CITY OF MILWAUKIE
SPECIAL CITY COUNCIL MEETING
October 19, 2006

CALL TO ORDER

Mayor Bernard called the special meeting of the Milwaukie City Council to order at 6:07 p.m. in the City Hall Council Chambers. The following Councilors were present:

Council President Deborah Barnes	Joe Loomis
Carlotta Collette	Susan Stone

Staff present:

Mike Swanson, City Manager	Paul Shirey, Engineering Director
Gary Firestone, City Attorney	

PLEDGE OF ALLEGIANCE

Announcements

Mayor Bernard announced the appointment of Tom Traver to the Public Safety Advisory Committee as an at-large member and directed staff to prepare the appropriate resolution.

Discussion of Clackamas County Service District 1 Citizen Advisory Council (CAC) Recommendation to the Board of County Commissioners Regarding a Wastewater Treatment Strategic Plan

Mr. Swanson reported the purpose of this special meeting as stated in the notice was to discuss the Citizen Advisory Council (CAC) recommendation regarding sewage treatment options. The goal was to get Council direction on a recommendation that the City would eventually forward to the Board of County Commissioners (BCC). The Board would consider the recommended action of the CAC. He would open with comments, a brief history, his recommendation, CAC Chair Knapp's presentation of the recommendation, and public testimony.

This was a special meeting of the Council within the code, and he reviewed the process for setting the special meeting. On October 3, 2006, all five Council members called for this meeting. On October 10 the agenda was posted in public buildings and on the website and faxed to the media. On October 12 a legal notice was published for the first time in *The Oregonian* and for the second time on October 16. The staff report was hand-delivered to Council members and posted on the website. On October 17, 2006 the special meeting date and time were announced at a regular City Council session. The legal notice was published in the *Clackamas Review* on October 18, 2006.

Mr. Swanson said it was important to note that the City of Milwaukie's status in terms of wastewater treatment was that it was a wholesale customer of Clackamas County Service District #1 (CCSD1). It was not within the boundaries of the District and not part of the District. By virtue of the agreements entered

into in the 1970's, the wholesale agreement was currently on a month-by-month basis with a 180-day termination clause. The District boundaries were roughly North Clackamas County excluding most of Gladstone, Oregon City and West Linn who are within Tri-City Service District.

A little over a year ago the BCC approved the Clearwater project and executed agreements with a number of cities including the City of Milwaukie. The Clearwater proposal would have diverted the flows currently going to Kellogg Treatment Plant eventually to Tri-City, provided for the decommissioning of Kellogg Treatment Plant in 2012. Title would go to the City, and the proceeds of the sale would be shared 60% to the District and 40% to the City of Milwaukie. That was approved in September. In January the BCC acting as CCSD1 Board rescinded or took action to cancel the Clearwater agreements. At that time they created the CAC and appointed the first three members who were the chief petitioners in putting the issue of Clearwater on the ballot. They gave the general charge to the CAC to develop a wastewater treatment strategic plan for CCSD1. In February the process began and occupied eight months. During the initial phases there were several meetings each month of the full CAC as well as subcommittee meetings. His point was that there had been a lot of work that occupied a great deal of the summer. The CAC had a technical manager, Mr. Lang former Bureau of Environmental Services (BES) director. The CAC was also advised by HDR consulting. The packet contained HDR's executive summary and final report and Mr. Lang's final recommendation to the CAC.

At the time the BCC created the CAC it was challenged to include the stakeholders in the process. Mr. Swanson thought we, the stakeholders, were challenged to work with the process. He would give Mr. Knapp the opportunity to recount the CAC recommendation. Although some of the meetings were rough around the edges, they were very open. He felt both in the meetings and in one-on-one conversations with the CAC members that they were interested in hearing the City's position and what it was thinking. He felt the process was open and organized.

As the City began in the process he felt Milwaukie had two major interests. One was the removal of the Kellogg Treatment Plant from the riverfront and reclaiming the riverfront. The second interest was in cost effective and environmentally sound treatment of wastewater. The interest in removing the Kellogg Treatment Plant tended to complicate things. As the process wound through he added an additional interest that was to find a plan that could be implemented. There were probably many different ways to develop the strategic plan, but as time went by, Mr. Swanson became more interested in the idea of creating a plan that would come to fruition and not be put on the shelf.

Mr. Swanson's recommendation was that the City Council forward to the BCC the endorsement of the plan developed by the CAC with specific mention of Milwaukie's interest in the removal of the Kellogg Treatment Plant from the riverfront. That was one of the elements developed late in the process that made him interested in the CAC's plan. He reviewed issues and how he got to his proposal. The first issue was that this was the most costly of the options. When looking at it from the 30,000-foot level the numbers were pretty gross. He was not sure anyone knew the true difference and whether the magnitude of any difference between one option and another was as great as it showed now. No solution to this problem would be cheap because it was a matter of catching up on 20 years of deferred maintenance. The CAC recommendation envisioned a new plant. It was not a site-specific recommendation; the next step would be looking at a site planning process. According to Mr. Lang's characterization a

new plant would result in a facility with a full-design life span rather than ones now reaching their half design life. A new plant would logically be more expensive because it would have a longer design life that Mr. Swanson felt would likely justify the cost. The Kellogg Treatment Plant was aged and Tri-City was aging. A new plant would carry the District much farther than either of those plants therefore justifying the cost.

The new plant would require siting work. The positive part was that any plant location process that envisioned a new plant would give people a chance to do up front work on minimizing the impacts. Siting wastewater treatment plants was not easy nor was retrofitting existing plants because of the impacts. Siting a new plant would give people a chance to pick a location that did not impact residential neighborhoods. A new plant also allowed one to take advantage of design and technology that would restrict the impacts as much as possible to the property on which the plant existed. People have talked about the time involved in siting and how we really need to look at this as being much longer process. The Clearwater agreement envisioned removal of the Kellogg Treatment Plant by 2012. He was under no illusion that siting, designing, and constructing a new plant would be a quick process. If Clearwater had come to its conclusion, it would have been six years before the Kellogg Treatment Plant was decommissioned. This would probably take a bit longer, but it was not an easy process. Anyone who thought we would see the Kellogg Treatment Plant go in a matter of months was not reasonable. The time to site if there was support for this particular process and if communities got behind it could be achieved in a shorter time span. He was not as concerned about the time to site because he thought any option would take a long time. He felt the CAC recommendation carried some political advantages. The CAC did not talk about these. From his perspective this represented the first time he had seen this City and the unincorporated area to the south sit down and talk and envision the possibility of a partnership that would reap positive benefits. There were many things in common. A year ago when there was the issue of housing sex offenders in the motel just to the south the interests were the same. This was a giant step forward in beginning to develop some relationships.

In closing he said he had not begun this process happily. He was a Clearwater supporter and felt that plan would accomplish the City's identified goals. It was a disappointment when the BCC took the action it did. He remembered wondering at the first CAC meetings where on earth this thing would go, but by the third and fourth meetings he saw a group of determined individuals. Many thought the process would fall apart, but Mr. Swanson concluded he needed to at least communicate with the CAC. He was shown every courtesy, and he did not feel anything was disallowed or repressed. He saw part of the process as continuing to work with this group or be a part of it. He found the groundwork was already there, and it would be a seamless transition. He stood firmly with the CAC in supporting its recommendation and urged the City Council to carefully consider it. He hoped it would be the recommendation forwarded to the BCC and being a new era and relationship with some new partners.

- **Jim Knapp, 4401 SE Risley Avenue and Jeff Winner, 13456 SE Snowfire, Happy Valley**

Mr. Knapp was an Oak Grove resident and considered himself a Milwaukie neighbor. He was a cement mason, and many people knew him because he had worked on the houses, schools, and businesses. He was before the Council to explain the CAC recommendation that would go before the BCC and ask the City

of Milwaukie for its support. He appreciated how well the City worked with the CAC. They were all regular citizens just like the Council trying to do the best they could for the people they represented. The CAC appreciated Mr. Swanson's time and effort in his support for the group and working to understand the issues. One of the goals at this meeting was for the CAC to show it listened to the City of Milwaukie. He understood the City felt like it had been left out of the process of deciding the future of its wastewater treatment, and the CAC heard that. They wanted Milwaukie to join CCSD1. Milwaukie said it wanted to take the plant off the riverfront and find a regional solution. The CAC wanted the same thing.

The recommendation had three components: upgrade the Kellogg Treatment Plant for clean, efficient treatment until a new plant came on line, and build a new state-of-the-art facility in the District that would handle treatment needs for generations to come. The intent was to have the new plant built as quickly as humanly possible; however, any decision made on a new facility needed to include the City of Milwaukie. The third component was that when the CAC made its recommendation to the BCC it included language meant to give flexibility to keep the Kellogg Treatment Plant online until the new facility was fully operational. He understood people interpreted that effort to build in some flexibility was a way of trying to keep the Kellogg Treatment Plant open indefinitely. That was not the CAC's recommendation. If needed, the CAC would amend its recommendation to be clearer. The recommendation was to close the Kellogg Treatment Plant and remove it from the riverfront as soon as possible after a new plant was on line. There was a lot of discussion in the recommendation of if and when. The CAC concluded this plan was also the City's. The cooperation of the community and the region was very important. There was Oak Lodge to the south, and they will likely be represented at future meetings.

Councilor Barnes heard Mr. Knapp say the new plant needed to include the District. Would it also include Happy Valley? Was it the intent or hope that the new facility would be built in Milwaukie?

Mr. Knapp looked at several ideas, and Happy Valley was a partner in CCSD1. Milwaukie and the unincorporated areas were all part of this group and needed to be brought into the discussion to accomplish what was in the recommendation.

Councilor Barnes said a lot of people in Milwaukie asked that since there was nothing specific in the recommendation and only referred to a new plant that was to be built. Apparently it was not at the point where there was a recommendation for the site, but a lot of Milwaukie residents wanted to know if the new plant would be in Milwaukie. Would that be the recommendation from the CAC?

Mr. Knapp replied the recommendation was for WES staff to look immediately for a new site. That was a group effort of the partners of the plant including Milwaukie. Since Milwaukie was a wholesale customer, it was included. The recommendation was not site specific.

Mayor Bernard understood that Milwaukie might be considered a potential site. The recommendation said site would be in District, but Milwaukie was not currently part of the District.

Mr. Knapp replied part of the change was that the CAC was asking Milwaukie to be part of the District and come to the table.

Councilor Barnes understood the CAC would be willing to amend the wording about "if and when" to go forward. She would like to see that change.

Councilor Collette had major concerns with the recommendation. The first was the proposal to upgrade the Kellogg Treatment Plant in order to handle 10 mgd.

Mr. Knapp replied right now the Plant was doing 8 mgd. During the upgrade to keep capacity there were two options. The first was to keep Kellogg Treatment Plant at 8 mgd and divert some flow to Tri-City. The Plant could definitely go to 8 mgd, and membrane filtration could raise it a bit. Right now people pay $500,000 annually to the diversion line. Milwaukie pays it, and the District pays it.

Councilor Collette's concern was that if money were invested in upgrading the Plant then the incentive to close it would diminish. She requested as part of the Council's agreeing to support the CAC was that the Plant not be upgraded and expanded to 10 mgd and keep it to 8 mgd with the diversion to Tri-City.

Mr. Knapp replied that was the original recommendation. Use the diversion and hold the Kellogg Treatment Plant where it was with improved technology.

Councilor Collette understood it could be made more efficient, but she did not want it made more efficient. She wanted to see the Plant off the river as quickly as possible. Any money invested in the interim would be money that was harder to say good-bye to when it was time to close the Plant.

Mr. Winner added there were several elements to keep in mind. There was a relatively new permit with rigorous increased water quality standards that are subject to renewal in 2009. He did not think a recommendation should be created that diverted them from some of the overarching goals one of which was environmental stewardship and making sure that each option thoroughly complied with water quality regulations. There might not be an expansion per se, but there may be drivers that require additional enhancement work at that Plant in order to meet regulatory compliance.

Mr. Knapp added that the City of Milwaukie would be sitting with the other members to make those recommendations.

Councilor Collette assumed it would take a vote of the people to join CCSD1.

Mr. Firestone responded that was correct. If the City were to join CCSD1 it would be subject to an election in the City. That would have to be preceded by action of the Council.

Councilor Collette understood it would be some time before Milwaukie could become a member of CCSD1 in order to have a voice in the process.

Mr. Firestone added there were organizational options other than having the City included as part of the existing entity.

Mayor Bernard understood part of the reason the diversion was taking place was for ammonia treatment.

Councilor Collette thought capacity would have to be reduced to meet new ammonia standards.

Mr. Knapp said that was being addressed in the technical part of the recommendation, and it was in draft form right now. Milwaukie and the other partners would be sitting on a board making these decisions because Milwaukie was 40% of the Plant capacity.

Councilor Stone asked for a comparison about the proposed recommendation versus the Clearwater proposal that the Council voted on a year ago. Was this a more cost effective recommendation the Clearwater or were they roughly the same?

Mr. Knapp did not have the Clearwater report with him at this meeting, but he could bring back that information. The Clearwater recommendation had no governance. The Clearwater program addressed capacity for plants in the area, but he did not have the totals in front of him. The big thing was that the Plant would go away, and there would be two force mains down the Trolley Trail.

Councilor Stone would like to see a plant that was in regulatory compliance and cost effective for the ratepayers. Those were the two things motivating this project plus taking care of the additional flow from growth in the region. Was governance impossible with the Clearwater decision?

Mr. Knapp replied the CAC was not looking at that in the study and was told to stay within the District. He could not talk about governance at this point.

Councilor Loomis was having a hard time with the numbers. From his standpoint he was never angry with the petitioners although he was disappointed. He supported citizen involvement. He was never upset. He supported what the citizens did and what the BCC did. Clearwater was a hard decision for him as a Councilor. He did not have the expertise and did not want to spend the time to check out the numbers. He was looking at it from the perspective of representing the citizens of Milwaukie. He was back and forth on whether to vote for it because of the increase in sewer rates to pay for the City's portion. Finally in the long run he thought regionally and for the City of Milwaukie it was the best decision, so he supported it. He was disappointed that it went away. He never questioned the numbers and had faith in people until he saw differently. As a responsibility as an elected official it was important to support other government agencies and not to bad-mouth them. Otherwise it just fueled distrust of government. Political figures were really the source of distrust in government. It bleeds down to staff who do a fine job but were blamed for all of the misgivings. The people who were doing the work were doing as directed. It came from the leaders and elected officials. For him to support this, he would have to be able to look at people and say this expense was justified. He went back to the objective which was that the region was nearing capacity, and there was tremendous growth. The projections were huge, so this needed to be addressed. The City took a lot of criticism for doing things regionally, but he saw this as a regional issue and a regional solution. If governance was the key then it needed to be included. It was important to the CAC and Milwaukie. Clearwater may be the best option. He thought the best he could do at this point until he heard other public testimony was to support Clearwater. If that was not going to work the objective was to address the issue. If there were another way that everyone could agree on he would support that. The costs did have to be close. It had to be done. Clearwater might not get done for political reasons or people may not support it. People needed to look at the governance part with that. If it will not, then he would look at another option because the problem needed to be addressed. His priority was cost effective treatment, environmentally sound, and to some extent removal of the Kellogg Treatment Plant from the riverfront. He thought, though, that the numbers proved it should be gone. He would be open-minded and appreciated everyone's work.

Mr. Knapp replied all of the alternatives were considered at 50,000 feet including Clearwater. It was the option called D1. All of the options needed to be scrutinized because the numbers were only an estimate. Until the implementation phase kicked in to a planning engineers study, those numbers were not known. He thought a lot of people were misinterpreting Clearwater. The unincorporated areas which included Happy Valley and that area were not included in the discussion. The CPOs were left out of the Clearwater discussion.

The citizens had no opportunity for give and take. Milwaukie as a wholesale customer would have just gone to the Tri-City Plant rebuilt on Clackamette Cove. That was where he saw a number of faults, and people did not realize what all of the numbers were about. Careful scrutiny of what was going on and who was getting what was an adventure, so he would be happy to explain that after this session if there were more questions.

Councilor Collette said Mr. Firestone referred to a structure other than Milwaukie just joining CCSD1. She understood the CAC was not able to include that review in the process. She asked if the CAC would be willing to include another form of authority that would include any city that wanted to participate in the new plan. Would the CAC be willing to include language to that effect in its recommendation?

Mr. Knapp said the CAC would be willing to do so. The City Council recommendation would be entertained.

- **Greg Chaimov**

The Island Station Neighborhood was the host of the Kellogg Treatment Plant. Unlike a year ago when he spoke enthusiastically to the BCC about the Clearwater proposal, he has come to praise Mr. Knapp. A year ago he appeared with Councilor Collette and Rep. Carolyn Tomei asking the BCC to approve the project which it did. If the political landscape were different he might be entertaining a different suggestion at this meeting. It was to forward to the BCC the CAC recommendation as clarified by Mr. Knapp. Over the course of the last year while going to the CAC and meeting frequently with Mr. Knapp he came to see that the citizens involved in the CAC process were as sincere and dedicated and determined as any public servants ever given a mission to carry out. If the BCC adopts the Clearwater alternative or something like it and not the CAC recommendation as refined by Mr. Knapp, then the same sincerity, determination, and energy will be used to place the matter on the ballot and defeat the recommendation. The parties would be back several more months down the road from getting a cost-effective solution and the Plant off the riverfront.

- **Jerry Foy, Oak Lodge**

His intent was to fully support the CAC's recommendation with caveats. He was an Oak Lodge Sanitary District Board member at the time that the Clearwater project was going through its process. He was the only one on the Board that supported Clearwater. At the same time he was a member of the master plan advisory committee that Oak Lodge just completed. He attended most of the CCSD1 advisory committee meetings, so he felt he had a good background on this topic. He would like to see whoever ends up with the authority to begin implement the plan immediately. He saw the first step as locating a site. That would take some time because of the number of issues and amount of public comment and involvement. At the same time he would like to see a site found that could meet the Clearwater requirements. He wanted Oak Lodge, Milwaukie, Happy Valley, Damascus, unincorporated Clackamas County, and perhaps even Tri-City build one plant to accommodate the entire region. He has seen the estimated rates for Oak Lodge and CCSD1 that were built on conceptual plans, so they were not entirely accurate yet. The difference could be up to 30% and would be refined as plans were completed. If you incorporated those areas and got that total ratepayer base he believed the rates would be more acceptable. There were rates projected for Clearwater, and he was not sure how those would

stand up. Anyone that drove McLoughlin Boulevard could see the riverfront and the potential. There was a huge difference that he sees the three or four times a day he drives through Milwaukie. He sympathized with the neighborhood because of the odor and aesthetics; the odor could be overpowering. To get the Plant off the riverfront was extremely important not only for the citizens of Milwaukie but also as a storefront to Clackamas County. It was important to the entire County. He did not care where the new plant might be sited. If there were advantages to having it in Milwaukie, then he thought the concept could be sold to the citizens. In today's environment there were designs for sewer plants that he defied anyone to identify as a sewer plant. They can literally be hidden. They did not look like sewer plants, smell like sewer plants, or make any noise. He thought that issue could be sold to the citizens of Milwaukie. He urged getting it started and not wait another 4 to 5 years. Oak Lodge, Tri-City, and the Kellogg Treatment Plants all had problems, and this was an opportunity.

- **Paul Savas, Oak Lodge**

Mr. Savas was the Chair of the Oak Lodge Sanitary District but did not speak on behalf of the District. He had attended a lot of meetings and was deeply involved. As a Clackamas County citizen he saw the elements of the dynamics in Milwaukie with the preservation of the waterfront and development potential. Tri-City may be through half its lifecycle, and his concern was that the investment would be huge. If there was development at The Cove, then he saw a problem. The numbers were very big right now and have at least doubled for environmental and inflationary reasons. What they knew as Clearwater a year ago had really changed. He attended all the CAC meetings and many others. He was very concerned about putting a plant in the floodplain, and events will be more dynamic with global warming. He was concerned about putting an investment of close to $1 billion at Clearwater in a floodplain. He supported the CAC recommendation because it would not likely be sited on a waterfront. As an Oak Lodge citizen he was looking for a recommendation he could support. He felt Milwaukie could play a key role in the decision. Mr. Chalmov had a concern that if the BCC did reject the CAC recommendation then there might be another petition, and this could be tied up for years. He endorsed the CAC's recommendation and suggested everyone taking a leadership role in moving forward on this Clackamas County wastewater treatment problem. The Oak Lodge Plant was in the floodplain, but the facility itself was not flooded in 1996.

- **Dave Aschenbrenner, Milwaukie**

He heard a lot of good issues to consider. This was a 30,000-foot look, and that was the CAC's charge. He would support the recommendation with a few changes and look at governance issue from a regional perspective and not just the CAC or Happy Valley or Milwaukie. He thought the recommendation should go forward with idea of building a regional plant and determine the players. He felt the recommendation should also refer to closing the Kellogg Treatment Plant as soon as possible, build a new plant to serve the region, and a regional governance board to oversee the operation. Milwaukie did not have any say in what happened because it was a wholesale customer, and the citizens did not get to vote on any of this. Others may want to join in like Oak Lodge if there were a regional solution to the big problem that was being avoided. He suggested the Council write a letter that was generally in agreement with the CAC with the addition of some of his comments.

Mr. Swanson replied Councilor Collette made point that she wanted to avoid an investment in the Kellogg Treatment Plant that would lead to a tendency to retain

the plant. Clearwater was reduced to a series of agreements that spelled out the different steps with each of the signatories. For example, Milwaukie and Happy Valley did not sign the same agreements because Milwaukie had the Kellogg Treatment Plant issue. One of the things the City needed to be cognizant of was to come up with an agreement about relationships and expectations. In order to implement the CAC recommendation and avoid the possibility of capacity problems there would need to be some decisions that would make minor physical changes. As Mr. Swanson understood the CAC recommendation it was not site specific but rather a recommendation to move to the next step which was a site selection process. He thought Milwaukie should make certain in any agreement that it was a player in the process. A new plant site has yet to be determined, and the important thing at this point was for Milwaukie to be involved in the process leading toward the decision. Councilor Loomis commented that he would have to be able to justify the expense. Hopefully the next step would include a much closer look at the cost estimates. A new plant would carry with it certain benefits including a life that would surpass the two plants currently serving the east side of the river. The government structure needed to be included into an agreement, and Milwaukie would expect that all of the various possibilities would be analyzed. He did not want Milwaukie to be in the position of having only a month-to-month wholesale agreement. He thought the original Clearwater proposal was a solution, but mid-way through the process he added another goal. That goal was to come up with a plan that could actually be implemented. He was not certain a Clearwater-like solution could politically be implemented. Both Mr. Foy and Mr. Savas made an important point that was that this needed to move forward. At this point it was the BCC's responsibility because it was the governing body of both service districts. He felt North Clackamas County was facing a critical point in time. The systems had served the area well, but he was not sure that they would continue to do so much longer. Studies have been going on for decades, and he thought leadership demanded that everything be done to move it forward. The message was that it was time for action because without it there would not be much of a legacy. It was a problem ripe for being solved.

