.

LKO: MIKEHA 12/22/2005 3:47pm --> R:\DWG\PREPLAT\D458EX08A.DWG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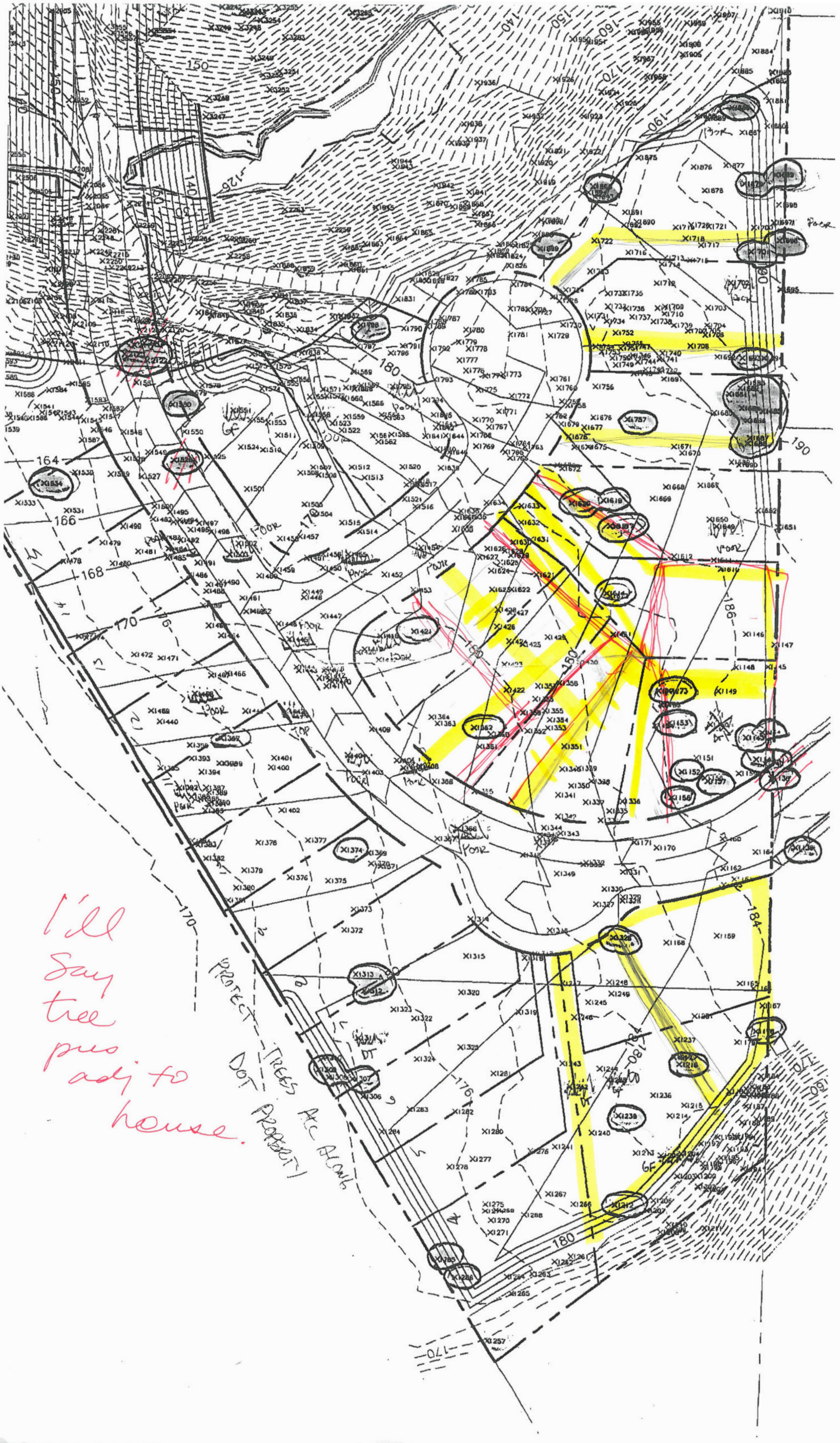
5-11-06
PROTECT TREES ARE ALONG
DOT PROPERTY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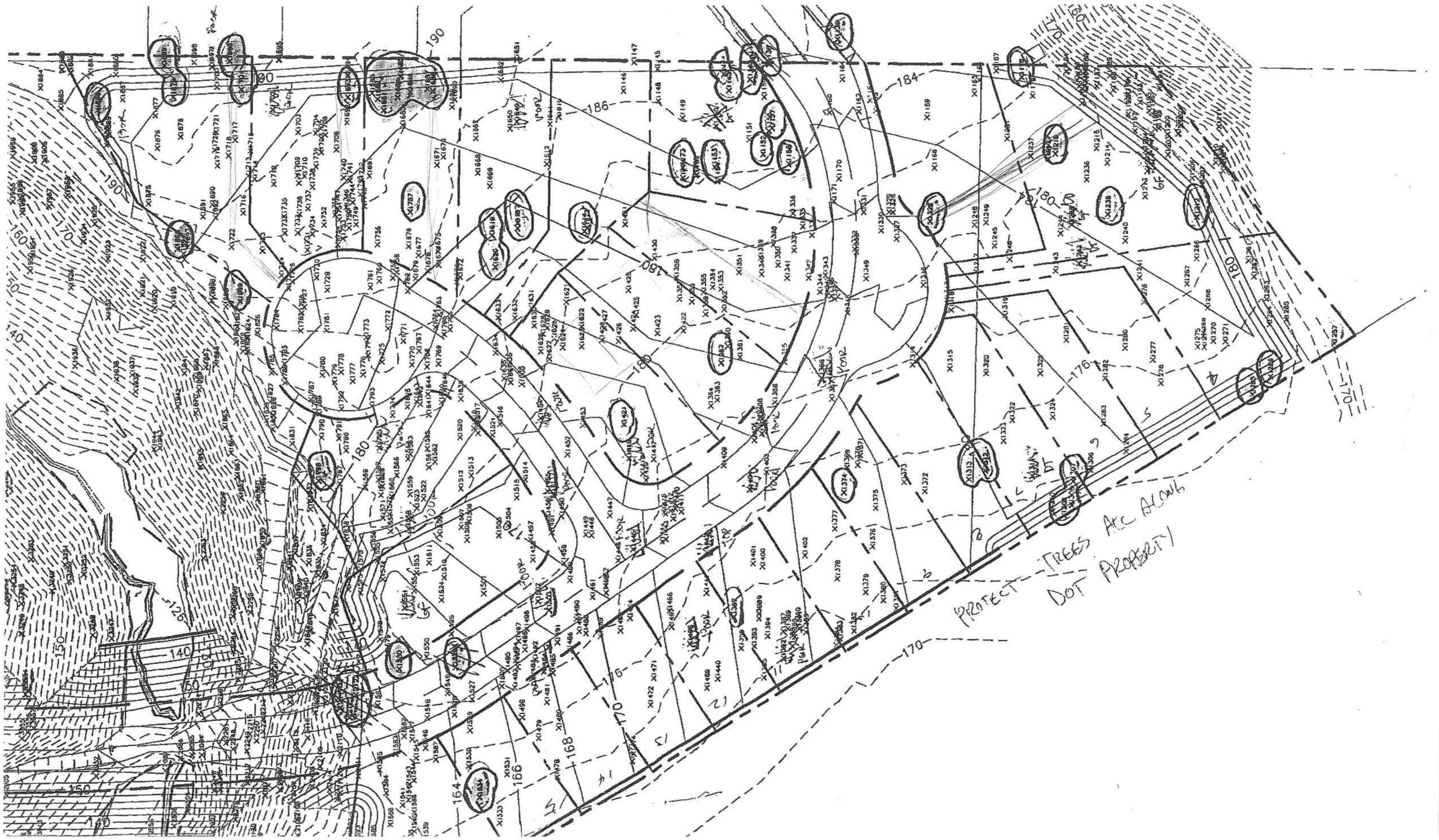
PROTECT TREES ALONG
DOT PROPERTY

otak

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

Staff completeness review of re-submittal

May 9, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Letter of March 20, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your letter of incompleteness dated March 20, 2006. I am responding to each item individually and providing you with three copies of the updated exhibit sheets EX01 through EX11A for this submittal.

Planning Comment Responses

85.160(E)(5) *Map and identify all trees per 55.100(B)(2). The City Arborist needs the type and size of the tree shown on the tree inventory map.*

Response: A detailed listing of tree type and sizes has been provided to the City Arborist under a separate submittal. City Arborist has requested field tagging of a select list of trees (117 trees total). This work will be completed by the applicant starting the week of April 17, 2006. I assume that sufficient tree information has been provided to date to meet the completeness requirements. Please let me know if this is not the case. Due to the requirement for the added stormwater areas, the additional trees have to be removed. A revised arborist report is provided with this letter.

85.200(J)(9) *No tree inventory per 55.100(B)(2)*

Response: An additional exhibit EX06B has been added to the plan set which shows tree type/size and symbols. This is the same information provided to the City Arborist under a separate submittal.

Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. *32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state.* ***The applicant shall verify with the City and determine whether such improvements are required.***

   Response: It is our understanding that this requirement will be evaluated during the land use approval process and should not be considered a completeness item.

Section 33.030

2. *33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070. Stormwater detention is required, and as such, a detailed plating plan is required.*

   Response: A topographic map consistent with the requested information is provide on Exhibits 3A, 7, 11, and 11A.

Section 33.040

3. *33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC. Stormwater detention is required, and as such, the detention facilities shall be vegetated in accordance with City requirements.*

   Response: A landscape planting plan for the detention pond area (Phase I) has been added to Exhibit EX07.

Section 33.050

4. *33.050 B2 – Provide a cross-section of the proposed stormwater facilities.*

Response: A cross-section of the proposed detention pond area (Phase I) has been added to Exhibit EX07.

5. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

Response: Stormwater facility access notes have been added to Exhibit EX08.

Section 85.150 and 85.200

6. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.*

Response: A request for variance was added to our planning application after our first completeness review letter.

7. *85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street. Verify with the City that sidewalks on only one side of the street will be acceptable.*

Response: The proposed sidewalk configuration was discussed with City staff as a design option to minimize the cross-section and impact to wetland area across the drainage crossing. This design option should be evaluated by staff with our application and not be considered a completeness item.

8. *85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Provide a Mitigation Plan in accordance with Section 30.110.*

Response: The sanitary sewer crosses the wetlands and the drainage ways at the same location as the roadway crossing. The impacts are governed by the roadway crossing, so the mitigation plan is based on the roadway crossing.

9. *85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision.* ***Show a sewer stub at the north end of the sanitary sewer.***

Response: The extension of a public sanitary sewer to the north end of Street A was shown on our planning resubmittal dated February 6, 2006 (plan set dated February 3, 2006).

10. *85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.*

    Response: The preliminary storm drainage report and plan exhibits have been updated to show proposed stormwater detention and water quality.

11. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

    Response: The preliminary storm drainage report and plan exhibits have been updated to show proposed stormwater detention and water quality, and is included with this submittal.

Section 85.160

12. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

    Response: A stamp and signature has been added to the Tentative Subdivision Plat (EX05), Tentative Grading Plan (EX07), and Tentative Utility Plan (EX08).

13. *85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown. Verify with the City Planner that "Street A" and "Street B" are approved street names.*

    Response: Street names for preliminary design and construction documents shall be designated as Street A and Street B. Final street names will be determined prior to final plat approval. This is in line with past practices at the City of West Linn.

14. *85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property. This applies to all utilities, not just water mains.*

    Response: Size and locations to existing utilities at the west end of Tamarisk Drive are shown or noted on Exhibit EX08. No existing utilities are shown for Woodbine Road or SW Johnson Road except the schematic water line tie-in point. Final design documents will detail existing utilities in this area if needed to design utility extensions.

Section 85.170

15. *85.170 A4 – On Sheet EX05, indicate when each phase will occur. Show the anticipated dates during which each phase will occur.*

    Response: Proposed development dates have been added to Exhibit EX05. It is anticipated that Phase I construction will occur in the summer/fall of 2006. The schedule for Phase II is dependent on the completion of Phase I and favorable market conditions for development. An expiration date for completing the subdivision phases will be included in the conditions of approval of the subdivision in accordance with CDC Section 85.110. We propose the final expiration date for the subdivision to be five (5) years after the subdivision approval.

16. *85.170 F3 –Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system. This information is not shown for all lots.*

    Response: Storm drain laterals are shown for all lots on Exhibit EX08. Size and type of material are to be based on City of West Linn Public Works Standards and will be shown with final design/construction documents.

17. *85.170 F4 – The detention facilities should include a vegetation plan for the facility.*

    Response: A landscape planting plan for the detention pond area (Phase I) has been added to the plan set (Sheet EX13).

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

18. *Show proposed curb cuts for driveways at each lot.*

    Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

19. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

20. *The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verity that this street section is acceptable.*

Response: This proposed street section was reviewed with City staff at the pre-application meeting and included as a design proposal as part of our Planned Unit Development (PUD) application. This item will be evaluated by City staff during their review of the application. This should not be considered a completeness item.

Peter, as we discussed on the telephone, I am providing 3 copies of this letter, the revised plans, and 3 copies of the revised density calculations. The areas did not change that drastically due to the fact that we were already disturbing the areas for the pump station tract. The information cited above is supported by the documentation provided in the narrative, previous resubmittal information, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosure: Updated Exhibit Sheets EX01 – EX11A (3 copies)
Revised Arborist Report (3 copies)
Revised stormwater report (3 copies)

XREF LIST
Liscofe: 1

Resolved
P458X001
P458X232
P458X432
S458X190
P458X602
TAXLOTS2
P458X332

Unresolved
P458X400
P458X502

PLATTED SUBDIVISION

PROPERTY LINE

EXIST. 8" SS

CONNECT TO EXIST. SSMH ON TAMARISK DR. FOR FLOW TO EAST IN EXIST. 8" SS

EXISTING SDCB RIM=184.98

EXIST. 6" W

EXISTING SDCB RIM=184.98

CONNECT TO EXIST. 6" WATER MAIN

RIM=205.4
IE=197.4

RIM=139.7
IE=191.7

RIM=184.9
IE=176.9

RIM=180.7
IE=172.7

TRACT B

TRACT C

TRACT D

TRACT A

WETLAND IMPACT (TYP)

SANITARY SEWER PUMP STATION

RIM=162.0
IE=150.8

SD CULVERT

WQ SWALE

STREET A

STREET B

STORMWATER TREATMENT VAULT FOR W.Q. (STORMWATER 360 STORMFILTER)

15' WATER EASEMENT

WETLAND MITIGATION AREA

WETLAND IMPACT (TYP)

PROPOSED 8" WATER LINE EXTENSION

6" W

FOR WATER LINE CONTINUATION – SEE DETAIL RIGHT

FOR WATER LINE CONTINUATION – SEE ABOVE LAYOUT

WOODBINE RD.

I-205

SW JOHNSON RD.

PROPOSED 6" WATER LINE EXTENSION IN PAVEMENT AT UNDERPASS

CONNECT TO EXIST. 6" WATER LINE

0' 25' 50' 100'

0' 50' 100' 200'

PHASE I
(2006/2007)

LOTS 1–25
STREET A (TO STA 16+50)
STREET B
SANITARY SEWER PUMP STATION(TRACT A)

PHASE II
(to be determined, up to 8 years after subdivision approval)

LOTS 26–35
STREET A (STA 16+50 TO END)
DRAINAGE CROSSING
6" WATER LINE EXTENSION TO JOHNSON RD.

NOTE:

1. EACH LOT SHALL HAVE A STORM AND SANITARY LATERAL CONNECTED TO THE PUBLIC STORM AND SANITARY MAINLINES.
2. ALL PUBLIC UTILITY LINES TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CITY OF WEST LINE PUBLIC WORKS STANDARDS.

LEGEND

- SS — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAIN
- STORM DRAIN (DETENTION PIPE)
- W — WATER
- SANITARY MANHOLE
- STORM MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- RETAINING WALL
- STREETLIGHT

NO.	DATE	BY	REVISION COMMENTS
Design:	Drawn:	Checked:	Date: Initial Issue Date: XX/04December 22nd, 2005

Stearns Marnella Communities

PLANNING RESUBMITTAL 4/28/06

TAMARISK PROPERTY
TENTATIVE SUBDIVISION PLAN
TENTATIVE UTILITY PLAN

otak
Incorporated
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035-5217
Phone: (503) 635-3618
FAX: (503) 635-5395
Internet: WWW.Otak.COM

13458 D458EX08
Project No. Drawing No.

EX08
Exhibit No.

Copyright 2005 ©

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Walter H. Knapp
Silviculture & Urban Forestry

May 9, 2006

TAMARISK PRELIMINARY ARBORIST REPORT

Site Description

The proposed Tamarisk development in West Linn, Oregon, is a heavily forested site with a wide range of native tree species (table 1). Most of the site had been logged within the last 25 years. Only the steep slopes, inaccessible areas, and lower-value trees were retained and represent an older, larger, and more diverse ecosystem.

Bigleaf maple is the most common species, representing 44% of the tree inventory. Red alder, with 21% of the trees, is also common. The conifers – western redcedar and Douglas-fir – account for a total of 30%. These four species – maple, alder, cedar, and fir – total 95% of the trees.

The forest conditions in the uplands (type 3 and type 4 areas) are in the stem exclusion phase of stand development, where the trees are competing with each other. As the trees grow larger, those that dominate will choke out the smaller competitors, which will eventually die. In many cases, species with fast juvenile growth, such as alder and maple, are overtopped by conifers with long-term sustained growth. In addition, alder is relatively short lived, and will begin to gradually die out after 40-60 years.

A listing of surveyed trees on the site and immediately adjacent areas is included in the tree inventory enclosed with this report.

Table 1. Species distribution, Tamarisk site.

Common Name	*Botanical Name*	# Trees	Percent
Bigleaf maple	*Acer macrophyllum*	679	44%
Red alder	*Alnus rubra*	320	21%
Western redcedar	*Thuja plicata*	236	15%
Douglas-fir	*Pseudotsuga menziesii*	236	15%
Black cottonwood	*Populus trichocarpa*	55	4%
Hawthorn	*Crataegus sp.*	10	1%
Fruit	*Malus sp.*	5	0.3%
American elm	*Ulmus americana*	3	0.2%
Madrone	*Arbutus menziesii*	2	0.1%
Holly	*Ilex sp.*	1	0.1%
Grand Total		1547	100%

No stand-level insect or disease conditions were identified during site reconnaissance. In addition, individual trees with stem decay or structural defects were not prevalent. However, a

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more detailed examination to identify trees with hazardous conditions near frequent use areas will be needed after site development. For example, defective trees or those vulnerable to windthrow will only need to be removed if they would impact a portion of the developed site.

Few if any trees in the upland areas meet the criteria of City of West Linn for classification as "significant." The City Arborist has been given the authority to designate significant trees and groves. To date, there have been no significant trees identified on type 3 and 4 lands.

Much of the lesser vegetation, the shrubs, forbs, grasses, and other plants, are representative of native species. In the uplands, this includes sword fern, Oregon grape, salal, hazel, and other common understory plants. Although there are areas of intrusion from invasive species, such as Himalayan blackberry and English ivy, the native vegetation is predominant in the uplands.

Land Type and Propose Prescriptions

Within the uplands, 145 trees will be removed on type 3 lands, and 662 will be removed on type 4 lands to provide for construction of site improvements, homes, and other infrastructure (table 2). Only 52 of the 391 trees on type 1 lands will be cut. On type 2 lands, 56 of the 98 trees on the site will be removed.

Table 2. Tree retention and removal by land type, Tamarisk Property.

Land Type	Prescription	Total
Offsite	Save	18
Type 1	Remove	52
	Save	391
Type 1 Total		443
Type 2	Remove	56
	Save	42
Type 2 Total		98
Type 3	Remove	145
	Save	35
Type 3 Total		180
Type 4	Remove	662
	Save	146
Type 4 Total		808
Grand Total		1547

Many of the protected trees on type 1 and 2 lands are conifers – Douglas-firs and western redcedars – in good to excellent condition, and growing in locations where they will provide long-term visual amenities and wildlife habitat to the site. No off-site trees are planned for removal unless designated due to construction of approved utilities or transportation access.

PRELIMINARY TREE PROTECTION REQUIREMENTS

The protection measures listed in this report are preliminary. Prior to site development, the following protection requirements will need to be more specific, including an on-site location of tree protection areas by the project arborist:

1. **Tree Protection Area.** The project arborist shall designate the Tree Protection Zone (TPZ). Where feasible, the TPZ shall be established at the dripline of the tree or grove as a minimum. If infrastructure (roads, sidewalks, and utilities) must be installed closer to the tree(s), the TPZ may be established within the dripline area if the project arborist determines that the tree(s) will not be unduly damaged. The protection area is designated on construction drawings.
2. **Protection Fencing.** All trees to be retained shall be protected by orange construction fencing installed prior to construction. Protection fencing shall be secured to steel posts placed no further than 10 feet apart and shall be installed at the edge of the TPZ.
3. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
4. **Excavation – TPZ.** Excavation with the TPZ shall be avoided if alternatives are available. If excavation within the TPZ in unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches. All construction within the TPZ shall be under the on-site technical supervision of the project arborist.
5. **Tree Protection Inspection.** The project arborist shall monitor construction activities and progress, and provide written reports at regular intervals.
7. **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the remaining trees.

Walter H. Knapp
Certified Forester, SAF 406
Certified Arborist, ISA PN-0497

Count of Prescription		
Land Type	Prescription	Total
Offsite	Save	18
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	Save	391
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	Save	35
Type 3 Total		180
Type 4	Remove	662
	Save	146
Type 4 Total		808
Grand Total		1547

Memorandum

17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone (503) 635-3618
Fax (503) 635-5395

To:	Mike Peebles, PE
From:	Terry Soltz, EIT
Copies:	File
Date:	May 9, 2006
Subject:	Tamarisk Property
Project No.:	13458

Introduction

The following is a preliminary stormwater management plan for the proposed Tamarisk Development. Otak conducted a site visit on October 10, 2005. A downstream analysis of the one-quarter mile reach of Fritchie Creek downstream of the proposed development is attached in Appendix C.

The proposed site is 15.5 acres and is located within the City of West Linn, Oregon at the end of Tamarisk Drive. The site is bounded to the east by Interstate 205 (I-205). The site includes tax lots 00600, 00690, and 00700. Under proposed conditions, stormwater runoff from the developed site will be collected and conveyed by a series of catch basins and pipes to detention and water quality facilities, then to an outfall which will discharge into Fritchie Creek. A base map of the proposed site is included as Figure 1.

Floodplain

The entire site is designated as Zone C according to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) for Clackamas County, Oregon, Panel 135 (August 4, 1987). The Zone C designation is defined as an area of minimal flooding.

Soil Survey

There were three soil types identified on the property according to the NRCS Soil Survey of Clackamas County, Oregon (1982). As summarized in Table 1, site soils are in Hydrologic Group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure.

Table 1:
Soil Types

Soil Name	SCS Symbol	Hydrologic Group
Woodburn Silt Loam	91B	C
Cascade Silt Loam	13C	C
Xerochrept/Haploxerolls	92F	n/a

Existing Storm Sewer

According to GIS maps viewed on the official website for the City of West Linn, existing storm-water and sanitary sewer lines extend to the end of Tamarisk Drive, but none are currently located on the Tamarisk property. There have been no documented complaints of drainage issues or flooding issues reported by neighboring developments or property owners, according to the City of West Linn.

Hydrology

The property was divided at the creek into south and north sections for the purpose of stormwater analysis and management. Runoff was calculated for existing and proposed conditions using Hydraflow Hydrographs 2004 software by Intelli*SOLVE*. Under existing conditions, the site was assumed to be completely wooded. For proposed conditions, separate hydrographs were calculated for pervious and impervious areas, then combined and subsequently routed through simulated detention facilities. Results are shown in Table 2, below, and a detailed summary is included in Appendix A.

Table 2:
Predicted Peak Runoff Rates

Proposed Basin	Area (ac)	Peak Runoff Rates (cfs)			
		WQ	2-yr	10-yr	25-yr
South Impervious	2.40	0.384	1.305	1.881	2.168
South Pervious	2.49	0.020	0.590	1.109	1.383
South TOTAL	4.89	0.386	1.891	2.982	3.541
North Impervious	1.46	0.234	0.794	1.145	1.319
North Pervious	1.52	0.012	0.402	0.745	0.925
North TOTAL	2.98	0.236	1.193	1.884	2.238

Water Quantity

The proposed project area comprises less than five percent of the total Fritchie Creek drainage basin area, and is located approximately 1,560 feet upstream from the confluence of Fritchie Creek and the Tualatin River. The City of West Linn, however, requires that all new development detain water to match existing flows for the 2-, 10-, and 25-year, 24-hour design storm events. For this purpose, a combination pond and pipe storage system is proposed for the southern portion (Phase 1), and a detention pipe is proposed for the northern portion (Phase 2). These facilities reduce the predicted discharge rates so that they do not exceed current rates, as shown in Table 3.

For the southern section, a five-foot deep pond with a footprint of approximately 4,000 square feet will be placed inline and at the same elevation as a 275-foot long four-foot diameter detention pipe for a combined storage of 19,600 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with an orifice and a double-cut rectangular notch. The riser will have a two-inch diameter orifice at the outlet elevation with a rim 4.9 feet above. The notch will be 1.2 feet wide to a depth of 0.2 feet from the rim, and 0.6 feet wide to a depth of 0.6 feet.

Storage for the north side will consist of a 350-foot long six-foot diameter pipe with a capacity of 9,900 cubic feet. Outflow will be regulated by an 18-inch diameter riser-type weir structure with two orifices and a rectangular notch. The riser will have a rim 5.85 feet above its outlet, with a 1.7-inch diameter orifice at the outlet elevation and a 3.8-inch diameter orifice with an invert elevation 4.8 feet above. The notch will be one foot wide to a depth of 0.25 feet from the rim.

Table 3:
Comparison of Existing and Predicted Flows

Condition	Peak Runoff Rates (cfs)		
	2-yr	10-yr	25-yr
South Existing	0.225	0.832	1.200
South Predicted (w/ detention)	0.212	0.674	1.096
North Existing	0.163	0.575	0.829
North Existing (w/ detention)	0.162	0.544	0.781

Water Quality

The City of West Linn refers to the Bureau of Environmental Services (BES) stormwater manual for water quality requirements. Due to the low infiltration rates expected for the site, flow-through vegetated swales will be used for treatment. These swales were sized according to the presumptive approach, and spreadsheet calculations are included in Appendix B. The swale that treats the south side runoff will be graded into the bottom of the detention pond. It will be at least 117 feet long, with a minimum depth of 0.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.8 percent, and a base width of four feet.

For the north side, a flow splitter will direct low flows to the swale and will bypass higher flows to the detention pipe. Outflows from the swale will also be conveyed to the detention pipe. The swale for the north side needs to be at least 117 feet long, with a minimum depth of 1.33 feet, a side slope of 4H:1V, a longitudinal slope of 0.9 percent, and a base width of two feet. This depth allows the 25-year predicted outflow from the splitter to pass through the swale with at least one foot of freeboard remaining. The flow splitter will consist of a 60-inch diameter manhole with a six-inch outlet at its base that leads to the swale, and a 12-inch bypass with its invert 0.35 feet higher than the primary invert. Freeboard calculations for the swale and stage-discharge table for the flow splitter are included in Appendix B.

Stormwater Outfall

Stormwater runoff will discharge to Fritchie Creek through a rip-rap outfall (southern basin) and a connection to the proposed culvert (northern basin). The proposed culvert will be designed to safely convey upstream flows and the stormwater flows discharged from the project site. This design will allow energy from the stormwater discharge to be dissipated within the culvert, and minimize erosion in Fritchie Creek. An in-pond weir designed to safely pass the 100-year flow will be constructed as the emergency overflow structure, and will discharge overland to Fritche Creek downstream of the proposed culvert crossing.