- **Rep. Carolyn Tomei, Milwaukie**

She has lived in Milwaukie for 40 years, and she looked back and asked how could that City Council have made that decision to use the beautiful waterfront for a sewage treatment plant – for a toilet. She was hearing about legacy and a problem that will not go away. This was not just Milwaukie's problem. It was the region's problem. Why was Milwaukie taking this on again? Councilor Stone and Councilor Loomis asked about cost. Rep. Tomei only attended one of the meetings, and the consultants talked about costs. The idea of a separate plant was the most expensive. This could cost a lot more. Why was it important that the City Council come up with a recommendation at this meeting or ever?

Mr. Swanson replied the BCC would have hearings on October 26 and November 2. He was not certain when the Board would make a decision. The Council could take the matter under consideration and ask people to submit written testimony. He thought at this time the latest possible time would be before the November meeting. He felt on an important issue such as this that not weighing in was a default position. It was important if the City Council was going to be part of the solution and say 'this is what I believe.' He would not want to fail to provide input to the BCC otherwise it would indicate a willingness to accept whatever the Board decided to do. He would rather attempt to influence the decision.

Rep. Tomei was surprised at Mr. Chaimov's support of the recommendation. She lived next door to the Kellogg Treatment Plant. Councilor Barnes made a good point. It was common knowledge that people were talking about the North Industrial Area. Did the Council want people in 30 to 40 years to ask why the decision was made and why Milwaukie was sold down the drain again? Think about your children and grandchildren asking that question. She lived next door to that Plant and walked and drove by it as did Mr. Foy. She frequently called and complained about the odor, but she would rather live next door to that plant for the rest of her life than site another plant in the North Industrial Area. She did not think that would be the Council's Sophie's Choice. She was appalled that the Council was being put in this position. She assumed the City Council had the letter from Lisa Batey and urged that they read it before making a decision. She did not think the Council needed to say it approved or disapproved of the CAC recommendation. Her opinion was that it was a region wide problem and not just Milwaukie's. This sounded like blackmail. She was hearing if the City Council did not go along with the CAC's recommendation then the Plant would stay in Milwaukie because they would not support moving the Plant. If that was true then it should be on the table. She did not think this needed to be a Sophie's Choice for the City Council. It was not a matter of choosing between two bad alternatives. She had hoped not to speak because this was an emotional issue for her. The City Council needed to think about what was best for Milwaukie. Happy Valley Mayor Grant said there was no way a plant would go east of I-205. If the CAC recommendation were supported the only option for a new plant was in the North Industrial Area.

Councilor Loomis had thought about the Council 40 years ago that made the decision to site the Kellogg Treatment Plant on the river. To them it was the right decision. He had considered that and was still thinking about it.

Rep. Tomei added there were good jobs and good companies in the North Industrial Area.

Councilor Stone had a question regarding the cost and was probably one that no one could answer. There was a comment that the Clearwater costs had increased over the past year. She knew when the CAC was looking at different options that they were within several millions of dollars of each other. It was going to be expensive whatever way it went. All the ratepayers in the region needed to be considered. She was concerned when she heard comments that if Clearwater were chosen that politically it would not happen. Ultimately the BCC would give its stamp of approval to any recommendation it saw fit. Why would they not go along with a recommendation that made sense for the region? What was the political stumbling block? People hear a lot of things about the recommendation, and she wanted everything out on the table in order to go forward with a good recommendation for the region and not just Milwaukie.

Mr. Swanson said it was important to recognize this was an attempt to predict the future as the City Council in the 1960s did when it made the decision to allow the Kellogg Treatment Plant on the river. None had the power to predict but tried to apply the available knowledge to the question and make the best decision. When he said he did not know if Clearwater would be implemented it was because he believed the original petitioners would go back and put it on the ballot. He believed there was a better than even chance that they would prevail. He did believe it was blackmail. He believed it was citizens exercising their rights to refer the question. That was one reason why it was probably not politically feasible. Secondly, he was not so sure all the cities saw a commonality of interests. The Clearwater proposal was not signed by the City of West Linn

whose position on growth likely make it suspect of Damascus and Happy Valley. He was not sure West Linn would enter into an agreement. He understood Gladstone was reconsidering Clearwater before the chief petitioners questioned Clearwater. He thought it was questionable that all the parties would participate. It was important to move forward with a solution that had a chance of being implemented. This was his guess based on what he knew and understood there were those who did not agree with him. He doubted Clearwater could be implemented quickly.

Mr. Firestone understood that Oregon City's position was less clear than it was. Part of the Clearwater agreement involved not actually a commitment from Oregon City to allow the Tri-City improvement, but it would make reasonable efforts toward that end. The City of Oregon City would ultimately have to make a land use decision, and it was now less clear whether the land use approval would be forthcoming.

Councilor Stone said this was a regional issue and not just Milwaukie's. Milwaukie has the treatment plant and has had it for 30 years. She felt everyone agreed that the Kellogg Treatment Plant should be off the riverfront for anyone who wanted to enjoy a beautiful regional park. She wanted to see everyone come to the table including West Linn, Gladstone, Oregon City, and Happy Valley. If their toilets were flushing and draining into our pipes then they needed to be a part of this. It should not be an option for them not to be. It needed to be figured out for every ratepayer what the best solution was economically and in terms of compliance with environmental regulations. There needed to be a plant that did both things. It needed to be efficient and timely. She thought the Clearwater study was excellent and that the CAC process was an excellent process. There was a lot of input from DHR and other companies that looked at all the recommendations. She was now seeing they were not perfect in terms of solutions being thrown out on the table. She saw the CAC recommendation and the Clearwater recommendation. She saw a third option that was going to the BCC and saying there were two solutions and talking about merging them and finding out to have governance and how everyone can have a seat at the table and be represented. She thought that was extremely important for everybody. It was not a good situation to be a wholesale customer and go month-to-month and know that you plant could be shut down in six months if that was what was decided. She recommended not necessarily agreeing tonight to do any one particular recommendation that was given to the City Council as a choice. She recommended a third possibility of taking the best pieces of both of those and putting them together and drafting a letter to the BCC in support of that.

Councilor Barnes agreed this was a regional government issue and that Milwaukie was one of many entities that needed to be at the table. She was taken aback by reading the Happy Valley Mayor's comments in the paper today. Unfortunately that area was part of the problem. The growth in Happy Valley and Damascus was harming wastewater treatment and the school system. New growth must bear its share of the costs. Milwaukie had done more than its fair share of hand wringing in this because it seemed like Milwaukie was carrying the emotional toll. She agreed there was a third solution. There needed to be something in writing saying that if there were a new plant that it would be built east of I-205. She would be happy to talk with the Happy Valley Mayor about opening his downtown core area to a new facility.

Councilor Loomis agreed this was a regional problem, and there needed to be governance. The solution needed to be found together.

Councilor Collette had a better understanding of the issues that drove the CCSD1 ratepayers to revolt. She understood that deals were being made to which they were not a party. This could be portrayed as a Sophie's Choice, and the City of Milwaukie was being asked to trust a process that had given it no reason to do so. Until recently no respect was shown in public. There was handshaking and private discussions that said Milwaukie was a partner, but that did not come across at the meetings. At the meetings members of the CAC said that Milwaukie would try to hold up the process, etc. Milwaukie needed to make a decision because everyone knew the BCC would throw out the CAC recommendation without support. Until Rep. Tomei spoke Councilor Collette was willing to give that support with caveats, but she found herself agreeing with Councilor Stone. She felt the City needed to be creative in how it addressed the decision, and the CAC made governance the issue. It was now the issue everyone needed to address. The CAC did not go for the cost-effective option, and it did not go for the public input survey solution. It went with the governance solution. She did not feel the City of Milwaukie should support any one direction at this point. She felt the City should go to the Board and say there was probably a lot of merit in the CAC's recommendation, but a look needed to be taken at a regional governance structure. That needed to be put back on the BCC to work with anyone who flushed their toilets and paid for it in the area a right to have a role in the decision making. We were all affected. While she thought the CAC did a huge amount of work and that the recommendation was a big first step, she believed it was just a first step. Milwaukie needed to be an equal partner in the process. Probably the best way to be partners was to go to the BCC and say this is a good first step but more needed to be done. The City could not endorse the CAC recommendation without those changes.

Councilor Loomis commented he did not believe it was fair to characterize the CAC. At times it was reacting to things that the City brought forward. They were always open and fair to Milwaukie.

Mayor Bernard listened and felt all of the comments were what CAC was requesting of the City. He thought a letter with Mr. Swanson's suggestions plus some caveats was appropriate. He was interested in the CAC recommendation but would not go a step further without all the cities and unincorporated areas having an opportunity to sit down and talk about the solution. The Clearwater process was not collaborative, and now was the time to be collaborative. Everyone had the same problems. Tri-City was headed for financial disaster. Oak Lodge would have a tremendous rate increase. One of the reasons for Clearwater was to help support the financial difficulties they saw of maintaining and expanding the plant to a point that it could serve Damascus and Happy Valley. He agreed that everyone needed to be open about the siting of a new plant and the impact on the neighborhood in the future. There were areas in the urban growth boundary (UGB) that were near I-205 that he might ask be considered and include annexation. Everyone had the same problem and looking for the same outcome which was regional partnerships. He wanted the letter to the BCC to state that everyone needed to have the option of being at the table. It needed to be cost effective and economically sound. He discussed the option of purple pipe which was water pumped back to new development for irrigation. There was also an opportunity with new plants for a higher level of water outflow. He would further insist that the Kellogg Treatment Plant goes away. All shareholders would have to be at the table in a district-wide process. He toured plants in the Seattle area and realized that technology had come a long way and that the treatment facilities were not even identifiable as such. Finally if a project included Happy Valley, unincorporated area, Damascus,

Milwaukie, Oak Lodge, and Tri-City the cost would be spread over many users. He asked if the City Council wanted Mr. Swanson to prepare a letter in support of the CAC's decision if there were a regional process to look at wastewater treatment that included all the affected cities.

Councilor Barnes said Milwaukie should be on the record and that it should be clear that Milwaukie wanted a regional decision.

Councilor Stone thought that the CAC recommendation had merit as did the Clearwater recommendation. Like so many things when solving a problem there were various solutions. There were some things about each that were good, but she did not like them separately. That was how she was seeing this. If they were merged and made sure it was hammered home to the BCC that there absolutely had to be a seat at the governance table that the BCC needed to immediately create that everyone who flushed a toilet was represented that we have that kind of representation and would come up with a better model that would be cost effective for all the ratepayers in the region as well as meet all the environmental regulations that were coming down the road. That was what she wanted to see in the letter. She wanted specific emphasis on getting that board of governance established.

Councilor Barnes wanted to make sure that any new facility be explored outside the City of Milwaukie.

Councilor Stone said it was a regional problem that should not just fall on the City of Milwaukie.

Councilor Barnes said everyone should be at the table discussing it. Her representation was still for this City. She wanted Milwaukie to be the last on the list of places where the next plant would go.

Councilor Stone added that Milwaukie had hosted the party long enough. She made her decision by studying all the options and facts, and she would decide based on those facts in front of her. She was not saying she would throw out any option to relocate a facility in Milwaukie, but she had not heard about any other locations. She wanted to hear everything. She wanted numbers and the facts.

Councilor Collette wanted to make sure that wherever the facility was sited that the community would be deeply involved with the design and would be rewarded for hosting such a facility. It could be invisible and impact free, but it still impacted a community even if by perception. "Old Stinky" has not been that bad for some time, yet people think of Milwaukie as the place you drive through and smell "Old Stinky." A perfect plant could be sited, but the perception would be that it was still a sewage treatment plant. She felt the host community should be well rewarded, and it had to be deeply involved in the design of the facility. It had to be a plant that was technologically state-of-the-art. The CAC was going to a place of high quality with a smaller footprint and as environmentally sustainable as possible. She agreed with Councilor Stone that maybe the City should not be sending a letter to the BCC saying the City Council supported the CAC recommendation. It may send a letter recognizing the CAC's efforts and the merits of its recommendation, but Milwaukie wanted to see the other issues considered. For her those included not upgrading the Kellogg Treatment Plant, not investing more money in expanding or upgrading it, the formation of a broad authority that represented anyone who wanted to be represented with decisions being made by a super majority so that no one group had more strength on the board than others, and forming a siting committee as soon as possible to determine if Tri-City can be the location and if not where. She thought this all

needed to happen quickly. Was there a way to form this board without everyone in the County voting? More representation was a plus for everyone.

Mr. Knapp brought a recommendation and asked for support from Milwaukie. The dialogue was open with the City, and he wanted it to remain so. The CAC included all members of CCSD1 including Happy Valley, Milwaukie, and now Oak Lodge. Discussion of the issues in a public session would be the first order of business. He was asking for a recommendation to look at the options. He thought there was enough flexibility that Milwaukie could be included. This was an open discussion that needed to be included, and he asked for the Council's support of the recommendation. There were a lot of unanswered questions. The CAC was told to stay within the confines of the District. It would like to reach out to Tri-City, and there were regional meetings with the 3 cities. Some chose not to. The CAC asked Damascus who sent a representative who did not wish to participate. The same for Oak Lodge. He asked for a recommendation from the Milwaukie City Council to move forward in order to partner in finding the answers. Treatment plants were built on rivers mostly because they were the lowest point of gravity. Other plants have been moved and disguised, so those concerns could be addressed. There was not much time, and it was important to get moving. He would call a meeting of Milwaukie, the CAC, and Oak Lodge as soon as possible to discuss these matters. The recommendation was that Milwaukie write a letter of acceptance to move forward. He urged the Council with its caveats and questions prepare a letter. The CAC was not allowed to discuss governance. It was important to come to an understanding that it was important to push this effort forward. He invited the Tri-City group to participate, like the caveats, and wanted to see the number. It was correct that this was the most expensive option, but the costs would not be known until the next engineer's estimate. Membrane filtration met the water quality that everyone wanted to see. To move forward he asked the Milwaukie City Council to send the CAC a letter of support.

Councilor Stone did not think anyone did not wish to support the CAC. The issue was to have a seat at the table and making sure there was governance.

Mayor Bernard thought Council was willing to send a letter that the CAC did a great job. The option might be one the City of Milwaukie would consider should there be a better picture. He would want the subsequent looks to include others in the region including Damascus, Happy Valley, Milwaukie, Tri-City and possibly Oak Lodge.

Councilor Loomis wanted to continue to work with the CAC to come up with a solution. He thought it was close. This needed to be implemented, and there needed to be a solution with others in the region. We are almost there, and the solution was somewhere in the middle.

Councilor Barnes asked if the City would write a letter asking the BCC to hold off on its final decision with the caveat that the region be given time to work together as a team to identify a solution.

Councilor Loomis said the CAC should be a part of that because they did the work and had a lot of knowledge.

Councilor Collette thought now the question was how to work together as a region. She thought Milwaukie was supportive of the steps so far. The City was at the table, and there needed to be others to move forward as quickly as possible. She suspected everyone was wincing because they had no place at the table. She was comfortable sending a letter saying give everyone a chance

to work on the recommendation and not necessarily saying it wanted a new recommendation. The regional solution was very close.

Mayor Bernard understood the Council was not necessarily supporting any of the options but supported the recommendation for a regional solution. Under the month-to-month agreement there was no guaranteed wastewater treatment. Milwaukie needed to assure its ratepayers that service would be there. This was a matter of level 4 or 5 water that could be used for irrigation, and currently Tri-City is not at that point.

It was moved by Councilor Stone and seconded by Mayor Bernard that the Council direct City Manager Mike Swanson to draft a letter to the BCC that spoke to continuing to work with the CAC to find a regional solution for wastewater treatment that merged elements of the Clearwater and CAC recommendations, that endorses establishing a regional board of governance and a site-finding committee in an effort to find a solution that best serves the ratepayers in the region and addressed environmental regulations.

Councilor Barnes wanted the motion to state that the City of Milwaukie did not want the BCC to make its final decision until the governance group had met.

Councilor Stone and **Mayor Bernard** accepted the friendly amendment.

Motion passed unanimously. [5:0]

It was moved by Councilor Barnes and seconded by Councilor Collette to adjourn the special session. Motion passed unanimously. [5:0]

Mayor Bernard adjourned the meeting at 8:09 p.m.

Pat DuVal

Pat DuVal, Recorder

AGENDA

MILWAUKIE CITY COUNCIL
OCTOBER 19, 2006

MILWAUKIE CITY HALL **SPECIAL MEETING**
Council Chambers
10722 SE Main Street

SPECIAL SESSION – 6:00 p.m.

I. CALL TO ORDER
Pledge of Allegiance

2. Discussion of Clackamas County Service District 1 Citizen Advisory Council (CAC) Recommendation to the Board of County Commissioners Regarding a Wastewater Treatment Strategic Plan

3. ADJOURNMENT

Public Information

- This meeting has been called by the Mayor and four City Councilors pursuant to §20, Milwaukie Charter of 1975 and §2.04.080, Milwaukie Municipal Code.

- Executive Session: The Milwaukie City Council may meet in executive session immediately following adjournment pursuant to ORS 192.660(2). All discussions are confidential and those present may disclose nothing from the Session. Representatives of the news media are allowed to attend Executive Sessions as provided by ORS 192.660(3) but must not disclose any information discussed. No Executive Session may be held for the purpose of taking any final action or making any final decision. Executive Sessions are closed to the public.

- For assistance/service per the Americans with Disabilities Act (ADA), please dial TDD 503.786.7555

- The Council requests that all pagers and cell phones be either set on silent mode or turned off during the meeting.

CITY OF MILWAUKIE

TO: **Mayor and City Council**

FROM: **Mike Swanson, City Manager**

DATE: **October 16, 2006**

RE: **Recommendation on Clackamas County Service District No. 1 (CCSD1) Wastewater Strategic Plan**

ACTION REQUESTED

The action requested is Council direction on a recommendation regarding a CCSD1 wastewater strategic plan.

BACKGROUND

On January 12, 2006 the Clackamas County Board of County Commissioners (BCC), acting in its capacity as the governing board of CCSD1, created the Citizen Advisory Council (CAC). The BCC further charged the CAC "to review, advise, and make recommendations to the District Board regarding the development of a strategic plan for the location and financing of wastewater treatment facilities of the District by September 30, 2006. All viable alternatives will be considered from the standpoint of efficiency, effectiveness, cost and practicality."[1]

The CAC began work in February 2006 assisted by contract technical staff, HDR Engineering Consultants, and Clackamas County Water Environment Services (WES) staff. Since February 2006 the CAC has held at least two monthly public hearings as well as individual outreach meetings.[2] Representatives of the CAC also met with the Council during a Council work session, and they also met with Island Station representatives. I have met frequently with CAC representatives throughout its process. The CAC followed a planned process that included the

[1] Creation of the CAC and the charge are set forth in BCC Board Order 2006-06. The "District Board" is the BCC sitting as the governing body of CCSD1.

[2] As the deadline for submission of its report approached, the CAC conducted two or more meetings each week to seek public input and to discuss issues leading to a final decision.

development of criteria, alternatives to be considered, and operating assumptions.[3]

The CAC presented its recommended plan to the BCC at the Board's September 28, 2006 regular weekly meeting. I have attached a copy of the CAC's "Recommendation to the Board of County Commissioners (BCC) for a Wastewater Treatment Solution," a copy of the "Executive Summary Final Report" produced by HDR, a copy of John Lang's "CCSD#1 Strategic Wastewater Infrastructure Strategic Plan Recommendation," and a copy of the CAC's public involvement process publication "Let's Talk Sewage!"[4] Additional information, including the minutes of every CAC meeting and all HDR reports can be accessed at www.co.clackamas.or.us/wes/contact/citizenmin.htm. The CAC is hosting an open house from 6:30 P.M. to 8:30 P.M. on Monday, October 16, 2006 on the 4th floor of the Sunnybrook Service Center, 9101 SE Sunnybrook Boulevard, Clackamas, Oregon. The BCC scheduled public hearings on October 26, 2006 and November 2, 2006 on the CAC plan. Both hearings will be held at 10:00 A.M. on the 4th floor of the Clackamas County Public Service Building located at 2051 Kaen Road, Oregon City, Oregon.

The purpose of this special meeting of the City Council is to consider Council direction on development of a City recommendation for submission to the BCC. Jim Knapp, who chaired the CAC, will be present to present its recommendation, and the meeting will include an opportunity for public comment.

In arriving at its recommendation the CAC considered eight different alternatives for treatment of sewage ranging from full to partial expansion of Kellogg to decommissioning the facility. It then adopted five alternatives that were studied in more detail. Those alternatives and the 30-year capital and operation/maintenance costs developed by HDR are[5]:

> Alternative A-1: Kellogg remains in service in its present general configuration. Kellogg would be upgraded to meet new ammonia limitations and the higher standards included in footnote 3 to this report. Plant capacity would remain at somewhere between 4.8 mgd and 8.0 mgd average dry weather flow, with the excess transferred to an upgraded Tri-City facility. Cost: $323.20 million.
>
> Alternative A-2: Kellogg remains in service similar to A-1 above with excess flows being routed to a new treatment facility located within the

[3] For example, the CAC determined that "ownership" and "self-determination" were principles that should be used in evaluating any final alternatives. It also reviewed future flows and determined that the process should look to an ultimate flow of 16.6 million gallons per day (mgd). It also determined that cost estimates would be calculated assuming a Class-4 treatment level and production of Class-A biosolids in order to anticipate changes in the regulatory environment.

[4] HDR is the engineering firm that was retained to conduct the technical analyses, and Mr. Lang is the consulting engineer who was hired as staff to the CAC.

[5] The costs are in 2006 dollars and are from HDR's "Executive Summary Final Report."

CCSD1 boundaries. This would require construction of a new plant at an as yet undetermined site. Cost: $392.40 million.

Alternative B-1: Kellogg remains in service with installation of hydraulic and process upgrades to accommodate up to 12.5 mgd average dry weather flow. The excess would be diverted to the Tri-City plant, thus necessitating some expansion of that facility. Cost: $366.39 million.

Alternative D-1: Decommission Kellogg and route all flows to the Tri-City plant, thus necessitating an expansion of that facility. Cost: $324.33 million.