Appendix A –
Runoff Computations

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.004	6	1440	38	----	------	------	SOUTH_EXT
2	SBUH Runoff	0.384	6	480	5,463	----	------	------	SOUTH_IMP
3	SBUH Runoff	0.020	6	1020	1,079	----	------	------	SOUTH_PER
4	Combine	0.386	6	480	6,541	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.081	6	924	6,518	4	157.71	2,053	Det. Pond
7	SBUH Runoff	0.002	6	1440	23	----	------	------	NORTH_EXT
8	SBUH Runoff	0.234	6	480	3,323	----	------	------	NORTH_IMP
9	SBUH Runoff	0.012	6	1014	658	----	------	------	NORTH_PER
10	Combine	0.236	6	480	3,982	8, 9	------	------	NORTH_TOT
11	Reservoir	0.063	6	624	3,961	10	0.81	803	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.221	6	492	9,131	----	------	------	SOUTH_EXT
2	SBUH Runoff	1.305	6	474	18,917	----	------	------	SOUTH_IMP
3	SBUH Runoff	0.590	6	480	10,506	----	------	------	SOUTH_PER
4	Combine	1.891	6	480	29,422	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.212	6	1404	29,399	4	161.29	16,534	Det. Pond
7	SBUH Runoff	0.163	6	486	5,564	----	------	------	NORTH_EXT
8	SBUH Runoff	0.794	6	474	11,508	----	------	------	NORTH_IMP
9	SBUH Runoff	0.402	6	480	6,413	----	------	------	NORTH_PER
10	Combine	1.193	6	480	17,921	8, 9	------	------	NORTH_TOT
11	Reservoir	0.159	6	1206	17,900	10	4.57	8,085	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	0.817	6	486	19,755	----	------	------	SOUTH_EXT
2	SBUH Runoff	1.881	6	474	27,589	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.109	6	480	18,169	----	------	------	SOUTH_PER
4	Combine	2.982	6	480	45,758	2, 3	------	------	SOUTH_TOT
5	Reservoir	0.674	6	660	45,735	4	161.67	18,185	Det. Pond
7	SBUH Runoff	0.575	6	480	12,039	----	------	------	NORTH_EXT
8	SBUH Runoff	1.145	6	474	16,783	----	------	------	NORTH_IMP
9	SBUH Runoff	0.745	6	480	11,091	----	------	------	NORTH_PER
10	Combine	1.884	6	480	27,874	8, 9	------	------	NORTH_TOT
11	Reservoir	0.548	6	558	27,854	10	5.07	8,915	N_STORAGE

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SBUH Runoff	1.178	6	486	25,847	----	------	------	SOUTH_EXT
2	SBUH Runoff	2.168	6	474	31,933	----	------	------	SOUTH_IMP
3	SBUH Runoff	1.383	6	480	22,198	----	------	------	SOUTH_PER
4	Combine	3.541	6	480	54,131	2, 3	------	------	SOUTH_TOT
5	Reservoir	1.096	6	558	54,108	4	161.83	18,877	Det. Pond
7	SBUH Runoff	0.829	6	480	15,751	----	------	------	NORTH_EXT
8	SBUH Runoff	1.319	6	474	19,426	----	------	------	NORTH_IMP
9	SBUH Runoff	0.925	6	480	13,551	----	------	------	NORTH_PER
10	Combine	2.238	6	480	32,976	8, 9	------	------	NORTH_TOT
11	Reservoir	0.826	6	534	32,956	10	5.63	9,632	N_STORAGE

Appendix B –
Water Quality Computations

SOUTH SWALE
WQ Flow

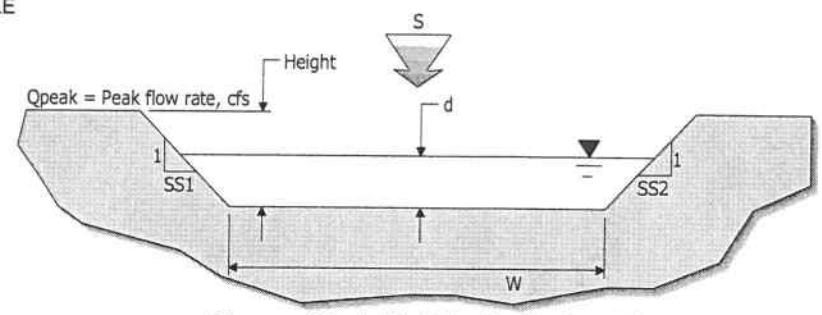


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	4	feet
Lengthwise Slope	S	0.008	feet/foot
Peak Flow Rate	Qpeak	0.386	cfs
Swale Height	Height	0.3333	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.96	inches
Cross-sectional Area	A	1.75	sf
Wetted Perimeter	WP	6.72	feet
Hydraulic Radius	R	0.26	feet
Computed Peak Flow Rate	Qpkcalc	0.38	cfs
Computed Peak Velocity	Vpkcalc	0.22	ft/sec
Computed Length	**L**	**117**	**feet**

NORTH SWALE
WQ Flow

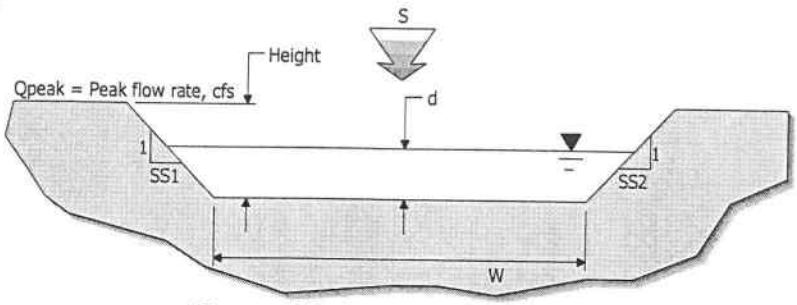


Diagram of Swale Variables Used in Spreadsheet

User-Supplied Data

Variable	Name		Unit
Side Slope 1	SS1	4	SS1:1
Side Slope 2	SS2	4	SS2:1
Swale Width	W	2	feet
Lengthwise Slope	S	0.009	feet/foot
Peak Flow Rate	Qpeak	0.236	cfs
Swale Height	Height	1.66667	feet
Manning Coefficient	n	0.25	

Computed Data

Variable	Name		Unit
Depth	d	3.94	inches
Cross-sectional Area	A	1.09	sf
Wetted Perimeter	WP	4.71	feet
Hydraulic Radius	R	0.23	feet
Computed Peak Flow Rate	Qpkcalc	0.23	cfs
Computed Peak Velocity	Vpkcalc	0.21	ft/sec
Computed Length	**L**	**115**	**feet**

Pond Report

Hydraflow Hydrographs by Intelisolve

Tuesday, May 9 2006, 1:45 PM

Pond No. 1 - North Basin Splitter

Pond Data

Bottom LxW = 4.4 x 4.4 ft Side slope = 0.0:1 Bottom elev. = 0.00 ft Depth = 1.60 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	0.00	20	0	0
0.08	0.08	20	2	2
0.16	0.16	20	2	3
0.24	0.24	20	2	5
0.32	0.32	20	2	6
0.40	0.40	20	2	8
0.48	0.48	20	2	9
0.56	0.56	20	2	11
0.64	0.64	20	2	13
0.72	0.72	20	2	14
0.80	0.80	20	2	16
0.88	0.88	20	2	17
0.96	0.96	20	2	19
1.04	1.04	20	2	20
1.12	1.12	20	2	22
1.20	1.20	20	2	24
1.28	1.28	20	2	25
1.36	1.36	20	2	27
1.44	1.44	20	2	28
1.52	1.52	20	2	30
1.60	1.60	20	2	31

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	12.00	0.00	0.00
Span (in)	= 6.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 0.00	0.35	0.00	0.00
Length (ft)	= 20.00	20.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Wet area) Tailwater Elev. = 0.00 ft

Stage / Storage / Discharge Table

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs	
0.00	0	0.00	0.00	0.00	---	---	---	---	---	---	---	0.00	
0.08	2	0.08	0.02	0.00	---	---	---	---	---	---	---	0.02	
0.16	3	0.16	0.07	0.00	---	---	---	---	---	---	---	0.07	
0.24	5	0.24	0.13	0.00	---	---	---	---	---	---	---	0.13	WQ
0.32	6	0.32	0.20	0.00	---	---	---	---	---	---	---	0.20	0.24
0.40	8	0.40	0.26	0.01	---	---	---	---	---	---	---	0.27	
0.48	9	0.48	0.29	0.07	---	---	---	---	---	---	---	0.37	
0.56	11	0.56	0.36	0.18	---	---	---	---	---	---	---	0.54	
0.64	13	0.64	0.44	0.30	---	---	---	---	---	---	---	0.74	
0.72	14	0.72	0.51	0.44	---	---	---	---	---	---	---	0.95	
0.80	16	0.80	0.57	0.59	---	---	---	---	---	---	---	1.16	
0.88	17	0.88	0.62	0.74	---	---	---	---	---	---	---	1.37	
0.96	19	0.96	0.67	0.89	---	---	---	---	---	---	---	1.57	
1.04	20	1.04	0.72	1.04	---	---	---	---	---	---	---	1.76	
1.12	22	1.12	0.76	1.17	---	---	---	---	---	---	---	1.94	
1.20	24	1.20	0.81	1.28	---	---	---	---	---	---	---	2.09	
1.28	25	1.28	0.85	1.36	---	---	---	---	---	---	---	2.21	25-yr
1.36	27	1.36	0.88	1.44	---	---	---	---	---	---	---	2.32	2.24
1.44	28	1.44	0.92	1.89	---	---	---	---	---	---	---	2.81	
1.52	30	1.52	0.95	2.25	---	---	---	---	---	---	---	3.20	
1.60	31	1.60	0.99	2.56	---	---	---	---	---	---	---	3.55	

Appendix C –
Down Stream Analysis

Down Stream Analysis

Introduction

There are four drainage basins on the Tamarisk Property, referred to as Basins A, B, C, and D. See Figure A. Basin A is a 0.26-acre area that drains to an unnamed stream that is located off-site to the north. Basin B is a 4.36-acre area that drains to Fritchie Creek, the stream crossing the northern portion of the property. Basin C is an 8.27-acre area drained by an unnamed tributary of Fritchie Creek that traverses the middle portion of the property. Basin D is a 3.12-acre area that drains south to an unnamed stream located off-site. The basin locations, culverts, and other structures mentioned in this analysis are shown on the map in Figure A., following this report.

Review of Downstream System

Basin A

Basin A is located at the northwest corner of the project site and drains north toward an unnamed tributary that flows near the intersection of Johnson and Wisteria Roads, and contributes to the Tualatin River. At 0.26 acres, this basin is a small portion of the Tamarisk site and it is situated along the relatively flat portion of the ridge top. This portion of the site is not expected to generate flow rates significant enough to affect the receiving drainage channel.

Basin B

The 4.36-acres of Basin B drain directly to Fritchie Creek. Fritchie Creek enters the Tamarisk Property at the northern boundary and exits the property through a 48-inch culvert (B-3) under I-205. The Fritchie Creek channel meanders through a moderately flat, large floodplain. The adjacent slopes to the floodplain range from 37 percent on the north side of the stream to 35 percent on the south side.

Fill, which appears to be a future road crossing, has been placed across Fritchie Creek approximately 300 feet upstream of the Tamarisk Property boundary. A 36-inch Corrugated Metal Pipe (CMP) culvert (B-1) was installed to convey stream flows through this fill.

A defined channel has been recently excavated Downstream of Culvert B-1 in the Fritchie Creek floodplain. This channel conveys outflows from Culvert B-1 downstream to another fill placement and culvert crossing (B-2). It is unknown if this channel is a re-alignment or mitigation resulting from the construction of Culvert B-1 in Fritchie Creek. Large woody debris and excavated fill were placed along the newly excavated channel.

Table A.1
Structures along Fritchie Creek

Structure	Type	Dimensions
B-1 (off-site)	Single Barrel CMP Culvert	36-inch diameter
B-2 (off-site)	Triple Barrel CPP Culvert	15-inch diameter / barrel
B-3	Single Barrel CMP Culvert	48-inch diameter

Table A.1 *(Continued)*
Structures along Fritchie Creek

Structure	Type	Dimensions
B-4 (off-site)	Single Barrel CMP Culvert	48-inch diameter
B-5 (off-site)	Trapezoidal Box Culvert	10-foot width

Culvert B-2 is located approximately 240 feet downstream of Culvert B-1. Culvert-crossing B-2 consists of three, 15-inch corrugated plastic pipes placed under fill that also appears to be a future road crossing providing access to the Tamarisk project site. These culverts convey flows from the upstream excavated channel, under the placed fill, and discharge into the wetland.

During the field visit at the inlet for Culvert B-2, only one of the pipes was conveying flows. The two other pipes are higher and were dry. Examination of the culvert outlets revealed that the submerged pipe had significant amounts of sedimentation within the pipe. It appeared that the two exposed pipes will properly convey water only under high flow conditions. An analysis may be necessary to determine conveyance capacity of this culvert design.

The section of Fritchie Creek from Culvert B-2 downstream to Culvert B-3 is primarily wetland. There are small trees and ground vegetation along the banks with no apparent sign of erosion. The 40-foot section of Fritchie Creek upstream of Culvert B-3 has experienced erosion that has widened parts of the channel bottom to approximately ten feet. There was also significant aggradation of soil materials immediately upstream of Culvert B-3, where Fritchie Creek converges with the unnamed tributary from Basin C.

Approximately 700 feet downstream from Culvert B-3, there is a 48-inch CMP culvert (B-4) under a driveway entrance located on Johnson Road. Approximately 60 feet downstream from Culvert B-4 is Culvert B-5, which is a ten-foot wide trapezoidal box culvert passing under Johnson Road. This culvert is embedded and appears to be a stream simulation design. Culverts B-4 and B-5 appeared to be recently improved and well maintained.

Basin C

Basin C is the 8.5-acre central portion of the Tamarisk Property that is drained by an unnamed tributary to Fritchie Creek. The side slopes adjacent to the channel range from 40 percent to 45 percent and are vegetated with medium-sized trees, but sparse ground cover. The stream channel itself is thickly vegetated with blackberry and hard-stemmed species. The channel has an average longitudinal slope of 4.8 percent and flows from the eastern boundary of the site to a fill structure (C-1) designed as a road crossing. This structure has a 15-inch CMP culvert to convey the stream-flow. There did not appear to be any significant erosion upstream or downstream of Culvert C-1. This culvert is located approximately 250 feet upstream of the confluence with Fritchie Creek. The last 30 feet of the channel upstream from the Fritchie Creek confluence has experienced severe widening and aggradation of fine sediments. The confluence with Fritchie Creek is eight feet upstream of the inlet to the 48-inch culvert under I-205 (B-3).

Table A.2 Structure within Basin C		
Structure	Type	Dimensions
C-1	Single Barrel CMP Culvert	15-inch diameter

Basin D

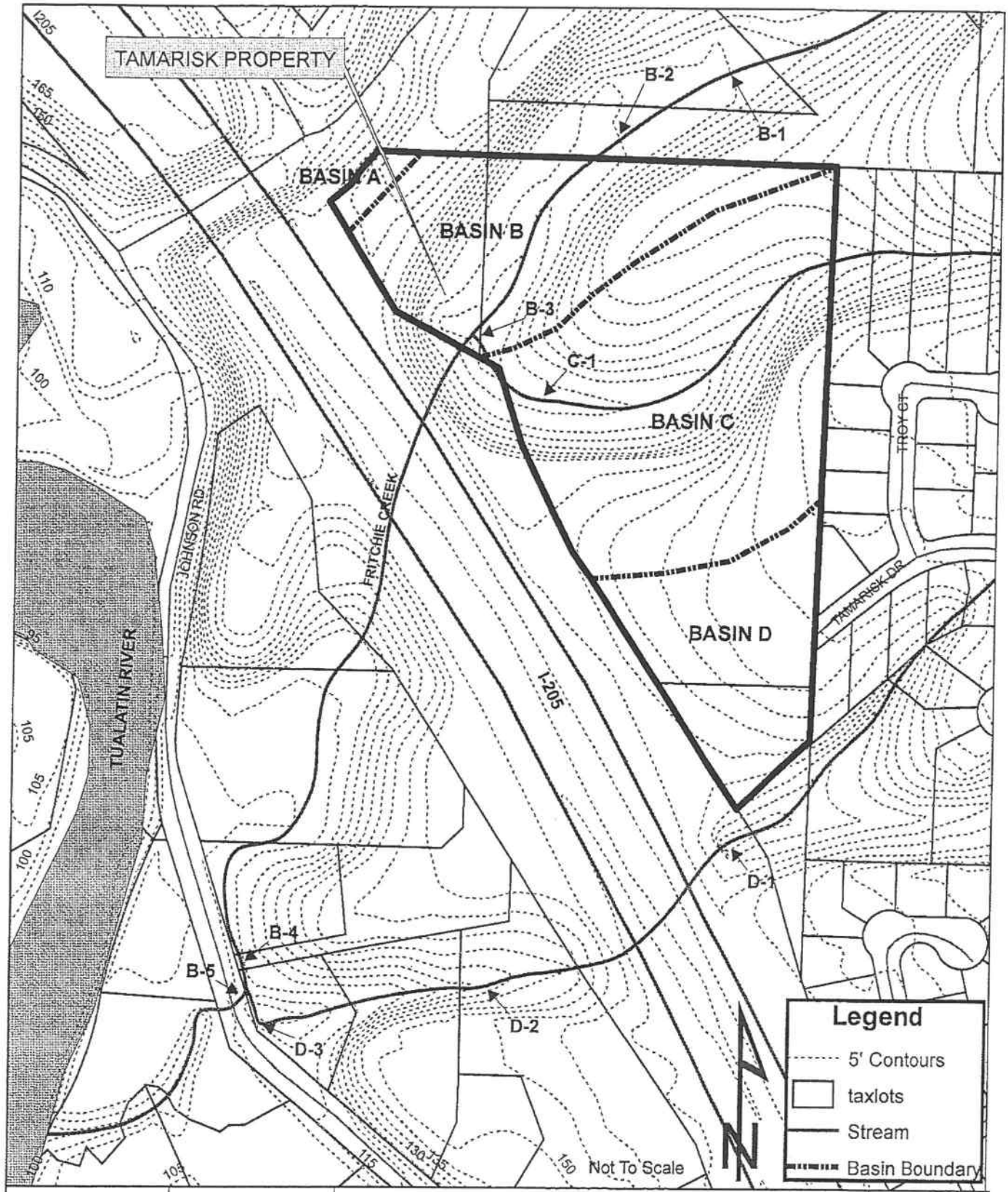
The off-site stream to the south of the Tamarisk Property that receives runoff from Basin D has side slopes of approximately 15 percent, and a longitudinal slope of approximately 3.8 percent. The upland slopes are well forested and have good ground cover with no evidence of erosion; however, the stream channel is incised and has heavily eroded banks. This unnamed stream is conveyed under I-205 through a 30-inch CMP culvert (D-1). There was little aggradation of eroded material near the inlet of Culvert D-1; therefore, the eroded channel material is apparently transported downstream.

Culvert D-1 discharges into a heavily vegetated detention facility (D-2) that has thick splays of aggraded soil material fanning out from the stream channel, causing the channel to migrate laterally within the facility. There is a 24-inch diameter riser that serves as the outlet structure from facility D-2, which is located approximately 200 feet downstream from the Culvert D-1 outlet. The outlet of the detention facility discharges to the natural channel and flows another 600 feet to Johnson Road. At Johnson Road the stream enters an 18-inch roadside culvert (D-3), then is conveyed 120 feet and discharges to Fritchie Creek at the inlet of the Johnson Road culvert (B-5). From this confluence, the combined streamflow enters the ten-foot wide trapezoidal box culvert (B-5), which is a cobble-stone-lined stream simulation culvert that flows under Johnson Road.

Table A.3 Structures Downstream of Basin D		
Structure	Type	Dimensions
D-1 (off-site)	Single Barrel CMP Culvert	30-inch diameter
D-2 (off-site)	CMP Flow Control Riser	24-inch diameter
D-3 (off-site)	Single Barrel Roadside Culvert	18-inch diameter

Conclusion

The relief across the Tamarisk Property varies greatly between the relatively flat ridge tops to the steep terrain adjacent to the stream channels. All drainage from Basins B, C, and D are transported under I-205 through two separate ODOT culverts, Culverts B-3 and D-1. The streams then converge at the inlet of the Johnson Road culvert (B-5). The channel downstream of Culvert B-5 has exposed scour surfaces that appear to be actively eroding the right outer bank. There is also under-cutting that appears to be undermining the root systems of large trees on the right outer bank. A photographic journal is also available but not included with this report.



Otak, Inc.
17355 SW Boones Ferry Rd.
Lake Oswego, OR 97035
Phone: 503.635.3618
Fax: 503.635.5395

TAMARISK PROPERTY

Location State

Figure A: Downstream Analysis

Date: 10/11/2005
Drawn: AJS Checked:
Project No.: 13458
File No.:
Sheet No.:

Spir, Peter

From: Perkins, Michael
Sent: Tuesday, April 11, 2006 11:50 AM
To: Spir, Peter
Subject: RE:

Mike Perkins
West Linn City Arborist
503-723-2554
mperkins@ci.west-linn.or.us

-----Original Message-----
From: Perkins, Michael
Sent: Wednesday, April 05, 2006 3:39 PM
To: Spir, Peter
Subject:

Peter, I went through the Tamarisk tree report and highlighted trees that stood out in terms of their size as candidates for significant tree status with the intent of going in the field and checking their condition. When I got to the site, however, the trees were not tagged making it almost impossible to identify them. Could we have the surveyor tag them? I know its a lot to ask but I really don't know how i'm going to do this otherwise...

Mike Perkins
West Linn City Arborist
503-723-2554
mperkins@ci.west-linn.or.us

Spir, Peter

From: Perkins, Michael
Sent: Tuesday, April 11, 2006 11:50 AM
To: Spir, Peter
Subject: FW: Tamarisk Tree Survey
Follow Up Flag: Follow up
Flag Status: Flagged

Mike Perkins
West Linn City Arborist
503-723-2554
mperkins@ci.west-linn.or.us

-----Original Message-----
From: Mike Peebles [mailto:mike.peebles@otak.com]
Sent: Thursday, April 06, 2006 3:56 PM
To: Perkins, Michael
Cc: Brad Kilby
Subject: RE: Tamarisk Tree Survey

Mike -
Please forward me your listing of trees you want to have tagged at the Tamarisk Property. I want to schedule survey crew as soon as possible, but need to know how many and what trees you'll want to be tagged. Thanks.

Otak Inc.
Mike Peebles, PE | Development Services
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.4526 | c: 503.313-8758 | f: 503.635.5395
www.otak.com

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From: Mike Peebles
Sent: Thursday, April 06, 2006 9:06 AM
To: mperkins@ci.west-linn.or.us
Subject: Tamarisk Tree Survey

Otak Inc.
Mike Peebles, PE | Development Services
17355 SW Boones Ferry Rd. | Lake Oswego, OR 97035
v: 503.699.4526 | c: 503.313-8758 | f: 503.635.5395
www.otak.com

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Spir, Peter

From: Perkins, Michael
Sent: Tuesday, April 11, 2006 11:50 AM
To: Spir, Peter
Subject: FW: Tamarisk Tree Survey

For your records...I'll send you all of my correspondence on all current developments

Mike Perkins
West Linn City Arborist
503-723-2554
mperkins@ci.west-linn.or.us

-----Original Message-----
From: Perkins, Michael
Sent: Monday, April 10, 2006 4:17 PM
To: 'Mike Peebles'
Subject: RE: Tamarisk Tree Survey

These are the the trees I need tagged. I went through the list of 1500 or so trees that are on the site and highlighted ones that jump out at me as being of significant size. I now need to check their condition in the field. I didn't include trees on type 1 or 2 lands that you listed to save. I did include trees you listed to save on type 3 and 4 lands as these will be evaluated to determine if they may count toward your "20% of otherwise buildable area" section of the CDC, plus any others that I have concerns about, including trees suggested for removal on type 1 and 2 lands. I didn't include the many muti-trunk bigleaf maples as these aren't really safe over the long term around homes. Please call me if you have any questions....

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Mike Perkins
West Linn City Arborist
503-723-2554
mperkins@ci.west-linn.or.us

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Cc: Brad Kilby
Subject: RE: Tamarisk Tree Survey

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Otak Inc.
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From: Mike Peebles

Sent: Thursday, April 06, 2006 9:06 AM
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West Linn

Planning Department

March 20, 2006

Stearns Marnella Communities LLC
18318 SE Abernathy Lane
Milwaukie, OR 97267

SUBJECT: SUB 05-06, Tamarisk Subdivision Completeness Determination

Dear Mssrs. Stearns and Marnella:

With the re-submittal of OTAK's material dated February 6, 2006, the Engineering and Planning Departments find that the subdivision application for Tamarisk subdivision is still **incomplete**. You have 180 days to make it complete ending July 26, 2006.

The specific grounds for incompleteness as determined by the engineering department are enclosed. The specific grounds for incompleteness as determined by the Planning Department are as follows:

85.160(E)(5)	Map and identify all trees per 55.100(B)(2). The City Arborist needs the type and size of the tree shown on the tree inventory map.
85.200(J)(9)	No tree inventory per 55.100(B)(2)

Regarding the Engineering review, please note that there may be some items that we can agree are already addressed to a sufficient degree so that these items do not delay determination of completeness.

Please contact me at 656-4211 if you have any questions or, better yet, e-mail me at pspir@ci.west-linn.or.us.

Sincerely,

Peter Spir
Associate Planner

PC: Brad Kilby, OTAK, 17355 SW Boones Ferry Road, Lake Oswego, OR 97035

attachment
:/devrvw/completeness check/incompl.-SUB 05-06-TAMARISK-resubmittal

15 March 2006

Memorandum

To: Peter Spir, City of West Linn, Planner

From: Aaron Eder

Subject: Tamarisk Subdivision (SUB-05-06) Application Completeness Check
K/J #0591005.00

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. 32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state. **The applicant shall verify with the City and determine whether such improvements are required.**

Section 33.030

2. 33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070. Stormwater detention is required, and as such, a detailed planting plan is required.

Section 33.040

3. 33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC. Stormwater detention is required, and as such, the detention facilities shall be vegetated in accordance with City requirements.

Section 33.050

4. 33.050 B2 – Provide a cross-section of the proposed stormwater facilities.

5. 33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.

Section 85.150 and 85.200

6. 85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet. Unless a variance is granted, this is a completeness item that will need to be addressed.

7. 85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street. Verify with the City that sidewalks on only one side of the street will be acceptable.

8. 85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Provide a Mitigation Plan in accordance with Section 30.110.

9. 85.200 G7 – The sanitary sewer line shall be extended or stubbed out to the next developable subdivision. **Show a sewer stub at the north end of the sanitary sewer system.**

10. 85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.

11. 85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.

Section 85.160

12. 85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.

13. 85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown. Verify with the City Planner that "Street A" and "Street B" are approved street names.

14. 85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property. This applies to all utilities, not just water mains.

Section 85.170

15. 85.170 A4 – On Sheet EX05, indicate when each phase will occur. Show the anticipated dates during which each phase will occur.

Memorandum

16. 85.170 F3 – Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system. This information is not shown for all lots.

17. 85.170 F4 – The detention facilities should include a vegetation plan for the facility.

Other Concerns

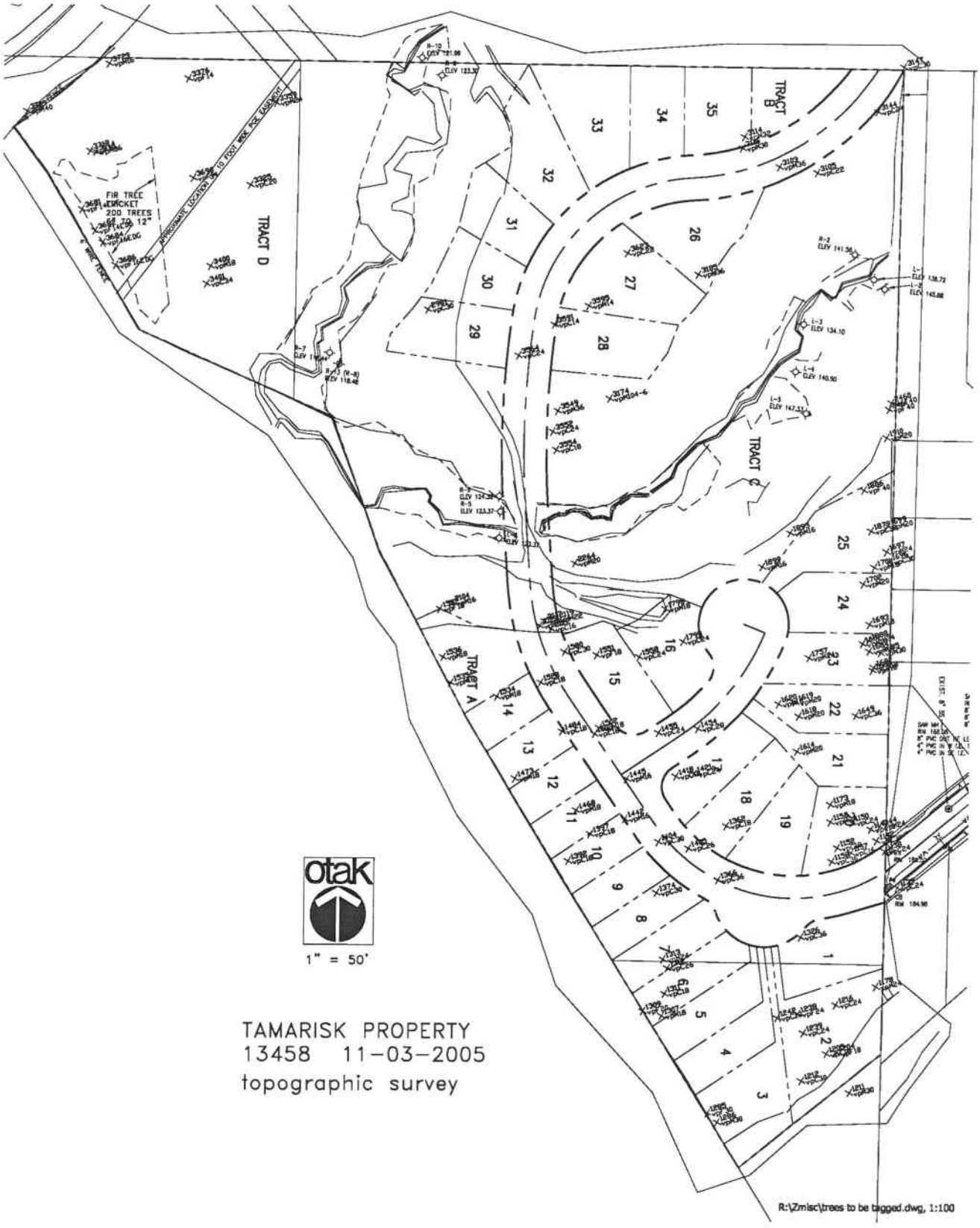
Although not required for completeness, the following items will need to be addressed during design review. It is encouraged that these items be addressed prior to the subsequent submittal of this application.