Alternative D-2: Decommission Kellogg and route all flows to a new treatment plant located with the CCSD1 boundaries. This requires construction of a new plant at an as yet undetermined site. $397.07 million.

RECOMMENDATION

The CAC process consumed eight months and the summer of 2006. It generated two major categories of comment—one centered on the operation of the CAC and the other centered on the CAC's final recommended course of action. I will address each in turn.

For two months preceding creation of the CAC in January 2006 there was a great deal of speculation on what was occurring. The BCC had approved the Clearwater Plan and agreements in September 2006, but little news was forthcoming in November and December other than rumors of the Plan's imminent demise. I was one who worked to make Clearwater happen, and I was among those who were disappointed when it was canceled by action of the BCC on January 12, 2006. The first few CAC meetings only confirmed my feelings that a mistake had been made. Over time, however, I began to question my initial assumptions. I still believe that the original Clearwater Plan had merit, but I also believe that the CAC made commitments to a step-by-step process and openness and accessibility, and it followed through. I continued to attend meetings of the CAC, and they were often rough, but that is often the nature of public process. The CAC as a group always sought comments from those in attendance, and I found that individual members were always willing to discuss issues. I continue to hear questions about the operational failures of the CAC, but I found the body and the individuals to be committed, concerned, and accessible. In short, I believe that the CAC's decision should be addressed based on the merits of the proposal and not on a perceived failure of process.

I believe that the CAC recommendation should be forwarded to the BCC as the City's preferred alternative. You will note that the recommendation does not contemplate a specific site and anticipates a site selection process. The City

approached this process with two major goals. One is a desire to recapture the whole of the City's riverfront with a plan for elimination of the Kellogg Creek Sewage Treatment Plant. Clearwater did this, and I believe that the CAC recommendation can lead to the same result. The City's other major goal is the efficient, cost effective, and environmentally sound treatment of wastewater. During the CAC process there were those who assumed that Milwaukie's interest was limited to removal of Kellogg. However, that is only one element of the City's interest. I believe that the second goal can be accomplished if the City possesses more than an agreement for services.[6] A full partnership with the District will best serve the City's long-term needs.

Attachments:

1. "Recommendation to the Board of County Commissioners (BCC) for a Wastewater Treatment Solution" dated September 28, 2006.
2. "Executive Summary Final Report" prepared by HDR dated September 27, 2006.
3. "CCSD#1 Wastewater Infrastructure Strategic Plan Recommendation" by John Lange, P.E., CAC Technical Advisor dated September 22, 2006.
4. "Let's Talk Sewage!" Public Involvement Process publication updated September 1, 2006.

[6] The City presently has a month-to-month wholesale agreement with CCSD1 for treatment of its sewage.

Citizens Advisory Council (CAC) of Clackamas County Service District No. 1 (CCSD#1) Recommendation to the Board of County Commissioners (BCC) for a Wastewater Treatment Solution

INTRODUCTION

At a special meeting of the CAC on Wednesday, September 20, 2006, the CAC **unanimously** selected HDR study option A.2 as their preferred alternative. However, as noted below, any one option including A.2, neither reflects the full intent of the CAC nor the extent of its recommendations. Accordingly, the following is the full and complete recommendation to the Board of County Commissioners as required by Board Order 2006-06.

CAC RECOMMENDATIONS

Based on the many factors considered, the CAC concludes that the best long term strategy for treating wastewater from CCSD#1 is to (a) keep the Kellogg plant in operation, (b) build a new treatment plant within the District, and (c) decommission Kellogg sometime in the future if and when it makes economic sense to do so.

As an integral part of this strategic recommendation, the CAC also recommends the following actions to the Board for their consideration and adoption:

1. **Address Near-term Needs** – To eliminate potential restrictions to additional development within the District, the CAC recommends that the BCC:

    a. **Resolve the Ammonia Limit** – Direct Water Environment Services (WES) to continue a vigorous appeal to DEQ to have the ammonia limit on Kellogg raised.

    b. **Restore Kellogg Treatment Capacity** – Direct WES to begin applying the most efficient and cost effective ammonia mitigation solution that also results in restoring Kellogg to its original capacity. In accordance with the CAC's adopted Amenities and Mitigation Policy, any improvements to the Kellogg plant should include reasonable amenities to reduce the impact of the plant on the surrounding community.

    c. **Continue the Temporary Diversion to Tri-Cities** – Direct WES to (1) continue diverting CCSD#1 flows to Tri-Cities, (2) renew the diversion agreement between CCSD#1 and Tri-Cities, and (3) complete the east side diversion pipeline as soon as possible, sized to provide CCSD#1 with sufficient additional capacity if and as needed.

2. **Site and Build a New Treatment Plant** - To provide long term treatment capacity for CCSD#1, the CAC recommends that the BCC:

    a. **Begin a Site Planning Study Now** – Direct WES and the CAC to begin a site planning study for a new plant immediately. The only restrictions are that the site (a) be within the District, (b) be above of the 100-year flood elevation, (c) not be on a geological fault line, and (d) takes full advantage of the existing conveyance system and the Kellogg outfall to the river if practical.

b. Build a New Plant – Based on the results of the site planning study, build a new treatment plant sized to meet anticipated mid-term needs yet expandable in increments to the maximum projected requirements of the District. Chose the most appropriate technology for the new plant that will facilitate achieving the projected maximum capacity, Class 4 effluent, and Class A biosolids. In accordance with the CAC's adopted Amenities and Mitigation Policy, the new plant should be designed to have a neutral or positive impact on the surrounding neighborhood and incorporate environmentally friendly and sustainable methodologies when possible.

3. **Decommission Kellogg** – Decommission the Kellogg plant sometime in the future if and when it makes economic sense to do so to enable CCSD#1 to achieve long-term regulatory and economic efficiencies.

4. **Continue CAC Responsibility** – Section 5 of Board Order 2006-06 provides that "the CAC shall be a standing committee of the District," continuing beyond the September 30, 2006 date established for submission of its recommendation. To facilitate continued involvement, the CAC recommends a meeting with the Board of County Commissioners in the near future to define the ongoing roles and responsibilities of the CAC. Topics for discussion may include, but not be limited to:

   a. Monitoring and reporting to the Board on WES' implementation of the adopted plan;

   b. WES support to the CAC; and

   c. Nomination and selection of future CAC members.

BACKGROUND FOR SELECTING ALTERNATIVE A.2.

As part of its study, the CAC selected, and WES hired, the engineering firm of HDR, Inc. to explore and cost various sewer treatment options for consideration by the CAC in developing its recommendation to the Board.

Five options or alternatives were selected for additional study because they represented the broad spectrums of (a) maintaining, expanding, or abandoning the Kellogg sewer treatment plant and (b) treating some of all future CCSD#1 flows either by a new plant within the District or by the Tri-Cities plant. The CAC requested HDR to provide engineering costs and estimated impacts on rates and system development charges for each of these five alternatives with the understanding that they would assist but not confine the CAC's recommended solution. It should be noted that HDR's study results represented only two of the many factors considered by the CAC over the last eight months. It is the CAC's intent to describe these other factors, and their impact on its final recommendation, more fully in a forthcoming final report to the Board.

As the HDR study memoranda were presented, discussed, and adopted at public CAC meetings, it became clear that the public expected the CAC to select one of the five study options as its recommended solution. To meet that expectation, the CAC at a September 20, 2006 special meeting, unanimously selected HDR study option A.2. as most closely embodying the thinking of the CAC. At that time, the CAC also resolved to articulate a more complete recommendation at their September 25th meeting. This document is the result of that process.

HDR's executive summary described alternative A.2. as preserving Kellogg at a de-rated state (i.e., assumed to be 4.8 million gallons per day (mgd)) in order to meet the ammonia limits established under the plant's new discharge permit. For purposes of the study, remedies at Kellogg were limited to using existing major infrastructure (clarifiers, aeration basins, etc.) without substantial capital modifications or improvements. All remaining capacity needs (estimated to be 11.8 mgd) were to be sent to a new conventional-type treatment plant. Because the new plant is not yet sited, HDR selected a site in order to develop engineering cost estimates for this alternative.

Alternative A.2. notwithstanding, the recommendations listed above reflect more fully the intent of the CAC.

FACTORS AND REASONS FOR THE RECOMMENDATIONS

The CAC's recommended strategy and action steps are based on many factors, including information received from our many meetings and outreach efforts to the public and area stakeholders during the last eight months; information from HDR's Engineering Planning study; a peer review of the alternatives and costs in that planning study; visits to other wastewater plants in the Seattle area; and a recently conducted public opinion survey.

The CAC intended to describe these and many other factors, together with their impact on the CAC's recommendation, in a forthcoming report to you. However, the CAC requires some additional resources from WES in order for the CAC to prepare this report for your consideration. It is the CAC's unanimous opinion that the information included in this report will be key to the Board's complete understanding of the CAC's recommended strategy and action steps and is necessary information for the Board to adopt them. We request the Board authorize these additional resources and enable this final report to be prepared soon to assist you in deciding the future of wastewater treatment for CCSD#1.

IN CONCLUSION

Relationships between areas of Clackamas County north of the Clackamas River have been rocky at best for decades. It is not necessary to revisit the possible reasons for this fact. It is important to understand that the CAC has bridged and to some degree forged these relationships into an inter-dependent and working partnership as our recommendation for CCSD#1 was developed. Our work thus far has brought a number of communities to the table to discuss a common problem. In several cases, once difficult relationships have been put aside to search for the best solution. The CAC believes that the work required to make its wastewater strategic plan a reality will continue to bring communities together to discuss, resolve, and implement an efficient, effective, and practical solution to a problem common to all.

Attachmemt 2

CLACKAMAS COUNTY SERVICE DISTRICT NO. 1

STRATEGIC WASTEWATER INFRASTRUCTURE PLANNING STUDY

EXECUTIVE SUMMARY FINAL REPORT

Executive Summary

September 27, 2006

HDR

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Section 1 - Introduction

Formed under a directive from the Clackamas County Board of Commissioners, the Citizen's Advisory Council (CAC) was tasked with the development of a strategic plan for locating and financing new wastewater treatment facilities for Clackamas County Service District No. 1 (District). Under this plan, the Council is to develop a long-range strategy for meeting the infrastructure and financing needs of the District as it relates to the expansion, construction, retention, or elimination of the main capital elements of the District's system, including (but not limited to) sewage treatment plant(s), pipelines, manholes, pipeline casing, measuring and metering devices, screening devices, holding tanks, valves, buildings, sewer laterals, collector mains, pumping stations and force mains, interceptors, and other such appurtenances deemed appropriate to the District sanitary sewer collection and treatment system.

HDR, Inc. was then hired by the County to assist staff and the CAC in the preparation of this plan. The Consultant's work was determined through a series of project tasks directed at developing data and information deemed pertinent in the creation of long-term capital and financing plan for the District. The work presented here represents a summary of the task memoranda delivered under HDR's contract with the County.

The purpose of this summary is to present the major findings for this project. These include:

- The establishment of baseline conditions within the District
- Future service projections for the area
- Review of the financial capacity of the District
- Intergovernmental Agreements affecting operations
- Creation of basic principles and criteria under which the planning effort would be conducted
- Examination of the existing treatment and conveyance capacity available to the District
- Future treatment and conveyance alternatives for meeting long-term needs
- Capital and operational costs for those alternatives
- Assessment of the financial impacts associated with those alternatives.

The data used in this study was obtained from a number of sources, including present-day billing and accounting records from the District, current and historic records of wastewater flows and loads within the system, regional data and reports, on-site survey of facilities, and facts and statistics from a variety of existing reports already completed by the District. This information was used to prepare separate capital plans associated with five selected alternatives covering treatment and conveyance needs for the District over the next 30 years. The cost figures for those plans were then used to evaluate the financial impacts for each alternative over the 30 year planning period.

The key facts and findings for the overall study are outlined in the following subsections. Draft findings are also presented regarding a recommended approach to future capital planning for treatment and conveyance needs for the District over the next 30 years.

It is important for the reader to understand that the findings and opinions outlined in this report are expressly those of HDR Inc. and it's staff, and does not represent those of any outside parties including those of the Citizens Advisory Council (CAC), it's members or other representatives associated with the planning effort for identifying the 30-year treatment and conveyance alternatives for Clackamas County Service District No. 1 (CCSD#1).

Section 2 - Service Area Description

2.1 Clackamas County Service District Number 1

The District is situated within both incorporated and unincorporated portions of Clackamas County. The District's present boundaries encompass portions of the cities of Gladstone, Happy Valley, Damascus, and a large unincorporated area between the cities of Milwaukie, Happy Valley, Damascus, Gladstone, and the Oak Lodge Sanitary District. The District is bounded to the north by the cities of Portland and Milwaukie, to the west by the Oak Lodge Sanitary District, to the south by the City of Gladstone and the Clackamas River, and to the east by portions of the City of Happy Valley and a small portion of the southwestern area of the City of Damascus. An illustration of the District's boundaries in relation to other key features is shown in Figure 1.

Operationally, the District provides wastewater collection, conveyance, and treatment to its customers through a series of pipes, pump stations, diversions, and the Kellogg Creek Wastewater Pollution Control Plant (WPCP). Of notable interest, the Kellogg treatment facility is actually located outside the District's boundary in downtown Milwaukie near the Willamette River. The District owns and operates the plant, including the land on which the facility is situated; however, the City of Milwaukie maintains land use jurisdiction over the property.

The District serves both retail and wholesale customers comprised of single and multifamily residential, public, commercial, institutional, and industrial accounts. Its jurisdictional boundaries, however, are marked with areas within its boundaries where persons or businesses are either part of a separate jurisdiction or are part of the unincorporated portion of Clackamas County. The one separate jurisdiction is that of Johnson City, which is a wholesale customer of the District. The remaining extraterritorial "islands" are simply unsewered and operate on private septic systems. A more detailed description of the District's customers is outlined in the following section.

The District's retail customers are defined by those service connections that reside within the District's boundaries. The majority of those retail customers are located within an area referred to as the North Clackamas Service Area, while the remainder are located within the cities of Gladstone and Damascus. In addition, the District's customer base also includes a number of important wholesale customers who are billed

on an aggregate basis separate from their traditional retail customers. These wholesale customers include the cities of Milwaukie and Johnson City.

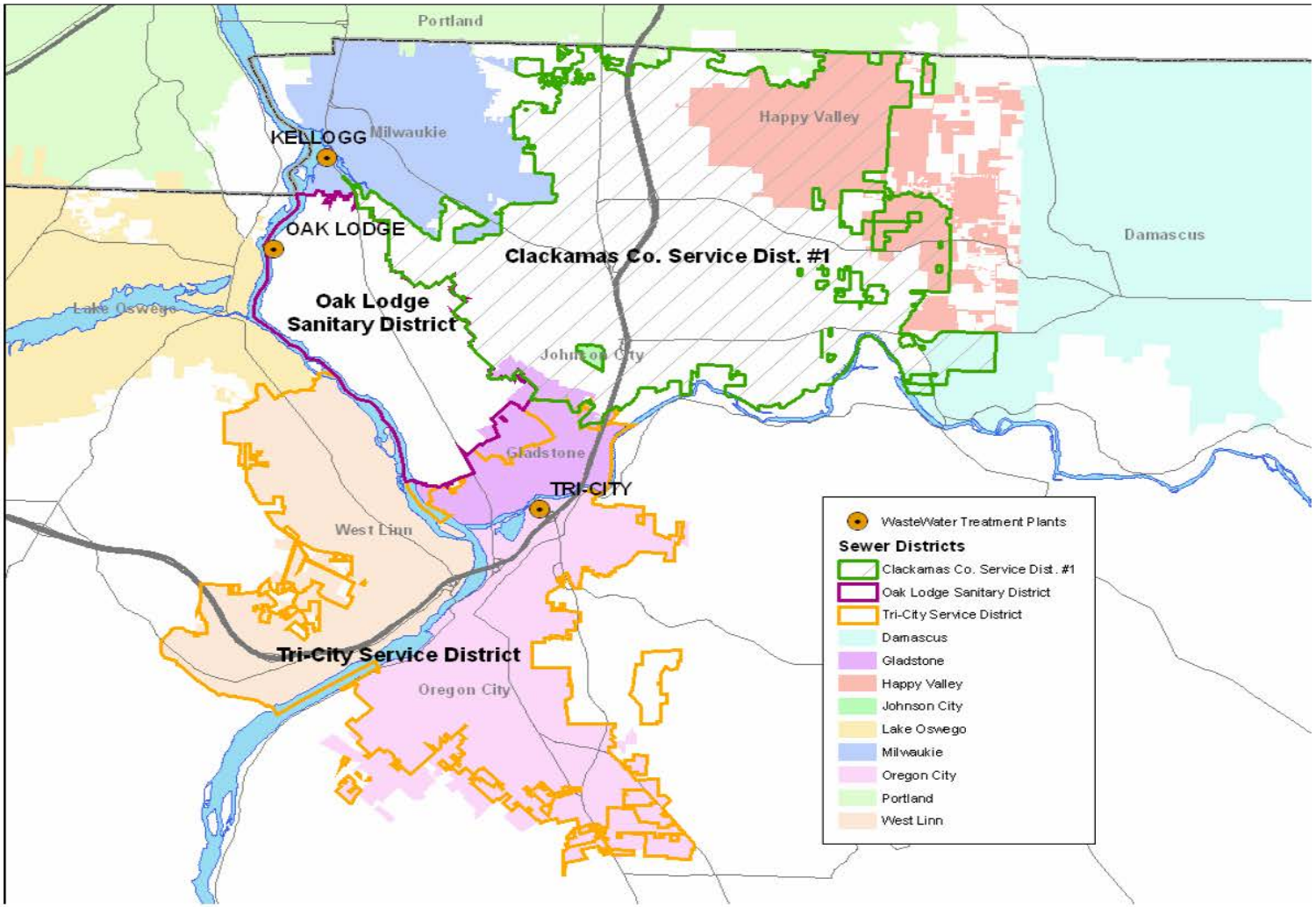


Figure 1: Sewer Districts

2.2 Billing Records and Equivalent Dwelling Units (EDUs)

As with most municipal sewer agencies, the District rates are established on a unit basis in relationship to a typical residential connection called an Equivalent Dwelling Unit (EDU). Moreover, the quantity of flow is tied largely to metered water use rather than direct measurements of wastewater discharge. Because of this, an EDU is a somewhat arbitrary number that is derived from historic knowledge of flows for the system.

Presently, the District defines an EDU as:

> "A unit of measurement of sewer usage assumed to be equivalent to the usage of an average single family dwelling unit. A unit is equivalent to sewage of a strength and volume normally associated with an average single family dwelling unit or its equivalent. Where unit equivalency must be computed, it will be equivalent to 1,000 cubic feet of water consumption per month" (Section 2.1.83 of the District's Rules and Regulations, WES 2006d).

The District's records indicate five major use sectors: single residential, multifamily residential, institutional, commercial, and industrial. For billing purposes, each of these sectors and their connections represent potentially different flows. Hence, separate EDU numbers are established for each connection type, with one EDU serving as the basis for a single family home, and then multiples applied to the other types of connections. (For example, the District currently assigns two EDUs to a duplex, one for each unit.) For commercial users, a basis of water use is applied, where one EDU is assigned per every 1000 cubic feet of metered water use per month.

A summary of the 2005 EDUs by customer type is shown in Table 1.

Table 1: 2005 Summary of District Accounts

Area	Customer Type	EDUs
District	Single family	14,339
	Multifamily, institutional, industrial	14,181
	Hand billed	608
	Industrial (extra strength)	1,407
District Retail Total		30,535
Johnson City	Wholesale	~300
Milwaukie[1]	Wholesale	9,780 (Year 2000)
Total		40,165

The District has also established wastewater strength for an EDU based on: (a) 0.449 pounds of BOD-5 per day; and (b) 0.449 pounds of suspended solids per day. Users

[1] According to the City website, Milwaukie's current population is approximately 20,600. For the purposes of this report, it is assumed there is no change in sewer customer base from 2000 to 2005.

discharging more than this are surcharged for the excess. It is important to note that these strength numbers are not used to quantify the number of EDUs; rather, they are used to define the anticipated waste loadings from the typical single-family home and then to apply appropriate fees for those discharging in excess of those basic criteria.

2.3 Wastewater Flows and Loads

2.3.1 Flows to Kellogg Treatment Plant

In 2005, dry weather flows (May through October) at the Kellogg plant averaged 7.6 million gallons per day (mgd) and wet weather season flows (November through April) averaged 8.6 mgd, while the annual average flows were 8.1 mgd. Wet weather flows are typically larger than dry weather conditions, especially for the maximum month and day. This is due to inflows and leaks into the system during storm events and higher groundwater conditions.

On the loading side, the District reported an average BOD-5 and TSS inflow to Kellogg of 16,250 lbs/day and 20,740 lbs/day, respectively. The numbers indicate a general increase in waste strength during dry weather conditions. This is due to the general dilution effect that occurs during inflows of rain or groundwater during wet weather conditions. Table 2 summarizes 2005 flows and loads for the Kellogg plant.

Table 2: Kellogg Creek 2005 Flows and Loads Summary

	Parameter	Unit	Average	Maximum Month	Maximum Day
Annual	Flow	mgd	8.1	14.3	19.8
	TSS	lbs/d	20,740	27,930	52,530
	BOD	lbs/d	16,250	19,540	47,130
Dry Weather Flows	Flow	mgd	7.6	9.4	12.3
	TSS	lbs/d	20,060	27,930	52,530
	BOD	lbs/d	16,380	18,650	37,840
Wet Weather Flows	Flow	mgd	8.6	14.3	19.8
	TSS	lbs/d	21,420	26,880	43,970
	BOD	lbs/d	16,120	19,540	47,130

2.3.2 Diversion

The District created a diversion of flow and load in January of 2000 using the Clackamas Pump Station to alleviate loadings into the Kellogg plant. The diversion was created to transfer high strength wastewater from several industrial customers in the North Clackamas industrial area to the Tri-City Water Pollution Control Plant (TCWPCP). The diversion is supported by the pump station and a 12 inch force main with a capacity of 2.0 mgd. The diverted flow currently ranges between 0.5 and 0.7 mgd, with a peak flow event of approximately 1.4 mgd. In 2005, the average flow diversion was measured at 0.58 mgd. Table 3 summarizes 2005 flows and loads from the Kellogg plant to the Tri-City plant.

Table 3: 2005 Diversion Flows and Loads Summary

	Parameter	Unit	Average	Maximum Month	Maximum Day
Diversion to Tri-City	Flow	mgd	0.58	0.73	1.40
	TSS	lbs/d	2,345	4,017	10,759
	BOD	lbs/d	3,437	5,371	9,214

2.4 Treatment and Conveyance Facilities

2.4.1 Kellogg Creek Water Pollution Control Plant (WPCP)

Wastewater flows from the District and its wholesale customers are principally treated at the Kellogg Creek Water Pollution Control Plant (Kellogg). This facility is located along McLoughlin Boulevard within the downtown area of the City of Milwaukie and is owned and operated by the District. The plant occupies approximately 8 acres of the 10.94 acresite. The property is bordered on the west by the Willamette River; on the north by a 1.42-acre city park and boat ramp; on the east by an abandoned railroad line and Highway 99E (McLoughlin Blvd.); and on the south by Eagle Street and the Island Station residential area. An active Southern Pacific rail line is also adjacent to the southeast corner of the property. Except for the small park on the north and the residential area to the south, the plant is relatively isolated from adjacent developed areas.

The City of Milwaukie maintains land use jurisdiction over the Kellogg site which is currently situated among the city's downtown office (DO) zoning, and as such is operating under a non-conforming land use designation. The plant currently operates within the provisions of a community service overlay (CSO) zone. The City is reviewing the status of the Kellogg facility under the CSO designation and has indicated potential plans to change that status, thereby establishing the facility as an unintended use at its present site under the city's zoning provisions.

When constructed in 1973, the Kellogg facility was rated for an average daily dry weather flow capacity of 10 mgd and 5-day biological oxygen demand (BOD-5) loading of 20,000 pounds per day (ppd). In the 1990's, the plant was unable to consistently meet discharge permit water quality requirements, particularly with regard to average daily dry weather flows. To remedy the problem, short-term flow diversions and plant improvements were made to address the noted performance issues.. Through time, modifications and loading changes to the plant may have altered its capacity. Current estimates place its capacity at approximately 8.0 mgd and 18,000 lbs/day BOD-5 during average day dry weather flow conditions. Based on 2005 data, the average day dry weather flow arriving at the plant was approximately 7.6 mgd, while the loading of BOD-5 was 16,380 ppd.

More recently, the Kellogg facility has undergone a periodic permit review by the Oregon State Department of Environmental Quality (ODEQ). Under the new permit, ODEQ restricts monthly average dry weather loadings to 1300 lbs/day for BOD-5 and 1,700 lbs/day for TSS. In addition, ODEQ has called for tighter controls for ammonia,

restricting daily maximum dry weather releases to no more than 33 mg/l and monthly averages to 18.6 mg/l over that same period. This latter restriction impacts the capacity at Kellogg. In order to meet the new standard, the capacity of the plant would likely be reduced by as much as 40% of its current number, leaving the plant at an estimated capacity of approximately 4.8 mgd. Table 4 outlines the estimate plant capacity for the Kellogg facility under the new ammonia permit from ODEQ.

Table 4: Ammonia Limit Effect

Kellogg Creek - Secondary Process Capacity				
Parameter	Capacity without Ammonia Limits	Units	Capacity with Ammonia Limits	Units
Flow	8.0	mgd	4.8	mgd
BOD	20,000	ppd	12,000	ppd
TSS	20,000	ppd	12,000	ppd

These numbers are important in that the flows and loads coming into to the Kellogg facility today are at or near its present day capacity of approximately 8 mgd.

2.5 Collection and Conveyance System

The District's conveyance system serves seven main sanitary basins, including the Lower, Middle, and Upper Kellogg basins in the southwest; the Mt. Scott basin in the central part of the district to the west of I-205; the Johnson Creek, Lower, and Upper Phillips basins to the north; the Mt. Talbert, Sieben Creek, and Happy Valley basins to the east and northeast; and the Clackamas basin serving the southern portion of the district east of I-205. The Phillips, Mt. Talbert, Happy Valley, and Clackamas basins all drain into a 36-inch main trunkline running through the Mt. Scott basin, which eventually flows into the 48-inch Lower Kellogg line and the Kellogg WPCP.

The District maintains approximately 251 miles of collection and conveyance pipeline that range in size from 6 to 48 inches in diameter within the North Clackamas area. The vast majority of these pipes, however, are related to smaller, local collection pipelines that run along homes and businesses and provide primary service to the system. In addition, the system contains larger, key conveyance pipelines that are used to transport aggregated waste flows from the collection system to the Kellogg treatment plant. A summary of the size and length of pipe that comprise the larger conveyance system is outlined in Table 5.

Table 5: Inventory Summary of the Conveyance System North Clackamas Area

Diameter of Pipe (inches)	Total Length of Pipe (feet)
8-10	58,000
11-13	46,000
14-17	23,000
18-23	39,250
24-35	19,000
36-47	18,000
48+	4,000

Figure 2 also displays a map of the District's conveyance system showing lines greater than 8 inches in diameter.

Section 3 - Projection of Flows and Loads

3.1 General Approach

The projection of flows and loads were based on growth rates defined under separate planning efforts conducted by the Sunrise Water Authority and Clackamas River Water. Recognizing the relation to water use and wastewater flows, it was assumed projections from both Sunrise and Clackamas River would provide a basis for quantifying anticipated growth in flow within the District's current boundaries. Projections for the western half of the District are based on Clackamas River Water use increases; those on the eastern half are from Sunrise Water Authority numbers. The area coverage between the two is roughly a 65-35% split between Sunrise Water Authority and Clackamas River Water, respectively, across the existing District boundaries. Hence, a corresponding weighted increase in projected water use was used to establish the rate of increase in future wastewater flows within the District.

Two other growth scenarios also considered the potential addition of the City of Damascus as a future wholesale customer, and the current unincorporated area between the cities of Happy Valley and Damascus (assumed to be annexed by the City of Happy Valley in the future and then served by the District). The projections for the City of Damascus are based on a recently-completed concept plan that predicts dwelling unit numbers, land use zone (acreage) and employment numbers through buildout in 2025. For the unincorporated area between the cities of Happy Valley and Damascus, the most recent Metro forecast for households was used to establish the rate of anticipated growth for that area. Additional detail as to the methods used for the various forecasts is outlined in their respective subsections below.

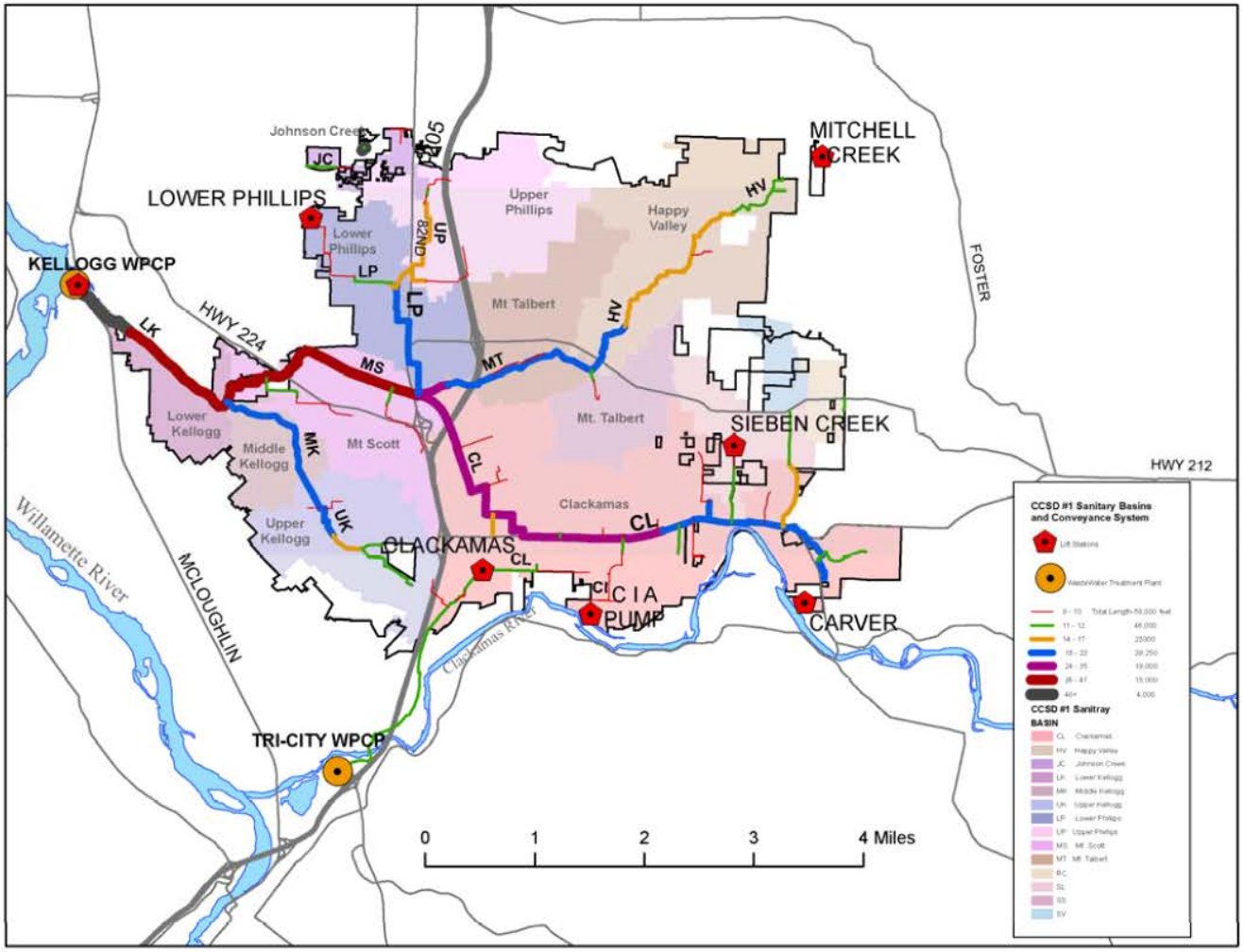


Figure 2: Clackamas County Service District No. 1 Conveyance System

3.2 Projection of Wastewater Flows and Loads

Two scenarios were used in the forecasts: scenario one assumes the District remains under its existing boundaries with possible expansion into the unincorporated area between Happy Valley and Damascus (following annexation by Happy Valley); scenario two assumes the same conditions as scenario one, with the addition of the City of Damascus as a wholesale customer. It is worthwhile to note that under these scenarios the buildout of the existing District territory is assumed to occur around 2025, as depicted by the Sunrise and Clackamas River plans. In addition, it was assumed the unincorporated area between the cities of Happy Valley and Damascus would not begin until 2015 and would extend through 2035, while that of the City of Damascus would begin now and extend through 2025 as noted within their present concept plan.

For residential users, it is assumed that future wastewater composition does not dramatically change from its current makeup. Thus, the rate of projected increase for both flow and loads (BOD-5 and TSS) is presumed identical and depends on the area in which those projections are being forecast–namely within the District whose projections are tied to forecasted water use, those within the unincorporated area between Happy Valley and Damascus tied to Metro household increases, and those within the City of Damascus tied to the estimate of new dwelling units outlined in their new municipal concept plan.

Similarly, on the commercial and industrial side, it is assumed the present breakdown between residential and commercial accounts remains relatively constant through time within the present District boundaries; thus, the rate of increase in flow and loads would be the same as that projected for the residential users within the District. Those same basic assumptions are also presumed to apply to future growth within the unincorporated area that currently resides between the cities of Happy Valley and Damascus (Rock Creek basin). The one notable commercial facility being planned for that area is a new 400-bed hospital (each bed is assumed to produce the same flow as an equivalent dwelling unit and a loading approximately 4-5 times that of a typical EDU). The estimated increase in wastewater flow from the hospital is only about 0.1 mgd, while the loading is about 1000 lbs/day of BOD-5 and 1,200 lbs/day of TSS. Finally, in the Damascus area, future commercial and industrial flows are expected to generate about 1,000 to 2,000 gallons per day per acre of commercial and industrial land. This latter estimate is derived from typical industry standards for light to medium industrial development. Under the existing Damascus concept plan, there are approximately 1,130 acres of commercial and industrial lands. This number would equate roughly to between 7,000 and 9,000 new equivalent dwelling units.

3.2.1 Future Wastewater Flows

The projected wastewater flows for the District reveal a dramatic increase over the next 20 years, starting at approximately 8.0 mgd for average annual conditions in 2005 and rising to 15.0 mgd in 2025. Embedded in these numbers is the basic assumption that flows will increase at rates similar to water use within the District, and that the City of Milwaukie's flow will increase 1.0 mgd over that same 20-year period, while those from Johnson City will remain relatively constant.

Beyond 2025, most of the relevant planning projections begin to predict near "buildout" conditions, and by 2030, that same average day flow has only grown to 16.6 mgd. A summary of those projections is shown in Figure 3.

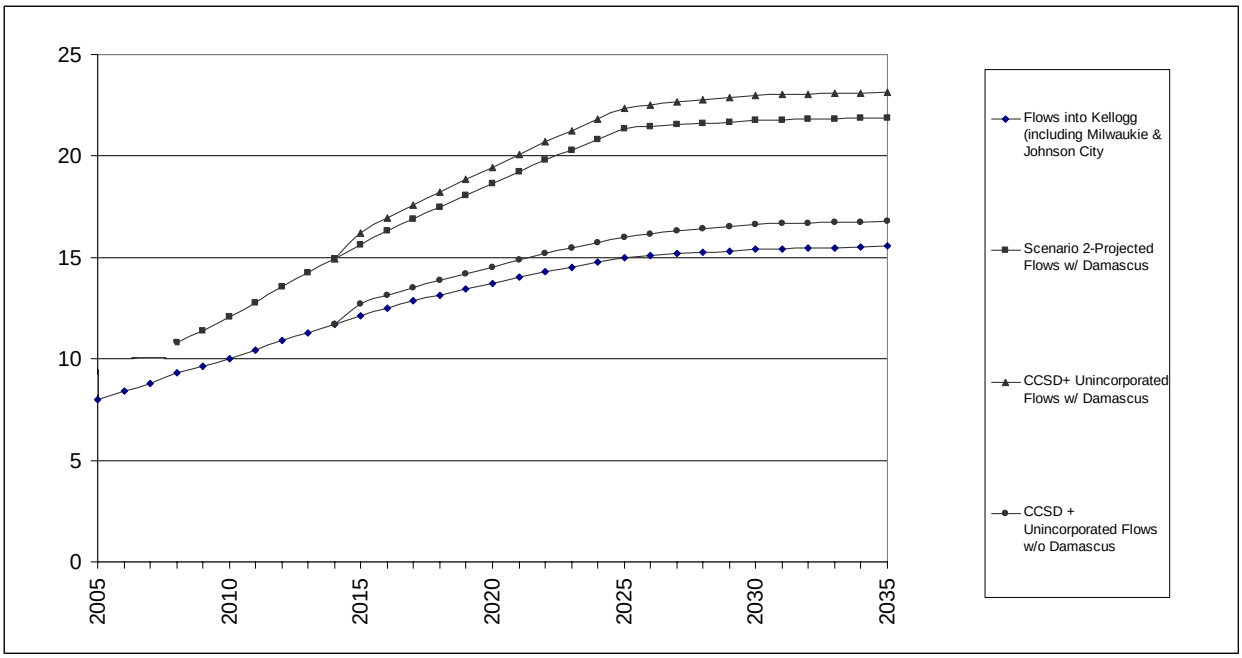


Figure 3: Projected Annual Average Wastewater Flows

If the city of Damascus is served by the District; the estimated average annual flow at year 2025 rises to 21.3 mgd, while the addition of the unincorporated area between Happy Valley and Damascus (Rock Creek) would add another 1.0 mgd – bringing the total potential flow over the next 20 years to 22.3 mgd. Similarly, at buildout, those same numbers rise to approximately 21.9 mgd for the District and the City of Damascus, and 23.1 for the further addition of the Rock Creek basin. The early projections for Damascus, namely those through 2008 or 2009, are not expected to be realized because the city does not yet have a completed collection and conveyance system.

3.2.2 Future Wastewater Loads

It is assumed composition of wastewater loads will not change dramatically in the future; therefore, the rate of growth in future loading for both BOD-5 and TSS are identical to that of flows. Beginning in 2005, at around 20,700 lbs/day, the estimated loading in TSS for the District grew to approximately 37,500 lb/day by year 2025, then to 39,000 lbs/day at buildout in year 2035. Similarly, the loadings for BOD-5 go from approximately 16,200 lbs/day in 2005 to 28,500 lbs/day by the year 2025, then to 29,600 lbs/day at buildout. A summary of the loading projections is shown in Figure 4 and Figure 5.

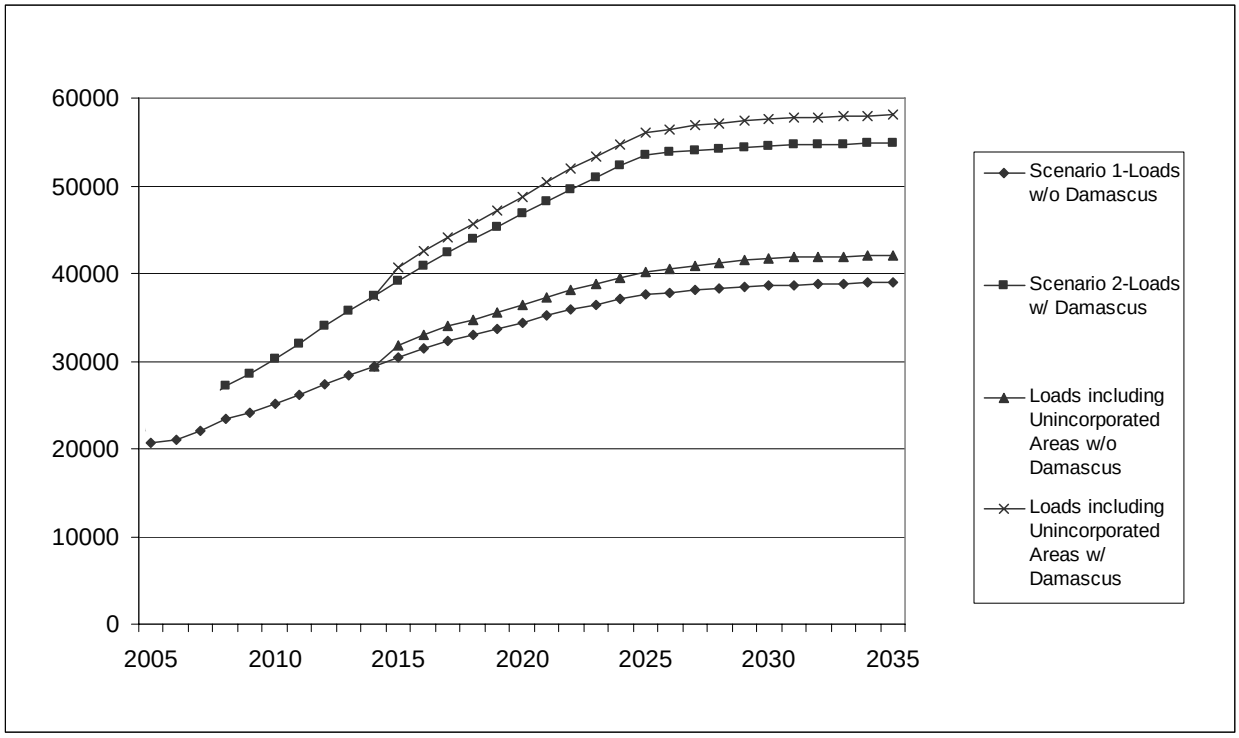


Figure 4: Projected Annual Average TSS Loading

If the city of Damascus is added, the loads for TSS and BOD-5 rise to 53,500 lbs/day and 43,300 lbs/day, respectively, by year 2025. While at buildout, these numbers climb slightly higher to 55,000 lbs/day and 44,500 lbs/day by year 2035. If, in addition, the unincorporated area between Happy Valley and Damascus is added, the total projected load for TSS and BOD-5 reach 56,000 lbs/day and 45,400 lbs/day by year 2025 and 58,000 lbs/day and 47,000 lbs/day by year 2035.

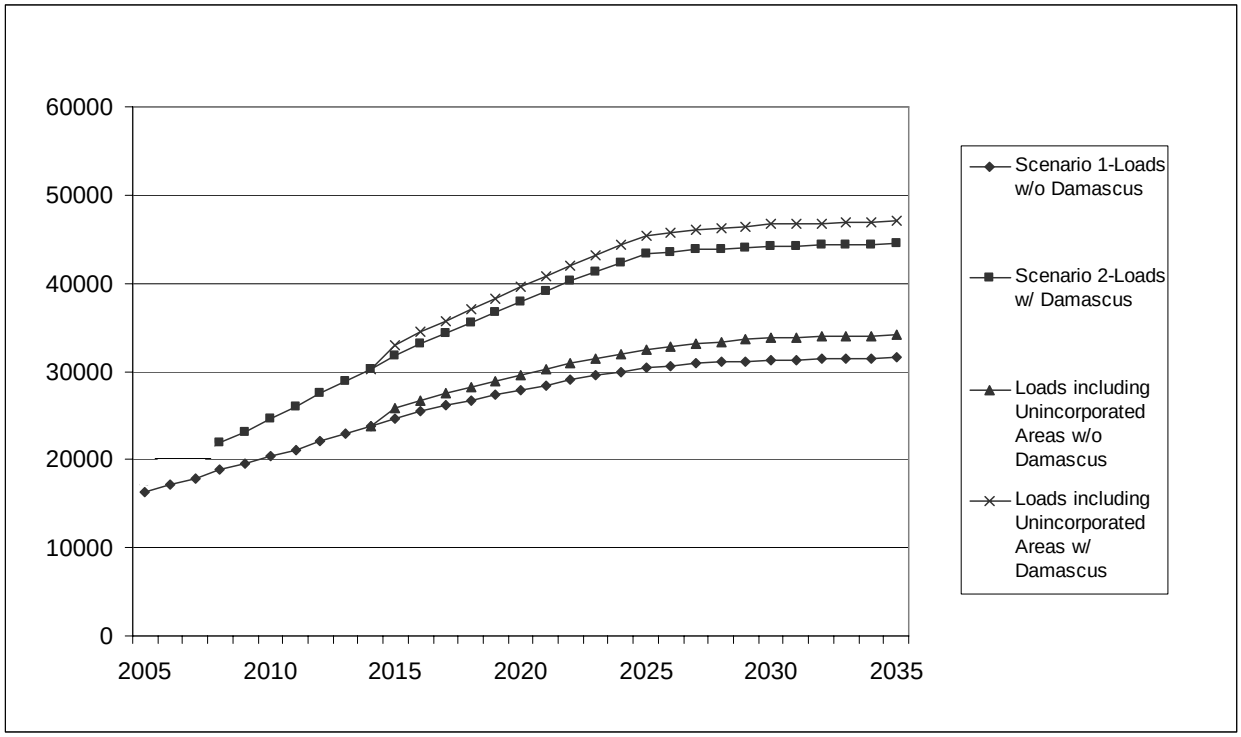


Figure 5: Projected Average Annual BOD Loading

Section 4 - Alternatives and Projected Costs

4.1 Summary of Selected Alternatives

In early June, a two-day series of workshops was conducted among the technical and financial committees of the CAC to discuss various alternatives for meeting the treatment and conveyance infrastructure needs for the District over the next 30 years. Those discussions were followed by a series of meetings by the CAC to formalize the alternatives into five definitive options. Each of the options was predicated on satisfying four fundamentals elements: (1) meeting all existing and anticipated regulatory requirements, including those for ammonia; (2) producing Class A biosolids by 2015; (3) producing a Class IV effluent (i.e., meeting a 10/10 mg/l limit for both BOD-5 and TSS); and (4) meeting existing and future capacity needs for both treatment and conveyance (ultimately 16.6 mgd based on dry weather flows in the year 2030).