18. Show proposed curb cuts for driveways at each lot.

19. The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.

20. The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. The applicant should consult with the City to verify that this street section is acceptable.

cc: file



TAMARISK PROPERTY
13458 11-03-2005
topographic survey

RECEIVED
MAR 16 2006
PLANNING & BUILDING
CITY OF WEST LINN
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Kennedy/Jenks Consultants

15 March 2006

Memorandum

To: Peter Spir, City of West Linn, Planner

From: Aaron Eder AME

Subject: Tamarisk Subdivision (SUB-05-06) Application Completeness Check
K/J #0591005.00

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Section 85.170

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cc: file

17355 sw boones ferry road • lake oswego, oregon 97035-5217
(503) 635-3618 • fax (503) 635-5395
www.otak.com

February 6, 2006

Attn: Peter Spir
City of West Linn Planning Division
22500 Salamo Road #100
West Linn, OR 97068

Re: Incompleteness Letter of January 30, 2006 (Tamarisk Subdivision SUB-05-06)
Otak Project No. 13458

Dear Peter:

I am providing the following documentation and responses to your letter of incompleteness dated January 30, 2006. I am responding to each item individually and providing you with three copies of the materials, including updated exhibit sheets EX01 through EX12.

Planning Comment Responses

85.160(E)(9) *Show map uses on adjoining properties.*

Response: An aerial photograph of the surrounding properties is provided with this submittal as Exhibit 12. As indicated in the previous narrative, the surrounding properties are a mixture of urban residential, rural residential, and vacant uses. In visiting the site, and looking at the aerial, all of the surrounding properties appear to have homes located on them with a few exceptions, including I-205. Those exception areas appear to be drainageways, large rural lots, and I-205.

85.160(E)(5) *Map and identify all trees per 55.100(B)(2) so that the City arborist can make a determination as to which ones are significant. Only then can the applicant prepare an analysis of how much of the site's non-type I and II lands are being set aside to protect the trees and the protected dripline areas (expressed in square feet and as percentage of total non-type I and II lands)*

Response: A detailed analysis of the trees is provided in this submittal by way of the *Tamarisk Preliminary Arborist Report* from Arborist, Walt Knapp. The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

creativity, integrity, and skill • strengthening our communities • performing exciting work • serving our clients

85.160(F)(2) *Provide geotech report. We have already received one letter of concern from the public re: stability of site.*

Response: A preliminary geotechnical report assessing the stability of the soils on the proposed development has been prepared by Jim Imbrie, a registered Geotechnical Engineer in the State of Oregon, and is provided with this submittal as Appendix 2.

85.200(J)(9) *No tree inventory per 55.100(B)(2)*

Response: An inventory and analysis of the trees onsite is provided in Walt Knapp's *Tamarisk Preliminary Arborist Report.* The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

75.000 *The applicant may still wish to consider a variance for the street length and number of lots served. Ordinarily this would not be an issue since a stub out is provided. However, that stub out is into unincorporated lands, which raises concerns because there is no short to middle range likelihood that the road will actually go through.*

Response: A variance is being requested with a narrative attached as Appendix 3 to this letter.

Engineering Comment Responses from Kennedy Jenks Letter

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. *32.050 1 – The 1996 Storm Drainage Master Plan shall be used as the basis for determining the existence of drainage ways. There appear to be two natural drainage ways on the Site. The north-south drainage way appears to be classified in the Storm Drainage Master Plan as a major open channel. The east-west drainage way appears to be classified in the Storm Drainage Master Plan as a minor open channel. Both drainage ways shall be identified on the tentative plans.*

   Response: Drainageways have been noted on the plan set (Sheet EX03).

2. *32.050 4 – Identify the wetlands and transition zone on Sheet EX05. Transition zones shall be in accordance with the requirements of Section 32.050-4 of the CDC.*

Response: The wetlands and transition zones are delineated on Sheet EX05. The transition zones were set in accordance with the requirements of Section 32.050(4) of the West Linn CDC and the site specific information provided in the Natural Resource Assessment prepared by SWCA.

3. *32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state. The applicant shall verify with the City and determine whether such improvements are required.*

Response: As indicated on page 23 of the narrative provided with the original application, the drainageways onsite have been delineated and surveyed. According to the report from SWCA, there is no indication that the drainageway is in an unhealthy state. If it is determined by the review authority to be unhealthy or disturbed, the applicant will comply with all necessary measures to ensure that the drainageway remains in a healthy state. The determination of the condition of the natural drainageways shall be verified by the City during review of the land use application.

Section 33.030

4. *33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070.*

Response: A tentative site plan (Sheet EX05A) has been added to the plan set in addition to the Tentative Subdivision Plat (Sheet EX05). A topographic survey is shown on the Existing Conditions Map (Sheet EX03). The preliminary water quality facility is proposed to be accommodated through an underground vault, which would not require a detailed planting plan. If it is determined by City staff that a vault system cannot be approved, then a detailed section and planting plan will be provided for a revised swale system.

Section 33.040

5. *33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC.*

Response: In accordance with Appendix 3, the Preliminary Stormwater Analysis, it was determined that no stormwater detention facilities would be proposed for the development and that water quality would be accommodated through a vault system. If it is subsequently

found by City staff that a vault system cannot be approved, then a detailed section and planting plan will be provided for a revised swale system in final design.

Section 33.050

6. *33.050 B2 – Provide a cross-section of the proposed stormwater facilities.*

Response: The proposed stormwater management facility located in Tract A will be a Stormwater360 StormFilter vault (in accordance with City of Portland BES SWMM approved devices). In order to treat the water quality volume, the stormwater vault will require approximately 10 cartridges. The structure will be below ground with access from the proposed pump station access road. No cross section is shown for this facility since it is an underground structure.

7. *33.050 B4 – Indicate locations of all trees measuring 6 inches in diameter at breast height or higher and a description of the existing vegetation species.*

Response: Existing trees are shown by symbol (Sheet EX06) and by survey point number (Sheet EX06A). A table of tree size/type is located in the appendix of the application as a reference to Sheet EX06A. Please see Appendix 1 to this letter.

8. *33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.*

Response: The proposed stormwater management facility located in Tract A will be a structural storm vault (in accordance with City of Portland SWMM approved devices). The structure will be below ground with a 15-foot-wide, all-weather, paved access from the proposed pump station access road. No maintenance vehicle access is provided to the bottom of the drainageway.

Section 85.150 and 85.200

9. *85.150 A3 – Provide a narrative explaining all aspects of land division per Section 85.200.*

Response: The applicable approval criteria in Section 85.200 of the West Linn CDC are discussed in the original narrative for the proposed subdivision beginning on page 45.

10. *85.200 A3 – The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. In addition, the proposed local road section identified on Sheet EX01 indicates a 5-foot planter strip. In accordance with the Sidewalk Width table provided on page 85-23 of the CDC, 6-foot planter strips are*

required for residential developments. The additional 1 foot of planter strip on either side of the street would result in a right-of-way width of 52 feet, which corresponds to Option E on the table on page 85-22 of the CDC. The applicant should consult with the City to determine the required street section.

Response: According to the traffic analysis completed by Dunn Traffic, and included as Appendix 1 to the original narrative, the development, if developed with 40 lots, could be expected to generate 383 average daily trips. Subsequent to Mr. Dunn's report, the application was revised so that only 35 lots were proposed. Utilizing 9.575 average daily trips, the proposed development could be expected to generate approximately 336 average daily trips. Figure 3-15 of the West Linn Transportation System Plan allows for a 28-foot local residential street with parking on both sides within a 50-foot right-of-way for local streets that accommodate less than 1,000 vehicle trips per day. It is for this reason that these road sections were proposed with this application. A 50-foot right-of-way width was originally discussed with the City engineer at the pre-application meeting.

11. *85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet.*

Response: There is only one true cul-de-sac (Street B) in the proposed development with a length of 265 feet from the centerline of the intersecting right-of-way to the back of curb. There is a long stub street within the development that according to staff in the pre-application meeting would not require a variance. Subsequently, we have discussed this further with staff, and at their direction, are applying for a variance to vary the standard if proposed Street "A" is viewed as a cul-de-sac. That variance request is provided as Appendix 3 to this letter.

12. *85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street.*

Response: According to the West Linn CDC Section 32.030, the City engineer has the flexibility to vary the street standards to minimize impacts to the drainageway. According to City staff, this has been a widely accepted practice in West Linn when streets are proposed across drainageways. The proposed section was discussed with City staff at the pre-application conference. A concrete street crossing is proposed at each end of the drainageway crossing.

13. *85.200 E3 – There is a substantial amount of fill proposed where Street A crosses the drainage way/wetland. If areas are to be graded with more than any 4-foot cut or fill, compliance with Section 85.170(C) is required.*

Section 85.170 C1 requires that information on the character of the soil be provided. This information should be provided in the form of a geotechnical report.

Response: Section 85.170(C) requires, "(1) If areas are to be graded, a plan showing the location of cuts, fill and retaining wall, and information on the character of soil shall be provided. The grading plan shall show proposed and existing contours at intervals per Section 85.160(E)(2), and (2) the grading plan shall demonstrate that the proposed grading to accommodate roadway standards and create appropriate building sites, is the minimum amount necessary." A preliminary grading plan showing the location of cuts, fills, and retaining walls was submitted in plan sheet EX07 to the original submittal. A preliminary geotechnical report prepared by GeoPacific Engineering is included as Appendix 2 to this letter of the application. The geotechnical information speaks to the characters of the soils onsite. The amount of proposed grading is necessary to construct the proposed road.

14. *85.200 F1 – Provide detailed information on the two proposed connections to existing water systems.*

Response: In accordance with discussions with the City and utility design requirements outlined in the pre-application meeting, the City will require a looped system to improve fire flows and overall public water system performance. The connection at the existing Tamarisk Drive street end will be a 6-inch tie-in to the existing line. Phase 1 (25 lots) will be served by this dead-end water line. Phase 2 will require the extension of the 6-inch stubbed line to be extended to the west through the I-5 underpass and connected to the existing 6-inch public water line stub in SW Johnson Road. These connections will be installed in accordance with City standards.

15. *85.200 F2 – On Sheet EX08, indicate the size(s) of all water lines serving the development.*

Response: Existing and proposed water line sizes have been added to Exhibit 08. All proposed water lines are 6-inch diameter.

16. *85.200 F5 – Provide a written statement, signed by the City Engineer, that water service can be made available to the Site by construction of onsite and offsite improvements and that such water service has sufficient volume and pressure to serve the proposed development's domestic and fire flows.*

Response: A formal request via email for this information has been requested of the City engineer; however, staff has indicated that the information is provided in the pre-application notes provided as Appendix 5 to the original submittal. The information is provided from Dennis Wright in the Water and Sewer section of his memo to the West Linn Planning Division.

17. *85.200 G1 and G2 – Sheet EX08 must show how the sanitary sewer system is gravity efficient. Invert elevations shall be provided to demonstrate this. In addition, provide detailed information on the proposed connection to the existing sewer in Tamarisk Drive.*

    Response: Preliminary sanitary sewer invert elevations at the uphill end of each line and at the manhole to the pump station have been added to Sheet EX08 and are provided with this letter. Minimum slope for the 8-inch public sewer will be 0.004 ft/ft. The proposed connection to the existing manhole in Tamarisk Drive will be designed/constructed in accordance with City standards.

18. *85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.*

    Response: The sanitary sewer line will cross the wetland/drainageway at the proposed roadway crossing. Mitigation will be provided for the roadway improvements. No additional disturbance is proposed beyond the limits of the roadway improvement for installation of the sanitary sewer line.

19. *85.200 G7 – Sanitary sewer shall be extended or stubbed out to the next developable subdivision. Show a sewer stub at the north end of the sanitary sewer system. Is the pump station being designed to accommodate further development north of this project?*

    Response: The sanitary sewer line is shown extending to the north property line. The pump station design will consider the overall future development basin for sizing of the pumps. The pump station may be designed for anticipated development flows, with the ability to upsize pumps in the future to provide additional capacity for future development north of the property.

20. *85.200 G9 – Provide a written statement, signed by the City Engineer, that existing sanitary sewers have sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.*

    Response: A formal request via email for this information has been requested of the City engineer; however, staff has indicated that the information is provided in the pre-application notes provided as Appendix 5 to the original submittal. The information is provided from Dennis Wright in the Water and Sewer section of his memo to the West Linn Planning Division.

21. *85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.*

Response: No stormwater detention is proposed for the Tamarisk Development. Stormwater treatment will be provided with the use of a Stormwater360 StormFilter Vault.

22. *85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.*

Response: Due to the site location at the downstream end of the Fritchie Creek drainage basin near the Tualatin River, and the project's small contribution to Fritchie Creek, no detention is proposed for this project. Based on observations documented in the downstream analysis, Fritchie Creek is expected to be able to convey future flows. If deficiencies are identified during design, the project will either remove obstructions in Fritchie Creek or provide stormwater detention.

The total Fritchie Creek drainage basin was delineated using the Oregon Water Resources Department's web-based auto delineation tool and is approximately 332 acres. The total proposed project area is approximately 15.5 acres. Therefore, the project area comprises less than 5 percent of the total Fritchie Creek drainage basin area and should not significantly increase the intensity of runoff downstream.

The project site is located in the lower portion of the Fritchie Creek drainage that is approximately 1,560 feet upstream from the confluence with the Tualatin River. An energy dissipator will be incorporated into the proposed culvert crossing to minimize the discharge velocity of stormwater runoff at the outfall. Water quality treatment will be provided with the use of a Stormwater360 StormFilter Vault.

23. *85.200 H3 – Plans shall demonstrate how stormwater drainage will be collected from all impervious surfaces, including roof drains. Stormwater drainage connections shall be provided to each dwelling unit/lot.*

Response: A note was added to the plans stating that all lots shall have storm lateral pipe to connect to the public storm drain system in the public street. Roof drains and lot area drains shall be connected to the public storm system in the street wherever possible. Some lots may require foundation drains to be discharged to the back yards into a trench drain for disposal into the drainage.

24. *85.200 I – All subdivisions shall establish, at a minimum, 5-foot utility easements on front and rear lot lines. The location, width, and purpose of all easements shall be identified on the Tentative Plan.*

Response: A 5-foot public utility easement has been added to the front lot lines of all lots in the subdivision (Sheet EX05).

25. *85.200 J4 – Indicate locations of proposed street lights on the Tentative Plan.*

Response: The preliminary locations of proposed street lights have been added to Sheet EX05A and EX08. These locations will have to be verified with City staff in final design and construction.

Section 85.160

26. *85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.*

Response: A stamp and signature has been added to the Tentative Plat (Sheet EX05).

27. *85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown.*

Response: Street names for preliminary design and construction documents shall be designated as Street A and Street B. Final street names will be determined prior to final plat approval. This is in line with past practices at the City of West Linn.

28. *85.160 D4 – Provide a tie to the City's coordinate system.*

Response: The location of the proposed land division is shown on the project map and vicinity map on Sheet EX01. The site information is noted as Tax Map 21E34A, tax lots 600, 690, and 700. A tie to the City coordinate system will be provided with the final design and final plat. Project surveyors tied into the City Benchmark listed below for the topographic survey.

"City of West Linn Bench Mark "B" is 93.5' east and 17.0' south of the edge of pavement from 4-way intersection of Rosemont/Santa Anita. 3" cap on pipe with yellow water works lid elevation = 667.22."

29. *85.160 E1 – On Sheet EX05, provide the widths of all existing or platted streets within 50 feet of, or adjacent to, the tract, together with easements and other important features such as section lines, donation land claim corners, section corners, City boundary lines, and monuments.*

Response: Additional information has been added to the Project Map on Sheet EX05.

30. *85.160 E5 – Isolated trees (6 inches in diameter at 5 feet above grade) should be identified by size, type, and location on the Tentative Plan.*

Response: An inventory and analysis of the trees onsite is provided in Walt Knapp's *Tamarisk Preliminary Arborist Report.* The report coincides with the data provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

31. *85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property.*

Response: Additional information has been added to Sheet EX08.

32. *85.160 F6 – Sheet EX11 shall include a tree planting schedule approved by the Parks Department.*

Response: A street tree plan is shown on Sheet EX11. The specific type and size of tree is typically provided during final construction. As proposed, a street tree that is available on the local market and approved by the City arborist will be selected for planting.

33. *85.160 F7 – Indicate any land area to be dedicated to the City or placed in common ownership.*

Response: Only the public streets are proposed to be dedicated to the City at this time. The narrative indicates that all areas outside of the proposed lots will either be dedicated to the City, or placed in protective easements to be owned in common by residents of the proposed development.

34. *85.160 F8 – On Sheet EX05, show the phase boundaries in the plan view. On Sheet EX08, show how the utilities are being phased.*

Response: The phase boundary is labeled at the south transition zone boundary and denoted as Phase I and Phase II. A table on Sheet EX05 outlines the phasing limits. This table has also been added to Sheet EX08.

Section 85.170

35. *85.170 A4 – On Sheet EX05, indicate when each phase will occur.*

Response: It is anticipated that the Phase I construction will occur in the summer/fall of 2006. The schedule for Phase II is dependent on the completion of Phase 1 and favorable market conditions for development. An expiration date for completing the subdivision phases will be included in the conditions of approval of the subdivision in accordance with CDC section 85.110.

36. *85.170 B1 –On Sheet EX10, the "K" value indicated for the Street B vertical curve is too low. According to American Association of State Highway Transportation Officials (AASHTO) guidelines, a sag curve with design speed of 25 miles per hour (mph) corresponds to a "K"value of 26.*

Response: The vertical curve shown on Street B is for a proposed stop-controlled intersection (stop sign on Street B prior to entering Street A). It is assumed the design speeds for the stop-controlled intersection will be below 25 mph. A proposed minimum K-value of 12 will provide the comfort design for the west end of Street B and not impact stopping sight distance.

37. *85.170 E2 – Provide depths of the sanitary sewers at the manholes and show how each lot would be sewered.*

Response: Preliminary sanitary sewer invert elevations at the uphill end of each line and at the manhole to the pump station have been added to Sheet EX08. Minimum slope for the 8-inch public sewer will be 0.004 ft/ft. The proposed connection to the existing manhole in Tamarisk Drive will be designed/constructed in accordance with City standards. Preliminary sanitary lateral locations are shown on the Tentative Utility Plan (Sheet EX08). Final locations/depths of laterals will be determined at final design based on final lot grading and lot design.

38. *85.170 E6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.*

Response: The sanitary sewer line will cross the wetland/drainageway at the proposed roadway crossing. Mitigation will be provided for the roadway improvements in accordance with DSL and USACOE requirements. No additional disturbance is proposed beyond the limits of the roadway improvement for installation of the sanitary sewer line. The code specifically allows these types of disturbances as long as they are mitigated. The most likely scenario for mitigation would be enhancement of the drainageway.

39. *85.170 F3 – Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system.*

Response: Preliminary storm lateral locations are shown on the Tentative Utility Plan (Sheet EX08). Final locations/depths of laterals will be determined at final design based on final lot grading and lot design. Storm drain material will meet City of West Linn standard specifications.

40. *85.170 F4 – The detention facilities should include a vegetation plan for the facility.*

Response: No stormwater detention facilities are proposed for the development.

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

41. *Show proposed curb cuts for driveways at each lot.*

Response: House layout and lot design has not been determined at this time. Driveway locations will be shown at the final design stage on the public improvement plans to be submitted for review/approval to the City of West Linn. The curb cuts will be provided in accordance with the City of West Linn design and construction standards.

42. *The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.*

Response: This item will be coordinated with the Fire Marshall and City staff during the land use approval process and may be included as a condition of approval to the subdivision.

43. *On Sheet EX01, show the typical cross-slope on the street sections.*

Response: A typical cross slope has been added to the street cross section on Sheet EX01.

44. *During the pre-application conference, it was decided that the applicant will need to provide a tree survey of all significant trees on the Site and comply with the provisions of CDC 55.100(B)(2). This does not appear to have been included with the application.*

Response: A detailed analysis of the trees is provided in this submittal by way of the *Tamarisk Preliminary Arborist Report* from Arborist, Walt Knapp. The report coincides with the data

provided on Exhibits 6 and 6a of the plan submittal. The report is attached to this letter as Appendix 1.

The information cited above is supported largely by the documentation provided in the narrative, these revisions, and the special studies provided as part of this application. If you have any questions, or need any additional information, please call me at (503) 699-2495.

Sincerely,

Otak, Incorporated

Brad Kilby, AICP

BK:sjs
Enclosures: Appendix 1, Arborist Report
Appendix 2, Geotechnical Report
Appendix 3, Variance Request
Revised Exhibits

Appendix 1—Arborist Report

Walter H. Knapp
Silviculture & Urban Forestry

February 2, 2006

TAMARISK PRELIMINARY ARBORIST REPORT

Site Description

The proposed Tamarisk development in West Linn, Oregon, is a heavily forested site with a wide range of native tree species (table 1). Most of the site had been logged within the last 25 years. Only the steep slopes, inaccessible areas, and lower-value trees were retained and represent an older, larger, and more diverse ecosystem.

Bigleaf maple is the most common species, representing 44% of the tree inventory. Red alder, with 21% of the trees, is also common. The conifers – western redcedar and Douglas-fir – account for a total of 30%. These four species – maple, alder, cedar, and fir – total 95% of the trees.

The forest conditions in the uplands (type 3 and type 4 areas) are in the stem exclusion phase of stand development, where the trees are competing with each other. As the trees grow larger, those that dominate will choke out the smaller competitors, which will eventually die. In many cases, species with fast juvenile growth, such as alder and maple, are overtopped by conifers with long-term sustained growth. In addition, alder is relatively short lived, and will begin to gradually die out after 40-60 years.

A listing of surveyed trees on the site and immediately adjacent areas is included in the tree inventory enclosed with this report.

Table 1. Species distribution, Tamarisk site.

Common Name	*Botanical Name*	# Trees	Percent
Maple	*Acer macrophyllum*	679	44%
Alder	*Alnus rubra*	320	21%
Cedar	*Thuja plicata*	236	15%
Fir	*Pseudotsuga menziesii*	236	15%
Cottonwood	*Populus trichocarpa*	55	4%
Hawthorne	*Crataegus sp.*	10	1%
Fruit	*Malus sp.*	5	0.3%
Elm	*Ulmus americana*	3	0.2%
Madrona	*Arbutus menziesii*	2	0.1%
Holly	*Ilex sp.*	1	0.1%
Grand Total		1547	100%

7615 SW Dunsmuir Lane, Beaverton, OR 97007
Phone: (503) 646-4349 Fax: (503) 265-8117

No stand-level insect or disease conditions were identified during site reconnaissance. In addition, individual trees with stem decay or structural defects were not prevalent. However, a more detailed examination to identify trees with hazardous conditions near frequent use areas will be needed after site development. For example, defective trees or those vulnerable to windthrow will only need to be removed if they would impact a portion of the developed site.

Few if any trees in the upland areas meet the criteria of City of West Linn for classification as "significant." The City Arborist has been given the authority to designate significant trees and groves. To date, there have been no significant trees identified on type 3 and 4 lands.

Much of the lesser vegetation, the shrubs, forbs, grasses, and other plants, are representative of native species. In the uplands, this includes sword fern, Oregon grape, salal, hazel, and other common understory plants. Although there are areas of intrusion from invasive species, such as Himalayan blackberry and English ivy, the native vegetation is predominant in the uplands.

Land Type and Propose Prescriptions

Within the uplands, 77% of the trees will be removed on type 3 lands, and 80% will be removed on type 4 lands to provide for construction of site improvements, homes, and other infrastructure (table 2). Only 12% of the trees will be cut on type 1 lands and 45% on type 2 lands. Many of the protected trees on type 1 and 2 lands are conifers – Douglas-firs and western redcedars – in good to excellent condition, and growing in locations where they will provide long-term visual amenities and wildlife habitat to the site.

Table 2. Tree retention and removal by land type, Tamarisk Property, West Linn, OR

Land Type	Save	%	Remove	%	Total	Total %
offsite	18	100%	0	0%	18	100%
Type 1	383	88%	50	12%	433	100%
Type 2	58	55%	48	45%	106	100%
Type 3	42	23%	140	77%	182	100%
Type 4	159	20%	649	80%	808	100%
Total	660	43%	887	57%	1547	100%

No off-site trees are planned for removal unless designated due to construction of approved utilities or transportation access.

PRELIMINARY TREE PROTECTION REQUIREMENTS

The protection measures listed in this report are preliminary. Prior to site development, the following protection requirements will need to be more specific, including an on-site location of tree protection areas by the project arborist:

1. **Tree Protection Area.** The project arborist shall designate the Tree Protection Zone (TPZ). Where feasible, the TPZ shall be established at the dripline of the tree or grove as a minimum. If infrastructure (roads, sidewalks, and utilities) must be installed closer to the tree(s), the TPZ may be established within the dripline area if the project arborist determines that the tree(s) will not be unduly damaged. The protection area is designated on construction drawings.
2. **Protection Fencing.** All trees to be retained shall be protected by orange construction fencing installed prior to construction. Protection fencing shall be secured to steel posts placed no further than 10 feet apart and shall be installed at the edge of the TPZ.
3. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
4. **Excavation – TPZ.** Excavation with the TPZ shall be avoided if alternatives are available. If excavation within the TPZ in unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches. All construction within the TPZ shall be under the on-site technical supervision of the project arborist.
5. **Tree Protection Inspection.** The project arborist shall monitor construction activities and progress, and provide written reports at regular intervals.
7. **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the remaining trees.

Walter H. Knapp
Certified Forester, SAF 406
Certified Arborist, ISA PN-0497

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1138	Cedar	24				Type 4	Remove
1139	Cedar	24				offsite	Save
1140	Cedar	10				Type 4	Save
1141	Cedar	8				Type 4	Save
1142	Cedar	30				Type 4	Remove
1143	Cedar	18				Type 4	Remove
1144	Maple	24				Type 4	Remove
1145	Maple	9x6	-	10		Type 4	Remove
1146	Maple	12				Type 4	Remove
1147	Maple	3x6	-	12		Type 4	Save
1148	Alder	2x8	-	10		Type 4	Remove
1149	Elm	2x8				Type 4	Remove
1150	Cedar	24				Type 4	Remove
1151	Maple	8x6	-	8		Type 4	Remove
1152	Cedar	18				Type 4	Remove
1153	Maple	24				Type 4	Remove
1154	Maple	2x6	-	8		Type 4	Remove
1155	Maple	5x6	-	10		Type 4	Remove
1156	Cedar	10				Type 4	Remove
1157	Cedar	16				Type 4	Remove
1158	Cedar	36				Type 4	Remove
1159	Maple	8				Type 4	Remove
1160	Fir	6				Type 4	Remove
1161	Alder	6				Type 4	Remove
1162	Alder	14				Type 4	Remove
1163	Alder	10				Type 4	Remove
1164	Alder	8				Type 4	Remove
1165	Alder	8				Type 4	Remove
1166	Maple	14				Type 4	Remove
1167	Maple	12				Type 4	Remove
1168	Maple	10				Type 4	Remove
1169	Elm	8				Type 4	Remove
1170	Fir	10				Type 4	Remove
1171	Fir	8				Type 4	Remove
1173	Maple	18				Type 4	Remove
1174	Maple	3x6	-	12		Type 4	Remove
1175	Maple	5x6	-	8		Type 4	Remove
1178	Maple	24				Type 4	Remove
1179	Maple	6				Type 4	Remove
1180	Fir	12				Type 4	Remove
1181	Maple	27				Type 1	Save
1182	Maple	18				Type 1	Save
1183	Cedar	12001				Type 1	Save
1184	Maple	18				Type 1	Save
1185	Fir	8				Type 1	Save
1186	Fir	8				Type 1	Save
1187	Maple	2x6				Type 1	Save
1188	Fir	8				Type 1	Save
1189	Maple	2x6	-	15		Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1190	Fir	8				Type 1	Save
1191	Maple	24				Type 1	Save
1192	Fir	10				Type 1	Save
1193	Fir	8				Type 1	Save
1194	Maple	2x30				Type 1	Save
1195	Fir	6				Type 1	Save
1196	Fir	6				Type 1	Save
1197	Maple	6				Type 4	Remove
1198	Maple	2x10	-	12		Type 1	Save
1199	Fir	8				Type 1	Save
1200	Fir	6				Type 1	Save
1201	Fir	12				Type 1	Save
1202	Maple	18				Type 1	Save
1203	Fir	18				Type 1	Save
1204	Fir	18				Type 4	Remove
1205	Fir	15				Type 4	Remove
1206	Fir	6				Type 1	Remove
1207	Maple	18				Type 1	Save
1208	Maple	2x12				Type 1	Save
1209	Maple	24				Type 1	Save
1210	Fir	8				Type 1	Save
1211	Maple	30				offsite	Save
1212	Cedar	30				Type 4	Remove
1213	Maple	4x6	-	12		Type 4	Remove
1214	Maple	5x6	-	8		Type 4	Remove
1215	Maple	6				Type 4	Remove
1216	Cedar	24				Type 4	Remove
1217	Cedar	2x10	-	15		Type 4	Remove
1236	Maple	7x6	-	10		Type 4	Remove
1237	Alder	12				Type 4	Remove
1238	Fir	24				Type 4	Remove
1239	Cedar	24				Type 4	Remove
1240	Maple	5x6	-	8		Type 4	Remove
1241	Maple	8x6	-	12		Type 4	Remove
1242	Cedar	18				Type 4	Remove
1243	Maple	8x6	-	8		Type 4	Remove
1244	Maple	6				Type 4	Remove
1245	Maple	3x8	-	12		Type 4	Remove
1246	Maple	6x6	-	10		Type 4	Remove
1247	Maple	2x6	-	8		Type 4	Remove
1248	Maple	8				Type 4	Remove
1249	Maple	8				Type 4	Remove
1251	Maple	6x6	-	8		Type 4	Remove
1257	Maple	30				Type 1	Save
1261	Maple	10				Type 4	Save
1262	Maple	5x10	-	20		Type 4	Save
1263	Maple	10				Type 4	Save
1264	Alder	10				Type 4	Remove
1265	Alder	12				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1266	Fir	6				Type 4	Remove
1267	Alder	2x6				Type 4	Remove
1268	Maple	8				Type 4	Remove
1269	Maple	6x6	-	10		Type 4	Remove
1270	Maple	6				Type 4	Remove
1271	Maple	2x6	-	8		Type 4	Remove
1274	Maple	2x8	-	10		Type 4	Remove
1275	Maple	8				Type 4	Remove
1276	Maple	6x6	-	12		Type 4	Remove
1277	Maple	6x6	-	10		Type 4	Remove
1278	Maple	4x8	-	10		Type 4	Remove
1280	Maple	8				Type 4	Remove
1281	Maple	10x6	-	12		Type 4	Remove
1282	Maple	9x6	-	14		Type 4	Remove
1283	Maple	3x6	-	8		Type 4	Remove
1284	Maple	2x6				Type 4	Remove
1285	Fir	30				Type 4	Save
1286	Maple	30				Type 4	Remove
1306	Maple	14				Type 4	Remove
1307	Maple	18				Type 4	Remove
1308	Maple	14				Type 4	Remove
1309	Fir	20				offsite	Save
1310	Maple	14				Type 4	Remove
1311	Cedar	18				Type 4	Remove
1312	Cedar	26				Type 4	Remove
1313	Maple	24				Type 4	Remove
1314	Maple	9x6	-	12		Type 4	Remove
1315	Maple	9x6	-	8		Type 4	Remove
1316	Alder	5x6	-	10		Type 4	Remove
1317	Cedar	12				Type 4	Remove
1318	Maple	7x6	-	8		Type 4	Remove
1319	Maple	10x6	-	8		Type 4	Remove
1320	Maple	5x6	-	10		Type 4	Remove
1321	Maple	8x6	-	10		Type 4	Remove
1322	Maple	10				Type 4	Remove
1323	Maple	5x6				Type 4	Remove
1324	Maple	12x6	-	8		Type 4	Remove
1325	Maple	10x6	-	10		Type 4	Remove
1326	Cedar	36				Type 4	Remove
1327	Maple	6				Type 4	Remove
1328	Maple	6				Type 4	Remove
1329	Maple	2x8	-	10		Type 4	Remove
1330	Maple	6				Type 4	Remove
1331	Maple	10x6	-	10		Type 4	Remove
1332	Alder	12				Type 4	Remove
1333	Alder	8				Type 4	Remove
1334	Fir	8				Type 4	Remove
1335	Fir	8				Type 4	Remove
1336	Alder	8				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1337	Fir	8				Type 4	Remove
1338	Fir	10				Type 4	Remove
1339	Fir	8				Type 4	Remove
1340	Fir	10				Type 4	Remove
1341	Maple	10				Type 4	Remove
1342	Maple	6				Type 4	Remove
1343	Maple	6				Type 4	Remove
1344	Alder	12				Type 4	Remove
1345	Alder	10				Type 4	Remove
1346	Alder	6				Type 4	Remove
1347	Alder	3x6	-	8		Type 4	Remove
1348	Alder	2x10	-	12		Type 4	Remove
1349	Maple	12				Type 4	Remove
1350	Fir	6				Type 4	Remove
1351	Fir	10				Type 4	Remove
1352	Fir	6				Type 4	Remove
1353	Fir	6				Type 4	Remove
1354	Alder	8				Type 4	Remove
1355	Fir	2x6	-	8		Type 4	Remove
1356	Alder	6				Type 4	Remove
1357	Fir	6				Type 4	Remove
1358	Fir	8				Type 4	Remove
1359	Fir	8				Type 4	Remove
1360	Maple	2x10	-	18		Type 4	Remove
1361	Maple	6x6	-	8		Type 4	Remove
1362	Cedar	18				Type 4	Remove
1363	Maple	5x6	-	8		Type 4	Remove
1364	Maple	8x6	-	8		Type 4	Remove
1365	Maple	2x6				Type 4	Remove
1366	Cedar	36				Type 4	Remove
1367	Alder	2x10				Type 4	Remove
1368	Maple	14				Type 4	Remove
1369	Maple	5x6	-	10		Type 4	Remove
1370	Maple	8x6	-	8		Type 4	Remove
1371	Maple	6x6				Type 4	Remove
1372	Maple	14				Type 4	Remove
1373	Maple	7x6	-	12		Type 4	Remove
1374	Cedar	30				Type 4	Remove
1375	Maple	4x8	-	10		Type 4	Remove
1376	Maple	10x6	-	8		Type 4	Remove
1377	Maple	10x6	-	8		Type 4	Remove
1378	Maple	7x6	-	8		Type 4	Remove
1379	Maple	6				Type 4	Remove
1380	Maple	8				Type 4	Remove
1381	Maple	2x6	-	8		Type 4	Remove
1382	Maple	2x6				Type 4	Remove
1383	Maple	6				Type 4	Remove
1384	Maple	14				Type 4	Remove
1385	Hawthorne	10				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1386	Hawthorne	10				Type 4	Remove
1387	Hawthorne	8				Type 4	Remove
1388	Hawthorne	6				Type 4	Remove
1389	Hawthorne	6				Type 4	Remove
1390	Hawthorne	8				Type 4	Remove
1391	Hawthorne	6				Type 4	Remove
1392	Cedar	18				Type 4	Remove
1393	Hawthorne	8				Type 4	Remove
1394	Hawthorne	6				Type 4	Remove
1395	Maple	2x6	-	8		Type 4	Remove
1396	Hawthorne	10				Type 4	Remove
1397	Cedar	18				Type 4	Remove
1398	Maple	8				Type 4	Remove
1399	Maple	10				Type 4	Remove
1400	Cottonwood	18				Type 4	Remove
1401	Cottonwood	3x14	-	18		Type 4	Remove
1402	Maple	2x8	-	10		Type 4	Remove
1403	Alder	10				Type 4	Remove
1404	Cedar	30				Type 4	Remove
1405	Cedar	26				Type 4	Remove
1406	Maple	6x6	-	8		Type 4	Remove
1407	Maple	4x6	-	8		Type 4	Remove
1408	Maple	12				Type 4	Remove
1409	Maple	3x6	-	14		Type 4	Remove
1410	Maple	6				Type 4	Remove
1411	Maple	10				Type 4	Remove
1412	Maple	6				Type 4	Remove
1413	Maple	6				Type 4	Remove
1414	Maple	8				Type 4	Remove
1415	Maple	8				Type 4	Remove
1416	Maple	8				Type 4	Remove
1417	Maple	10				Type 4	Remove
1418	Cedar	18				Type 4	Remove
1419	Maple	10				Type 4	Remove
1420	Maple	8				Type 4	Remove
1421	Cedar	24				Type 4	Remove
1422	Fir	10				Type 4	Remove
1423	Fir	6				Type 4	Remove
1424	Fir	8				Type 4	Remove
1425	Fir	10				Type 4	Remove
1426	Fir	6				Type 4	Remove
1427	Fir	10				Type 4	Remove
1428	Fir	8				Type 4	Remove
1429	Fir	8				Type 4	Remove
1430	Maple	5x6	-	8		Type 4	Remove
1431	Maple	10x6	-	10		Type 4	Remove
1440	Maple	3x6	-	8		Type 4	Remove
1441	Maple	4x6	-	8		Type 4	Remove
1442	Maple	16				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1443	Alder	8				Type 4	Remove
1444	Alder	12				Type 4	Remove
1445	Maple	16				Type 4	Remove
1446	Maple	8				Type 4	Remove
1447	Alder	12				Type 4	Remove
1448	Alder	2x8	-	10		Type 4	Remove
1449	Alder	8				Type 4	Remove
1450	Maple	6x6	-	8		Type 4	Remove
1451	Maple	2x6	-	8		Type 4	Remove
1452	Maple	2x6	-	8		Type 4	Remove
1453	Maple	10				Type 4	Remove
1454	Cedar	28				Type 4	Remove
1455	Cedar	24				Type 4	Remove
1456	Maple	6x6	-	8		Type 4	Remove
1457	Maple	6				Type 4	Remove
1458	Maple	12				Type 4	Remove
1459	Fir	6				Type 4	Remove
1460	Maple	6				Type 4	Remove
1461	Fir	6				Type 4	Remove
1462	Maple	6				Type 4	Remove
1463	Maple	8				Type 4	Remove
1464	Maple	3x6				Type 4	Remove
1465	Maple	9x6	-	10		Type 4	Remove
1466	Maple	8				Type 4	Remove
1467	Alder	10				Type 4	Remove
1468	Maple	18				Type 4	Remove
1469	Maple	6x6	-	8		Type 4	Remove
1471	Maple	5x6	-	12		Type 4	Remove
1472	Alder	12				Type 4	Remove
1473	Maple	18				Type 4	Remove
1474	Maple	10				Type 4	Remove
1478	Maple	4x6	-	8		Type 4	Remove
1479	Maple	5x6	-	10		Type 4	Remove
1480	Alder	12				Type 4	Remove
1481	Alder	12				Type 4	Remove
1482	Alder	2x10				Type 4	Remove
1483	Alder	10				Type 4	Remove
1484	Cedar	18				Type 4	Remove
1485	Maple	10				Type 4	Remove
1486	Maple	12				Type 4	Remove
1487	Alder	16				Type 4	Remove
1488	Alder	8				Type 4	Remove
1489	Alder	8				Type 4	Remove
1490	Alder	8				Type 4	Remove
1491	Maple	8				Type 4	Remove
1492	Alder	6				Type 4	Remove
1493	Alder	10				Type 4	Remove
1494	Alder	10				Type 4	Remove
1495	Alder	8				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1496	Alder	6				Type 4	Remove
1497	Alder	12				Type 4	Remove
1498	Alder	6				Type 4	Remove
1499	Maple	3x6	-	8		Type 4	Remove
1500	Alder	6				Type 4	Remove
1501	Alder	2x8	-	10		Type 4	Remove
1502	Maple	18				Type 4	Remove
1503	Cedar	18				Type 4	Remove
1504	Cedar	12				Type 4	Remove
1505	Maple	6				Type 4	Remove
1506	Maple	8				Type 4	Remove
1507	Alder	6				Type 4	Remove
1508	Cottonwood	18				Type 4	Remove
1509	Cottonwood	18				Type 4	Remove
1510	Cottonwood	18				Type 4	Remove
1511	Maple	6x6	-	8		Type 4	Remove
1512	Maple	12x6	-	8		Type 4	Remove
1513	Maple	2x6	-	8		Type 4	Remove
1514	Maple	5x6	-	8		Type 4	Remove
1515	Alder	8				Type 4	Remove
1516	Maple	3x6	-	8		Type 4	Remove
1517	Maple	6				Type 4	Remove
1518	Maple	8				Type 4	Remove
1519	Maple	8				Type 4	Remove
1520	Alder	14				Type 4	Remove
1521	Maple	2x6				Type 4	Remove
1522	Alder	12				Type 4	Remove
1523	Alder	10				Type 4	Remove
1524	Alder	8				Type 4	Remove
1525	Cottonwood	14				Type 4	Remove
1526	Alder	2x12				Type 4	Remove
1527	Alder	2x12				Type 4	Remove
1528	Cedar	18				Type 4	Remove
1529	Maple	8				Type 4	Remove
1530	Alder	12				Type 4	Remove
1531	Maple	4x6	-	10		Type 4	Remove
1533	Maple	2x12	-	18		Type 4	Remove
1534	Maple	18				Type 4	Remove
1535	Maple	18				Type 4	Remove
1536	Maple	18				Type 4	Remove
1537	Alder	12				Type 4	Remove
1538	Alder	8				Type 4	Remove
1539	Alder	10				Type 4	Remove
1540	Alder	8				Type 4	Remove
1541	Alder	8				Type 4	Remove
1542	Maple	5x6				Type 4	Remove
1543	Alder	10				Type 4	Remove
1544	Alder	6				Type 4	Remove
1545	Alder	14				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1546	Alder	14				Type 4	Remove
1547	Alder	12				Type 4	Remove
1548	Maple	10				Type 4	Remove
1549	Alder	2x8				Type 4	Remove
1550	Maple	14				Type 4	Remove
1551	Fir	18				Type 4	Remove
1552	Fir	18				Type 3	Save
1553	Maple	5x6				Type 4	Remove
1554	Maple	2x6				Type 4	Remove
1555	Alder	14				Type 4	Remove
1556	Alder	2x10	-	12		Type 4	Remove
1557	Alder	8				Type 4	Remove
1558	Cedar	24				Type 4	Remove
1559	Alder	10				Type 4	Remove
1560	Alder	10				Type 4	Remove
1561	Alder	3x6	-	8		Type 4	Remove
1562	Alder	12				Type 4	Remove
1563	Alder	14				Type 4	Remove
1564	Alder	6				Type 4	Remove
1565	Alder	6				Type 4	Remove
1566	Alder	10				Type 4	Remove
1567	Alder	8				Type 4	Remove
1568	Alder	8				Type 4	Remove
1569	Maple	2x6				Type 3	Remove
1570	Alder	12				Type 4	Remove
1571	Alder	10				Type 4	Remove
1572	Alder	14				Type 4	Remove
1573	Maple	8				Type 3	Remove
1574	Alder	6				Type 4	Remove
1575	Maple	2x6	-	8		Type 3	Remove
1576	Maple	5x6	-	8		Type 2	Remove
1577	Maple	7x6	-	8		Type 2	Save
1578	Alder	8				Type 4	Remove
1579	Alder	10				Type 4	Remove
1580	Cedar	30				Type 4	Remove
1581	Maple	4x6	-	8		Type 3	Remove
1582	Alder	8				Type 4	Remove
1583	Alder	4x6	-	8		Type 4	Remove
1584	Alder	2x6	-	10		Type 4	Remove
1585	Maple	2x6	-	10		Type 4	Remove
1586	Alder	8				Type 4	Remove
1587	Maple	3x6				Type 4	Remove
1588	Alder	6				Type 4	Remove
1589	Maple	8				Type 4	Remove
1590	Maple	6x6	-	10		Type 4	Remove
1591	Maple	8				Type 3	Save
1592	Elm	10				Type 3	Save
1593	Alder	6				Type 4	Remove
1594	Cedar	18				Type 3	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1595	Maple	12				Type 4	Save
1596	Maple	2x8	-	10		Type 3	Save
1610	Alder	6				Type 4	Remove
1611	Alder	2x10	-	12		Type 4	Remove
1612	Maple	15x6	-	10		Type 4	Remove
1613	Maple	2x6	-	8		Type 4	Remove
1614	Maple	20				Type 4	Remove
1617	Fir	12				Type 4	Remove
1618	Maple	20				Type 4	Remove
1619	Maple	20				Type 4	Remove
1620	Maple	18				Type 4	Remove
1621	Fir	8				Type 4	Remove
1622	Fir	8				Type 4	Remove
1623	Alder	16				Type 4	Remove
1624	Alder	14				Type 4	Remove
1625	Fir	6				Type 4	Remove
1626	Alder	14				Type 4	Remove
1627	Alder	10				Type 4	Remove
1628	Alder	6				Type 4	Remove
1629	Alder	8				Type 4	Remove
1630	Alder	8				Type 4	Remove
1631	Fir	8				Type 4	Remove
1632	Fir	8				Type 4	Remove
1633	Fir	6				Type 4	Remove
1634	Alder	5x10				Type 4	Remove
1635	Alder	2x6	-	12		Type 4	Remove
1636	Alder	8				Type 4	Remove
1637	Alder	12				Type 4	Remove
1638	Alder	8				Type 4	Remove
1639	Alder	12				Type 4	Remove
1640	Alder	8				Type 4	Remove
1641	Alder	10				Type 4	Remove
1642	Alder	6				Type 4	Remove
1643	Alder	8				Type 4	Remove
1644	Alder	10				Type 4	Remove
1645	Alder	10				Type 4	Remove
1646	Alder	10				Type 4	Remove
1649	Cedar	36				Type 4	Remove
1650	Maple	8				Type 4	Remove
1651	Cedar	14				Type 4	Save
1652	Maple	8x6	-	10		Type 4	Remove
1667	Maple	5x6	-	10		Type 4	Remove
1668	Maple	7x6	-	8		Type 4	Remove
1669	Maple	6x6	-	8		Type 4	Remove
1670	Maple	4x6	-	8		Type 4	Remove
1671	Maple	4x6	-	10		Type 4	Remove
1672	Alder	18				Type 4	Remove
1673	Alder	12				Type 4	Remove
1674	Alder	10				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1675	Alder	2x6	-	8		Type 4	Remove
1676	Alder	10				Type 4	Remove
1677	Alder	12				Type 4	Remove
1678	Alder	10				Type 4	Remove
1679	Alder	8				Type 4	Remove
1680	Maple	2x6	-	8		Type 4	Remove
1681	Maple	18				Type 4	Remove
1682	Maple	24				Type 4	Remove
1683	Maple	12				Type 4	Remove
1684	Maple	18				Type 4	Remove
1685	Maple	30				Type 4	Remove
1686	Maple	14				Type 4	Remove
1687	Maple	18				Type 4	Remove
1688	Maple	18				Type 4	Remove
1689	Maple	3x6				Type 4	Remove
1690	Alder	8				Type 4	Remove
1691	Maple	5x6	-	8		Type 4	Remove
1692	Maple	6				Type 4	Remove
1693	Maple	18				Type 4	Remove
1694	Maple	10				Type 4	Remove
1695	Maple	10				Type 4	Save
1696	Cedar	30				Type 4	Remove
1697	Maple	24				Type 4	Remove
1698	Maple	4x14	-	30		Type 4	Remove
1699	Maple	20				Type 4	Remove
1700	Maple	12				Type 4	Remove
1701	Maple	18				Type 4	Remove
1702	Maple	20				Type 4	Remove
1703	Maple	10				Type 4	Remove
1704	Alder	14				Type 4	Remove
1705	Alder	10				Type 4	Remove
1706	Alder	6				Type 4	Remove
1707	Alder	12				Type 4	Remove
1708	Alder	6				Type 4	Remove
1709	Alder	10				Type 4	Remove
1710	Alder	12				Type 4	Remove
1711	Alder	10				Type 4	Remove
1712	Alder	12				Type 4	Remove
1713	Alder	14				Type 4	Remove
1714	Alder	6				Type 4	Remove
1715	Alder	10				Type 4	Remove
1716	Alder	14				Type 4	Remove
1717	Cedar	14				Type 4	Remove
1718	Alder	6				Type 4	Remove
1719	Alder	10				Type 4	Remove
1720	Alder	6				Type 4	Remove
1721	Alder	2x8				Type 4	Remove
1722	Alder	14				Type 3	Remove
1723	Maple	2x6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1724	Maple	4x8	-	14		Type 4	Remove
1725	Alder	8				Type 4	Remove
1726	Alder	2x10	-	14		Type 4	Remove
1727	Alder	12				Type 4	Remove
1728	Alder	10				Type 4	Remove
1729	Alder	14				Type 4	Remove
1730	Alder	14				Type 4	Remove
1731	Alder	10				Type 4	Remove
1732	Alder	10				Type 4	Remove
1733	Alder	12				Type 4	Remove
1734	Alder	6				Type 4	Remove
1735	Alder	10				Type 4	Remove
1736	Alder	8				Type 4	Remove
1737	Alder	8				Type 4	Remove
1738	Alder	10				Type 4	Remove
1739	Alder	6				Type 4	Remove
1740	Maple	2x6				Type 4	Remove
1741	Maple	6				Type 4	Remove
1742	Maple	8				Type 4	Remove
1743	Alder	8				Type 4	Remove
1744	Alder	10				Type 4	Remove
1745	Alder	8				Type 4	Remove
1746	Alder	10				Type 4	Remove
1747	Alder	12				Type 4	Remove
1748	Alder	12				Type 4	Remove
1749	Alder	8				Type 4	Remove
1750	Alder	6				Type 4	Remove
1751	Alder	8				Type 4	Remove
1752	Alder	8				Type 4	Remove
1753	Alder	8				Type 4	Remove
1754	Alder	6				Type 4	Remove
1755	Maple	12				Type 4	Remove
1756	Alder	5x6	-	16		Type 4	Remove
1757	Maple	24				Type 4	Remove
1758	Alder	10				Type 4	Remove
1759	Alder	2x12				Type 4	Remove
1760	Alder	14				Type 4	Remove
1761	Alder	8				Type 4	Remove
1762	Alder	8				Type 4	Remove
1763	Alder	14				Type 4	Remove
1764	Alder	6				Type 4	Remove
1765	Alder	6				Type 4	Remove
1766	Alder	8				Type 4	Remove
1767	Alder	14				Type 4	Remove
1768	Alder	12				Type 4	Remove
1769	Alder	3x12				Type 4	Remove
1770	Alder	8				Type 4	Remove
1771	Alder	6				Type 4	Remove
1772	Alder	6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1773	Alder	10				Type 4	Remove
1774	Alder	12				Type 4	Remove
1775	Alder	4x6	-	14		Type 4	Remove
1776	Alder	14				Type 4	Remove
1777	Alder	8				Type 4	Remove
1778	Alder	8				Type 4	Remove
1779	Alder	6				Type 4	Remove
1780	Alder	2x8				Type 4	Remove
1781	Alder	6				Type 4	Remove
1782	Alder	2x8				Type 4	Remove
1783	Alder	2x6	-	8		Type 3	Remove
1784	Alder	10				Type 3	Remove
1785	Alder	8				Type 3	Remove
1786	Alder	10				Type 3	Remove
1787	Alder	6				Type 3	Remove
1788	Alder	8				Type 3	Remove
1789	Alder	6				Type 3	Remove
1790	Alder	14				Type 3	Remove
1791	Alder	12				Type 3	Remove
1792	Alder	4x6	-	8		Type 3	Remove
1793	Alder	10				Type 4	Remove
1794	Alder	8				Type 4	Remove
1795	Cedar	24				Type 4	Remove
1796	Alder	8				Type 3	Remove
1797	Alder	12				Type 3	Remove
1798	Maple	18				Type 3	Remove
1821	Maple	2x8				Type 3	Remove
1822	Maple	8				Type 3	Remove
1823	Maple	4x6	-	8		Type 3	Remove
1824	Maple	8				Type 3	Remove
1825	Maple	8				Type 3	Remove
1826	Maple	8				Type 3	Remove
1827	Alder	6				Type 3	Remove
1828	Alder	6				Type 3	Remove
1829	Alder	2x6	-	8		Type 3	Remove
1830	Alder	8				Type 3	Remove
1831	Cottonwood	16				Type 3	Remove
1832	Maple	2x6				Type 3	Save
1833	Maple	3x6	-	8		Type 2	Save
1834	Maple	2x6	-	10		Type 2	Save
1835	Cedar	24				Type 2	Save
1836	Cedar	14				Type 2	Save
1837	Maple	30				Type 1	Save
1838	Alder	8				Type 2	Remove
1839	Cedar	20				Type 2	Save
1840	Maple	30				Type 2	Save
1841	Cedar	10				Type 1	Save
1842	Cedar	12				Type 1	Save
1844	Alder	8				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1845	Alder	6				Type 2	Save
1858	Cottonwood	14				Type 1	Save
1859	Cedar	24				Type 1	Save
1860	Cottonwood	3x10	-	14		Type 1	Save
1861	Alder	6				Type 1	Save
1862	Cottonwood	16				Type 1	Save
1863	Cottonwood	16				Type 1	Save
1864	Cottonwood	16				Type 1	Save
1865	Maple	2x6	-	12		Type 1	Save
1866	Cottonwood	16				Type 1	Save
1867	Cottonwood	10				Type 1	Save
1868	Cottonwood	26				Type 1	Save
1869	Cottonwood	12				Type 1	Save
1870	Maple	2x8				Type 1	Save
1872	Maple	4x6	-	10		Type 1	Save
1873	Maple	14				Type 1	Remove
1875	Maple	5x6				Type 3	Remove
1876	Cedar	6				Type 4	Remove
1877	Maple	12				Type 4	Remove
1878	Cottonwood	2x10	-	18		Type 4	Remove
1879	Cedar	38				Type 4	Remove
1880	Fir	14				Type 4	Remove
1881	Fir	10				Type 4	Remove
1882	Fir	10				Type 4	Save
1883	Fir	8				Type 4	Save
1884	Maple	2x18	-	36		Type 3	Save
1885	Maple	3x6	-	18		Type 3	Save
1886	Fir	40				Type 3	Remove
1887	Fir	6				Type 4	Remove
1888	Maple	2x14	-	24		Type 3	Remove
1889	Cedar	12				Type 3	Remove
1890	Alder	2x6	-	8		Type 4	Remove
1891	Alder	3x6	-	8		Type 3	Remove
1892	Alder	6				Type 3	Remove
1893	Alder	2x6				Type 3	Remove
1894	Alder	8				Type 3	Remove
1895	Maple	16				Type 2	Remove
1896	Cottonwood	14				Type 3	Remove
1897	Cottonwood	6				Type 3	Remove
1898	Cottonwood	10				Type 3	Remove
1899	Maple	16				Type 3	Remove
1905	Maple	12				Type 1	Save
1906	Maple	12				Type 1	Save
1907	Cedar	30				Type 1	Save
1908	Maple	26				Type 1	Save
1909	Maple	10				Type 3	Save
1910	Maple	20				Type 3	Save
1919	Alder	2x6	-	10		Type 1	Save
1920	Maple	10				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
1921	Maple	2x14				Type 1	Save
1922	Maple	4x4	-	6		Type 1	Save
1923	Maple	6				Type 1	Save
1924	Maple	16				Type 1	Save
1925	Maple	36				Type 1	Save
1926	Maple	4x6	-	8		Type 1	Save
1932	Alder	8				Type 1	Save
1936	Maple	5x12	-	18		Type 1	Save
1937	Maple	3x6	-	8		Type 1	Save
1938	Maple	8				Type 1	Save
1939	Maple	14				Type 1	Save
1941	Maple	4x8	-	12		Type 1	Save
1942	Maple	3x6				Type 1	Save
1943	Cedar	8				Type 1	Save
1944	Cedar	2x10	-	24		Type 1	Save
1945	Maple	40				Type 1	Save
1950	Alder	8				Type 1	Save
1951	Maple	12				Type 1	Save
1952	Maple	2x18	-	22		Type 1	Save
1953	Cedar	12				Type 1	Save
1954	Maple	16				Type 1	Save
1955	Maple	12				Type 1	Save
1956	Maple	8				Type 1	Save
1957	Cedar	10				Type 1	Save
1958	Cedar	28				Type 1	Save
1959	Maple	12				Type 1	Save
1960	Maple	16				Type 1	Save
1961	Maple	10				Type 1	Save
1962	Cedar	28				Type 1	Save
1963	Cedar	18				Type 1	Save
1964	Maple	10				Type 1	Save
1965	Maple	18				Type 1	Save
1966	Maple	10				Type 1	Save
1967	Maple	2x6	-	14		Type 1	Save
1968	Maple	12				Type 1	Save
1969	Cedar	18				Type 1	Save
1970	Cedar	10				Type 1	Save
1971	Maple	15				Type 1	Save
1972	Maple	20				Type 1	Save
2084	Alder	8				Type 2	Remove
2085	Alder	10				Type 2	Remove
2086	Alder	10				Type 2	Remove
2087	Alder	12				Type 2	Remove
2101	Maple	12				Type 1	Save
2102	Maple	8				Type 1	Save
2103	Maple	2x6				Type 1	Save
2104	Maple	16				Type 3	Save
2105	Maple	8x8	-	14		Type 1	Save
2106	Maple	12				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2107	Maple	3x8	-	12		Type 1	Remove
2108	Maple	5x8	-	12		Type 1	Remove
2109	Maple	4x8	-	14		Type 1	Remove
2110	Maple	2x8	-	12		Type 1	Remove
2111	Maple	10				Type 3	Remove
2112	Maple	2x8	-	10		Type 3	Remove
2113	Maple	8				Type 3	Remove
2114	Maple	2x6				Type 1	Remove
2115	Maple	5x6	-	10		Type 1	Remove
2116	Maple	3x8	-	12		Type 1	Remove
2117	Maple	24				Type 1	Remove
2118	Maple	12				Type 1	Remove
2119	Maple	22				Type 1	Remove
2120	Maple	6x6	-	8		Type 1	Remove
2121	Maple	8				Type 1	Remove
2122	Cedar	16				Type 3	Remove
2123	Maple	16				Type 1	Remove
2124	Maple	2x6				Type 1	Remove
2125	Maple	2x6	-	8		Type 1	Remove
2126	Maple	8				Type 1	Remove
2127	Maple	10				Type 1	Remove
2128	Maple	2x6	-	10		Type 1	Save
2129	Maple	3x6	-	14		Type 1	Save
2130	Maple	4x6	-	10		Type 1	Save
2131	Maple	3x10	-	12		Type 1	Save
2132	Maple	10				Type 1	Save
2133	Maple	10				Type 1	Save
2134	Maple	10				Type 1	Save
2137	Maple	8				Type 1	Save
2138	Maple	3x6	-	8		Type 1	Save
2140	Maple	12				Type 1	Save
2141	Maple	12				Type 1	Save
2142	Maple	14				Type 1	Save
2143	Maple	8				Type 1	Save
2144	Maple	6x6	-	12		Type 1	Save
2207	Maple	8				Type 2	Remove
2209	Alder	10				Type 2	Remove
2210	Alder	8				Type 1	Remove
2213	Alder	8				Type 2	Remove