Under those guidelines, the CAC agreed to examine the following five main alternatives:

1. *Preserve Kellogg and Move Future Flows to Tri-City*: Under this alternative, Kellogg would be preserved under a de-rated state (i.e., assumed 4.8 mgd) to meet the ammonia limits established under the plant's new discharge permit and all remaining capacity needs (11.8 mgd) would be conveyed and treated at the Tri-City plant. Remedies at Kellogg would be limited to using the existing major infrastructure (such as clarifiers, basins, etc.) without substantial capital modifications.

2. *Preserve Kellogg and Move Future Flows to a New Treatment Facility*: The same conditions as those defined under Alternative 1 with the exception that all future flows (11.8 mgd) would be sent to a new conventional-type plant to be situated on 30 acres along the industrial corridor south of Highway 212/224. For purposes of this study, it is assumed that this location sits adjacent (east) to the existing Fred Meyer warehouse.

3. *Expand Kellogg to Meet the Existing System's Conveyance Capacity*: Under this option, Kellogg would be rehabilitated using new treatment technology such as high-rate clarifiers or membrane bio-reactors to achieve a treatment capacity on the existing plant's footprint that would serve 12.5 mgd (i.e., the estimated capacity of the existing conveyance system) with the residual future flow (4.1 mgd) to be sent to the Tri-City plant.

4. *Abandon Kellogg and Move Flows to the Tri-City*: The focus of this option would be to transition the flows (ultimately 16.6 mgd) over the next 5-10 years to the Tri-City and decommission the existing Kellogg facility.

5. *Abandon Kellogg and Move Flows to a New Plant*: Similar to Alternative 4 in its plan to decommission Kellogg, this option would transition the flows (ultimately 16.6 mgd) over the next 5-10 years to a new plant situated on 30 acres along the industrial corridor south of Highway 212/224 (as described in Alternative 1).

Technically, the advantage to Alternative 1 is associated with its reliance on the existing infrastructure either at Kellogg or the Tri-City plants. Although the Kellogg facility may provide as little as 4.8 mgd of treatment capacity under its new ammonia permit, it does provide an important cornerstone within the District's current infrastructure. Its replacement would be expensive; moreover, the District is simply under capacity with regard to treatment. At a minimum, Kellogg would have to remain in operation until sufficient capacity could be built to replace it or meet treatment needs through other options. Keeping Kellogg offers a low incremental cost in terms of treatment capacity. Additionally, remedies to meet the ammonia permit may also be relatively inexpensive – weighed against rising maintenance costs to preserve the operation of a plant over 30 years old. By contrast, buildout or expansion at the Tri-City plant is thought to be relatively easy, given there is ample room and an existing infrastructure that can be shared, creating potential savings in terms of scales of economies. The main disadvantage to this alternative is that of added pumping and conveyance required to redirect the flows from Kellogg to the Tri-City plant.

Similarly, Alternative 2 takes advantage of keeping Kellogg and its potentially low incremental costs for baseline treatment capacity, with added capacity being directed at the construction of a new plant. The new plant offers the ease of construction at an open site and autonomy from having to form an intergovernmental agreement with

another agency or District for treatment. The potential for locating the new plant centrally within the District also offers the most economical position regarding future reuse of its discharge. The main disadvantages, however, are those of acquiring a new site (i.e., possible condemnation), potentially protracted permitting of a new plant (which could delay the addition of needed capacity in meeting future flow and load demands), and the extra pumping and conveyance costs associated with the redirection of collected flows to the new plant and their discharge to an outfall.

Alternative 3 would not only retain Kellogg, but would also build it out to meet the capacity of the existing conveyance system. Unlike the other alternatives, this option makes the greatest use of existing pipes, leaving the remaining treatment capacity to be built out at the Tri-City location. In addition, the option will make use of more modern treatment technology in the form of a membrane bioreactor, which allows for the expansion of capacity within the existing Kellogg site beyond the plant's original capacity. The main disadvantage is the need to preserve the old Kellogg plant while renovations at that site are completed; hence, the need to build new capacity at the Tri-City plant before Kellogg could be built out. Moreover, the cost of membrane technology is relatively high and its installation would have to occur while maintaining a fully functioning conventional plant at the Kellogg site. The logistics of that implementation would greatly increase construction costs at the Kellogg site.

Alternatives 4 and 5 are variants of Alternatives 1 and 2. The entire treatment capacity is directed either at buildout at the Tri-City plant or a new treatment plant location. The advantages and disadvantages are similar to those outlined for Alternatives 1 and 2, except that Kellogg is abandoned permanently as quickly as new treatment capacity can be built at either of the two alternative locations. The examination of these alternatives, however, affords a look at the potential economies of scale for construction at the Tri-City site and the ease of implementation of full treatment capacity at each alternative location.

It is important to note that the various alternatives selected were also designed to cover a range of options. These options were identified as feasible in providing sufficient treatment and conveyance capacity for the District over the next 30 years. As such, each alternative could in whole or part provide a key element to the actual preferred option to either an interim or long-term solution to the District's need for wastewater treatment and conveyance.

4.2 Capital and Operation and Maintenance Plans

For each of the five selected alternatives, separate capital plans were created, each intended to meet the infrastructure needs of the District over the next 30 years. Engineering cost estimates for relevant improvements were developed under present day (2006) dollars, along with supporting costs for operation and maintenance. The scheduling of projects was also designed to meet the capacity requirements for projected flows and loads through 2030.

The key time horizons begin early, noting current system flows are at or near the existing treatment capacity for both Kellogg and the diversions to Tri-City. Because of

this, the system will demand early expansion of treatment capacity to a level beyond 10 mgd (average dry weather flow) by 2010 and 14.5 mgd by 2020, with final capacity reaching between 16 and 17 mgd by 2030.

Cost numbers were generated using a variety of data sources, including existing reports, construction costs estimates for similar facilities in the Northwest, and the experience of senior HDR engineering staff. During the analysis, estimates were prepared for approximately 25 major capital elements associated with the various alternatives, including (but not limited to): influent pumping, screening, grit removal, primary and secondary clarifiers, aeration basins, blowers, membrane bioreactors, high-rate clarifiers, effluent filters, disinfection (ultraviolet), sludge thickening, digestion, and dewatering, odor control, chemical feed systems, effluent pumping, diffuser upgrades, land acquisition, demolition, force main and gravity pipelines, and pump stations. In order to present these costs in a manageable form, similar process elements were aggregated into main capital categories. On the treatment side, aggregate categories were created for liquid processes, solids processes, outfall facilities, and others; on the conveyance side, aggregate categories were created for pipeline and pump stations. Summaries of the cost estimates for each of the alternatives shown by aggregate capital elements are displayed in Table 6. It is important to note the dollar figures shown in this table reflect only the portion of financial responsibility born by the District. Similar costs associated with plans by Tri-City to expand or modify its own facilities are not included.

The table also reveals the relevant operation and maintenance costs for each alternative displayed under six main elements: labor, utilities, chemicals, laboratory, maintenance and equipment, and general (administration). The source of data used to define these costs came largely from recent summaries compiled for similar costs for the Kellogg and Tri-City plants. In addition, cost information was obtained from published reports related to chemical enhanced sedimentation and energy costs for membrane bioreactors and high-rate ballasted clarifiers. In applying this information, labor costs were estimated from known rates and projected staffing demands obtained from reported standards within the industry, utility (energy) and chemical costs from known and reported data scaled by flow, laboratory costs from known data and reported standards, and maintenance and equipment costs from known data and scaled by plant capacity, and general (administration) costs from known data and scaled by staffing levels. Summaries of the operation and maintenance cost estimates for each of the alternatives are also shown in Table 6.

The results indicate that Alternative 1 is potentially the least cost option, followed closely by Alternative 4. Although these options require all or a good portion of the flow to be moved to the Tri-City, they take advantage of the lower incremental treatment costs associated with the expansion of an existing, operational plant offering economies of scale and few site restrictions. The higher cost for Alternative 4 comes from additional pumping demands and added treatment infrastructure in comparison to those of Alternative 1, where 4.8 mgd at Kellogg is preserved and less is required to be rerouted to the Tri-City.

By contrast, Alternatives 2 and 5 rely on the construction of a new plant in the future. And though the treatment costs for this plant are competitive, the associated pumping and pipe costs are high. In each Alternative 2 and 5, wastewater that is currently being collected and conveyed under gravity is being pumped back (i.e., uphill) to the proposed new treatment plant site and then in turn repumped as part of final disposal via the original Kellogg outfall. This situation creates high pumping and piping costs for these options, especially if a site is selected away from the Clackamas River and the existing Kellogg facility. The ultimate cost for this option will rely on the final selection of a new plant location.

The option that makes best use of the existing conveyance system is that of Alternative 3. Here, piping and pumping costs are greatly reduced by taking advantage of all of the existing conveyance capacity that currently serves Kellogg. Those low conveyance costs, however, are accomplished by relatively high treatment costs. Here, newer technologies, such as high-rate clarifiers and membrane bioreactors, allow for adequate capacity to be constructed on the existing Kellogg site amid the operational units now in place. That reduced footprint technology, along with potentially difficult site conditions during construction (i.e., a 30% contingency is added for this factor), make the treatment costs for this option relatively expensive.

In summary, under the assumptions used for this study, the least expensive alternative(s), in terms of present day dollars, are those involving the diversion of a portion of the District's wastewater flows to the Tri-City, while preserving as much of the existing capacity at Kellogg without requiring substantial modification in altering its present form (technology) of treatment or abandoning the facility.

Table 6: Summary of 30-Year Capital and Operation/Maintenance Costs (2006 $ Millions)

	Alternative 1					Alternative 2					Alternative 3				
	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**
Liquid Process	$44.59	$28.50	$26.28	$0.00	**$99.36**	$75.41	$12.91	$27.45	$0.00	**$115.77**	$118.46	$32.58	$19.56	$3.30	**$173.90**
Solids Process	$11.05	$20.36	$7.20	$0.00	**$38.61**	$24.21	$13.16	$12.11	$0.00	**$49.48**	$9.75	$28.25	$1.34	$0.00	**$39.34**
Outfall	$4.67	$7.89	$0.93	$0.00	**$13.50**	$4.73	$0.00	$0.00	$0.00	**$4.73**	$3.94	$6.83	$0.00	$0.00	**$10.76**
Other	$18.46	$8.61	$2.17	$0.00	**$29.24**	$37.59	$3.90	$5.50	$0.00	**$46.99**	$20.57	$7.84	$0.44	$0.00	**$28.85**
Subtotal	**$78.76**	**$65.37**	**$36.58**	**$0.00**	$180.71	**$141.93**	**$29.97**	**$45.06**	**$0.00**	$216.96	**$152.72**	**$75.49**	**$21.34**	**$3.30**	$252.85
Pipelines	$23.03	$8.24	$0.00	$0.00	**$31.27**	$34.38	$5.59	$0.00	$0.00	**$39.97**	$11.79	$5.22	$0.00	$0.00	**$17.01**
Pump Stations	$16.39	$6.89	$0.00	$0.00	**$23.29**	$16.56	$7.31	$0.00	$0.00	**$23.87**	$5.36	$1.34	$0.00	$0.00	**$6.70**
Subtotal	**$39.42**	**$15.13**	**$0.00**	**$0.00**	$54.56	**$50.94**	**$12.91**	**$0.00**	**$0.00**	$63.85	**$17.15**	**$6.56**	**$0.00**	**$0.00**	$23.71
Labor	$3.66	$4.49	$4.73	$9.70	**$22.58**	$3.66	$6.65	$7.37	$16.18	**$33.86**	$3.66	$4.32	$5.64	$11.88	**$25.50**
Utilities (Power)	$2.58	$4.12	$5.55	$12.74	**$24.99**	$3.14	$5.61	$6.61	$15.19	**$30.55**	$2.05	$4.72	$6.83	$14.40	**$28.00**
Chemicals	$2.20	$2.61	$3.09	$6.65	**$14.55**	$2.20	$2.85	$3.09	$6.65	**$14.79**	$2.20	$1.95	$2.44	$5.11	**$11.70**
Lab	$0.90	$1.36	$1.43	$2.85	**$6.54**	$1.50	$1.90	$2.02	$4.20	**$9.62**	$0.90	$1.25	$1.58	$3.33	**$7.05**
Maint./Equip.	$1.00	$1.86	$2.43	$5.24	**$10.52**	$1.00	$1.61	$2.14	$4.80	**$9.54**	$1.00	$1.16	$1.86	$3.89	**$7.90**
General	$1.44	$1.74	$1.83	$3.75	**$8.76**	$1.44	$2.60	$2.88	$6.32	**$13.24**	$1.44	$1.68	$2.19	$4.37	**$9.68**
Subtotal	**$11.78**	**$16.18**	**$19.05**	**$40.93**	$87.94	**$12.94**	**$21.22**	**$24.10**	**$53.33**	$111.60	**$11.25**	**$15.07**	**$20.52**	**$42.98**	$89.82
	$129.96	$96.68	$55.63	$40.93	**$323.20**	$205.81	$64.10	$69.16	$53.33	**$392.40**	$181.13	$97.12	$41.86	$46.28	**$366.39**

	Alternative 4					Alternative 5				
	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**
Liquid Process	$56.67	$28.34	$28.34	$0.00	**$113.34**	$71.42	$20.60	$30.16	$6.19	**$128.36**
Solids Process	$16.40	$8.20	$8.20	$0.00	**$32.80**	$29.20	$9.61	$9.61	$0.00	**$48.42**
Outfall	$2.37	$10.08	$1.19	$0.00	**$13.64**	$2.25	$0.00	$0.00	$0.00	**$2.25**
Other	$14.02	$6.42	$1.11	$0.00	**$21.55**	$33.18	$6.35	$4.73	$0.00	**$44.25**
Subtotal	**$89.46**	**$53.03**	**$38.84**	**$0.00**	$181.32	**$136.04**	**$36.55**	**$44.49**	**$6.19**	$223.28
Pipelines	$40.14	$5.22	$0.00	$0.00	**$45.36**	$55.94	$2.57	$0.00	$0.00	**$58.51**
Pump Stations	$16.32	$4.08	$0.00	$0.00	**$20.40**	$17.02	$4.25	$0.00	$0.00	**$21.27**
Subtotal	**$56.46**	**$9.30**	**$0.00**	**$0.00**	$65.76	**$72.96**	**$6.82**	**$0.00**	**$0.00**	$79.78
Labor	$3.66	$2.52	$3.02	$7.06	**$16.26**	$3.66	$4.32	$5.04	$10.08	**$23.10**
Utilities (Power)	$3.62	$5.86	$6.93	$16.07	**$32.48**	$4.51	$7.27	$8.67	$20.09	**$40.53**
Chemicals	$2.20	$1.19	$1.43	$3.33	**$8.14**	$2.20	$1.19	$1.43	$3.33	**$8.14**
Lab	$0.90	$1.25	$1.40	$3.00	**$6.55**	$0.90	$1.25	$1.40	$3.00	**$6.55**
Maint./Equip.	$1.00	$1.16	$1.68	$3.64	**$7.48**	$1.00	$0.79	$1.40	$3.50	**$6.69**
General	$1.44	$0.98	$1.18	$2.74	**$6.34**	$1.44	$1.68	$1.96	$3.92	**$9.00**
Subtotal	**$12.82**	**$12.96**	**$15.63**	**$35.84**	$77.25	**$13.71**	**$16.49**	**$19.90**	**$43.91**	$94.01
	$158.74	$75.28	$54.47	$35.84	**$324.33**	$222.71	$59.87	$64.39	$50.10	**$397.07**

Section 5 - Financial Assessment

5.1 Overview of the Financial Planning Process

After estimating the capital and operation and maintenance cost for each alternative, an analysis was conducted to assess the financial impact of each alternative over the 30-year planning horizon, allowing the influence of the "time value of money" to come into play in determining potential least cost alternatives. The basic model used is one formulated on a "cash basis" approach. The resulting model analyzes the revenue requirements for constructing, operating, and maintaining the noted capital planning elements and balances that financial need among various (assumed) funding sources, including rates, system development charges (SDCs), debt (bonds), and other funding sources (e.g., grants or capital reserves).

The results are presented in different ways, allowing the most financially viable option to be shown based on the reader's perspective. The results are presented for each alternative based on the net present value (NPV) of the rate revenues over the projection period, the rates for year 1, 5, 10, 30, and level unit rates. Each of these measures is important in evaluating the financial viability of each alternative.

The net present value of revenues provides a measure of the total cost of each alternative viewed from the perspective of the total cost measured in today's dollars. This is the total amount of money that would need to be invested today in order to fund the operation and maintenance, debt service, and capital over the 30-year planning horizon.

The service rates in dollars per 1,000 gallons for year 1, 5, 10, and 30 allow for the evaluation of the impacts of each alternative on short run, mid-period, and long run rates.

The last measure of the financial analysis, levelized unit rates, allows for an "apples to apples" comparison of rates averaged over the entire 30 year planning period. The purpose of a levelized unit rate is to make the ratepayer indifferent as the rate paid over the period. That is to say, that the consumer can pay the levelized unit rate or the actual rates over the period and be financially indifferent at the end of the period. While the levelized rate may be higher than the actual rate initially, the excess funds are invested and used to make up any differences in the long run, when the levelized unit rate is lower than the actual rate.

As a word of caution to the reader, the results shown in this section should not be considered definitive. While one alternative may appear to be more financial viable than another, differences in the rates can be misleading because the underlying costs may include substantial variances from what may actually be paid and the assumptions used in the financial plan also have a significant impact on the results shown for each alternative and most certainly will not hold

at the same rate over the entire 30 year period. Therefore, the rates shown should be viewed in a range (such as plus or minus 10 %)

5.2 Summary of Financial Planning Results

Based on the assumptions detailed in Task Memorandum 2.7, the results of the financial analysis for each of the alternatives are presented in Table 7. The results include the cost per 1,000 gallons for year 1, 5, 10, and 30, the level unit rate, and the net present value of the revenue requirements (to convert to EDUs, multiply by 7.48). A graphic representation of the cost in $1,000 for each year of the study period is provided in Figure 6. This same representation in $1,000 is shown in Figure 7.

Table 7: Financial Results
Clackamas County Service District No. 1
Strategic Infrastructure Planning Study

	Unit Cost ($/1,000 gallon)					
Description	**Year 1**	**Year 5**	**Year 10**	**Year 30**	**Level Unit Rate**	**NPV of Service Revenues ($1,000)**
Alternative 1	1.99	2.54	3.50	1.69	2.85	218,666
Alternative 2	1.99	3.63	4.07	2.78	3.62	277,725
Alternative 3	1.99	2.21	4.27	1.24	3.08	236,102
Alternative 4	1.99	2.72	3.26	1.64	2.79	214,280
Alternative 5	1.99	3.89	4.14	2.45	3.64	279,375

As shown in Table 7, both Alternatives 1 and 4 are the most economical options over the long run. Alternative 4 has slightly higher rates in year 5 due to the need to finance capital in the first five years. Alternatives 2 and 5 appear to be the most expensive options due to the need to build a new plant and do not take advantage of existing infrastructure and economies of scale. Alternative 3 is slightly higher than alternatives 1 and 4 due to the cost of construction. The lower rates in the first few years for Alternative 3 are due to the timing of the capital improvements. The major improvements costs are assumed not to occur until year five and beyond.

The intent of the financial analysis was to provide an “apples to apples” comparison of the cost each alternative and not to determine the impact on individual rates. However, an indication of the impact on individual rates can be inferred. The impact on individual rates should be viewed as an “order of magnitude” impact and not as an exact rate. The exact rates for each option would need to be determined based on a preliminary engineering report and detailed rated model. However, the relative differences in the alternative would be the same. To determine the approximate individual rate for each alternative, an additional cost of $10 to 15 dollars per EDU can be added to the cost as shown in Figure 3. The additional cost would cover the cost of overhead and collection.

Figure 6: Clackamas County Service District No. 1 Wastewater Conveyance/Treatment Annual Costs Per $/1000 Gallons

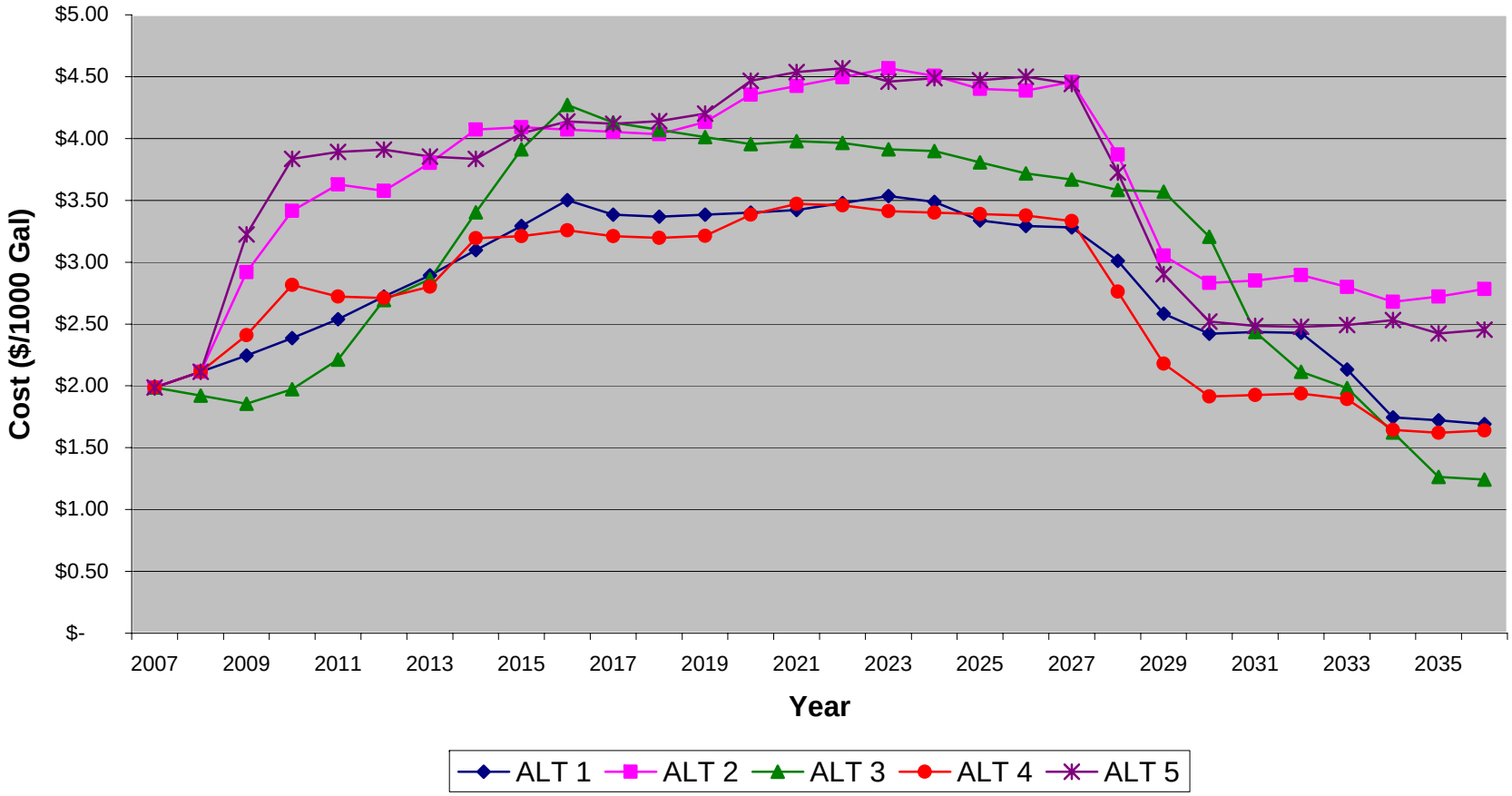
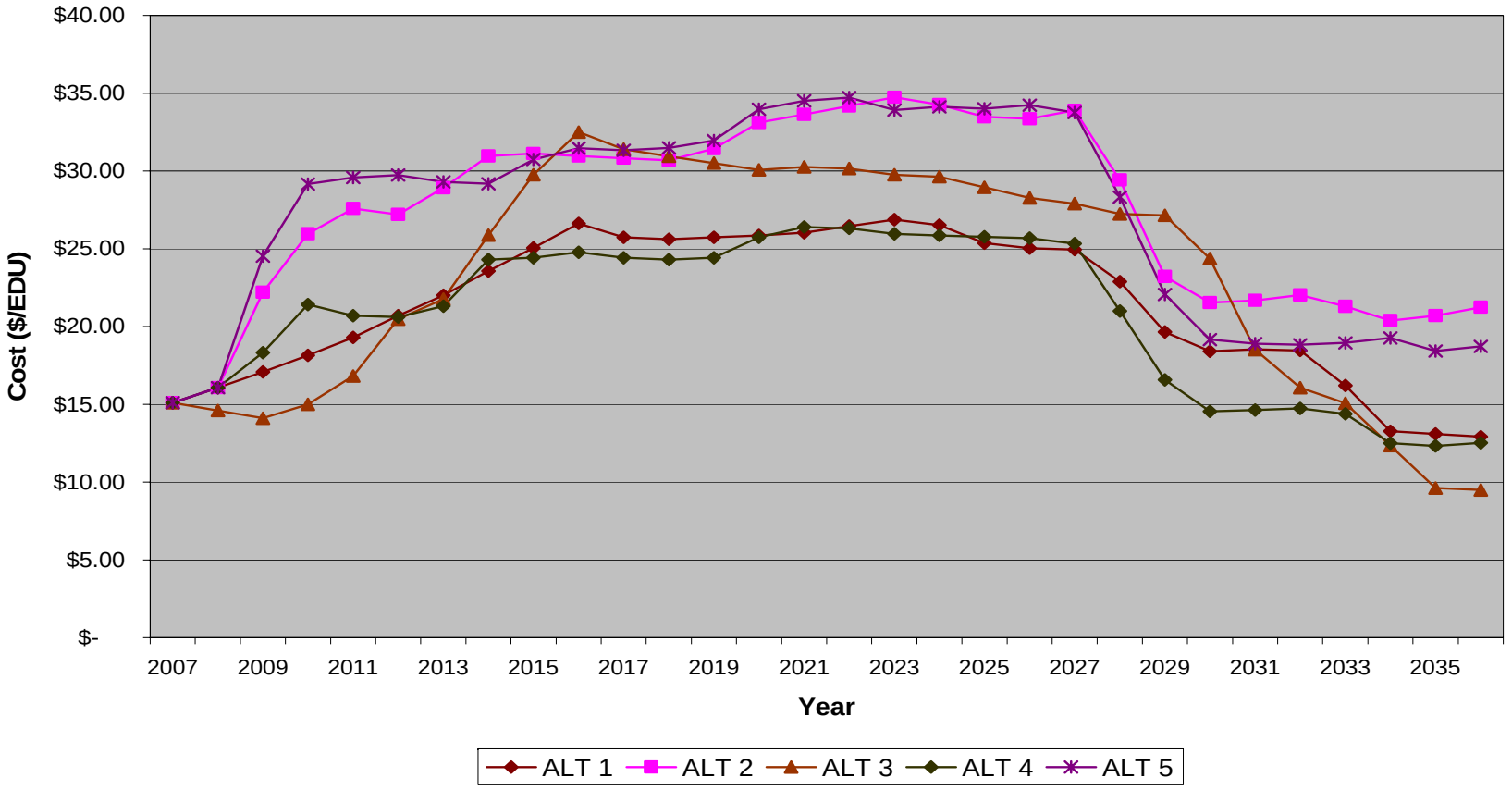


Figure 7: Clackamas County Service District No. 1 Wastewater Conveyance/Treatment Annual Costs Per EDU



Section 6 - Evaluation of Alternatives

6.1 Criteria Assessment

Early in the development of this plan, the Citizen's Advisory Council established a series of basic principles for guiding the process of discovery and eventual decision making. These principles were intended to reflect the overall interests and priorities of the District and its customers, as represented by the CAC, which included:

- Maintain Regulatory Compliance
- Preserve Self-Determination
- Fair Allocation of Costs and Impacts
- Cost Effective and Timely Solution
- Coordinate with Other Districts and Jurisdictions

These principles, in turn, served as a foundation in the creation of series of fundamental assumptions that set the stage for conducting the planning effort. A summary of those principles and the associated assumptions are outlined in Technical Memorandum 2.1.

In addition, those principles were used to create a series of criteria for evaluating the various treatment and conveyance alternatives. A full description of those criteria is presented in Technical Memorandum 2.2. Following that guidance, the five selected alternatives were evaluated against those criteria, subject to a qualifying scoring system denoting each alternative in terms of being favorable, unfavorable, or neutral. The summary of that criteria assessment is outlined in Table 8.

The evaluation of alternatives indicates that Alternative 4 provides the greatest number of "favorable" ratings among the various criteria. The advantages to Alternative 4 include a high degree for maintaining regulatory compliance, relatively low cost and low impact on rates, ease of implementation of permitting and constructability, timely implementation, and overall efficiency regarding regional coordination. The disadvantages, however, stem largely from the lack of self-determination, requiring intergovernmental agreements with the Tri-City Service District (TCSD). This alternative was predicated on the assumption that "an ownership interest" could be established with the TCSD for the District's portion of assets at the combined treatment plant location. That assumption leaves a number of unanswered questions as to the acceptance of this alternative by TCSD or the ability to establish a mutually acceptable agreement between the two districts.

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Maintain Regulatory Compliance						
Impacts to Wetlands or Cultural Resources	Various lands are protected under federal, state, and local regulations. Impact to these areas may restrict siting and construction of facilities. May also increase cost and time delays.	Favorable	Neutral	Favorable	Favorable	Neutral
Impacts on Water Quality Standards or Discharge Limits	Treated effluent must meet regulatory standards in relation to federal and state water quality protection.	Neutral	Neutral	Favorable	Favorable	Favorable
Impacts to Fish and Wildlife	Impacts to threatened or endangered species are regulated by federal and state law and may restrict siting and construction of facilities. May also increase cost and time delays.	Favorable	Neutral	Favorable	Favorable	Neutral
Preserve Self-Determination						
Maintains Ownership of Assets	Ownership of existing or future assets establishes a high degree of control regarding their use and management.	Neutral[1]	Favorable	Neutral	Neutral[1]	Favorable
Provides for On-going Role in Implementation	Besides actual ownership, an alternative may provide a role in implementation and operation activities.	Neutral[1]	Favorable	Favorable	Neutral[1]	Favorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Meets Capacity Demands of the District	An alternative that meets the demands of the District may be preferred over those that do not. The latter forcing the District to rely on outside interest to cover their "capacity" needs.	Neutral[1]	Favorable	Neutral	Neutral[1]	Favorable
Fair Allocation of Costs and Impacts						
Requires Growth-Related Costs to by Paid by Growth	An alternative may create greater equity in terms of financial responsibility among growth and non-growth-related elements.	Neutral[1]	Favorable	Favorable	Neutral[1]	Favorable
Impacts to Landowners and Businesses	The need for easements or access to right-of-way may impact access by landowners and/or operations of businesses.	Neutral	Unfavorable	Neutral	Neutral	Unfavorable
Impact to Residences and Neighborhoods	The need for new facilities or expanded operations may result in undesired impacts on adjacent residences or surrounding neighborhoods.	Neutral	Unfavorable	Neutral	Neutral	Unfavorable
Impact on Rates and Fees	The need for new facilities or expanded operations may result in undesired impacts on rate and fees.	Favorable	Unfavorable	Neutral	Favorable	Unfavorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Cost Effective and Timely Solution						
Construction Costs	Costs associated with building new facilities or improving or expanding existing facilities (i.e., capital costs).	Favorable	Unfavorable	Unfavorable	Favorable	Unfavorable
Lifecycle Costs	Long-term costs associated with an option that includes both capital construction and ongoing operation and maintenance.	Favorable	Unfavorable	Neutral	Favorable	Unfavorable
Constructibility	Ease and timeliness of implementation in terms of design, permitting, and construction. Impacts associated with unique technology selection, poor construction conditions, or difficult permitting conditions may delay implementation.	Favorable	Unfavorable	Unfavorable	Favorable	Unfavorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Coordinate with Other Districts and Jurisdictions						
Meets Regional Land Use and Comprehensive Plans Where Possible	An alternative compatible with regional land use and comprehensive plans is more likely to gain support for implementation.	Neutral	Unfavorable	Unfavorable	Favorable	Unfavorable
Promotes Regional or Interagency Efficiencies	An alternative that offers regional or shared use of facilities is likely to take advantage of economies of scale and be more efficient.	Neutral	Unfavorable	Neutral	Favorable	Unfavorable
Impacts Rates and Fees to other Jurisdictions	An alternative that creates a burden to other jurisdiction(s) may be more difficult to approve.	Favorable	Neutral	Favorable	Favorable	Neutral

1 – These tanks are dependent on the type of agreement reached with Tri-City.

The potential preference for Alternative 4 is followed closely by that of Alternative 1. Instead of moving all the treatment capacity to the Tri-City, Alternative 1 makes use of the infrastructure already at Kellogg, thus reducing the need for potential replacement of the necessary treatment capacity for the District. The continuance of Kellogg, however, raises a number of questions regarding the age of the plant, its potential for meeting long-term regulatory compliance, rising maintenance costs, and potential conflict with land use plans within the City of Milwaukie. As such, this alternative increases the risk regarding successful long-term implementation, yet preserves an important element of self-determination for the District by retaining the Kellogg facility.

Alternatives 2 and 5, which rely on the construction of a new plant, provide for the greatest degree of self-determination for the District, offering complete ownership in assets and options for future control in operations and maintenance. Unfortunately, these alternatives are the most costly and risky in terms of implementation. The higher costs are being driven by excessive conveyance and pumping costs associated with the redirection of flows away from Kellogg to a new site and the return of those flows to one of the established outfall (discharge) locations. Those costs, however, are dependent on the actual location of a new plant. Moreover, the time required to permit and build a new plant may be undesirable. It may take 6 to 8 years for site acquisition and to get a new plant permitted and constructed, which could require unique acceptance by the state to approve the dual use of an outfall to the Willamette River at either the Kellogg or Tri-City facility on a interim or permanent basis. In addition, the land required for the new site may not be readily available and may require condemnation, conditional land use permitting, or other delays in its acquisition. Only a site planning process can determine the validity of our conclusions.

Between the two pairings of alternatives is Alternative 3, which relies on the preservation of the Kellogg facility. This alternative is advantageous in that in makes maximum use of the installed infrastructure, both in terms of treatment and conveyance. It also affords the District a high degree of ownership in assets and self-determination. Conversely, this alternative is predicated on the rehabilitation and expansion of treatment capacity at the existing Kellogg site. Implementation requires the maintenance of a fully functioning plant while new technology (high rate primaries and membrane bioreactors) is installed to replace some of the old conventional treatment units. Constructability is of great concern, along with the uncertainty in costs and implementation. Moreover, the Kellogg site may suffer from long-term issues related to land use and acceptance within the City of Milwaukie.

6.2 Recommended Approach

The pressing issue on every alternative is time. The District's present treatment capacity resides solely at the existing Kellogg facility, which is operating near its dry weather flow capacity of 8 mgd at this time. The new ammonia limit substantially infringes on this capacity (up to 40%), which can result in water quality excursions and permit violations. Immediate action is necessary to remedy the problems on an interim or permanent basis.

Because of the urgency to respond and the significant associated costs, plans that rely on the construction of a new plant, such as Alternatives 2 and 5, may be unworkable. Although these alternatives offer the highest degree of self-determination for the District and its customers, the potential for protracted delays in land acquisition and permitting make these options difficult to implement. In addition, plans that look to permanently preserve or expand the existing Kellogg site are burdened by conflict with the goals of the City of Milwaukie and the maintenance of an aged facility.

It is important to note that all of the alternatives have some implementation delay associated with them. Any one of them cannot be completed or employed in months or even a few years and, as such, must rely on the preservation of Kellogg at some level on an interim basis. The best approach for meeting the District's needs is a plan that preserves Kellogg over the next 6-12 years, while phasing in replacement or added treatment capacity at the Tri-City plant. There are several distinct advantages to this approach, including costs, scales of economy, and ease of implementation. But none is more important than the ability to respond quickly and decisively to put needed treatment capacity into service on a timely basis. The success of that implementation, however, is tied to the need for the two districts to work in partnership, allowing an equity interest for CCSD#1 in the Tri-City facility.

Our recommended approach would be for the District to initiate plans and negotiations to build an approximate 6-8 mgd expansion at the Tri-City plant, while maintaining Kellogg at its 8 mgd capacity in the interim. This approach will require some renovation at the Kellogg plant without substantial replacement or modification of existing plant infrastructure. The new capacity at Tri-City could be put into service in approximately 3-5 years. This option may also require the interim increase of the diversion flow currently in place between the District and Tri-City.

As those interim measures are being designed and constructed, plans would continue to examine the phase-out of the Kellogg facility over the following few years, allowing for final plans to be created for the subsequent buildout of District treatment capacity at the Tri-City plant and for the necessary associated conveyance facilities.

As noted earlier, it is important for the reader to understand that the findings and opinions outlined in this report are expressly those of HDR Inc. and it's staff, and does not represent those of any outside parties including those of the Citizens Advisory Council (CAC), it's members or other representatives associated with the planning effort for identifying the 30-year treatment and conveyance alternatives for Clackamas County Service District No. 1 (CCSD#1).

John Lang, P.E. **Public Works and Engineering Management**

September 22, 2006

TO: Members of the CCSD #1 CAC: Jim Knapp, Eric Hofeld, Vern Cameron, John Hilley, Elaine Maxey, and Jeff Winner

FROM: John Lang, P.E.: CAC Technical Advisor

SUBJECT: CCSD #1 Strategic Wastewater Infrastructure Strategic Plan Recommendation

You have come to a conclusion that the best and preferred strategy for meeting the District's future wastewater needs includes developing a new plant for treating wastewater collected by CCSD #1. This has been a difficult decision but one reached based on the information you received during the last eight months of many public meetings, "Roundtable" discussions with your wholesale customers and other affected jurisdictions, the HDR Engineering Report, the Peer Review of Alternatives and Cost, and your recently conducted Public Survey.

Developing a strategic plan for locating and financing wastewater treatment facilities for Clackamas County Service District No. 1 is a major public policy action. It will have long term impacts on the public and environmental health of the District, it will provide a necessary part of the infrastructure needed for years of continued growth and economic vitality of Clackamas County, and implementing it will require the expenditure of approximately $250 to $300 million in public funds. Clearly, decisions of this magnitude must be well thought out and best serve the purpose for which they are intended.

I believe three important questions must be addressed by this strategy.

- First, is this strategy realistic and able to provide wastewater services when needed by the District and as required by regulatory agencies?
- Second, is the cost of implementing this strategy reasonable and acceptable to those who have to pay for it?
- Third, does this strategy meet and/or facilitate achieving the goals of the District, its customers, and the Region?

Following are my thoughts of how a strategy to develop a new plant meets these three purposes.

Is the strategy for a new plant realistic and able to accomplish its purpose of providing wastewater services when needed by the District and as required by the regulatory agencies?

Yes. The CAC considered five different alternatives for meeting the District's future wastewater needs. All of them are considered realistic, able to meet the requirements of State and federal regulators, and will provide adequate capacity for treating the Districts wastewater needs through the year 2036.

Because of the current ammonia limitations and site restrictions for the Kellogg plant, the difficult part this question is "how soon will the various alternatives will be ready to provide wastewater treatment service?" Constructing new wastewater plants or making major expansions to them is often a long and difficult process. All the alternatives will have the capacity to provide

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wastewater services when needed once identified improvements are constructed and put in operation. A "case" can be made that any alternative calling for a new plant will take longer and is more risky to implement than other alternatives requiring only expansion of wastewater facilities at an existing treatment plant site. This is because a new plant, using conventional treatment, requires a site 20 to 30 acres in size. That requires land to be found, acquired and, then the site must go through local land use process to obtain all the necessary construction permits. However, Tri-City and Kellogg are both located in cities that will also require "land use and permitting" processes that have the potential for delaying any expansion. Also, in the case of Tri-Cities, a negotiated agreement for service to the District could additionally prolong and delay the start of constructing expanded treatment facilities at that site.

Another factor to consider in the "length of time" factor is that the existing Kellogg plant requires immediate capacity improvements regardless of which alternative is chosen. Kellogg's new Discharge Permit now requires more ammonia removal from the effluent discharge to the Willamette River than before. Because of this, Kellogg no longer has the capacity to treat all of its existing wastewater flows and will require interim capacity improvements before any of the five alternatives can be implemented and operational. Providing adequate interim capacity improvements now, regardless of which alternative is selected, will buy the District additional time which should minimize concerns about which alternative will take the longest to implement.

Is the cost of implementing the plan reasonable and acceptable to those who have to pay for it?

People are always shocked at how costly major improvements to wastewater treatment plants are. This is the situation you find CCSD #1 to be in. The District is going to be responsible for funding and paying anywhere from $250 million to $300 million in capital costs over the next 25 years for any wastewater strategy and alternative that is adopted. In turn, this creates the need for major increases in monthly sewer rates and Sewer Development Charges to your customers. All five alternatives will require average EDU monthly rate increases that range from $21 to $28 per month. SDC's will also need to be increased to pay the share of costs attributable to new growth in the District.

The fact that all alternatives require an increase in monthly rates in the range of $21 to $28 may render moot the question of "is the strategy's cost reasonable and acceptable?" Improvements must be made and regardless of which alternative is selected, the cost is going to be high and will need to be paid for by the rate payers of CCSD #1.

Perhaps a better way of looking at which alternative has the most acceptable and reasonable cost is to consider what you get for the difference in monthly rates between the alternatives. The alternative requiring the least amount of average monthly rate increases is to abandon Kellogg and treat all of the District's waste at the Tri-Cities plant location for an average monthly EDU rate increase of approximately $20.85. The alternative the CAC may prefer is to abandon Kellogg and treat all of the District's waste at a new plant in a new location requiring an average monthly EDU rate increase of approximately $27.25. The question to consider then is: Does your preferred alternative best meet and facilitate goals of the District, its customers, and Clackamas County for the additional $6.40 in monthly sewer rates? Based on the results of your public process and survey, I think yes.

Does a new plant strategy meet and facilitate the goals of the District, its customers, and the Region?

Building a new wastewater plant in a new location does meet and facilitate many of the goals and desires you have identified for the District and its customers. It can also provide "technical" benefits that are not available at the Kellogg or Tri-Cities sites, as well as meeting a major goal of Milwaukie by removing the Kellogg plant from its waterfront site. And finally, depending on location, can also provide regional benefits to the County.

Technical Benefits: During the Peer Review of the alternatives and their costs, one conclusion was that a new site may be preferable because:

- It provides the opportunity for adequate space to have:
  - An efficient "layout" of plant facilities
  - Flexibility and expansion.
- Construction costs are reduced because:
  - The site does not have interfering underground facilities, contamination, high ground water, or poor foundation conditions such as may be found at Kellogg or Tri-Cities.
  - Construction does not have to occur at or around the operation of an existing treatment plant.
  - Construction scheduling is easier and possibly faster.
  - Both the plant and associated equipment are all new which reduces the need to interface new equipment with old which would be required when expanding older facilities
  - It provides a better opportunity for automated equipment to reduce labor and other costs, and
  - It results in a new facility with a full design life span rather than the ones now reaching half their design life.

District Goals and Desires: During the last eight months, the CAC has identified and evaluated goals and desires for the future of Clackamas County Sewer District #1. These have recently been measured by your recent public survey. The conclusion drawn from that effort is that the alternative of constructing a new plant meets these important goals and desires. I also believe a new plant provides several benefits to the District that are additional to those measured in the survey. Significantly, I believe:

- Self determination is best achieved and preserved by owning and operating your own treatment plant.
- A new plant location has the greatest opportunity for minimizing undesirable operational impacts on residential neighborhoods by locating it outside existing or encroaching residential development.
- The investment of public funds for the construction of a new plant has the potential to stimulate the adjacent local economy through both public and private investments. This benefit makes it desirable to locate the plant within the district whose customers are paying for the plant so they, rather than residents and businesses outside the district, will receive any benefits from such stimulus.
- Constructing a new plant in a new site provides opportunities for multiple uses at the same site. For example, a new plant location might also accommodate park

area or a Tri-Met Park and Ride Station. A new site also be designed to model and provide educational environmental benefits such as using grass swales to collect parking lot runoff?