2214	Alder	6				Type 1	Remove
2215	Alder	6				Type 2	Remove
2217	Maple	5x8				Type 1	Remove
2219	Alder	10				Type 1	Save
2221	Maple	3x6	-	12		Type 1	Remove
2223	Maple	8				Type 1	Save
2224	Maple	3x6	-	12		Type 1	Save
2225	Maple	6				Type 1	Save
2226	Maple	2x6	-	8		Type 1	Save
2227	Maple	3x6				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2228	Maple	3x6				Type 1	Save
2229	Maple	8				Type 1	Save
2230	Maple	12				Type 1	Save
2231	Maple	2x6				Type 1	Save
2232	Maple	6				Type 1	Save
2234	Maple	3x8				Type 1	Save
2235	Maple	6				Type 1	Save
2236	Maple	3x8				Type 1	Save
2237	Maple	2x6	-	8		Type 1	Save
2238	Maple	6				Type 1	Save
2245	Maple	3x8				Type 1	Remove
2246	Maple	5x6				Type 1	Remove
2248	Maple	6				Type 2	Remove
2249	Maple	6				Type 1	Remove
2250	Maple	10				Type 1	Remove
2251	Alder	12				Type 2	Remove
2256	Maple	5x6	-	12		Type 1	Save
2258	Maple	8				Type 1	Save
2259	Maple	10				Type 1	Save
2260	Maple	22				Type 1	Save
2261	Maple	8				Type 1	Save
2263	Cedar	18				Type 1	Save
2264	Maple	20				Type 1	Remove
2265	Alder	6				Type 1	Remove
2269	Alder	10				Type 2	Remove
2274	Alder	12				Type 1	Remove
2348	Alder	12				Type 2	Save
2349	Maple	2*14	-	18		Type 1	Save
2359	Cedar	10				Type 1	Save
2378	Cedar	12				Type 1	Save
2379	Cedar	28				Type 1	Save
2380	Alder	20				Type 1	Save
2386	Cedar	36				Type 1	Save
2398	Cedar	12				Type 1	Save
2400	Cedar	12				Type 1	Save
2404	Cedar	12				Type 2	Save
2427	Cedar	10				Type 1	Save
2428	Maple	2*18	-	20		Type 1	Save
2430	Maple	14				Type 1	Save
2431	Alder	22				Type 1	Save
2433	Cedar	20				Type 1	Save
2435	Alder	18				Type 1	Save
2436	Cedar	20				Type 1	Save
2437	Maple	10				Type 1	Save
2440	Cedar	20				Type 1	Save
2441	Madrona	10				Type 1	Save
2442	Madrona	10				Type 1	Save
2445	Maple	8				Type 1	Save
2446	Maple	10				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2447	Maple	8				Type 1	Save
2448	Cedar	20				Type 1	Save
2449	Cedar	14				Type 1	Save
2450	Maple	12				Type 1	Save
2451	Maple	12				Type 1	Save
2452	Maple	8				Type 1	Save
2453	Maple	12				Type 1	Save
2454	Maple	22				Type 1	Save
2455	Cedar	16				Type 1	Save
2456	Maple	12				Type 1	Save
2457	Maple	2*12	-	14		Type 1	Save
2459	Maple	18				Type 1	Save
2460	Fir	40				Type 3	Save
2461	Fir	40				Type 3	Save
2464	Maple	20				Type 1	Save
2466	Maple	20				Type 1	Save
2467	Maple	2*10	-	16		Type 1	Save
2468	Cedar	12				Type 1	Save
2469	Cedar	14				Type 1	Save
2470	Alder	18				Type 1	Save
2471	Cedar	6				Type 1	Save
2472	Cedar	14				Type 1	Save
2473	Alder	18				Type 1	Save
2479	Alder	2*10	-	18		Type 1	Save
2490	Cedar	18				Type 2	Save
2505	Alder	18				Type 1	Remove
2508	Maple	8				Type 2	Remove
2513	Maple	10				Type 2	Save
2554	Alder	10				Type 2	Save
2556	Alder	12				Type 2	Remove
2631	Maple	8x6				Type 2	Save
2638	Cottonwood	48				Type 2	Save
2639	Cottonwood	30				Type 2	Save
2640	Fir	10				Type 3	Save
2641	Fir	10				Type 3	Save
2642	Fir	6				Type 2	Save
2643	Fir	10				Type 2	Save
2644	Fir	6				Type 2	Save
2645	Fir	8				Type 3	Save
2646	Cottonwood	36				Type 3	Save
2647	Fir	6				Type 3	Save
2648	Fir	10				Type 2	Save
2649	Cedar	12				Type 2	Save
2651	Cedar	18				Type 2	Save
2719	Fir	40				Type 1	Save
2766	Cedar	14				Type 1	Save
2767	Cedar	30				Type 1	Save
2769	Cedar	36				Type 1	Save
2808	Cedar	18				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2809	Cedar	12				Type 2	Save
2810	Cedar	18				Type 2	Save
2811	Fir	30				Type 1	Save
2812	Maple	8x6				Type 1	Save
2813	Cedar	16				Type 1	Save
2814	Cedar	16				Type 1	Save
2815	Cedar	18				Type 1	Save
2816	Maple	5x6	-	8		Type 1	Save
2819	Cottonwood	2x18				offsite	Save
2820	Maple	5x6	-	10		offsite	Save
2821	Maple	18				offsite	Save
2822	Maple	6				Type 2	Remove
2823	Maple	5x6	-	8		Type 2	Save
2824	Maple	6				Type 2	Save
2825	Maple	5x6	-	8		Type 2	Save
2829	Maple	2x12	-	18		Type 3	Save
2830	Maple	3x6	-	8		Type 3	Save
2832	Maple	2x8				Type 3	Save
2837	Alder	8				offsite	Save
2855	Maple	6x6	-	12		Type 1	Save
2856	Cedar	10				Type 1	Save
2857	Cedar	20				Type 1	Save
2858	Cedar	20				Type 1	Save
2859	Cedar	20				Type 1	Save
2860	Cedar	18				Type 1	Save
2861	Cedar	16				Type 1	Save
2862	Cedar	24				Type 1	Save
2863	Cedar	18				Type 1	Save
2864	Maple	4x6	-	12		Type 1	Save
2865	Cedar	20				Type 1	Save
2866	Cedar	12				Type 1	Save
2867	Cedar	18				Type 2	Save
2868	Maple	7x6	-	12		Type 2	Save
2869	Fruit	8				Type 3	Save
2870	Alder	6				Type 3	Save
2871	Alder	8				Type 3	Save
2872	Alder	10				Type 3	Save
2873	Maple	4x6	-	8		Type 3	Save
2874	Alder	3x6	-	10		Type 4	Save
2875	Alder	8				Type 4	Save
2876	Alder	10				Type 4	Save
2877	Alder	6				Type 3	Save
2878	Alder	6				Type 3	Save
2879	Alder	6				Type 3	Save
2880	Alder	6				Type 3	Remove
2881	Alder	3x6	-	10		Type 3	Remove
2882	Fir	8				Type 2	Save
2883	Fir	12				Type 2	Save
2884	Fir	8				Type 2	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2885	Fir	12				Type 4	Remove
2886	Fir	12				Type 3	Remove
2887	Maple	3x6	-	8		Type 3	Remove
2888	Alder	8				Type 3	Remove
2889	Maple	12x6				Type 4	Remove
2890	Fir	6				Type 4	Remove
2891	Fir	10				Type 4	Remove
2892	Fir	6				Type 4	Remove
2893	Fir	6				Type 4	Remove
2894	Alder	8				Type 4	Save
2895	Alder	10				Type 4	Remove
2896	Fir	12				Type 4	Remove
2897	Maple	12x6	-	8		Type 4	Remove
2898	Cottonwood	36				Type 4	Remove
2900	Maple	2x8				Type 3	Remove
2901	Maple	6				Type 3	Remove
2902	Alder	3x8	-	10		Type 3	Remove
2903	Cottonwood	18				Type 3	Remove
2904	Cottonwood	12				Type 3	Save
2905	Alder	8				Type 3	Save
2906	Alder	8				Type 3	Save
2907	Alder	8				Type 2	Remove
2908	Alder	8				Type 2	Remove
2909	Alder	8				Type 2	Remove
2910	Maple	6x6	-	8		Type 2	Save
2911	Maple	5x6	-	10		Type 2	Remove
2912	Maple	12x6	-	10		Type 2	Remove
2913	Maple	10				Type 2	Save
2914	Maple	10x6	-	8		Type 2	Remove
2915	Maple	5x6	-	8		Type 3	Remove
2916	Maple	8x6	-	10		Type 3	Remove
2917	Alder	8				Type 3	Remove
2918	Cottonwood	8				Type 3	Remove
2919	Cottonwood	12				Type 3	Remove
2920	Cottonwood	10				Type 3	Remove
2921	Cottonwood	8				Type 3	Remove
2922	Cottonwood	12				Type 3	Remove
2923	Cottonwood	10				Type 3	Remove
2924	Cottonwood	8				Type 3	Remove
2925	Cottonwood	12				Type 3	Remove
2926	Cottonwood	14				Type 3	Remove
2927	Cottonwood	14				Type 3	Remove
2928	Maple	2x6				Type 4	Remove
2929	Maple	4x6	-	8		Type 4	Remove
2930	Cottonwood	8				Type 4	Remove
2931	Maple	3x6	-	8		Type 4	Remove
2932	Fruit	8				Type 4	Remove
2933	Maple	10x6	-	10		Type 3	Remove
2934	Maple	5x6	-	8		Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2935	Maple	4x6				Type 3	Remove
2936	Fir	10				Type 3	Remove
2937	Maple	15x6	-	12		Type 3	Remove
2938	Maple	5x6	-	8		Type 3	Remove
2939	Maple	7x6	-	8		Type 3	Remove
2940	Maple	4x6	-	8		Type 3	Remove
2941	Maple	5x6	-	10		Type 3	Remove
2942	Maple	5x6	-	10		Type 2	Remove
2943	Fir	6				Type 4	Remove
2944	Fir	6				Type 3	Remove
2945	Cottonwood	4x6	-	14		Type 3	Remove
2946	Maple	15x6	-	12		Type 3	Remove
2947	Maple	8				Type 3	Remove
2948	Fir	2x6				Type 3	Remove
2952	Alder	12				Type 2	Remove
2955	Maple	5x6	-	8		Type 1	Remove
2956	Fir	10				Type 1	Save
2957	Fir	12				Type 1	Save
2958	Alder	6				Type 4	Save
2960	Fir	10				Type 4	Save
2967	Alder	12				Type 3	Remove
2968	Fir	6				Type 3	Remove
2969	Alder	8				Type 4	Remove
2970	Fir	6				Type 3	Remove
2972	Maple	6x8	-	10		Type 3	Save
2973	Maple	2x6	-	12		Type 1	Save
2974	Maple	8x6	-	10		Type 1	Save
2975	Fir	12				Type 1	Save
2976	Maple	4x18				Type 1	Save
2977	Maple	5x8				Type 1	Save
2979	Fir	8				Type 1	Save
2980	Cedar	18				Type 2	Save
2981	Cedar	30				Type 3	Save
2982	Cedar	24				Type 2	Save
2983	Fir	6				Type 3	Remove
2984	Fir	6				Type 4	Remove
2985	Maple	4x8	-	10		Type 4	Remove
2986	Maple	2x6	-	8		Type 3	Remove
2987	Fir	8				Type 3	Save
2988	Fir	8				Type 3	Save
2989	Fir	12				Type 4	Remove
2990	Fir	10				Type 4	Remove
2991	Fir	6				Type 4	Save
2992	Alder	6				Type 4	Save
2993	Maple	8				Type 4	Save
2994	Alder	12				Type 4	Remove
2995	Alder	8				Type 4	Save
2996	Alder	8				Type 4	Remove
2997	Alder	10				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
2998	Fir	8				Type 3	Save
2999	Maple	8				Type 3	Save
3009	Maple	20				Type 1	Save
3010	Maple	12				Type 1	Save
3013	Maple	3x6				Type 1	Save
3014	Maple	12				Type 1	Save
3016	Maple	2x6				Type 1	Save
3017	Cedar	36				Type 1	Save
3018	Cedar	36				Type 1	Save
3019	Cedar	36				Type 1	Save
3020	Cedar	12				Type 1	Save
3021	Cedar	6				Type 1	Save
3022	Maple	5x6	-	12		Type 1	Save
3023	Cedar	10				Type 1	Save
3024	Cedar	15				Type 1	Save
3025	Cedar	15				Type 1	Save
3026	Maple	4x6				Type 1	Save
3027	Maple	4x6	-	10		Type 1	Save
3029	Maple	5x6	-	8		Type 1	Save
3030	Cedar	6				Type 1	Save
3031	Maple	15				Type 1	Save
3032	Maple	3x6	-	12		Type 1	Save
3033	Maple	7x6	-	10		Type 1	Save
3034	Cedar	18				Type 1	Save
3035	Cedar	22				Type 1	Save
3036	Cedar	22				Type 1	Save
3037	Maple	7x6	-	8		Type 1	Save
3038	Cedar	24				Type 1	Save
3039	Maple	2x6	-	8		Type 1	Save
3040	Cedar	20				Type 1	Save
3041	Cedar	15				Type 1	Save
3042	Maple	2x8				Type 1	Save
3043	Maple	2x8				Type 1	Save
3044	Cedar	15				Type 1	Save
3045	Cedar	36				Type 1	Save
3046	Cedar	24				Type 1	Save
3047	Cedar	18				Type 1	Save
3049	Maple	3x6				Type 1	Save
3050	Maple	12				Type 1	Save
3051	Maple	6				Type 1	Save
3052	Maple	5x3	-	6		Type 1	Save
3053	Maple	2x18				Type 1	Save
3056	Maple	18				Type 1	Save
3058	Maple	5x4	-	8		Type 1	Save
3059	Maple	10				Type 4	Save
3060	Maple	12				Type 4	Save
3063	Maple	4x3	-	6		Type 4	Save
3064	Maple	3x4	-	8		Type 4	Save
3065	Maple	3x4	-	8		Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3066	Maple	8x4	-	10		Type 4	Save
3067	Maple	4x4	-	6		Type 4	Save
3068	Maple	4x4	-	8		Type 4	Remove
3069	Maple	4x4	-	6		Type 4	Remove
3070	Maple	4x4	-	10		Type 1	Save
3071	Maple	8x3	-	8		Type 1	Save
3072	Maple	3x8	-	12		Type 1	Save
3073	Maple	6				Type 1	Save
3074	Maple	3x4	-	6		Type 1	Save
3079	Maple	4x6				Type 4	Remove
3080	Maple	8x6				Type 4	Remove
3081	Maple	2x6				Type 4	Remove
3082	Cedar	10				Type 4	Remove
3083	Maple	8x6	-	10		Type 4	Remove
3084	Maple	11x6				Type 4	Remove
3085	Maple	9x6				Type 4	Remove
3086	Maple	8x6				Type 1	Save
3087	Maple	4x6				Type 1	Save
3088	Maple	10				Type 1	Save
3089	Holly	8				Type 1	Save
3090	Fir	8				Type 4	Remove
3091	Maple	5x6				Type 4	Remove
3092	Fir	8				Type 4	Remove
3093	Maple	6				Type 4	Remove
3094	Fir	6				Type 4	Remove
3095	Fir	6				Type 4	Remove
3096	Fir	6				Type 4	Remove
3097	Fir	12				Type 4	Remove
3098	Maple	7x4	-	10		Type 4	Save
3099	Maple	11x4	-	10		Type 4	Remove
3100	Cedar	12				Type 4	Remove
3101	Cedar	15				Type 4	Save
3102	Maple	5x4	-	8		Type 4	Save
3103	Maple	36				Type 4	Remove
3105	Cedar	22				Type 4	Save
3106	Maple	6x4	-	8		Type 4	Remove
3107	Maple	12				Type 4	Remove
3108	Maple	4x6				Type 4	Remove
3109	Maple	8				Type 4	Remove
3110	Fir	6				Type 4	Remove
3111	Maple	6				Type 4	Remove
3112	Maple	8				Type 4	Remove
3113	Maple	8				Type 4	Remove
3114	Maple	32				Type 4	Remove
3115	Maple	30				Type 4	Remove
3116	Maple	6				Type 4	Remove
3117	Maple	12				Type 4	Remove
3118	Maple	10				Type 4	Remove
3119	Maple	10				Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3120	Maple	6x4	-	8		Type 3	Remove
3121	Maple	12				Type 4	Remove
3122	Alder	2x8				Type 4	Remove
3123	Maple	15				Type 4	Remove
3124	Maple	12				Type 4	Remove
3125	Maple	12				Type 4	Remove
3126	Maple	2x18	-	24		Type 4	Remove
3127	Maple	4x6	-	18		Type 4	Save
3128	Maple	4x6	-	18		Type 4	Remove
3129	Cedar	3x6	-	18		Type 4	Remove
3130	Maple	5x6				Type 4	Remove
3131	Maple	6				Type 4	Remove
3132	Alder	8				Type 4	Remove
3133	Alder	8				Type 4	Remove
3134	Alder	2x6				Type 4	Remove
3135	Alder	6				Type 4	Remove
3136	Alder	6				Type 4	Remove
3143	Alder	3*6				Type 4	Save
3144	Cedar	24				Type 4	Save
3147	Cedar	30				offsite	Save
3148	Cedar	6				Type 4	Save
3149	Cedar	6				Type 4	Save
3150	Maple	3*6				Type 4	Save
3151	Maple	8*10	-	12		Type 4	Save
3152	Maple	5*4	-	8		Type 4	Save
3153	Maple	12				Type 4	Save
3154	Maple	6*6				Type 4	Save
3155	Maple	6*4	-	8		Type 4	Save
3156	Maple	8				Type 4	Remove
3157	Alder	10				Type 4	Remove
3159	Maple	14*4	-	6		Type 4	Remove
3160	Maple	10*8				Type 4	Remove
3161	Cedar	6*6				Type 4	Remove
3162	Maple	6*4	-	6		Type 3	Remove
3163	Maple	4*4	-	8		Type 3	Remove
3164	Maple	4*4	-	8		Type 3	Remove
3165	Maple	7*3	-	10		Type 2	Remove
3166	Maple	7*3	-	10		Type 2	Remove
3167	Maple	6*3	-	8		Type 3	Remove
3168	Maple	2*2	-	10		Type 3	Remove
3169	Maple	8				Type 3	Remove
3170	Maple	12				Type 3	Remove
3171	Maple	10				Type 2	Remove
3174	Maple	104	-	6		Type 2	Save
3175	Maple	10*6	-	10		Type 2	Remove
3176	Maple	10*6	-	10		Type 2	Remove
3177	Maple	8*6	-	12		Type 4	Remove
3178	Maple	8*6	-	12		Type 4	Remove
3179	Maple	3*6				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3181	Maple	10*6	-	10		Type 4	Remove
3182	Maple	12				Type 4	Remove
3183	Maple	12				Type 4	Remove
3185	Maple	36				Type 4	Remove
3186	Maple	12				Type 4	Remove
3187	Maple	12				Type 4	Remove
3188	Cedar	14				Type 4	Remove
3189	Maple	8				Type 4	Remove
3190	Maple	10				Type 4	Remove
3191	Maple	8				Type 1	Save
3192	Maple	8				Type 1	Remove
3193	Maple	8				Type 1	Save
3194	Maple	12				Type 1	Save
3195	Maple	8				Type 1	Save
3196	Cedar	12				Type 1	Save
3197	Maple	8*6				Type 4	Remove
3198	Cedar	12				Type 1	Save
3199	Maple	2*12				Type 1	Save
3200	Cedar	6				Type 4	Remove
3201	Cedar	2*6				Type 1	Save
3202	Maple	4*6	-	10		Type 1	Save
3203	Cedar	14				Type 1	Save
3204	Cedar	14				Type 1	Save
3205	Cedar	12				Type 1	Save
3206	Cedar	2*10				Type 1	Save
3207	Maple	12				Type 1	Save
3209	Cedar	24				Type 1	Save
3210	Cedar	24				Type 1	Save
3211	Cedar	26				Type 1	Save
3212	Maple	8*4	-	8		Type 1	Save
3213	Cedar	28				Type 1	Save
3214	Cedar	20				Type 1	Save
3215	Cedar	28				Type 1	Save
3216	Cedar	18				Type 1	Save
3217	Cedar	14				Type 1	Save
3218	Maple	18				Type 1	Save
3219	Maple	4*6				Type 1	Save
3220	Cedar	12				Type 1	Save
3221	Cedar	16				Type 1	Save
3224	Cedar	24				Type 1	Save
3225	Cedar	28				Type 1	Save
3226	Cedar	26				Type 1	Save
3227	Cedar	42				Type 1	Save
3228	Cedar	12				Type 1	Save
3229	Cedar	26				Type 1	Save
3230	Maple	6*3	-	8		Type 1	Save
3231	Maple	10*3	-	12		Type 1	Save
3232	Maple	10*3	-	12		Type 1	Save
3233	Maple	10*3	-	12		Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3234	Maple	2*6				Type 1	Save
3235	Maple	12*3	-	12		Type 1	Save
3236	Maple	12				Type 4	Save
3237	Maple	10*3	-	12		Type 4	Save
3238	Maple	2x8	-	12		Type 2	Save
3239	Maple	2x6				Type 2	Save
3240	Maple	3x6				Type 2	Remove
3241	Cedar	18				Type 2	Save
3242	Cedar	24				Type 1	Save
3243	Cedar	20				Type 1	Save
3244	Maple	2x6				Type 1	Save
3245	Cedar	8				Type 1	Save
3246	Maple	5x6				Type 1	Save
3247	Maple	5x6	-	12		Type 1	Save
3248	Cedar	15				Type 1	Save
3249	Maple	5x4	-	10		Type 1	Save
3250	Cedar	15				Type 1	Save
3251	Cedar	15				Type 1	Save
3252	Cedar	12				Type 1	Save
3253	Cedar	30				Type 1	Save
3254	Maple	3x6	-	8		Type 1	Save
3255	Maple	10				Type 1	Save
3256	Maple	5x6				Type 1	Save
3257	Cedar	12				Type 1	Save
3258	Cedar	12				Type 1	Save
3259	Cedar	12				Type 1	Save
3260	Cedar	10				Type 1	Save
3261	Maple	15				Type 1	Save
3262	Maple	12				Type 1	Save
3263	Maple	10				Type 1	Save
3264	Cedar	18				Type 1	Save
3265	Cedar	18				Type 1	Save
3266	Cedar	2x10				Type 1	Save
3267	Maple	3x6	-	8		Type 2	Remove
3268	Maple	8x4	-	8		Type 2	Remove
3274	Maple	24				offsite	Save
3275	Cedar	12				offsite	Save
3276	Cedar	15				offsite	Save
3279	Cedar	18				Type 1	Save
3280	Cedar	18				Type 1	Save
3281	Maple	18				Type 1	Save
3282	Cedar	24				Type 1	Save
3283	Cedar	18				Type 1	Save
3284	Cedar	10				Type 1	Save
3285	Maple	2x24				Type 1	Save
3286	Cedar	12				Type 1	Save
3287	Cedar	8				Type 1	Save
3288	Maple	18				Type 1	Save
3289	Cedar	8				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3290	Maple	7x6	-	12		Type 1	Save
3291	Cedar	15				Type 1	Save
3292	Cedar	12				Type 1	Save
3293	Maple	12				Type 1	Save
3294	Cedar	20				Type 1	Save
3295	Cedar	12				Type 1	Save
3296	Cedar	30				Type 1	Save
3297	Cedar	10				Type 1	Save
3298	Cedar	18				Type 1	Save
3299	Cedar	24				Type 1	Save
3302	Cedar	15				Type 1	Save
3303	Maple	7x6	-	12		Type 1	Save
3304	Cedar	30				Type 1	Save
3305	Maple	6x6	-	8		Type 1	Save
3306	Cedar	12				Type 1	Save
3307	Cedar	24				Type 1	Save
3308	Fir	20				Type 1	Save
3309	Cedar	8				Type 1	Save
3310	Cedar	8				Type 1	Save
3311	Maple	10x6	-	10		Type 1	Save
3312	Maple	3x3	-	6		Type 1	Save
3313	Maple	6x4	-	6		Type 1	Save
3314	Maple	7x6	-	10		Type 1	Save
3315	Cedar	18				Type 1	Save
3316	Maple	6x6				Type 1	Save
3317	Maple	11x6	-	10		Type 2	Save
3319	Fir	10			Edge	Type 4	Save
3320	Maple	8				Type 2	Save
3321	Maple	7x8	-	12		Type 2	Save
3322	Maple	6x6				Type 4	Save
3323	Maple	3x6				Type 2	Save
3324	Maple	4x6				Type 4	Save
3325	Cedar	20				Type 4	Save
3326	Maple	2x12				Type 4	Save
3327	Fir	6			Edge	Type 4	Save
3328	Fir	8			Edge	Type 4	Save
3329	Alder	3x6	-	10	Edge	Type 4	Save
3330	Fir	18				Type 1	Save
3331	Fir	18				Type 1	Save
3332	Fir	10				Type 1	Save
3333	Maple	6x8				Type 4	Save
3334	Cedar	24				Type 1	Save
3335	Alder	8				Type 4	Save
3336	Cedar	15				Type 4	Save
3337	Cedar	12				Type 1	Save
3338	Cedar	24				Type 1	Save
3339	Cedar	18				Type 1	Save
3340	Cedar	2x15	-	22		Type 1	Save
3341	Cedar	22				Type 1	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3342	Cedar	24				Type 1	Save
3343	Cedar	2x18				Type 1	Save
3344	Fir	24				Type 1	Save
3345	Cedar	18				Type 1	Save
3346	Fir	10				Type 4	Save
3347	Fir	10				offsite	Save
3348	Fir	10				offsite	Save
3349	Fir	10				Type 4	Save
3350	Fir	12				Type 4	Save
3351	Fir	12				offsite	Save
3352	Fir	10				Type 4	Save
3353	Fir	12				Type 4	Save
3354	Fir	8				Type 4	Save
3355	Fir	8				Type 4	Save
3356	Fir	10				Type 4	Save
3357	Fir	10				Type 4	Save
3358	Fir	6				Type 4	Save
3359	Maple	24				Type 4	Save
3361	Maple	12				Type 4	Save
3362	Maple	4*3	-	8		Type 4	Save
3363	Maple	7*3	-	8		Type 4	Save
3364	Maple	4*3	-	8		Type 4	Save
3366	Fir	4			Edge	Type 4	Save
3367	Fir	4			Edge	Type 4	Save
3368	Maple	5*6	-	10		Type 4	Save
3369	Maple	2*8	-	14		Type 4	Save
3371	Fir	10				Type 4	Save
3372	Fir	8				Type 4	Save
3373	Fir	10				Type 4	Save
3374	Fir	12				Type 4	Save
3375	Fir	10				Type 4	Save
3376	Fir	14				Type 4	Save
3377	Fir	8				Type 4	Save
3380	Fir	8			Edge	Type 4	Save
3381	Fir	12			Edge	Type 4	Save
3382	Fir	8			Edge	Type 4	Save
3383	Fir	8			Edge	Type 4	Save
3384	Fir	8			Edge	Type 4	Save
3385	Fir	10			Edge	Type 4	Save
3390	Fir	10				Type 4	Save
3391	Fir	10				Type 4	Save
3392	Fir	10				Type 4	Save
3393	Fir	10				Type 4	Save
3394	Maple	12				Type 4	Save
3397	Fir	8			Edge	Type 4	Save
3398	Fir	8			Edge	Type 4	Save
3399	Fir	8			Edge	Type 4	Save
3400	Maple	18				Type 4	Save
3401	Cedar	34				Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3402	Cedar	3*6	-	24		Type 2	Save
3403	Maple	7*4	-	8		Type 2	Save
3404	Cedar	8			Edge	Type 4	Save
3405	Maple	7*3	-	10		Type 2	Save
3406	Maple	7*3	-	10		Type 2	Save
3407	Maple	7*3	-	10		Type 1	Save
3408	Cedar	32				Type 1	Save
3409	Maple	2*10	-	14		Type 1	Save
3410	Fir	20				Type 1	Save
3412	Fir	18				Type 1	Save
3413	Maple	7*8	-	12		Type 1	Save
3414	Maple	3*6	-	12		Type 1	Save
3415	Maple	10*4	-	10		Type 1	Save
3416	Maple	5*4	-	12		Type 1	Save
3417	Maple	4*4	-	8		Type 1	Save
3418	Cedar	12				Type 1	Save
3420	Maple	30				Type 1	Save
3425	Cedar	16				Type 2	Save
3426	Maple	16				Type 2	Save
3427	Maple	3*8				Type 4	Save
3429	Maple	18				offsite	Save
3431	Maple	16				offsite	Save
3434	Maple	2*12	-	14		offsite	Save
3500	Alder	8				Type 3	Remove
3501	Fir	8				Type 3	Remove
3502	Fruit	8				Type 3	Remove
3503	Fir	8				Type 3	Save
3504	Fir	8				Type 2	Save
3505	Alder	10				Type 2	Save
3506	Alder	8				Type 3	Save
3507	Fir	6				Type 3	Save
3508	Cedar	20				Type 2	Save
3509	Alder	10				Type 3	Save
3510	Cedar	18				Type 2	Save
3511	Maple	5x6	-	10		Type 2	Save
3512	Cedar	24				Type 2	Save
3513	Maple	5x6	-	10		Type 2	Remove
3518	Alder	10				Type 4	Save
3519	Alder	6				Type 4	Save
3520	Alder	10				Type 4	Remove
3521	Alder	6				Type 4	Remove
3522	Fir	6				Type 4	Remove
3523	Fir	6				Type 4	Remove
3524	Alder	12				Type 4	Remove
3525	Fir	6				Type 4	Remove
3526	Maple	4x8	-	12		Type 4	Remove
3527	Alder	6				Type 4	Save
3528	Alder	12				Type 4	Save
3529	Alder	8				Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3530	Maple	2x10	-	12		Type 1	Remove
3531	Maple	7x6	-	8		Type 1	Remove
3532	Maple	12x6	-	16		Type 1	Remove
3533	Cedar	30				Type 2	Remove
3534	Maple	8				Type 3	Remove
3535	Maple	5x8	-	12		Type 2	Remove
3536	Fir	10				Type 4	Remove
3537	Maple	6				Type 4	Remove
3538	Fir	6				Type 3	Remove
3539	Fir	6				Type 3	Remove
3540	Maple	7x6	-	8		Type 3	Remove
3541	Maple	7x6	-	8		Type 3	Remove
3542	Maple	3x6				Type 2	Remove
3543	Maple	3x6				Type 2	Remove
3544	Maple	8				Type 2	Remove
3545	Maple	3x6				Type 2	Remove
3546	Maple	6 6	-	10		Type 1	Remove
3547	Maple	6 6	-	10		Type 1	Remove
3548	Maple	6				Type 1	Remove
3549	Maple	36				Type 1	Remove
3550	Maple	6				Type 1	Remove
3551	Maple	9x6	-	10		Type 1	Remove
3552	Cedar	24				Type 1	Remove
3553	Maple	6x6	-	8		Type 1	Remove
3554	Cedar	18				Type 1	Remove
3555	Maple	6x6	-	10		Type 1	Remove
3556	Maple	4x6				Type 1	Remove
3557	Maple	5x6	-	10		Type 1	Remove
3558	Fruit	3x6				Type 4	Remove
3559	Fruit	6				Type 4	Remove
3560	Alder	6				Type 4	Remove
3564	Cedar	24				Type 4	Remove
3565	Fir	10				Type 4	Remove
3566	Fir	8				Type 4	Remove
3567	Fir	6				Type 4	Remove
3568	Maple	2x8	-	10		Type 4	Remove
3569	Fir	6				Type 4	Remove
3570	Fir	12				Type 4	Remove
3571	Fir	8				Type 4	Remove
3572	Fir	6				Type 4	Remove
3573	Fir	8				Type 4	Remove
3574	Fir	10				Type 4	Remove
3575	Fir	6				Type 4	Remove
3576	Fir	10				Type 4	Remove
3577	Fir	10				Type 4	Remove
3578	Fir	8				Type 4	Remove
3579	Fir	6				Type 4	Remove
3580	Fir	8				Type 4	Remove
3581	Maple	7 6	-	10		Type 4	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3582	Maple	12x6				Type 4	Remove
3583	Maple	8				Type 4	Remove
3584	Fir	10				Type 4	Remove
3585	Maple	5x6	-	10		Type 4	Remove
3586	Fir	10				Type 4	Remove
3587	Fir	10				Type 4	Remove
3588	Fir	8				Type 4	Remove
3589	Cedar	12				Type 4	Remove
3590	Maple	6x6				Type 1	Remove
3591	Cedar	14				Type 4	Remove
3592	Maple	10x6	-	10		Type 1	Remove
3593	Maple	12x6	-	12		Type 2	Remove
3594	Fir	12				Type 2	Remove
3595	Maple	14				Type 2	Remove
3598	Cottonwood	3x6	-	12		Type 3	Remove
3599	Cottonwood	8				Type 3	Remove
3600	Cottonwood	12				Type 3	Remove
3601	Maple	2x6				Type 4	Remove
3602	Cottonwood	8				Type 4	Remove
3603	Cottonwood	6				Type 4	Remove
3604	Cottonwood	10				Type 3	Remove
3605	Fir	10				Type 3	Remove
3606	Fir	8				Type 3	Remove
3607	Fir	8				Type 3	Remove
3608	Fir	6				Type 3	Remove
3609	Fir	8				Type 3	Remove
3610	Cottonwood	14				Type 3	Remove
3611	Cottonwood	12				Type 3	Remove
3612	Cottonwood	12				Type 3	Remove
3613	Cottonwood	12				Type 3	Remove
3614	Cottonwood	6				Type 3	Remove
3615	Cottonwood	12				Type 3	Remove
3616	Cottonwood	8				Type 3	Remove
3617	Cottonwood	12				Type 4	Remove
3618	Cottonwood	8				Type 3	Remove
3619	Cedar	12				Type 3	Remove
3620	Maple	6x6	-	10		Type 3	Remove
3621	Maple	12x6	-	12		Type 3	Remove
3622	Maple	4x6	-	8		Type 2	Remove
3623	Cedar	22				Type 3	Remove
3624	Maple	6x6	-	12		Type 3	Remove
3625	Cottonwood	10				Type 3	Remove
3626	Maple	10x6	-	10		Type 4	Remove
3627	Fir	10				Type 3	Remove
3628	Fir	8				Type 3	Remove
3629	Fir	8				Type 3	Remove
3630	Fir	8				Type 3	Remove
3631	Fir	6				Type 3	Remove
3632	Maple	10x6	-	10		Type 3	Remove