Regional Goals and Desires

One of the County's goals is to regionalize its responsibilities for wastewater treatment. Regionalism does not necessarily mean only one treatment plant. Rather, it can mean the ability to serve multiple jurisdictions at one location for efficiency and economic benefits. A new plant in a new location for CCSD #1 has the potential to do this. If sighted properly, it could treat sewerage at one location for unincorporated N. Clackamas County, Milwaukie, Happy Valley, and Damascus. I understand there is even some discussion that the Oak Lodge Sewer District may consider having their wastewater treated at a new CCSD #1 plant if its location and cost is less than their current estimated costs for upgrading the Oak Lodge treatment plant.

Summary and Recommendations

I believe there are two important issues associated with the development of a new treatment plant alternative and are the deciding factors for selecting it as the preferred alternative.

1. Is the risk of time delay associated with acquiring the site and obtaining local permits for a new plant acceptable when considering the other alternatives? Probably yes when you consider that critical additional capacity in the immediate future will be met by interim capacity improvements at Kellogg and that all five alternatives have the risk of delays by going through local land use and permitting requirements.

2. Is the additional amount of $6.40 in estimated monthly sewer rates for this alternative more than offset by the additional benefits provided to the District and its customers by having a new plant owned and operated by the District? Based on the goals and desires of the District, as measured in its survey, as well as information received from customers and other impacted agencies, that the benefits do indeed outweigh the additional amount in rates.

Based on your information and discussions, a new wastewater plant located within the District certainly best meets your goals and desires for the future of CCSD #1. Assuming such a plant is part of the strategic plan recommended to the Board of County Commissioners, I strongly recommend that you include the following actions as part of your strategic plan submitted to the BCC:

1. On adoption of your recommended strategic plan immediately begin a "site study" to determine the new plant location and initiate acquisition of the site.
2. Because of the high cost associated with all alternatives, cost reduction ideas should be explored and used wherever possible during the pre-design stage of implementation.

"Let's Talk Sewage!"

Public Involvement Process

Updated as of 9/1/06

Overview

On January 12, 2006, the Board of County Commissioners (BCC) acting as the governing body for Clackamas County Service District No. 1 (CCSD1), created the Citizen Advisory Council (CAC). The CAC was appointed *to review, advise, and make recommendations to the District Board regarding the development of a strategic plan for the location and financing of wastewater treatment facilities of the District by September 30, 2006. All viable alternatives will be considered from the standpoint of efficiency, effectiveness, cost and practicality* (Board Order 2006-06).

The CAC plans to submit for review to the Board a single all-inclusive plan for sewage services by September 30, 2006. The CAC has made a commitment to coordinate with and seek input from any advisory groups appointed by the Board of County Commissioners, by Tri-City Service District, and/or representatives who are customers of the District. In addition, the CAC has been responsible for conducting a program of community outreach to inform voters and ratepayers in the District on matters of concern to the District and its operations.

Since February 2006, the CAC has been working diligently with a technical and financial team, HDR Engineering consultants, and Water Environment Services (WES) staff to develop a project timeline that includes a transparent public involvement process.

Alternatives for Further Study

Eight different alternatives for treating sewage were developed for the Citizen Advisory Council (CAC) to consider ranging from full to partial expansion at the Kellogg sewage treatment plant, to completely decommissioning the facility. Each alternative concept was discussed in detail from the standpoint of its technical merits, estimated relative cost and its ability to be implemented. The alternatives, deliberations, and the conclusions of the "charrette" technical workshops were presented to the public for input following each of the workshop deliberations. The CAC then adopted the alternatives that would continue on for more extensive study in the strategic planning process.

These treatment options include the following:

The Kellogg Creek sewage treatment plant is located west of McLoughlin Road in Milwaukie along the Willamette River.

***Alternative A.1** - The Kellogg sewage plant remains in service in its current general configuration. The plant will be upgraded to meet the new ammonia limitation of its permit and to incorporate a higher level of wastewater treatment to allow for future reuse opportunities. The capacity of the plant would remain at somewhere between 4.8 million gallons per day (MGD) to 8.0 MGD average dry weather flow. All flows exceeding the new upgraded capacity would be routed to the Tri-City sewage plant in Oregon City. This alternative would require new and modified conveyance systems and expansion of the Tri-Cities facility.

***Alternative A.2** – The Kellogg sewage treatment plant remains in service similar to Alternative A.1 with flows exceeding the upgraded capacity being routed to a new treatment facility located somewhere within the boundaries of CCSD1. This alternative would require construction of a new sewage plant, modification of the existing conveyance systems to transfer the sewage flows to the new plant, and construction of new conveyance systems to utilize the existing outfall at the Kellogg Plant.

The Tri-City sewage treatment plant is located west of the I-205 Park Place exit near the Clackamette Cove.

Alternative B.1 - Kellogg remains in service with installation of various hydraulic and process upgrades to accept up to 12.5 MGD average dry weather flow which is the current limit of the upstream conveyance system. All excessive flow above that physical limitation would be diverted to the Tri-City sewage plant in Oregon City. This alternative would require new or modified conveyance systems to get the flow to the Tri-City sewage plant and future expansion of the Tri-Cities plant to accommodate the diversion.

Alternative D.1 - Decommission the Kellogg sewage plant and route all flows to the Tri-Cities facility. This alternative would require an expansion of the Tri-Cities sewage plant and new and modified conveyance systems to transfer all sewage flows now being sent to Kellogg.

Alternative D.2 - Decommission the Kellogg sewage plant and route all flows to a new sewage facility located somewhere within the boundaries of CCSD1. This alternative would require construction of a new sewage plant, modification of the existing conveyance systems to transfer the sewage flows to the new plant, and construction of new conveyance systems to utilize the existing outfall at the Kellogg sewage plant.

Sewage Treatment Alternatives For Further Study			Sewage Treatment Plant - Million Gallons per Day (MGD)		
Designation		Features	Kellogg	Tri-Cities (Add capacity)	New CCSD#1 Plant
*A.1	Existing Kellogg	Upgrade Kellogg sewage plant to nitrification and route surplus to Tri-Cities	4.8-8 MGD	11.8 MGD	
*A.2	Existing Kellogg	Upgrade Kellogg sewage plant to nitrification and route surplus to new Plant	4.8-8 MGD		11.8 MGD
B.1	Cap Kellogg	Limit Kellogg sewage plant base flows to the capacity of the influent sewer and route excess to Tri-Cities	12.5 MGD	4.1 MGD	
D.1	Abandon Kellogg	Abandon Kellogg sewage plant and route flows to Tri-Cities		16.6 MGD	
D.2	Abandon Kellogg	Abandon Kellogg sewage plant and route flows to new Plant			16.6 MGD

Other alternatives reviewed by the CAC were eliminated due to concerns about relatively high costs in operations, limitations of land available for expansion, and the CAC's desire to maintain ownership of the sewage plant through an asset partnership.

All of the alternatives have assumed that the District would upgrade to a Class 4 treatment level to provide for future unrestricted re-use of the WWTP effluent, and production of Class A biosolids to anticipated changes in the regulatory environment.

*Many wastewater facilities have ammonia nitrogen limits (NH3-N) in their permits. To accomplish ammonia removal, Kellogg and the Tri-City plants use a biological process known as nitrification. Nitrification is the process whereby ammonia in wastewater is oxidized (meaning chemical addition of oxygen to breakdown pollutants or organic wastes) to nitrite (NO2) and then nitrate (N03) by bacterial or chemical reactions. The danger ammonia poses for fish depends on the water's temperature and pH; the higher the pH and the warmer the temperature, the more toxic the ammonia.

Public Involvement Process – At a Glance

Date	Task
January through February 2006	• Citizen Advisory Council (CAC) is formed • Regular CAC meetings scheduled for 2nd & 4th Monday's of the month • Website page is developed • Current service characteristics and future service area projections
March 2006	• CAC reviews and comments on scope of work for technical and financial services • CAC selects HDR Engineering firm to conduct the technical and financial analysis
April 2006	• Sewer News mailed to CCSD1 ratepayers • HDR Engineering develops sewage treatment alternatives based on basic principles and evaluation criteria set by CAC
May 2006	• Eight alternatives for sewage treatment are selected by CAC
June 2006	• Open house "charrette" takes place June 7th & 8th • CAC adopts alternatives for more extensive study
July 2006	• HDR Engineering develops a capital, operations and financial plan for each alternative • Round table discussions with Cities
August 2006	• Speaker's Bureau on alternatives for further study begins
September 2006	**WE ARE HERE** • CAC makes final recommendation to BCC by September 30, 2006
October 2006	• BCC accepts and implements sewage plan

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Attachmemt 2

CLACKAMAS COUNTY SERVICE DISTRICT NO. 1

STRATEGIC WASTEWATER INFRASTRUCTURE PLANNING STUDY

EXECUTIVE SUMMARY FINAL REPORT

Executive Summary

September 27, 2006

HDR

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Section 1 - Introduction

Formed under a directive from the Clackamas County Board of Commissioners, the Citizen's Advisory Council (CAC) was tasked with the development of a strategic plan for locating and financing new wastewater treatment facilities for Clackamas County Service District No. 1 (District). Under this plan, the Council is to develop a long-range strategy for meeting the infrastructure and financing needs of the District as it relates to the expansion, construction, retention, or elimination of the main capital elements of the District's system, including (but not limited to) sewage treatment plant(s), pipelines, manholes, pipeline casing, measuring and metering devices, screening devices, holding tanks, valves, buildings, sewer laterals, collector mains, pumping stations and force mains, interceptors, and other such appurtenances deemed appropriate to the District sanitary sewer collection and treatment system.

HDR, Inc. was then hired by the County to assist staff and the CAC in the preparation of this plan. The Consultant's work was determined through a series of project tasks directed at developing data and information deemed pertinent in the creation of long-term capital and financing plan for the District. The work presented here represents a summary of the task memoranda delivered under HDR's contract with the County.

The purpose of this summary is to present the major findings for this project. These include:

- The establishment of baseline conditions within the District
- Future service projections for the area
- Review of the financial capacity of the District
- Intergovernmental Agreements affecting operations
- Creation of basic principles and criteria under which the planning effort would be conducted
- Examination of the existing treatment and conveyance capacity available to the District
- Future treatment and conveyance alternatives for meeting long-term needs
- Capital and operational costs for those alternatives
- Assessment of the financial impacts associated with those alternatives.

The data used in this study was obtained from a number of sources, including present-day billing and accounting records from the District, current and historic records of wastewater flows and loads within the system, regional data and reports, on-site survey of facilities, and facts and statistics from a variety of existing reports already completed by the District. This information was used to prepare separate capital plans associated with five selected alternatives covering treatment and conveyance needs for the District over the next 30 years. The cost figures for those plans were then used to evaluate the financial impacts for each alternative over the 30 year planning period.

The key facts and findings for the overall study are outlined in the following subsections. Draft findings are also presented regarding a recommended approach to future capital planning for treatment and conveyance needs for the District over the next 30 years.

It is important for the reader to understand that the findings and opinions outlined in this report are expressly those of HDR Inc. and it's staff, and does not represent those of any outside parties including those of the Citizens Advisory Council (CAC), it's members or other representatives associated with the planning effort for identifying the 30-year treatment and conveyance alternatives for Clackamas County Service District No. 1 (CCSD#1).

Section 2 - Service Area Description

2.1 Clackamas County Service District Number 1

The District is situated within both incorporated and unincorporated portions of Clackamas County. The District's present boundaries encompass portions of the cities of Gladstone, Happy Valley, Damascus, and a large unincorporated area between the cities of Milwaukie, Happy Valley, Damascus, Gladstone, and the Oak Lodge Sanitary District. The District is bounded to the north by the cities of Portland and Milwaukie, to the west by the Oak Lodge Sanitary District, to the south by the City of Gladstone and the Clackamas River, and to the east by portions of the City of Happy Valley and a small portion of the southwestern area of the City of Damascus. An illustration of the District's boundaries in relation to other key features is shown in Figure 1.

Operationally, the District provides wastewater collection, conveyance, and treatment to its customers through a series of pipes, pump stations, diversions, and the Kellogg Creek Wastewater Pollution Control Plant (WPCP). Of notable interest, the Kellogg treatment facility is actually located outside the District's boundary in downtown Milwaukie near the Willamette River. The District owns and operates the plant, including the land on which the facility is situated; however, the City of Milwaukie maintains land use jurisdiction over the property.

The District serves both retail and wholesale customers comprised of single and multifamily residential, public, commercial, institutional, and industrial accounts. Its jurisdictional boundaries, however, are marked with areas within its boundaries where persons or businesses are either part of a separate jurisdiction or are part of the unincorporated portion of Clackamas County. The one separate jurisdiction is that of Johnson City, which is a wholesale customer of the District. The remaining extraterritorial "islands" are simply unsewered and operate on private septic systems. A more detailed description of the District's customers is outlined in the following section.

The District's retail customers are defined by those service connections that reside within the District's boundaries. The majority of those retail customers are located within an area referred to as the North Clackamas Service Area, while the remainder are located within the cities of Gladstone and Damascus. In addition, the District's customer base also includes a number of important wholesale customers who are billed

on an aggregate basis separate from their traditional retail customers. These wholesale customers include the cities of Milwaukie and Johnson City.

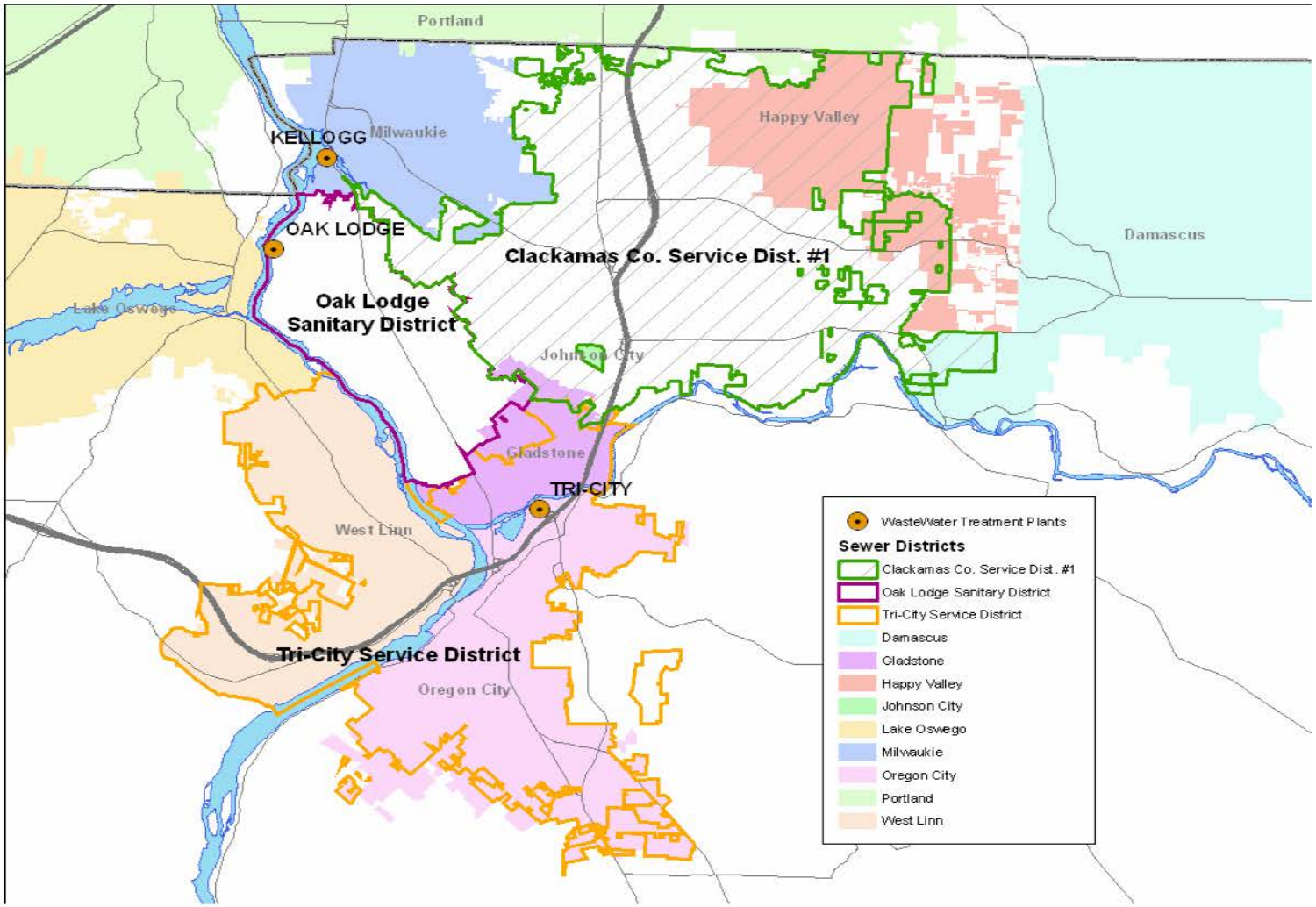


Figure 1: Sewer Districts

2.2 Billing Records and Equivalent Dwelling Units (EDUs)

As with most municipal sewer agencies, the District rates are established on a unit basis in relationship to a typical residential connection called an Equivalent Dwelling Unit (EDU). Moreover, the quantity of flow is tied largely to metered water use rather than direct measurements of wastewater discharge. Because of this, an EDU is a somewhat arbitrary number that is derived from historic knowledge of flows for the system.

Presently, the District defines an EDU as:

> "A unit of measurement of sewer usage assumed to be equivalent to the usage of an average single family dwelling unit. A unit is equivalent to sewage of a strength and volume normally associated with an average single family dwelling unit or its equivalent. Where unit equivalency must be computed, it will be equivalent to 1,000 cubic feet of water consumption per month" (Section 2.1.83 of the District's Rules and Regulations, WES 2006d).

The District's records indicate five major use sectors: single residential, multifamily residential, institutional, commercial, and industrial. For billing purposes, each of these sectors and their connections represent potentially different flows. Hence, separate EDU numbers are established for each connection type, with one EDU serving as the basis for a single family home, and then multiples applied to the other types of connections. (For example, the District currently assigns two EDUs to a duplex, one for each unit.) For commercial users, a basis of water use is applied, where one EDU is assigned per every 1000 cubic feet of metered water use per month.

A summary of the 2005 EDUs by customer type is shown in Table 1.

Table 1: 2005 Summary of District Accounts

Area	Customer Type	EDUs
District	Single family	14,339
	Multifamily, institutional, industrial	14,181
	Hand billed	608
	Industrial (extra strength)	1,407
District Retail Total		30,535
Johnson City	Wholesale	~300
Milwaukie[1]	Wholesale	9,780 (Year 2000)
Total		40,165

The District has also established wastewater strength for an EDU based on: (a) 0.449 pounds of BOD-5 per day; and (b) 0.449 pounds of suspended solids per day. Users

[1] According to the City website, Milwaukie's current population is approximately 20,600. For the purposes of this report, it is assumed there is no change in sewer customer base from 2000 to 2005.

discharging more than this are surcharged for the excess. It is important to note that these strength numbers are not used to quantify the number of EDUs; rather, they are used to define the anticipated waste loadings from the typical single-family home and then to apply appropriate fees for those discharging in excess of those basic criteria.

2.3 Wastewater Flows and Loads

2.3.1 Flows to Kellogg Treatment Plant

In 2005, dry weather flows (May through October) at the Kellogg plant averaged 7.6 million gallons per day (mgd) and wet weather season flows (November through April) averaged 8.6 mgd, while the annual average flows were 8.1 mgd. Wet weather flows are typically larger than dry weather conditions, especially for the maximum month and day. This is due to inflows and leaks into the system during storm events and higher groundwater conditions.

On the loading side, the District reported an average BOD-5 and TSS inflow to Kellogg of 16,250 lbs/day and 20,740 lbs/day, respectively. The numbers indicate a general increase in waste strength during dry weather conditions. This is due to the general dilution effect that occurs during inflows of rain or groundwater during wet weather conditions. Table 2 summarizes 2005 flows and loads for the Kellogg plant.

Table 2: Kellogg Creek 2005 Flows and Loads Summary

	Parameter	Unit	Average	Maximum Month	Maximum Day
Annual	Flow	mgd	8.1	14.3	19.8
	TSS	lbs/d	20,740	27,930	52,530
	BOD	lbs/d	16,250	19,540	47,130
Dry Weather Flows	Flow	mgd	7.6	9.4	12.3
	TSS	lbs/d	20,060	27,930	52,530
	BOD	lbs/d	16,380	18,650	37,840
Wet Weather Flows	Flow	mgd	8.6	14.3	19.8
	TSS	lbs/d	21,420	26,880	43,970
	BOD	lbs/d	16,120	19,540	47,130

2.3.2 Diversion

The District created a diversion of flow and load in January of 2000 using the Clackamas Pump Station to alleviate loadings into the Kellogg plant. The diversion was created to transfer high strength wastewater from several industrial customers in the North Clackamas industrial area to the Tri-City Water Pollution Control Plant (TCWPCP). The diversion is supported by the pump station and a 12 inch force main with a capacity of 2.0 mgd. The diverted flow currently ranges between 0.5 and 0.7 mgd, with a peak flow event of approximately 1.4 mgd. In 2005, the average flow diversion was measured at 0.58 mgd. Table 3 summarizes 2005 flows and loads from the Kellogg plant to the Tri-City plant.

Table 3: 2005 Diversion Flows and Loads Summary

	Parameter	Unit	Average	Maximum Month	Maximum Day
Diversion to Tri-City	Flow	mgd	0.58	0.73	1.40
	TSS	lbs/d	2,345	4,017	10,759
	BOD	lbs/d	3,437	5,371	9,214

2.4 Treatment and Conveyance Facilities

2.4.1 Kellogg Creek Water Pollution Control Plant (WPCP)

Wastewater flows from the District and its wholesale customers are principally treated at the Kellogg Creek Water Pollution Control Plant (Kellogg). This facility is located along McLoughlin Boulevard within the downtown area of the City of Milwaukie and is owned and operated by the District. The plant occupies approximately 8 acres of the 10.94 acresite. The property is bordered on the west by the Willamette River; on the north by a 1.42-acre city park and boat ramp; on the east by an abandoned railroad line and Highway 99E (McLoughlin Blvd.); and on the south by Eagle Street and the Island Station residential area. An active Southern Pacific rail line is also adjacent to the southeast corner of the property. Except for the small park on the north and the residential area to the south, the plant is relatively isolated from adjacent developed areas.