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3633	Maple	10x6	-	10		Type 2	Remove
3634	Maple	4x6	-	12		Type 2	Remove
3635	Maple	10x6	-	12		Type 2	Remove
3637	Maple	5x6	-	10		Type 4	Remove
3638	Maple	6x6	-	8		Type 3	Remove
3639	Maple	6x6	-	8		Type 3	Remove
3640	Fir	6				Type 4	Remove
3641	Alder	6				Type 3	Remove
3642	Alder	8				Type 3	Remove
3643	Alder	10				Type 4	Remove
3644	Fir	6				Type 4	Remove
3645	Fir	8				Type 4	Remove
3646	Alder	8				Type 3	Remove
3649	Fir	10				Type 3	Remove
3654	Fir	6				Type 3	Remove
3655	Maple	6x6	-	12		Type 3	Remove
3656	Fir	6				Type 2	Remove
3657	Cedar	2x12				Type 1	Save
3658	Cedar	14				Type 1	Save
3659	Cedar	10				Type 1	Save
3660	Maple	10x6	-	14		Type 1	Save
3664	Fir	6				Type 4	Remove
3665	Fir	6				Type 4	Save
3666	Fir	6				Type 4	Save
3667	Fir	6				Type 4	Save
3668	Fir	8				Type 4	Save
3669	Fir	8				Type 4	Save
3670	Fir	8				Type 4	Save
3671	Fir	8				Type 4	Save
3672	Fir	8				Type 4	Save
3673	Fir	8				Type 4	Save
3674	Fir	8				Type 4	Save
3675	Fir	10				Type 4	Save
3676	Fir	10				Type 4	Save
3677	Fir	8			Edge	Type 4	Save
3678	Fir	10			Edge	Type 4	Save
3679	Fir	12			Edge	Type 4	Save
3680	Fir	12			Edge	Type 4	Save
3681	Fir	14			Edge	Type 4	Save
3682	Fir	14			Edge	Type 4	Save
3683	Fir	8			Edge	Type 4	Save
3684	Fir	16			Edge	Type 4	Save
3685	Fir	10			Edge	Type 4	Remove
3686	Fir	16			Edge	Type 4	Remove
3687	Fir	6			Edge	Type 4	Save
3688	Fir	12			Edge	Type 4	Save
3689	Fir	12			Edge	Type 4	Save
3690	Fir	12			Edge	Type 4	Save
3691	Fir	6			Edge	Type 4	Save

Svy. #	Species	Diam.	-	Rng	Comments	Land Type	Rx
3692	Fir	10			Edge	Type 4	Save
3693	Fir	8			Edge	Type 4	Save
3694	Fir	10				Type 4	Save
3695	Fir	12				Type 4	Save
3696	Fir	14				Type 4	Save
3697	Fir	8				Type 4	Save
3709	Maple	40				offsite	Save
3710	Maple	5x12	-	20		Type 4	Save
3711	Alder	12				Type 4	Save
3712	Alder	12				Type 4	Save
3713	Maple	30				Type 4	Save
3714	Maple	36				Type 4	Save
3715	Cedar	6				Type 4	Save
3716	Alder	10				Type 4	Save
3717	Alder	6				Type 4	Save
3718	Alder	10				Type 4	Save
3719	Maple	12x6	-	12		Type 4	Save
3720	Alder	12				Type 4	Save
3721	Alder	10				Type 4	Save
3722	Alder	8				Type 4	Save
3723	Alder	14				Type 4	Save
3724	Alder	12				Type 4	Save
3725	Alder	12				Type 4	Save
3726	Maple	3x24	-	30		Type 4	Save
3728	Alder	2x14	-	16		Type 4	Save
3729	Maple	16				Type 4	Save
3730	Alder	12				Type 4	Save
3732	Alder	10				Type 4	Save

Appendix 2—Preliminary Geotechnical Study

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

December 14, 2005

Project No. 05-9541

Stearns Marnella Construction LLC
18318 SE Abernathy Lane
Milwaukie, Oregon 97267

Attention: Tony Marnella

RE: PRELIMINARY GEOTECHNICAL FINDINGS
TAMARISK DEVELOPMENT
WEST LINN, OREGON

This report presents our preliminary geotechnical findings, interpretations, and conclusions based on 12 exploratory test pits that were excavated at select locations on the above-referenced property. Logs of the test pits and borings are presented in Appendix A. Their locations are shown on a preliminary topographic map of the site at a contour interval of 2 feet. A preliminary layout of proposed streets and lot locations is shown. These may be further refined on future site plans. The purpose of this preliminary report is to present the subsurface information and our preliminary geotechnical interpretation to aid in assessment of the potential impacts of these conditions on site development and to assist in project planning and preliminary budgeting.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The approximately 15-acre site is located northwest of the West Linn 10th Street exit off the East Portland 205 Freeway. The proposed development is accessed from the west terminus of Tamarisk Drive. The site is shaped like a right triangle with an irregular longer side bordering the north side of Freeway 205 for a distance of about 1,400 feet. A 100 to 200 foot wide buffer zone separates the freeway from the portion of the site to be developed. The 90 degree angle of the triangle is located in the extreme northeast portion of the site, about 900 feet from the freeway. The site is wooded with a mix of Douglas fir, cedar, alder, and maple. The topography in the southern portion of the site is gentle with grades of between 2 and 8 percent. The northeastern portion of the site has some ridge top grades ranging between 16 and 24 percent, with a very limited area of 10 percent grade. The northern site area is dissected by an "U"-shaped drainage that is deeply incised between 40 and 60 feet and has side slopes averaging between about 62 and 42 percent grade. These steep slopes are characterized by trees with locally severe trunk warping as a result of creep, and benching as a result of soil slumping; however, no deep-seated landslides have been observed on the site. Based on our twelve, widely spaced, exploratory test pits to a maximum depth of 10 feet, the site soils consist of tan micaceous silt that underlies the entire site throughout the exposed topographic section between elevations of 130 and 200 feet. No significant rock was found in any of the test pits.

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Tel (503) 598-8445
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Project No. 05-9541
Tamarisk Development

The currently proposed plan for development includes 47 lots for single-family homes and associated improvements; including about 1,800 lineal feet of a new main-street extension with two cul-de-sacs. A water quality facility is not yet located.

SITE GEOLOGY

Based on our initial site reconnaissance and test pit exploration, the site is underlain by at least 70 feet of flood deposits consisting of tan silt deposited some 13,000 years ago during the last of the Catastrophic Flood event, which inundated the Portland and Willamette Valley areas to an elevation of about 400 feet. The flood deposits found thorough the site consists of micaceous silt with occasional traces of fine sand and clay and no significant rock. The silt is overlain by brown clayey silt colluvial soil and topsoil that generally ranged in thickness between 4 to 6 feet. The silt below 4 to 6 feet depth is stiff to very stiff and contains little groundwater, often becoming dry in test pits below depths of 9 to 10 feet.

SUBSURFACE EXPLORATIONS

The subject site was explored on December 12, 2005 by excavating 12 widely-spaced test pits to depths ranging between 7 and 10 feet. The subsurface conditions and material types observed on the subject site are summarized below.

Topsoil

Topsoil consisted primarily of 6 to 9 inches of gray-brown to light brown silt with traces of clay and fine sand. Fine organic debris was generally limited to the initial 4 to 5 inches. The near-surface soils, including topsoil, were hard and dry at the time of our exploration as a result of desiccation.

Colluvial Soils

Typical colluvial soil at this site generally consists of brown silt with some clay and brown clayey silt. This soil was typically soft and moist at the date of our exploration. These soils are prone to downslope creep and shallow sliding in the upper 4 to 6 feet of slopes steeper than 30 percent.

Catastrophic Flood Deposits

The catastrophic flood deposit at the consisted of light brown to tan micaceous silt with some to traces of clay and occasionally very fine sand. This soil was typically stiff to very stiff and moist to damp, or dry at depth.

Soil Moisture and Groundwater

At the time of out site investigation during mid-December, the near-surface soils of the site were generally moist in the upper 5 to 6 feet but lost moisture with increased depth so that it was not uncommon for the silt soil to be dry and powdery at depths of 9 to 10 feet. No groundwater was encountered in any of the exploratory test pits.

Project No. 05-9541
Tamarisk Development

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Our preliminary investigation indicates that the proposed residential development is geotechnically feasible provided continued geotechnical input is obtained both in a formal geotechnical investigation report after the plans become more formalized and during development construction. Approximately 6 or 7 of the proposed lots are located on slopes that are prone to creep and shallow sliding. The plan preferably should be revised to avoid creating lots where extensive stabilization measures may be required. Spread foundations are expected to be appropriate for construction of the single-family homes on slopes less than 20 percent grade, subject to review during construction. The upper 4 to 6 feet of the site soils are relatively soft and easily disturbed.

The potential for encountering rock of any size during both shallow and deep site excavations and grading is very low, however if deep foundations are to be designed on the steeper slopes, then deep boring explorations will likely be necessary to confirm the design.

The potential for encountering shallow or deep groundwater is very low with the exception of in or adjacent to wetland areas. Stripping of topsoil is expected to be minimal, less than 6 to 9 inches in most areas, however large root removal should be expected in the upper two feet of cuts.

The existing topography shows little signs of slope instability with the exception of the steep side slopes within the incised creek drainages. Deformed tree trunks and pistol-butt root masses are evidence of rapid creep on the steep slopes above drainages. Benching on these same slopes give clear evidence of shallow soil slumping; however, no deep-seated landslides appear to have occurred during the recent past. Downslope creep and shallow sliding appears to be limited to the upper 4 to 6 feet on slopes steeper than 30 percent. Tree clearing on steep slopes is not recommended because trees maintain stable slopes and remove excess moisture.

Soil erosion on steep slopes, once initiated, appears to progress rapidly in the fine silt soil, forming V-shaped side channels and gullies. The site slopes and soil types are such that the site will be susceptible to erosion and likely slow to grow vegetation after grading. Stripped surface soils should be saved for redistribution over the site. Erosion prevention will require careful planning and protection on fill and cut slopes during earthwork projects. Due to the very fine nature of the site soils, piping along buried drains and utilities could be an issue if groundwater is encountered.

UNCERTAINTY AND LIMITATIONS

We have prepared this report for the developer and designers, for use on this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Project No. 05-9541
Tamarisk Development

We recommend that GeoPacific be retained to prepare a final investigation report and to review the plans and specifications and verify that our recommendations have been interpreted and implemented as intended. Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

Sincerely,

GEOPACIFIC ENGINEERING, INC.

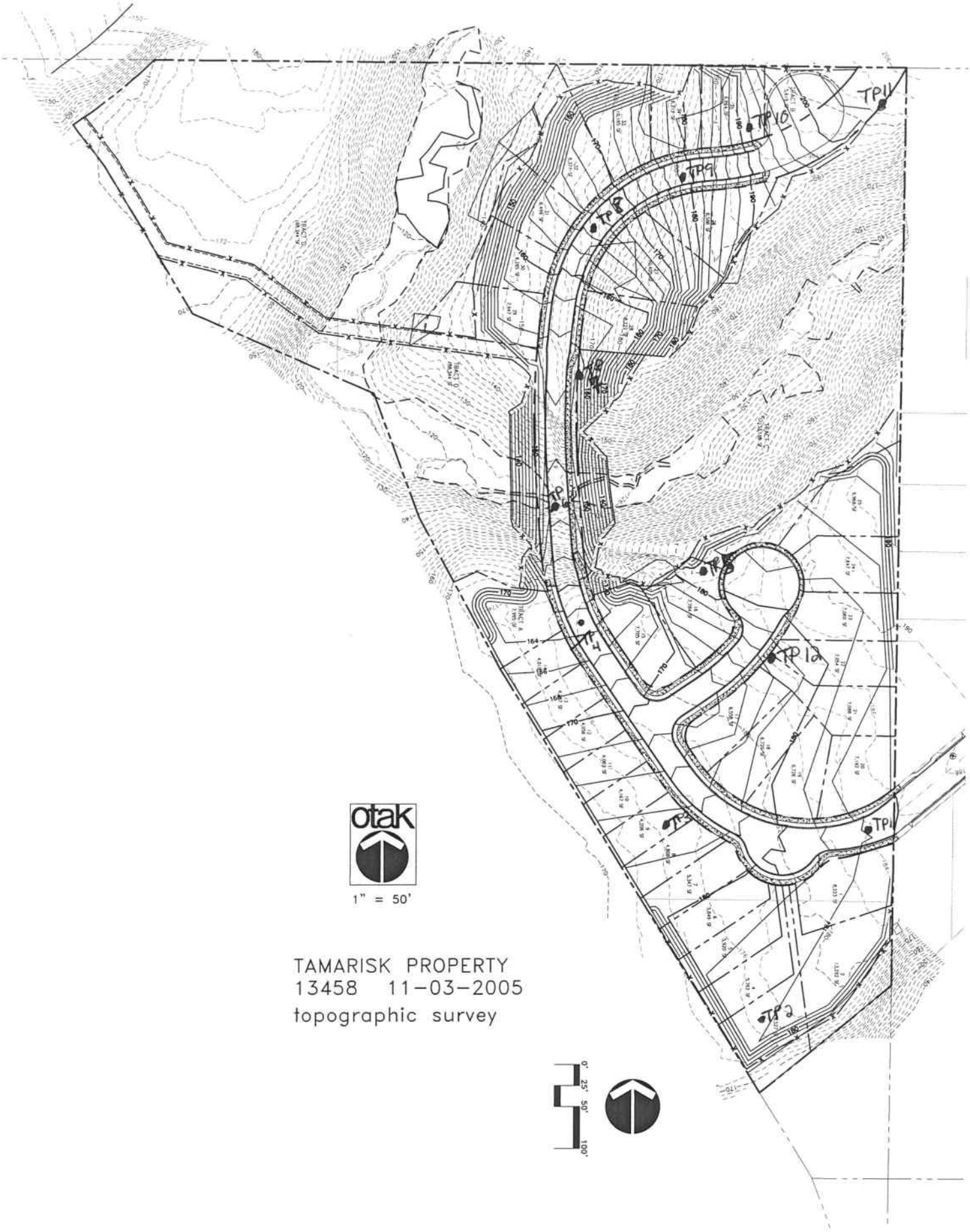
James E. Pyne R.G.
Senior Geologist

James D. Imbrie, P.E., C.E.G.
Principal Geotechnical Engineer

Attachments:

Figure 1 – Site and Exploration Plan
Test Pit Logs

CC: OTAK



TAMARISK PROPERTY
13458 11-03-2005
topographic survey

APPENDIX A

LOGS OF EXPLORATORY TEST PITS

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-1

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0						Dark brown organic silt, some clay, abundant roots, soft, moist (12" Topsoil - ML).
1	0.75					Brown clayey silt, soft, moist (Colluvial Soil - ML).
2	1.5					
	1.5					Rust brown clayey silt, micaceous, soft, moist (Colluvial Soil - ML).
3	1.5					
	3.5					Below 3.5' with some fine fragments of weathered basalt, stiff to very stiff, moist (Colluvial Soil - ML).
4	4.5					
5						
6						Light tan silt with some clay, micaceous, stiff, less moist than above. (Catastrophic Flood deposits - ML).
7						
8						
9						
10						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. **TP- 2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, fine organic debris, roots, soft, moist (8" Topsoil - ML).
1	2.25					Brown clayey silt, medium stiff to soft, moist (Colluvial Soil - ML).
	1.5					
2	1.75					
	2.25					Rust-brown silt with some clay, stiff, moist (Colluvial Soil - ML).
3	2.0					
	2.0					
4	2.5					
5						Light brown to tan silt, trace to some clay in zones, porous, very fine root fibers throughout, dry and powdery at depth (Catastrophic Flood deposit - ML).
6						
7						
8						
9						
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. **TP- 3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, abundant roots, fine organic debris, soft, moist (11" Topsoil - ML).
1	1.5					Brown silt with some clay, some charcoal inclusions, medium stiff, moist (Colluvial Soil - ML).
	1.5					
2	1.75					
	2.5					At 2.5 feet, zone of black charcoal fragments, some fine, highly weatherred basalt fragments (Colluvial Soil - ML)., stiff below 3 feet.
3	3.5					
	3.0					
4	3.5					
	3.5					Rust-brown silt with traces of clay and fine sand. stiff, moist (Catastrophic Flood deposit - ML).
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
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Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-4

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, trace of clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Brown clayey silt, medium stiff, moist (Colluvial Soil - ML).
	1.25					
2	2.0					
	1.75					
3	2.0					Brown silt with some clay , medium stiff to stiff, moist (Colluvial Soil - ML).
	1.75					
4	2.0					
	2.0					
5						
6						Light tan silt, micaceous, stiff, damp (Catastrophic Flood Deposit - ML).
7						
8						
9						Silt is dry and powdery below 9 feet.
10						
11						Test pit terminated at 10 feet, No groundwater encountered, No rock found.
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-5

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris, soft, moist (8" Topsoil - ML).
1	1.5					Mottled light gray, rust, and brown clayey silt, medium stiff, moist (Disturbed soil located in old dozer trail (Fill - ML).
	1.5					
2	1.5					
	2.5					
3	2.0					Brown silt with some clay; stiff, moist (Colluvial Soil or Disturbed Soil - ML).
	2.0					
4	2.5					
	3.0					Light tan silt, trace of clay, micaceous, stiff damp (Catastrophic Flood deposit - ML).
5	3.25					
6						
7						Test pit terminated at 7 feet, No Groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-6

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5 2.0					Brown clayey silt with charcoal fragments, soft to stiff (Disturbed soil in old dozer trail - ML).
2	3.25 3.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					
4	2.75 2.5 4.0					Light brown to tan silt, some clay, micaceous, stiff to very stiff (Catastrophic Flood deposit - ML).
5	3.75 4.5					
6	4.5					
7						Test pit terminated at 7 feet, No groundwater encountered, No rock found.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-7

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1	0.5					Dark brown silt with fine organic debris, abundant roots, soft, moist (18" Topsoil - ML).
	0.5					
2	0.75					Brown clayey silt, moist, soft (Colluvial Soil - ML).
	0.75					
3	0.5					Light tan silt with some clay, soft, very moist (Catastrophic Flood deposit - ML).
	1.25					
4	1.5					
	1.5					
5						Light tan silt, micaceous, some clay, medium stiff, moist (Catastrophic Flood deposit - ML).
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-8

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, fine organic debris and roots, soft, moist (11" Topsoil - ML).
1	1.25					
	1.0					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	0.75					
	1.0					
						Brown and light rust mottled clayey silt, stiff, moist (Colluvial Soil - ML).
3	2.0					
	2.5					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
4	3.5					
	3.0					Light tan micaceous silt, lightly iron-stained in near-horizontal patterns, stiff, damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
9						
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-9

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
1						Dark gray-brown organic silt, soft, moist (local area of disturbed topsoil - ML).
	0.5					
2	0.5					Rust brown silt with some sand and clay, soft, moist (Colluvial Soil - ML).
	1.0					
3	1.25					
	1.0					Light brown clayey silt, soft, moist (Colluvial Soil - ML).
4	3.0					
	3.5					Light tan micaceous silt with some clay, some light rust mottling, stiff, moist (Catastrophic Flood deposit - ML).
5						
6						
						Tan micaceous silt with a trace of clay, some light rust mottling, stiff, damp (Catastrophic Flood deposit - ML).
7						
8						
9						
						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering, Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development
West Linn, Oregon.

Project No. 05-9541

Test Pit No. TP-10

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay and fine organic debris, soft, moist (9" Topsoil - ML).
1	1.0					
	1.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	1.25					
	2.0					Brown clayey silt, stiff, moist (Colluvial Soil - ML).
3	~~3.5~~					
	3.75					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
4	~~2.75~~					
	3.75					Light tan silt, micaceous, very stiff, wet to damp (Catastrophic Flood deposit - ML).
5						
6						
7						
8						
9						
						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc.
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-11

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Brown silt, some clay, soft, moist (7" Topsoil - ML).
1	0.5					Brown silt with some clay, soft, moist (Colluvial Soil - ML).
2	~~1.5~~ 1.0					Brown clayey silt, soft, moist (Colluvial Soil - ML).
3	~~0.5~~ 2.0 4.0					Brown silt with some clay, stiff, moist (Colluvial Soil - ML).
4						Brown silt with a trace of clay, micaceous, stiff , moist (Catastrophic Flood deposit - ML).
5						Light tan micaceous silt, stiff, damp (Catastrophic Flood deposit - ML).
6						
7						
8						
9						Test pit terminated at 9 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

GeoPacific Engineering Inc
7312 SW Durham Road
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 598-8705

TEST PIT LOG

Project: Tamarisk Development West Linn, Oregon.	Project No. 05-9541	Test Pit No. TP-12

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
						Dark brown silt, some clay, organic, roots, soft, moist (9" Topsoil - ML).
1	3.5					Brown clayey silt, soft, moist (Colluvial Soil - ML).
	0.75					
2	2.5					Brown silt with some fine sand, trace of clay , stiff, moist (Colluvial Soil - ML).
	2.75					
3	1.0					Brown silt with some clay, medium stiff, moist (Colluvial Soil - ML).
	1.5					
4	3.5					
	4.5					Light rust-brown silt with some clay, stiff, moist (Catastrophic Flood deposit - ML).
5						
6						Light tan micaceous silt, stiff, moist to damp (Catastrophic Flood deposit - ML).
7						
8						
9						Test pit terminated at 8 feet, No groundwater encountered, No rock found.
10						
11						
12						
13						
14						
15						
16						
17						

LEGEND

Bag Sample | Bucket Sample | Shelby Tube Sample | Seepage | Water Bearing Zone | Water Level at Abandonment

Dates Excavated: 12/12/05
Logged By: J. Pyne
Surface Elevation:

Appendix 3—Variance Narrative

West Linn

DEVELOPMENT REVIEW APPLICATION

TYPE OF REVIEW (Please check all boxes that apply):

- [ ] Annexation
- [ ] Appeal and Review
- [ ] Conditional Use
- [ ] Design Review
- [ ] Easement Vacations
- [ ] Flood Management Area
- [ ] Historic District Review
- [ ] Home Occupation – Type II
- [ ] Legislative Plan or Change
- [ ] Lot Line Adjustment
- [ ] Minor Partition
- [X] Natural Drainageway Protection
- [ ] Non-Conforming Lots, Uses & Structures
- [X] Planned Unit Development
- [ ] Quasi-Judicial Plan or Zone Change
- [ ] Street Vacation
- [X] Subdivision
- [ ] Temporary Uses
- [ ] Tualatin River Greenway
- [ ] Variance
- [X] Wetland
- [ ] Willamette River Greenway
- [ ] Other/Misc.

RECEIVED
FEB - 7 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

TOTAL FEES/DEPOSIT $21,980 – (+ $1,800.00 VAR – attached)

Edwin L. and Gloria D. Fritchie, Trustee	21929 S. Clearcreek Road	Estacada, OR	97023	
OWNER	**ADDRESS**	**CITY**	**ZIP**	**PHONE(res.& bus.)**
Stearns Marnella Communities, LLC	18318 SE Abernethy Lane	Milwaukie, OR	97267	(503)
APPLICANT	**ADDRESS**	**CITY**	**ZIP**	**PHONE(res.& bus.)**
Otak, Inc. Attn: Brad Kilby, AICP	17355 SW Boones Ferry Rd.	Lake Oswego, OR	97035	(503) 699-2495
CONSULTANT	**ADDRESS**	**CITY**	**ZIP**	**PHONE (bus.)**

SITE LOCATION The properties are located at the current terminus of Tamarisk Drive in West Linn

Assessor's Map No.: 21E34A **Tax Lot(s):** 600, 690, and 700 **Total Land Area:** approx. 14.84 Acres

1. All application fees are non-refundable (excluding deposit).
2. The owner/applicant or their representative should be present at all public hearings.
3. A denial or grant may be reversed on appeal. No permit will be in effect until the appeal period has expired.

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application.

SIGNATURE OF PROPERTY OWNER(S)
X Edwin L. Fritchie Date 12-1-05

SIGNATURE OF APPLICANT(S)
X Date 12-7-05

BY SIGNING THIS APPLICATION, THE CITY IS AUTHORIZED REASONABLE ACCESS TO THE PROPERTY.
ACCEPTANCE OF THIS APPLICATION DOES NOT INFER A COMPLETE SUBMITTAL.
COMPLETENESS WILL BE DETERMINED WITHIN 30 DAYS OF SUBMITTAL.

PLANNING AND BUILDING; 22500 SALAMO RD #1000; WEST LINN, OR 97068
PHONE: 503-656-4211 FAX: 503-656-4106

TAMARISK SUBDIVISION
VARIANCE APPLICATION

West Linn, Oregon

Request for
Variance

Prepared for
Stearns Marnella Communities

Prepared by
Otak, Incorporated

February 4, 2006

APPLICATION SUMMARY

I. REQUEST

The applicant requests approval of a variance to the cul-de-sac length of West Linn CDC Section 85.200(A)(11), which states, "Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per CDC Chapter 75." In this instance, there are two trains of thought, and the applicant has been provided with varying direction by City staff.

In one instance, it would seem that under the provisions of CDC Section 85.200(A)(8), which states, "Where necessary to give access to, or permit a satisfactory future subdivision of adjoining land, streets shall be extended to the boundary of the subdivision and the resulting dead-end streets may be approved without turnarounds. (Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long)" that a variance would not be required because the street is stubbed to the property directly west of the subject site in a location that is the most appropriate location to follow the topography of the surrounding slopes.

In the second case, it could be perceived that the street acts more as a cul-de-sac because the street stubs to the Urban Growth Boundary (UGB), and any urban development that would occur on the adjacent properties would not happen in the short- or medium-term future. Nevertheless, the stub provides adjacent properties with the opportunity to be connected with City streets should the properties be brought into the UGB, be annexed into the City of West Linn, and be developed.

This variance is being requested based on the premise that the proposed street is a cul-de-sac. If it is considered as a cul-de-sac, then it would be approximately 940 feet long and serves 13 lots.

The variance would be applicable to proposed Tamarisk Subdivision, which is located at the current terminus of Tamarisk Drive in West Linn, Oregon. As proposed, the Tamarisk Subdivision is a Planned Unit Development (PUD) request for a 35-lot residential subdivision in West Linn, Oregon. The PUD approval is requested in light of the environmental constraints associated with the property.

II. SITE DESCRIPTION

Location

The site is located at the terminus of Tamarisk Drive. The property is physically described as tax lots 600, 690, and 700 of map 21E34A in Clackamas County, Oregon.

Zoning

The West Linn Community Development Code designates .96 acre of the site R-10 (Low Density Residential) and 14.39 acres of the site R-15 (Low Density Residential). Single-family residential uses are listed as preferred uses. Both the R-10 and R-15 zones allow for single-family development as an outright permitted use. In this instance, density will be transferred from the Type I and II lands to the buildable portions of the site. Lot sizes within the proposed development will be varied to maximize density on the site.

Surrounding Land Uses

The surrounding properties are a mixture of urban residential, rural residential, and vacant uses. The properties located within the city limits and surrounding the site are all zoned residential. The properties located directly north of the site and within Clackamas County are all zoned Rural Residential Farm/Forest-5 (RRFF-5). According to Clackamas County, the RRFF-5 zone is applied to properties which have a general parcel size of five (5) acres; are affected by development; contain no serious natural hazards and the topography and soils are suitable for development; and are easily accessible to a Rural Center or incorporated city. I-205 is located directly adjacent to the western edge of the property along Parker Road.

Topography

The site has a variety of slopes, with the majority of the site containing grades ranging from approximately 5 to 25 percent. There are two large areas within the site that have slopes exceeding 25 percent. These areas will largely remain intact, with the exception of the area needed to construct streets and utilities to accommodate the proposed development. See Exhibit 4 (Existing Slope Analysis and Drainage Map).

Vegetation

The site is heavily forested with a large variety of trees. It appears as though the understory of the site has been cleared within the past several years. The majority of trees onsite are Alder, Cedar, Ash, Hawthorn, or Oak.

Wetland and Riparian Areas

There are wetlands and two large drainageways on the site. A resource assessment and wetland delineation has been conducted by Mirth Walker and Stacey Reed, Wetland Scientists with SWCA. Their report and recommendations are included with this submittal.

Existing Structures

The only structure on the property is an existing culvert that was placed in the drainage to accommodate an old logging road. The culvert will be extended and replaced to accommodate the new road as prescribed by the City of West Linn Community Development Code (CDC). There are no other known structures on the property.

Access and Circulation

Tamarisk Road serves the site from the southeast. Tamarisk Road will continue through the site and be stubbed to the adjacent property to accommodate future development of the adjacent properties and to provide an ultimate connection of Tamarisk Road to Woodbine. A street connection through this site directly to Woodbine is not feasible due to the severity of the slopes along the area closest to Woodbine. Instead, Tamarisk Road has been realigned to follow the topography. All streets have been designed to meet the City of West Linn design standards for local streets with the exception of that portion of right-of-way that crosses the drainageway. The portion of street that crosses the drainageway is proposed to be a 24-foot paved section, with curb-tight sidewalks within a 50-foot right-of-way. All other streets are designed to be located within a 50-foot right-of-way with a 28-foot paved section, including curb and gutter, a planter strip, and sidewalk. See Exhibits 1 (Cover Sheet), 2 (Vicinity Transportation Network Map), and 5 (Tentative Subdivision Plat).

Existing Utility Locations

Water: Water to the site will be provided by an extension of a six-inch water line through the site from Tamarisk Drive, under I-205 via Woodbine Road, into an existing line on SW Johnson Street. The system will also be stubbed to the north property line for future extension.

Sanitary Sewer: Sanitary Sewer will be pumped from an onsite sewer pump that is to be constructed with the development to the existing six-inch line located within Tamarisk Drive.

Storm Drainage: Stormwater will be collected and conveyed by a series of catch basins and pipes to a water quality facility, then to an outfall which will discharge into a proposed culvert crossing on Fritchie Creek.

III. COMPLIANCE WITH APPLICABLE APPROVAL CRITERIA

Section 75.060 of the West Linn Development Code outlines the approval criteria necessary to obtain a variance. The following is a discussion of how this proposal meets the applicable criteria.

75.060 THE APPROVAL CRITERIA

The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The approval authority shall deny the variance if any of the criteria are not met.

Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the same zone or vicinity, and result from lot size or shape, legally existing prior to the date of this ordinance, topography, or other circumstances over which the applicant has no control.

Response: The Tamarisk site contains a significant amount of slopes in excess of 25 percent, two drainageways with associated wetlands, and is heavily tree covered. These circumstances of steep slopes and tree cover do not apply to the majority of sites in the City of West Linn, which are, for the most part, already developed. While there are steep slopes and trees in the vicinity, none of the properties within the City limits in this vicinity are of the same size facing the same constraints. The applicant has no control over these physical features. Primarily, it is the steepness of the site which constrains the developer from providing streets which are fully compliant with the Development Code standards and, thereby, leading to this variance request.

The variance is necessary for the preservation of a property right of the applicant, which is substantially the same as a right possessed by owners of other property in the same zone or vicinity.

Response: The property is the largest property within this vicinity with the low-density residential zoning classification. Other properties within the City that share this designation have the same rights as the owner of this property to develop in compliance with the standards of the CDC. In this instance, the property owner's rights to develop are affected by physical attributes of the property and is not due to any prior actions of the owner. The steep slopes, drainageways, and surrounding streets dictate the location of the street extension to this portion of the site. When other large parcels within this area were developed, they were also required to provide long cul-de-sac streets. In this instance, it is debatable as to whether or not the proposed street even constitutes a cul-de-sac since it is also able to stub out to undeveloped parcels and be extended with future development. Street extensions from stubbed streets are always dictated by the timing of the adjacent owners' willingness to develop or other circumstances that may be beyond their control.

The authorization of the variance will not be materially detrimental to the purposes and standards of this Code, will not be inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.

Response: The proposed variance will not be materially detrimental to the purposes and standards of this ordinance or to surrounding properties. The granting of the variance does not preclude the future extension of the proposed street and still provides for the orderly development of future properties that are currently not located within the UGB or City limits of the City of West Linn, but the property will someday be considered for inclusion to these boundaries and it would be shortsighted not to consider the ramifications of the decisions that are made today. There is no evidence to suggest that the proposed variance would conflict with the goals and policies of the West Linn Comprehensive Plan.

The variance request is the minimum variance, which would alleviate the exceptional and extraordinary circumstance.

Response: The hardship is not a self-imposed hardship. The variance is the minimum variance from the standard that would allow the property to be developed at densities that are consistent with the Low Density Residential districts.

The exceptional and extraordinary circumstance does not arise from the violation of this ordinance.

Response: There are no know violations of this ordinance; therefore, the hardship does not arise from any violation of the West Linn Community Development Code. In fact, it is a matter of interpretation as to whether or not the proposed variance is required at all.

The variance will not impose physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification

Response: The proposed variance does not impose physical limitations on other properties or uses in the area and provides opportunities for future development on neighboring vacant and underdeveloped properties to be developed in accordance to the applicable standards of the underlying classification.

IV. CONCLUSION

This application narrative demonstrates that all applicable provisions of the City of West Linn have been addressed and that the applicant has met the burden of proof necessary to grant the requested variance. The applicant, therefore, respectfully requests approval of this application.

West Linn

Planning Department

January 27, 2006

Stearns Marnella Communities LLC
18318 SE Abernathy Lane
Milwaukie, OR 97267

SUBJECT: SUB 05-06, Tamarisk Subdivision Completeness Determination

Dear Mssrs. Stearns and Marnella:

With the submittal of your material dated and received on December 29, 2005, the Engineering and Planning Departments find that the subdivision application for Tamarisk subdivision is **incomplete**. You have 180 days to make it complete ending July 26, 2006.

The specific grounds for incompleteness as determined by the engineering department are enclosed. The specific grounds for incompleteness as determined by the Planning Department are as follows:

85.160(E)(9)	Show (map) uses on adjoining properties
85.160(E)(5)	Map and identify all trees per 55.100(B)(2) so that the city arborist may make a determination as to which ones are significant. Only then can the applicant prepare an analysis of how much of the site's non-type I and II lands are being set aside to protect the trees and the protected dripline areas (expressed in square feet and as percentage of total non-type I and II lands).
85.160(F)(2)	Provide geotech report. We have already received one letter of concern from the public re: stability of site.
85.200(J)(9)	No tree inventory per 55.100(B)(2)
75.000	The applicant may still wish to consider a variance for the street length and number of lots served. Ordinarily this would not be an issue since a stub out is provided. However, that stub out is into unincorporated lands, which raises concerns because there is no short to middle range likelihood that the road will actually go through.

Please contact me at 656-4211 if you have any questions or, better yet, e-mail me at pspir@ci.west-linn.or.us.

Sincerely,

Peter Spir
Associate Planner

PC: Brad Kilby, OTAK, 17355 SW Boones Ferry Road, Lake Oswego, OR 97035

attachment

:/devrvw/completeness check/incompl.-SUB 05-06-TAMARISK

Kennedy/Jenks Consultants

RECEIVED
JAN 19 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. AA TIME

18 January 2006

Memorandum

To: Peter Spir, City of West Linn, Planner

From: Aaron Eder

Subject: Tamarisk Subdivision (SUB-05-06) Application Completeness Check
K/J #0591005.00

I have reviewed the planning application for the Tamarisk Subdivision (Site) application for completeness with regard to the City of West Linn's (City's) Community Development Code (CDC). Specifically, the completeness check has been conducted for public infrastructure. It is assumed that the planning portion of the application will be reviewed by the City Planning Department. The application was found to be incomplete. The following are my comments.

Section 32.050

1. 32.050 1 – The 1996 Storm Drainage Master Plan shall be used as the basis for determining the existence of drainage ways. There appear to be two natural drainage ways on the Site. The north-south drainage way appears to be classified in the Storm Drainage Master Plan as a major open channel. The east-west drainage way appears to be classified in the Storm Drainage Master Plan as a minor open channel. Both drainage ways shall be identified on the tentative plans.

2. 32.050 4 – Identify the wetlands and transition zone on Sheet EX05. Transition zones shall be in accordance with the requirements of Section 32.050-4 of the CDC.

3. 32.050 9 – Vegetative improvements to areas within natural drainage ways may be required if the City Arborist and Planning Department determine the Site to be in an unhealthy or disturbed state. The applicant shall verify with the City and determine whether such improvements are required.

Section 33.030

4. 33.030 B – A site plan and topographic map consistent with CDC Section 33.070 shall be submitted with the application. Section 33.070 requires submittal of a detailed planting plan using species from Metro's native plant list. An even distribution of a mix of low-maintenance trees, shrubs, and groundcover is preferred. The planting plan shall address the requirements identified in Paragraphs A through E of CDC Section 33.070.

Section 33.040

5. 33.040 E – Stormwater detention and treatment facilities shall be vegetated with plants from Metro's native plant list as described in Section 33.070. This should be incorporated on the planting plan required by Section 33.070 of the CDC.

Memorandum

Section 33.050

6. 33.050 B2 – Provide a cross-section of the proposed stormwater facilities.

7. 33.050 B4 – Indicate locations of all trees measuring 6 inches in diameter at breast height or higher and a description of the existing vegetation species.

8. 33.050 B5 – Access to the stormwater facilities will be required. Indicate the location, width, and material of access road according to Public Works Design Standards.

Section 85.150 and 85.200

9. 85.150 A3 – Provide a narrative explaining all aspects of land division per Section 85.200.

10. 85.200 A3 – The applicant is proposing a 50-foot right-of-way with a paved width of 28 feet. This is a non-standard width according to the Road/Right-of-Way Width Standards table provided on page 85-22 of the CDC. In addition, the proposed local road section identified on Sheet EX01 indicates a 5-foot planter strip. In accordance with the Sidewalk Width table provided on page 85-23 of the CDC, 6-foot planter strips are required for residential developments. The additional 1 foot of planter strip on either side of the street would result in a right-of-way width of 52 feet, which corresponds to Option E on the table on page 85-22 of the CDC. The applicant should consult with the City to determine the required street section.

11. 85.200 A11 – Cul-de-sacs shall have maximum lengths of 400 feet, unless otherwise specified by variance per CDC Chapter 75. The proposed cul-de-sac exceeds 400 feet.

12. 85.200 A16 – Sidewalks shall be installed per Section 92.010(H). This section requires sidewalks to be installed on both sides of public streets. The proposed cross-section through the drainage crossing indicates sidewalk on one side of the street.

13. 85.200 E3 – There is a substantial amount of fill proposed where Street A crosses the drainage way/wetland. If areas are to be graded with more than any 4-foot cut or fill, compliance with Section 85.170(C) is required. Section 85.170 C1 requires that information on the character of the soil be provided. This information should be provided in the form of a geotechnical report.

14. 85.200 F1 – Provide detailed information on the two proposed connections to existing water systems.

15. 85.200 F2 – On Sheet EX08, indicate the size(s) of all water lines serving the development.

16. 85.200 F5 – Provide a written statement, signed by the City Engineer, that water service can be made available to the Site by construction of onsite and offsite improvements and that

such water service has sufficient volume and pressure to serve the proposed development's domestic and fire flows.

17. 85.200 G1 and G2 – Sheet EX08 must show how the sanitary sewer system is gravity efficient. Invert elevations shall be provided to demonstrate this. In addition, provide detailed information on the proposed connection to the existing sewer in Tamarisk Drive.

18. 85.200 G6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.

19. 85.200 G7 – Sanitary sewer shall be extended or stubbed out to the next developable subdivision. Show a sewer stub at the north end of the sanitary sewer system. Is the pump station being designed to accommodate further development north of this project?

20. 85.200 G9 – Provide a written statement, signed by the City Engineer, that existing sanitary sewers have sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.

21. 85.200 H1 – A stormwater quality and detention plan shall be provided with reference to the adopted Storm Drainage Master Plan.

22. 85.200 H2 – The preliminary stormwater analysis indicates that no detention is proposed with this project due to its proximity to Fritchie Creek and its relatively small contribution to this creek. According to this section of the CDC, stormwater treatment and detention facilities are required and shall be sized to accommodate a 25-year storm incident. Resubmittal of the application documents shall include detailed water quality and detention calculations.

23. 85.200 H3 – Plans shall demonstrate how stormwater drainage will be collected from all impervious surfaces, including roof drains. Stormwater drainage connections shall be provided to each dwelling unit/lot.

24. 85.200 I – All subdivisions shall establish, at a minimum, 5-foot utility easements on front and rear lot lines. The location, width, and purpose of all easements shall be identified on the Tentative Plan.

25. 85.200 J4 – Indicate locations of proposed street lights on the Tentative Plan.

Section 85.160

26. 85.160 B – A stamp and signature of the registered civil engineer shall be included on the Tentative Plan.

27. 85.160 D1 – The proposed names of the streets, approved by the Planning Commission or Planning Director as applicable, shall be shown.

Memorandum

28. 85.160 D4 – Provide a tie to the City's coordinate system.

29. 85.160 E1 – On Sheet EX05, provide the widths of all existing or platted streets within 50 feet of, or adjacent to, the tract, together with easements and other important features such as section lines, donation land claim corners, section corners, City boundary lines, and monuments.

30. 85.160 E5 – Isolated trees (6 inches in diameter at 5 feet above grade) should be identified by size, type, and location on the Tentative Plan.

31. 85.160 E7 – On Sheet EX08, show and indicate the sizes and locations of existing utilities in adjoining streets and property.

32. 85.160 F6 – Sheet EX11 shall include a tree planting schedule approved by the Parks Department.

33. 85.160 F7 – Indicate any land area to be dedicated to the City or placed in common ownership.

34. 85.160 F8 – On Sheet EX05, show the phase boundaries in the plan view. On Sheet EX08, show how the utilities are being phased.

Section 85.170

35. 85.170 A4 – On Sheet EX05, indicate when each phase will occur.

36. 85.170 B1 –On Sheet EX10, the "K" value indicated for the Street B vertical curve is too low. According to American Association of State Highway Transportation Officials (AASHTO) guidelines, a sag curve with design speed of 25 miles per hour (mph) corresponds to a "K" value of 26.

37. 85.170 E2 – Provide depths of the sanitary sewers at the manholes and show how each lot would be sewered.

38. 85.170 E6 – The sanitary sewer line crosses wetlands and drainage ways. Indicate how this disturbance is mitigated pursuant to Chapters 30 and 32 of the CDC.

39. 85.170 F3 – Show stormwater drainage connections to each lot. Show the size and type of material for the stormwater drainage system.

40. 85.170 F4 – The detention facilities should include a vegetation plan for the facility.

Memorandum

Other Concerns

Although not required with the application, the following items will need to be addressed during design review. It is encouraged that these items are addressed prior to the subsequent submittal of this application.

41. Show proposed curb cuts for driveways at each lot.

42. The steep grades (15 percent) along a portion of Street A may require that the new houses be constructed with sprinklers.

43. On Sheet EX01, show the typical cross-slope on the street sections.

44. During the pre-application conference, it was decided that the applicant will need to provide a tree survey of all significant trees on the Site and comply with the provisions of CDC 55.100(B)(2). This does not appear to have been included with the application.

cc: file

RECEIVED
JAN 19 2006
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

January 18, 2006

Peter Spir –Associate Planner
City of West Linn
22500 Salamo Rd #1000
West Linn, OR 97068

Re: SUB-05-06, ZC-05-09, MISC-05-56 Tamarisk-35 Lot PUD

Dear Peter,

I am writing this letter to you as a concerned resident regarding the proposed 48-lot (per original plan from Brad Kilby) PUD at 1200 Tamarisk Drive. Since you are listed as the Project Manager for this application I felt obligated to voice to you my concerns and the concerns of my neighbors affected by this development.

Obviously as part of the pre-application process that has taken place you have at least been made aware of the number and type of concerns the residents have. The proposed density change (through density transfer), reduced lot size and lack of a reasonable solution to limit traffic congestion in what amounts to a very large cul-de-sac in an already congested traffic area are a few of them.

While these are certainly concerns I share, of greater concern to me is the construction of homes on or near the upper slopes of the designated wetland causing instability in the delicate drainage. The tree survey flags which were placed on the trees to be removed indicate a significant number of trees and shrubs will be removed from the area, leaving little to keep these slopes intact. As a matter of fact, very few trees are not marked for removal.

These concerns are further highlighted by events that have already occurred in our neighborhood. My neighbor at 1347 Tamarisk Drive had to bring in multiple dump truck loads of fill dirt to replace land lost to a slide two years ago. This affected two homes which have had no construction around them nor removal of trees, and resulted in significant costs and loss of property.

In the news this past week is just one of many reports of a neighborhood in Oregon City on Newell Ridge Rd battling with slide conditions that are threatening to undermine their homes. At the time those homes were built I'm sure the developer chose to maximize usable land in lieu of more conservative setbacks protecting against such an occurrence.

Not only does this concern me for my own property, but also for the properties of my neighbors and those that choose to purchase the homes built upon this unstable portion of the property.

I'm sure you have many land use applications to review and pass judgment upon and this project has many other obstacles which you must address. I simply wanted to further highlight the potential consequences that will likely arise if the developer is allowed to clear and build as close to the slopes as they propose on this very sensitive natural drainage.

Respectfully,

Bill Maxwell
2570 Troy Ct
West Linn, OR 97068

CITY OF WEST LINN
PLANNING AND DEVELOPMENT

EXHIBIT PC-7

APPLICANT'S SUBMITTAL

FILE NO.: **SUB 05-06/ MISC-05-56/VAR-05-10/ZC-05-09**

REQUEST: **34-LOT SUBDIVISION, PLANNED UNIT DEVELOPMENT (PUD), CLASS II VARIANCE AND NATURAL DRAINAGEWAY PERMIT AT NORTH-WEST END OF TAMARISK DRIVE**

TAMARISK SUBDIVISION

CITY OF WEST LINN, OREGON

Request for:
Planned Unit Development
Subdivision
Drainageway Permit

Prepared for:
Stearns/Marnella Communities

Prepared by:
Otak, Inc.

December 27, 2005

Bill Maxwell
2570 Troy Ct
West Linn, OR 97068

February 21, 2006

Peter Spir – Associate Planner
West Linn Planning & Development
22500 Salamo Rd #1000
West Linn, OR 97068

Dear Peter,

I am writing this letter as a third attempt to document what I feel should be a significant concern for you regarding the Tamarisk Development application you are reviewing. As you may recall from my prior letter and email to you my primary concern is in the stability of the steep slopes located on the north portion of the proposed planned development.

I have been in contact with Brad Kilby at OTAK Development to explain my concerns to him and listen to his brief explanation of how they are addressing the issues of the steep slopes and instability of the ground. They have hired a geo-technical engineering firm to review their plans and make recommendations based on their own site surveys.

What I would like to know is once this planning process is completed, who is retaining responsibility for the ongoing stability of the undeveloped slopes dropping into the designated wetland? Over the 10 years that we have lived in this home this has not been a concern since the natural features of trees, shrubbery and groundcover have provide the drainage necessary to support the delicate slopes.

Once construction begins, the trees will be removed, ground will be scraped and graded and the wheels will be set in motion for ongoing erosion and potential loss of property for myself, existing neighbors and even the new homes being developed along this slope.

I have included some documentation I was able to copy from the USDA's National Resources Conservation Service including soil survey results with outlined map of the specific area being developed. In addition I have obtained tabular data relating to hazard of erosion for each of the 3 soil types located in the proposed development area.

I don't suggest that my rudimentary research on this topic is anything other than a suggestion that this needs to be a significant concern for all parties involved. I would like to know that each party involved in the development of the Tamarisk PUD from approval of the plans to building of the homes is going to retain responsibility for any degradation of the land from erosion or landslide both during construction and once the homes are completed.

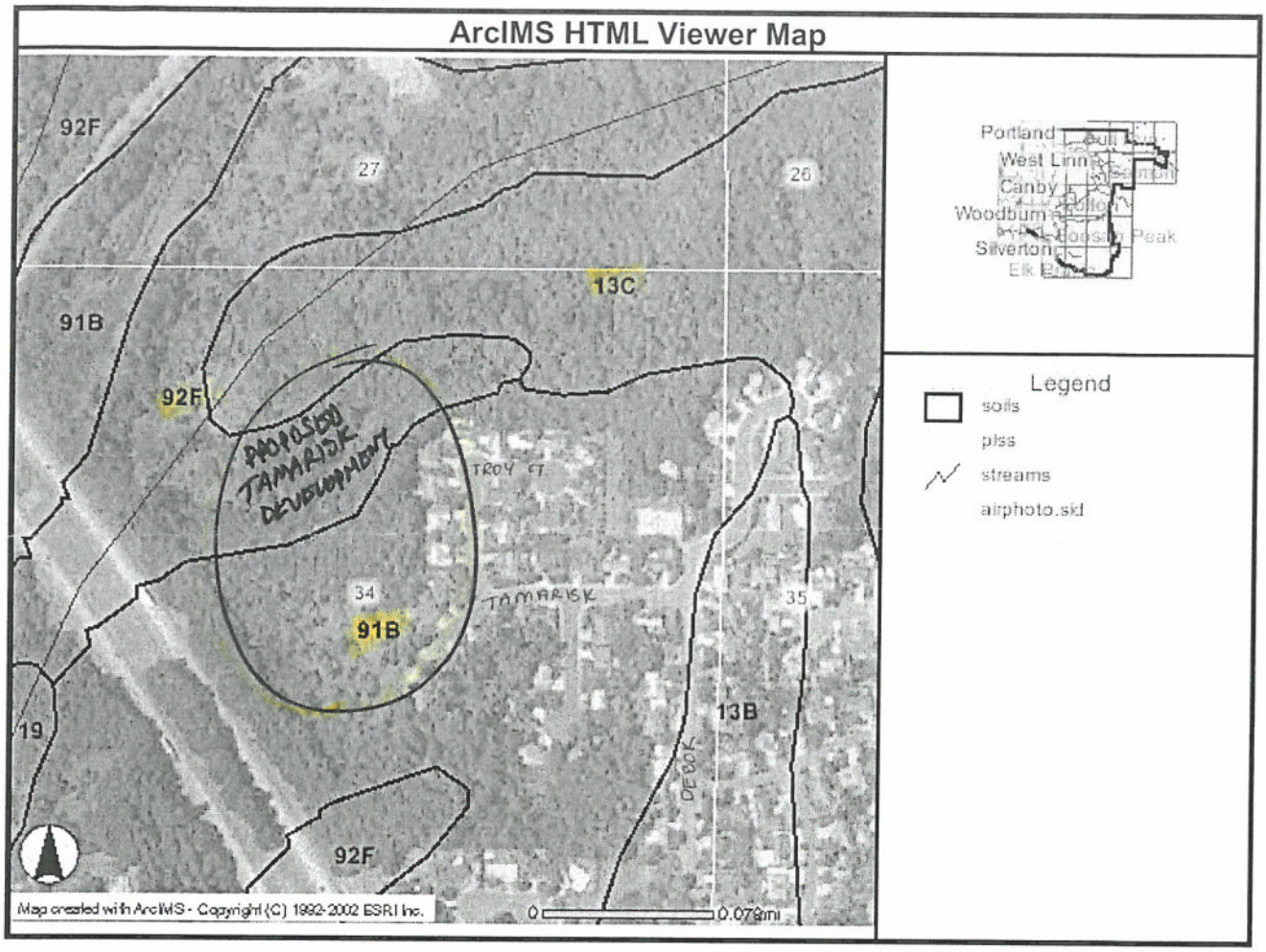
As I've felt from the beginning, I'm not opposed to homes being developed in the area behind our neighborhood, provided it is done in a manner that does not cause property loss to me or my neighbors. In the rush to control costs however, It is quite possible that OTAK or Stearns/Marnella might have greater interest in meeting only the basic needs to complete the construction of these homes in a timely manner.

I would like some reassurance from the city planning department that this risk is being addressed in a manner that substantially mitigates the potential loss of property from erosion or landslide to my property, my neighbor's property and to new homeowners in the proposed development. I can be reached during weekdays at 503-288-8818, in evenings at 503-657-8279 or by email at billm@timmco.com .

Sincerely,

Bill Maxwell

Cc: Bryan Brown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Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
92F:							
Xerochrepts	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1
						Low strength	0.5
Haploxerolls	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1
						Low strength	0.5

Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13C:							
Cascade	80	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.5	Slope/erodibility	0.95	Slope	0.5
						Low strength	0.5

Hazard of Erosion and Suitability for Roads on Forestland (OR)

Clackamas County Area, Oregon

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface) (OR)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
91B:							
Woodburn	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.5	Low strength	0.5

91B-Woodburn silt loam, 3 to 8 percent slopes.
This deep, moderately well drained soil is on broad valley terraces. It formed in stratified glaciolacustrine deposits. The vegetation in areas not cultivated is mainly native grasses, western hazel, poison-oak, Douglas-fir, and Oregon white oak. Elevation is 150 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

Typically, the surface layer is very dark brown and dark brown silt loam about 16 inches thick. The upper 22 inches of the subsoil is dark yellowish brown and dark brown silty clay loam, and the lower 16 inches is dark brown silt loam. The substratum to a depth of 60 inches or more is dark brown silt loam that is slightly brittle.

Included in this unit are small areas of Aloha, Amity, Huberly, Dayton, and Willamette soils. Included areas make up about 10 percent of the total acreage.

Permeability of this Woodburn soil is moderate to a depth of 38 inches and slow below this depth. Available water capacity is about 10 to 13 inches. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The water table is at a depth of 24 to 36 inches in winter and early in spring. This soil is droughty in summer.

Most areas of this unit are used for crops, mainly sweet corn, beans, strawberries, and small grain. Among the other crops grown are alfalfa, nursery stock, filberts, and pasture. Some areas are used as homesites and wildlife habitat and for recreation and timber production. This unit is subject to increased use as homesites. Where the unit has been used for homesite development, as much as 80 percent of the area not covered by buildings or other impervious material has been disturbed. The disturbed areas have been covered by as much as 20 inches of fill material or have had as much as 30 inches of the original profile removed by cutting or grading. The fill material is most commonly from adjacent areas of Woodburn soils that have been cut or graded.

This unit is suited to cultivated crops. It is limited mainly by wetness. Wetness generally limits the suitability of this unit for deep-rooted crops. Tile drainage can be used to reduce wetness if a suitable outlet is available. In summer, irrigation is needed for maximum production of most crops. Sprinkler irrigation is a suitable method of applying water.

Excessive cultivation can result in the formation of a tillage pan, which can be broken by subsoiling when the soil is dry. When the soil is wet, grazing and other activities that cause trampling result in compaction of the surface layer, poor tilth, and excessive runoff. If the soil in this unit is plowed in fall, runoff and erosion can be reduced by fertilizing and seeding to a cover crop. Diversions and grassed waterways may be needed.

Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Grain and grasses respond to nitrogen; legumes respond to phosphorus, boron, sulfur, and lime; and vegetables and berries respond to nitrogen, phosphorus, and potassium.

This unit is well suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 160 to 175. On the basis of a site index of 169, the potential production per acre of merchantable timber is 10,800 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 102,080 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is wetness. Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if heavy equipment is used when the soil is wet. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills. Brushy plants such as western hazel and blackberry limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the slow permeability, wetness, and low soil strength. Drainage is needed if roads and buildings are constructed. Wetness is reduced by installing drain tile around footings. Roads and buildings should be designed to offset the limited ability of the soil in this unit to support a load. Septic tank absorption fields do not function properly during rainy periods because of wetness and the slow permeability.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Plants that tolerate wetness and droughtiness should be selected unless drainage and irrigation are provided.

This map unit is in capability subclass IIe.

91C-Woodburn silt loam, 8 to 15 percent slopes.
This deep, moderately well drained soil is on broad valley terraces. It formed in stratified glaciolacustrine deposits. The vegetation in areas not cultivated is mainly native grasses, western hazel, poison-oak, Douglas-fir, and Oregon white oak. Elevation is 150 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

Typically, the surface layer is very dark brown and dark brown silt loam about 16 inches thick. The upper 22 inches of the subsoil is dark yellowish brown and dark brown silty clay loam, and the lower 16 inches is dark brown silt loam. The substratum to a depth of 60 inches or more is dark brown silt loam that is slightly brittle.

Included in this unit are small areas of Aloha, Willamette, and Dayton soils. Included areas make up about 10 percent of the total acreage.

Permeability of this Woodburn soil is moderate to a depth of 38 inches and slow below this depth. Available

water capacity is about 10 to 13 inches. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The water table is at a depth of 24 to 36 inches in winter and early in spring. This soil is droughty in summer.

This unit is used mainly for crops such as small grain, hay, and pasture. Berries are also grown. Some areas of the unit are used for timber production and as wildlife habitat and homesites. This unit is subject to increased use as homesites. Where the unit has been used as homesites, as much as 75 percent of the area not covered by buildings or other impervious material has been disturbed. The disturbed areas have been covered by as much as 24 inches of fill material or have had as much as 36 inches of the original profile removed by cutting or grading. The fill material is most commonly from adjacent areas of Woodburn soils that have been cut or graded.

This unit is suited to cultivated crops. It is limited mainly by wetness and slope. Wetness generally limits the suitability of this unit for deep-rooted crops. Crops that require good drainage can be grown if a properly designed tile drainage system is installed. In summer, irrigation is needed for maximum production of most crops. Sprinkler irrigation is a suitable method of applying water.

Excessive cultivation can result in the formation of a tillage pan, which can be broken by subsoiling when the soil is dry. When the soil is wet, grazing and other activities that cause trampling result in compaction of the surface layer, poor tilth, and excessive runoff. If the soil in this unit is plowed in fall, runoff and erosion can be reduced by fertilizing and seeding to a cover crop. All tillage should be on the contour or across the slope. Diversions and grassed waterways may be needed.

Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Grain and grasses respond to nitrogen; legumes respond to phosphorus, boron, sulfur, and lime; and berries respond to nitrogen, phosphorus, and potassium.

This unit is suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 160 to 175. On the basis of a site index of 169, the potential production per acre of merchantable timber is 10,800 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 102,080 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is wetness. Conventional methods of harvesting timber generally are suitable, but the soil may become compacted if heavy equipment is used when the soil is wet. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills.

Brushy plants such as western hazel and blackberry limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the slow permeability, wetness, low soil strength, and slope. Drainage is needed if roads and buildings are constructed. Wetness is reduced by installing drain tile around footings. Roads and buildings should be designed to offset the limited ability of the soil in this unit to support a load. Preserving the existing plant cover during construction helps to control erosion. Septic tank absorption fields do not function properly during rainy periods because of wetness and the slow permeability.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Plants that tolerate wetness and droughtiness should be selected unless drainage and irrigation are provided.

This map unit is in capability subclass IIIe.

92F-Xerochrepts and Haploxerolls, very steep. This map unit is on terrace escarpments. Slope is 20 to 60 percent. The native vegetation is mainly Douglas-fir, Oregon white oak, bigleaf maple, western redcedar, red alder, western hazel, Oregon-grape, and salal. Elevation is 50 to 1,000 feet. The average annual precipitation is 40 to 60 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 165 to 210 days.

This unit is about 50 percent Xerochrepts and 35 percent Haploxerolls. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Saum, Jory, Cascade, Witzel, and Woodburn soils. Included areas make up about 20 percent of the total acreage.

Xerochrepts are deep and well drained. They formed in colluvium derived dominantly from igneous rock. No single profile of Xerochrepts is typical, but one commonly observed in the survey area has a surface layer of dark brown silt loam about 8 inches thick. The upper 7 inches of the subsoil is dark brown gravelly loam, and the lower 33 inches is brown and dark yellowish brown gravelly clay loam. The substratum to a depth of 60 inches or more is brown very cobbly clay loam.

Permeability of the Xerochrepts is moderate to moderately slow. Available water capacity is about 5 to 10 inches. Effective rooting depth is 40 to 60 inches or more. Runoff is rapid, and the hazard of water erosion is severe.

Haploxerolls are deep and well drained. They formed in colluvium derived dominantly from basic igneous rock. No single profile of Haploxerolls is typical, but one commonly observed in the area has a surface layer of very dark grayish brown silt loam about 12 inches thick. The upper 12 inches of the subsoil is dark brown silt loam, and the lower 26 inches is dark yellowish brown

silty clay loam and gravelly silty clay loam. The substratum to a depth of 60 inches or more is dark yellowish brown very gravelly loam.

Permeability of the Haploxerolls is moderate to moderately slow. Available water capacity is about 8 to 12 inches. Effective rooting depth is 40 to 60 inches or more. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used for timber production and as wildlife habitat and homesites.

This unit is suited to the production of Douglas-fir. The site index for Douglas-fir ranges from 130 to 155. On the basis of a site index of 140, the potential production per acre of merchantable timber is 8,700 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 77,280 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 80 years old.

The main concern in producing and harvesting timber is steepness of slope. The steepness of slope limits the kinds of equipment that can be used in forest management. Highlead or other cable logging methods can be used for harvesting timber. Use of these methods is limited during December through March.

The soils in this unit are subject to slumping, especially if road cuts are made in the steeper areas. Slumping can be minimized by locating roads in the more gently sloping areas and by using properly designed road drainage systems. Roads for year-round use need heavy base rock. Roads and landings can be protected from erosion by constructing water bars and by seeding cuts and fills. Brushy plants such as red alder and western hazel limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are steepness of slope and the instability of the soils. The soils are subject to slumping, especially if road cuts are made in the steeper areas. Slumping can be minimized by locating roads in the more gently sloping areas and by using properly designed road drainage systems. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed. This unit generally is too steep to install septic tank absorption fields. Absorption lines should be placed in adjoining areas that are more nearly level.

This map unit is in capability subclass VIIe.

93E-Xerochrepts-Rock outcrop complex, moderately steep. This map unit is on high terraces and rolling uplands. Slope is 0 to 30 percent. The native vegetation is mainly Douglas-fir, Oregon white oak, western hazel, Oregon-grape, poison-oak, and grasses. Elevation is 100 to 500 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the average frost-free period is 165 to 210 days.

This unit is about 60 percent Xerochrepts and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Witzel, Nekia, and Saum soils. Included areas make up about 10 percent of the total acreage.

Xerochrepts are shallow to moderately deep and are well drained. They formed in colluvium derived dominantly from andesite and basalt. No single profile is typical of Xerochrepts, but one commonly observed in the survey area has a surface layer of dark brown gravelly loam or loam about 8 inches thick. The subsoil is brown gravelly loam or loam about 18 inches thick. Basalt is at a depth of 26 inches. Depth to basalt ranges from 15 to 40 inches.

Permeability of the Xerochrepts is moderate to moderately slow. Available water capacity is about 3 to 7 inches. Effective rooting depth is restricted by the depth to basalt. Runoff is medium, and the hazard of water erosion is moderate. This soil is droughty in summer.

Rock outcrop consists of areas of exposed bedrock. These areas support only moss and lichens.

This unit is used as wildlife habitat and homesites and for timber production.

This unit is poorly suited to the production of Douglas-fir. On the Xerochrepts, the site index for Douglas-fir ranges from 110 to 125. On the basis of a site index of 115, the potential production per acre of merchantable timber is 6,360 cubic feet from an even-aged, fully stocked stand of trees 60 years old or 57,960 board feet (International rule, one-eighth-inch kerf) from an even-aged, fully stocked stand of trees 90 years old.

The main concerns in producing and harvesting timber are the restricted rooting depth and large areas of Rock outcrop, which can interfere with felling, yarding, and other operations involving the use of equipment. The low available water capacity generally influences seedling survival in areas where understory plants are numerous. Brushy plants such as western hazel and Oregon-grape limit natural regeneration of Douglas-fir.

If this unit is used for homesite development, the main limitations are the areas of Rock outcrop and depth to rock. topsoil can be stockpiled and used to reclaim areas disturbed during construction. Removal of gravel in disturbed areas is needed for best results when landscaping, particularly in areas used for lawns. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. The limited depth to bedrock interferes with excavation for utilities and septic tank absorption fields.

This map unit is in capability subclass VIIs.

94D-Zygore gravelly loam, 5 to 30 percent slopes. This deep, well drained soil is on mountainous uplands. It formed in colluvium derived dominantly from basalt and andesite mixed with volcanic ash. The native

Spir, Peter

From: Bill Maxwell [billm@timmco.com]
Sent: Monday, February 06, 2006 8:33 AM
To: Spir, Peter
Subject: Tamarisk 35-lot PUD - Current resident inquiry

Hi Peter,

My name is Bill Maxwell and I live at 2570 Troy Ct, which is adjacent to the planned unit development proposed at the end of Tamarisk Rd (Sub 05-06, ZC 05-09, MISC 05-56). I've been in contact with the developer as well as their planner to keep apprised of their ongoing plans for the property. You might also recall I sent you a letter back in January addressing my concerns for the steep slope (above designated wetlands) that runs at an angle from the back corner of my property, directly through the development planned by Stearns/Marnella Communities.

I have a copy of the original plan of 48 units which shows homes being built right on the top of each side of the ridge, and I have been advised that the number has been reduced to 35 units recently but that the street and utility patterns are still the same as the original plans.

Can you explain to me if the plan is still to build directly on the edge of the ridge (each side) and if so what precautions you will be requiring the developer to take to prevent any future instability in the slope (for both new homes and existing homes), or damage to the designated wetlands below? I'm extremely concerned about this as it stands to reason if all of the trees and supporting shrubbery are removed as planned (currently flagged from survey for removal), this steep slope will not support the loss of natural drainage and root structure stability.

While I'm not opposed to the developing of land for future residents, I am aware of Stearn/Marnella's past projects and their niche of building cheaper homes to target first time homeowners. In this scenario, they do not have the margin nor desire to spend resources on aspects other than the building of these homes and getting them on the market. I know it is up to the city to hold them to the standards necessary to insure that current residents and taxpayers in West Linn are not negatively impacted by this developent.

I appreciate your time Peter.

Sincerely,

Bill Maxwell

Timmco Insurance, Inc.
Wk: 503-288-8818
Fax: 503-288-8764

Design Development		$	1,894.00	3J
Construction Docs		$	5,484.00	3J
Survey		$	2,500.00	Estimate Compass
Construction				
	Demo	$	2,500.00	Estimate
	Erosion Cntrl	$	800.00	Estimate
	Traffic Cont	$	1,000.00	Estimate
	Curb	$	1,425.00	Estimate
	Sidewalk	$	3,150.00	Estimate
	Paving	$	10,157.00	Estimate
		$	19,032.00	
	Sub Total	$	28,910.00	
JT Smith @ 10%		$	2,891.00	JT Smith
	Gradn Total	$	31,801.00	

Spir, Peter

From: Gordon Munro [GordonMunro@KennedyJenks.com]
Sent: Wednesday, January 18, 2006 3:04 PM
To: Spir, Peter
Cc: Wright, Dennis
Subject: SUB-05-06

Hello Peter

Attached is the completeness check for the Tamarisk application. A hard copy will also be sent. Two issues that you may wish to look at from a planning standpoint are:

- The use of "eyebrows" in the streets. Engineering is okay with these.
- This will be a dead end line with a substantial amount of homes on it, and the extension would be outside the UGB.

Gordon

First American

First American Title Insurance Company of Oregon
222 SW Columbia Street, Suite 400
Portland, OR 97201
Phn - (503) 222-3651
Fax - (503) 790-7858

James Welch, Title Officer
Toll Free: (800) 929-3651
Direct: (503) 795-7669
Email: jwelch@firstam.com

First American Title Insurance Company of Oregon
4650 SW Griffith
Beaverton, OR 97005-8799

Order No.: 7031-662367
August 26, 2005

Attn: Amanda Walsh
Phone No.: (503) 641-7000 - Fax No.: (503) 627-0921
Email: ajwalsh@firstam.com

Preliminary Title Report

ALTA Owners Standard Coverage	Liability $	1,900,000.00	Premium $	3,455.00
ALTA Owners Extended Coverage	Liability $		Premium $	
ALTA Lenders Standard Coverage	Liability $		Premium $	
ALTA Lenders Extended Coverage	Liability $		Premium $	
Endorsement 100, 116 & 8.1			Premium $	50.00
Govt Service Charge			Cost $	50.00
Other			Cost $	

We are prepared to issue Title Insurance Policy or Policies in the form and amount shown above, insuring title to the following described land:

The land referred to in this report is described in Exhibit A attached hereto.

and as of August 16, 2005 at 8:00 a.m., title vested in:

Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004)

Subject to the exceptions, exclusions, and stipulations which are ordinarily part of such Policy form and the following:

1. Taxes for the fiscal year 2005-2006 a lien due, but not yet payable.

2. The assessment roll and the tax roll disclose that the premises herein described were specially assessed as Forest Land pursuant to O.R.S. 321.358 to 321.372. If the land becomes disqualified for the special assessment under the statute, an addition tax may be levied for the last five (5) or lesser number of years in which the land was subject to the special land assessment.

This report is for the exclusive use of the parties herein shown and is preliminary to the issuance of a title insurance policy and shall become void unless a policy is issued, and the full premium paid.

3. City liens, if any, of the City of West Linn.

   Note: There are no liens as of August 16, 2005. All outstanding utility and user fees are not liens and therefore are excluded from coverage.

4. Rights of the public and of governmental bodies in and to that portion of the premises herein described lying below the high water mark of Tate Creek.

5. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:

   Recording Information: September 11, 1902 in Book 74, Page 452

   (Affects Parcel III)

6. Easement, including terms and provisions contained therein:

   Recording Information: August 20, 1935 in Book 228, Page 486
   In Favor of: Portland General Electric Company, an Oregon Corporation
   For: Electrical transmission lines
   Affects: Over Parcel III

7. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.

   Recorded: December 18, 1967
   Recording No.: 67003687
   From: Zella M. Jones, a widow
   To: State of Oregon, by and through its State Highway Commission

   (Affects Parcel III)

8. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.

   Recorded: January 26, 1968
   Recording No.: 68001596
   From: Duane A. Zacher and Bonnie M. Zacher, husband and wife; Nellie Fordyce, a widow
   To: State of Oregon, by and through its State Highway Commission

   (Affects Parcel II)

9. Relinquishment of Access as contained in Deed in the Circuit Court/Superior Court, Clackamas County.

   Recorded: January 29, 1968
   Recording No.: 68001666
   From: Earl E. Loney and Lalah M. Loney, husband and wife
   To: State of Oregon, by and through its State Highway Commission

   (Affects Parcel II)

10. Covenants, conditions, restrictions and/or easements; but deleting any covenant, condition or restriction indicating a preference, limitation or discrimination based on race, color, religion, sex, handicap, family status, or national origin to the extent such covenants, conditions or restrictions violate Title 42, Section 3604(c), of the United States Codes:
    Recording Information: April 3, 1984 as Fee No. 84010842
    (Affects Parcel II)

11. In order to insure a transaction involving the herein named trust, we will need to be provided a Certification of Trust pursuant to ORS 128.232 through ORS 128.246.

12. The following pertain to Lender's Extended Coverage only:
    a. Parties in possession, or claiming to be in possession, other than the vestees shown herein.
    b. Statutory liens for labor and/or materials, including liens for contributions due to the State of Oregon for employment compensation and for workman's compensation, or any rights thereto, where no notice of such liens or rights appears of record.

- END OF EXCEPTIONS -

NOTE: This Preliminary Title Report does not include a search for Financing Statements filed in the Office of the Secretary of State, or in a county other than the county wherein the premises are situated, and no liability is assumed if a Financing Statement is filed in the Office of the County Clerk covering Timber on the premises wherein the lands are described other than by metes and bounds or under the rectangular survey system or by recorded lot and block.

NOTE: We find no judgments or United States Internal Revenue liens against Stearns Marnella Construction LLC and Edwin L. Fritchie

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $62.41
Map No.: 21E34A-00600
Property ID: 00400391
Tax Code No.: 003.002 (Affects Parcel I)

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $5.20
Map No.: 21E34A-00690
Property ID: 00400408
Tax Code No.: 003.002 (Affects Parcel II)

NOTE: Taxes for the year 2004-2005 PAID IN FULL
Tax Amount: $9.56
Map No.: 21E34A-00700
Property ID: 00400417
Tax Code No.: 003.002 (Affects Parcel III)

NOTE: According to the public record, the following deed(s) affecting the property herein described have been recorded within 12 months of the effective date of this report: Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077362 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L.

Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077363 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).
Bargain and Sale Deed recorded August 23, 2004 as Fee No. 2004-077365 from Edwin L. Fritchie and Gloria D. Fritchie to Edwin L. Fritchie, Trustee of the Edwin L. Fritchie Trust, and Gloria D. Fritchie, Trustee of the Gloria D. Fritchie Trust, as tenants in common (both Trusts dated August 18, 2004).

Situs Address as disclosed on Clackamas County Tax Roll:

Not Assigned, West Linn, OR 97023

THANK YOU FOR CHOOSING FIRST AMERICAN TITLE!
WE KNOW YOU HAVE A CHOICE!

RECORDING INFORMATION

Filing Address: **Clackamas County**
2051 Kaen Road
Oregon City, OR 97045

Recording Fees:
$ **5.00** per page
$ **10.00** per document (Public Land Corner Preservation Fund)
$ **11.00** per document (OLIS assessment & Taxation Fee)
$ **5.00** for each additional document title
$ **20.00** non-standard fee

cc: Stearns Marnella Construction LLC
cc: Edwin L. Fritchie
cc: Anthony Marnella, Stearns/Marnella Communities
18318 SE Abernethy Lane, Milwaukie, OR 97267

First American Title Insurance Company of Oregon

SCHEDULE OF EXCLUSIONS FROM COVERAGE

ALTA LOAN POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
   (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

ALTA OWNER'S POLICY (10/17/92)

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (a) to timely record the instrument of transfer; or
      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

SCHEDULE OF STANDARD EXCEPTIONS

The ALTA standard policy form will contain in Schedule B the following standard exceptions to coverage:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceeding by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records, unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose.

NOTE: A SPECIMEN COPY OF THE POLICY FORM (OR FORMS) WILL BE FURNISHED UPON REQUEST

TI 149 Rev. 5-99

Exhibit "A"

Real property in the County of Clackamas, State of Oregon, described as follows:

Parcel I

A tract of land in the Northeast quarter of Section 34, T. 2S., R. 1E., W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

Beginning at the Northwest corner of Tract 10 of the Subdivision of the J. D. Miller D.L.C. and South Half of James M. Moore D.L.C. in Township 2 South, Range 1 East of the Willamette Meridian, as shown on the map recorded in Clackamas County Deed Book 75, pages 250 to 253; thence South 89°34' East along the North line of said Tract 10 for a distance of 667.22 feet, more or less, to an iron pipe at the Northwest corner of that 20.87 acre tract deeded to Charles Shields, et ux by deed dated October 7, 1926; thence South 0°30' West along the West line of said 20.87 acre tract, 988.57 feet, more or less, to the Northeast corner of the tract described as Parcel II in the Deed to the State of Oregon by and through the State Highway Commission, recorded under Fee No. 68-1596; thence West along the North line of said State of Oregon parcel 300 feet, more or less, to an intersection with the Easterly line of the right of way acquired by said State of Oregon for use as a part of the East Portland Freeway (I-205); thence Northwesterly along said right of way line 545 feet, more or less, to its intersection with the West line of said Tract 10; thence North along the West line of said Tract 10 for a distance of 385 feet, more or less, to the Northwest corner thereof and the point of beginning.

Parcel II

A parcel of land lying in the James D. Miller, D.L.C. No. 56, Township 2 South, Range 1 East, W.M., in the City of West Linn, Clackamas County, State of Oregon, and being that property designated as Parcel 2 and described in that deed to the State of Oregon, by and through its State Highway Commission, recorded as Recorder's Fee No. 68-1596 Film Records of Clackamas County, containing 1.0 acre, more or less.

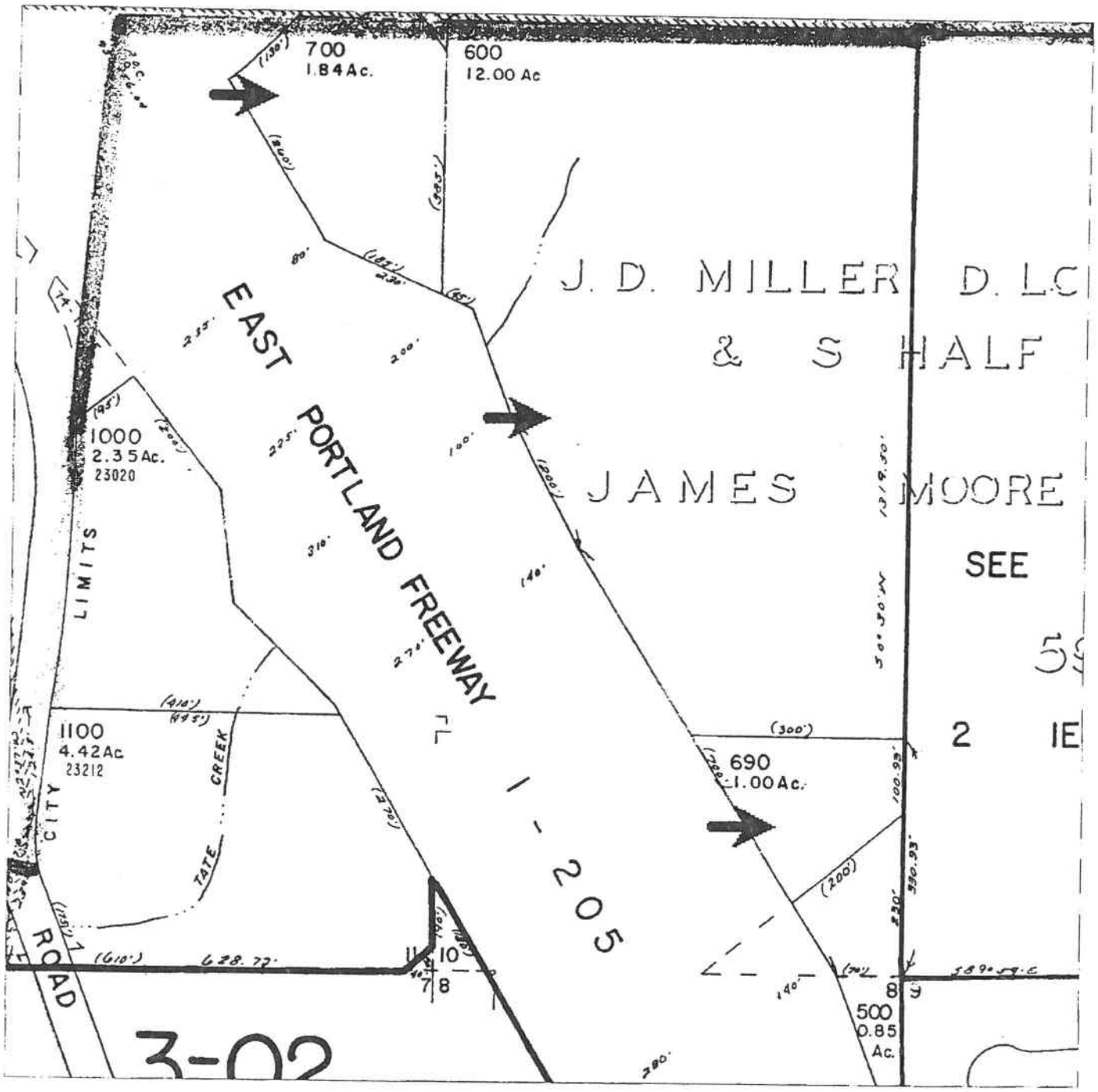
Parcel III

A portion of the J.D. Miller D.L.C. in T. 2S., R.IE. of the W.M., in the City of West Linn, Clackamas County, State of Oregon, described as follows:

That portion of Tract II, as shown on the Plat of the J.D. Miller D.L.C. lying Southeasterly of Woodbine Road and Northeasterly of the Tract conveyed to the State of Oregon as Parcel I, in deed recorded as Clackamas County Fee No. 67-3687. Also that portion of Tract 76, Rosemont Acres in Section 27, T. 2S., R.IE., of the W.M., lying Southerly of Woodbine Road and Westerly of the tract conveyed to the State of Oregon as Parcel III in Deed filed as Clackamas County Fee No. 67-3687.

Tax Parcel Number: 00400391 and 00400408 and 00400417

First American Title Insurance Company of Oregon
An assumed business name of TITLE INSURANCE COMPANY OF OREGON

This map is provided as a convenience in locating property
First American Title Insurance Company assumes no liability for any variations as may be disclosed by an actual survey

Reference Parcel Number 21E34A 00690