The City of Milwaukie maintains land use jurisdiction over the Kellogg site which is currently situated among the city's downtown office (DO) zoning, and as such is operating under a non-conforming land use designation. The plant currently operates within the provisions of a community service overlay (CSO) zone. The City is reviewing the status of the Kellogg facility under the CSO designation and has indicated potential plans to change that status, thereby establishing the facility as an unintended use at its present site under the city's zoning provisions.

When constructed in 1973, the Kellogg facility was rated for an average daily dry weather flow capacity of 10 mgd and 5-day biological oxygen demand (BOD-5) loading of 20,000 pounds per day (ppd). In the 1990's, the plant was unable to consistently meet discharge permit water quality requirements, particularly with regard to average daily dry weather flows. To remedy the problem, short-term flow diversions and plant improvements were made to address the noted performance issues.. Through time, modifications and loading changes to the plant may have altered its capacity. Current estimates place its capacity at approximately 8.0 mgd and 18,000 lbs/day BOD-5 during average day dry weather flow conditions. Based on 2005 data, the average day dry weather flow arriving at the plant was approximately 7.6 mgd, while the loading of BOD-5 was 16,380 ppd.

More recently, the Kellogg facility has undergone a periodic permit review by the Oregon State Department of Environmental Quality (ODEQ). Under the new permit, ODEQ restricts monthly average dry weather loadings to 1300 lbs/day for BOD-5 and 1,700 lbs/day for TSS. In addition, ODEQ has called for tighter controls for ammonia,

restricting daily maximum dry weather releases to no more than 33 mg/l and monthly averages to 18.6 mg/l over that same period. This latter restriction impacts the capacity at Kellogg. In order to meet the new standard, the capacity of the plant would likely be reduced by as much as 40% of its current number, leaving the plant at an estimated capacity of approximately 4.8 mgd. Table 4 outlines the estimate plant capacity for the Kellogg facility under the new ammonia permit from ODEQ.

Table 4: Ammonia Limit Effect

Kellogg Creek - Secondary Process Capacity				
Parameter	Capacity without Ammonia Limits	Units	Capacity with Ammonia Limits	Units
Flow	8.0	mgd	4.8	mgd
BOD	20,000	ppd	12,000	ppd
TSS	20,000	ppd	12,000	ppd

These numbers are important in that the flows and loads coming into to the Kellogg facility today are at or near its present day capacity of approximately 8 mgd.

2.5 Collection and Conveyance System

The District's conveyance system serves seven main sanitary basins, including the Lower, Middle, and Upper Kellogg basins in the southwest; the Mt. Scott basin in the central part of the district to the west of I-205; the Johnson Creek, Lower, and Upper Phillips basins to the north; the Mt. Talbert, Sieben Creek, and Happy Valley basins to the east and northeast; and the Clackamas basin serving the southern portion of the district east of I-205. The Phillips, Mt. Talbert, Happy Valley, and Clackamas basins all drain into a 36-inch main trunkline running through the Mt. Scott basin, which eventually flows into the 48-inch Lower Kellogg line and the Kellogg WPCP.

The District maintains approximately 251 miles of collection and conveyance pipeline that range in size from 6 to 48 inches in diameter within the North Clackamas area. The vast majority of these pipes, however, are related to smaller, local collection pipelines that run along homes and businesses and provide primary service to the system. In addition, the system contains larger, key conveyance pipelines that are used to transport aggregated waste flows from the collection system to the Kellogg treatment plant. A summary of the size and length of pipe that comprise the larger conveyance system is outlined in Table 5.

Table 5: Inventory Summary of the Conveyance System North Clackamas Area

Diameter of Pipe (inches)	Total Length of Pipe (feet)
8-10	58,000
11-13	46,000
14-17	23,000
18-23	39,250
24-35	19,000
36-47	18,000
48+	4,000

Figure 2 also displays a map of the District's conveyance system showing lines greater than 8 inches in diameter.

Section 3 - Projection of Flows and Loads

3.1 General Approach

The projection of flows and loads were based on growth rates defined under separate planning efforts conducted by the Sunrise Water Authority and Clackamas River Water. Recognizing the relation to water use and wastewater flows, it was assumed projections from both Sunrise and Clackamas River would provide a basis for quantifying anticipated growth in flow within the District's current boundaries. Projections for the western half of the District are based on Clackamas River Water use increases; those on the eastern half are from Sunrise Water Authority numbers. The area coverage between the two is roughly a 65-35% split between Sunrise Water Authority and Clackamas River Water, respectively, across the existing District boundaries. Hence, a corresponding weighted increase in projected water use was used to establish the rate of increase in future wastewater flows within the District.

Two other growth scenarios also considered the potential addition of the City of Damascus as a future wholesale customer, and the current unincorporated area between the cities of Happy Valley and Damascus (assumed to be annexed by the City of Happy Valley in the future and then served by the District). The projections for the City of Damascus are based on a recently-completed concept plan that predicts dwelling unit numbers, land use zone (acreage) and employment numbers through buildout in 2025. For the unincorporated area between the cities of Happy Valley and Damascus, the most recent Metro forecast for households was used to establish the rate of anticipated growth for that area. Additional detail as to the methods used for the various forecasts is outlined in their respective subsections below.

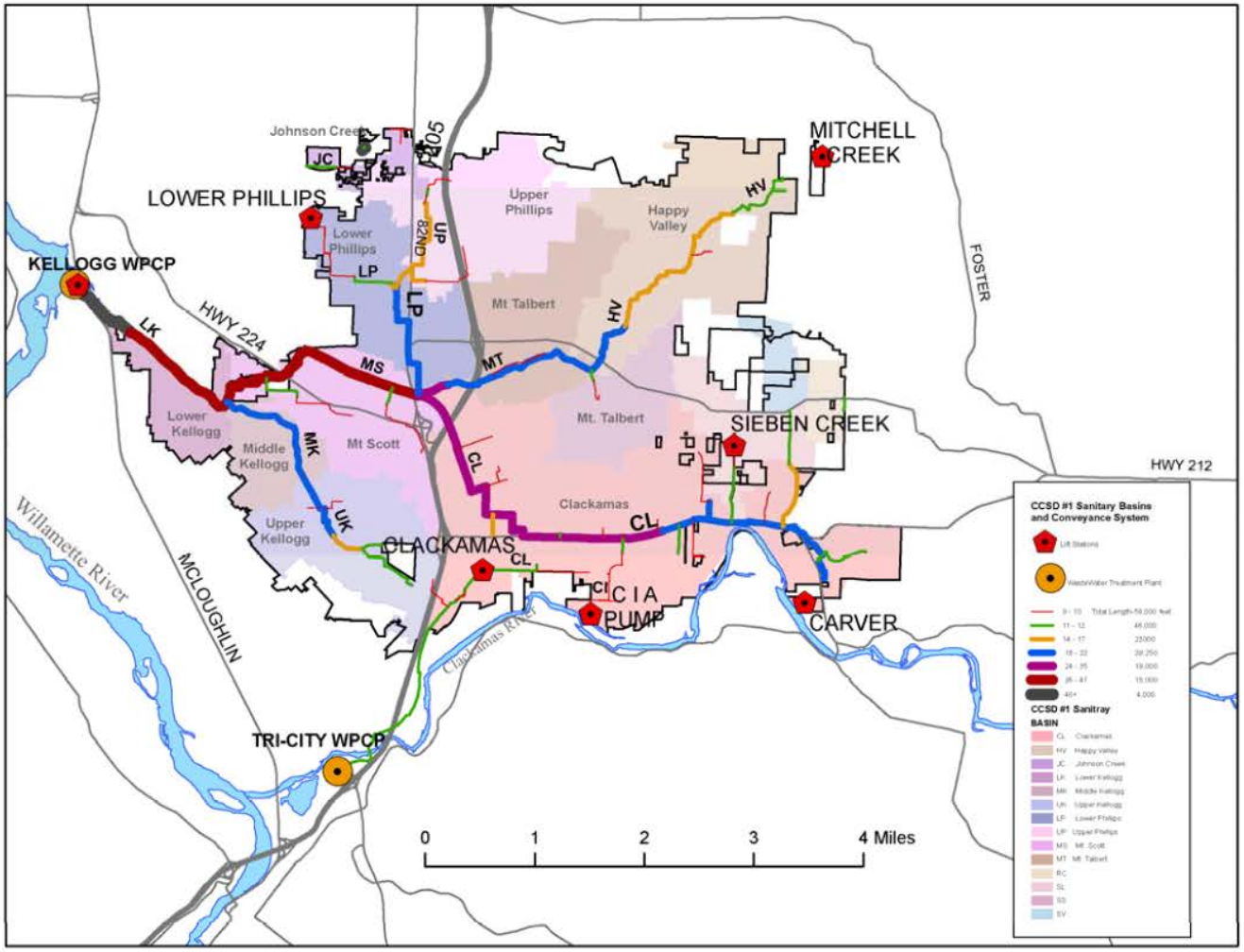


Figure 2: Clackamas County Service District No. 1 Conveyance System

3.2 Projection of Wastewater Flows and Loads

Two scenarios were used in the forecasts: scenario one assumes the District remains under its existing boundaries with possible expansion into the unincorporated area between Happy Valley and Damascus (following annexation by Happy Valley); scenario two assumes the same conditions as scenario one, with the addition of the City of Damascus as a wholesale customer. It is worthwhile to note that under these scenarios the buildout of the existing District territory is assumed to occur around 2025, as depicted by the Sunrise and Clackamas River plans. In addition, it was assumed the unincorporated area between the cities of Happy Valley and Damascus would not begin until 2015 and would extend through 2035, while that of the City of Damascus would begin now and extend through 2025 as noted within their present concept plan.

For residential users, it is assumed that future wastewater composition does not dramatically change from its current makeup. Thus, the rate of projected increase for both flow and loads (BOD-5 and TSS) is presumed identical and depends on the area in which those projections are being forecast–namely within the District whose projections are tied to forecasted water use, those within the unincorporated area between Happy Valley and Damascus tied to Metro household increases, and those within the City of Damascus tied to the estimate of new dwelling units outlined in their new municipal concept plan.

Similarly, on the commercial and industrial side, it is assumed the present breakdown between residential and commercial accounts remains relatively constant through time within the present District boundaries; thus, the rate of increase in flow and loads would be the same as that projected for the residential users within the District. Those same basic assumptions are also presumed to apply to future growth within the unincorporated area that currently resides between the cities of Happy Valley and Damascus (Rock Creek basin). The one notable commercial facility being planned for that area is a new 400-bed hospital (each bed is assumed to produce the same flow as an equivalent dwelling unit and a loading approximately 4-5 times that of a typical EDU). The estimated increase in wastewater flow from the hospital is only about 0.1 mgd, while the loading is about 1000 lbs/day of BOD-5 and 1,200 lbs/day of TSS. Finally, in the Damascus area, future commercial and industrial flows are expected to generate about 1,000 to 2,000 gallons per day per acre of commercial and industrial land. This latter estimate is derived from typical industry standards for light to medium industrial development. Under the existing Damascus concept plan, there are approximately 1,130 acres of commercial and industrial lands. This number would equate roughly to between 7,000 and 9,000 new equivalent dwelling units.

3.2.1 Future Wastewater Flows

The projected wastewater flows for the District reveal a dramatic increase over the next 20 years, starting at approximately 8.0 mgd for average annual conditions in 2005 and rising to 15.0 mgd in 2025. Embedded in these numbers is the basic assumption that flows will increase at rates similar to water use within the District, and that the City of Milwaukie's flow will increase 1.0 mgd over that same 20-year period, while those from Johnson City will remain relatively constant.

Beyond 2025, most of the relevant planning projections begin to predict near "buildout" conditions, and by 2030, that same average day flow has only grown to 16.6 mgd. A summary of those projections is shown in Figure 3.

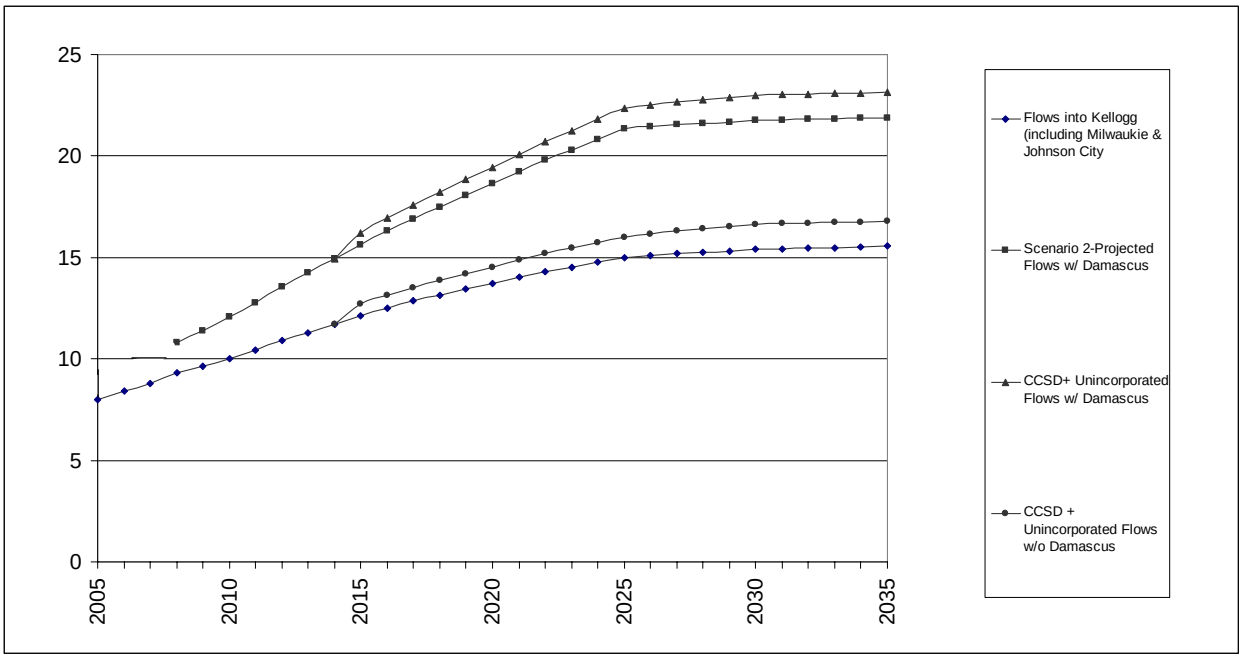


Figure 3: Projected Annual Average Wastewater Flows

If the city of Damascus is served by the District; the estimated average annual flow at year 2025 rises to 21.3 mgd, while the addition of the unincorporated area between Happy Valley and Damascus (Rock Creek) would add another 1.0 mgd – bringing the total potential flow over the next 20 years to 22.3 mgd. Similarly, at buildout, those same numbers rise to approximately 21.9 mgd for the District and the City of Damascus, and 23.1 for the further addition of the Rock Creek basin. The early projections for Damascus, namely those through 2008 or 2009, are not expected to be realized because the city does not yet have a completed collection and conveyance system.

3.2.2 Future Wastewater Loads

It is assumed composition of wastewater loads will not change dramatically in the future; therefore, the rate of growth in future loading for both BOD-5 and TSS are identical to that of flows. Beginning in 2005, at around 20,700 lbs/day, the estimated loading in TSS for the District grew to approximately 37,500 lb/day by year 2025, then to 39,000 lbs/day at buildout in year 2035. Similarly, the loadings for BOD-5 go from approximately 16,200 lbs/day in 2005 to 28,500 lbs/day by the year 2025, then to 29,600 lbs/day at buildout. A summary of the loading projections is shown in Figure 4 and Figure 5.

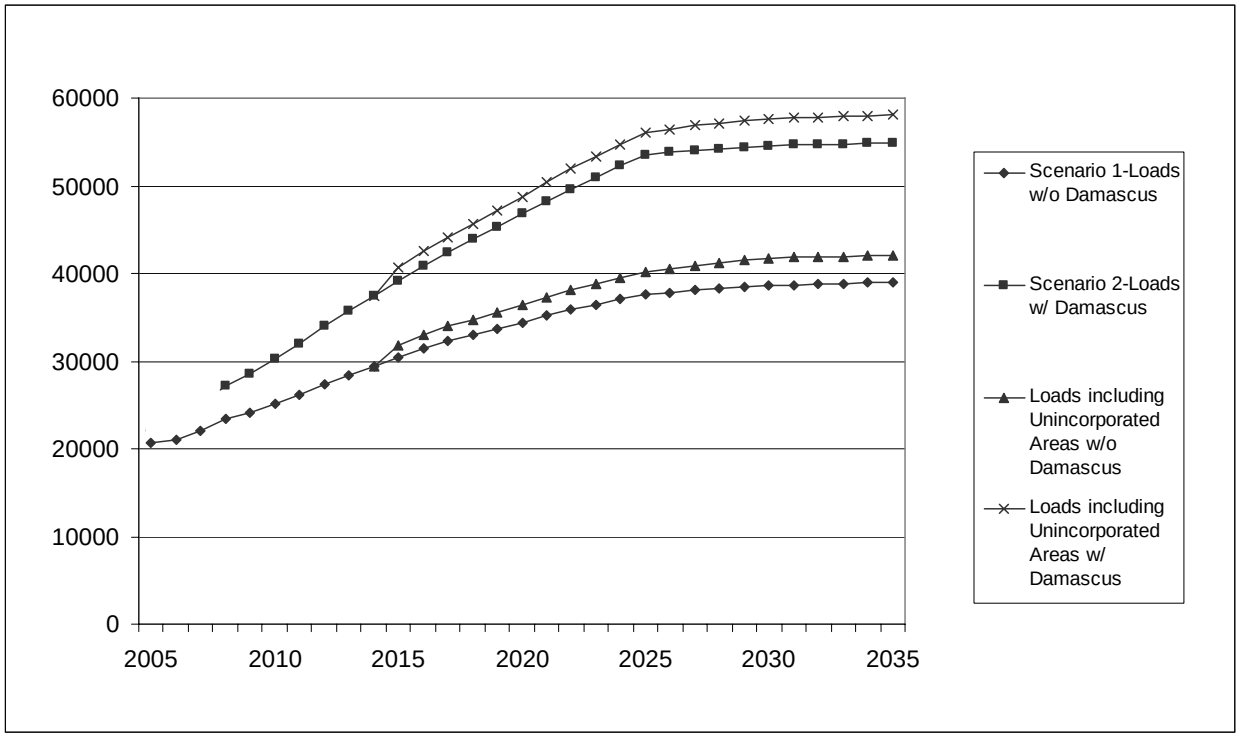


Figure 4: Projected Annual Average TSS Loading

If the city of Damascus is added, the loads for TSS and BOD-5 rise to 53,500 lbs/day and 43,300 lbs/day, respectively, by year 2025. While at buildout, these numbers climb slightly higher to 55,000 lbs/day and 44,500 lbs/day by year 2035. If, in addition, the unincorporated area between Happy Valley and Damascus is added, the total projected load for TSS and BOD-5 reach 56,000 lbs/day and 45,400 lbs/day by year 2025 and 58,000 lbs/day and 47,000 lbs/day by year 2035.

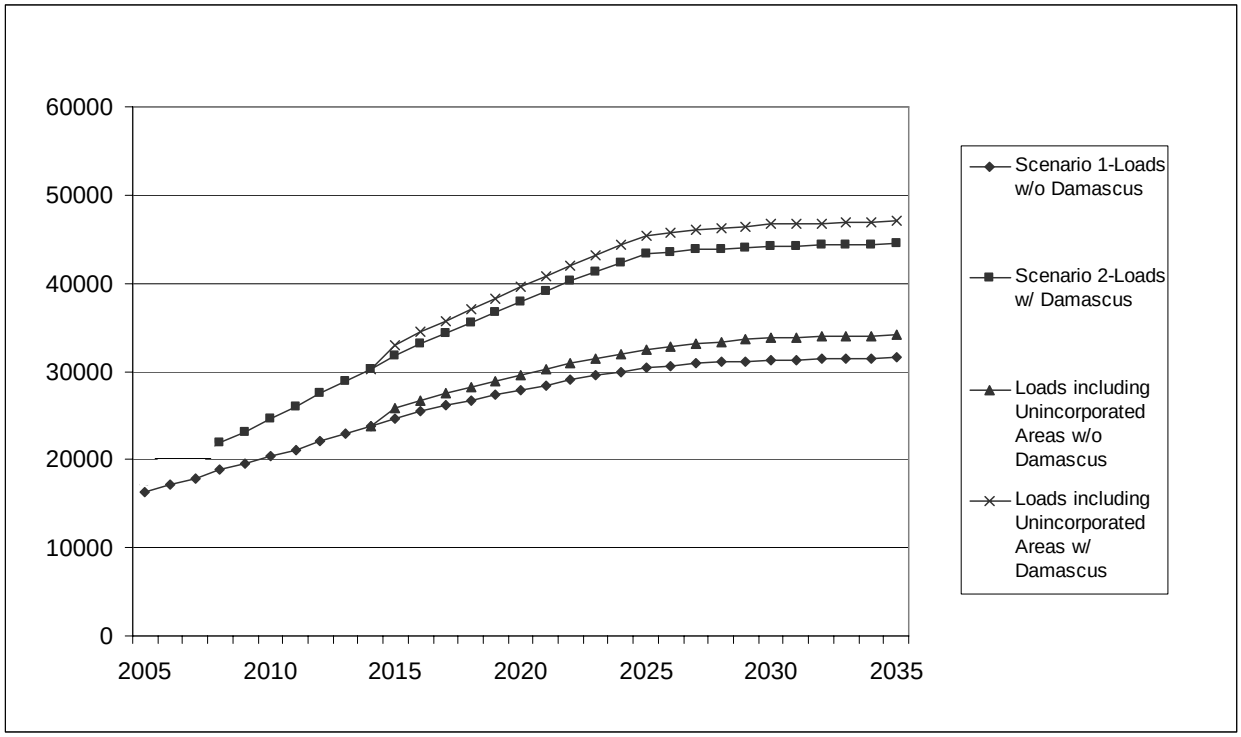


Figure 5: Projected Average Annual BOD Loading

Section 4 - Alternatives and Projected Costs

4.1 Summary of Selected Alternatives

In early June, a two-day series of workshops was conducted among the technical and financial committees of the CAC to discuss various alternatives for meeting the treatment and conveyance infrastructure needs for the District over the next 30 years. Those discussions were followed by a series of meetings by the CAC to formalize the alternatives into five definitive options. Each of the options was predicated on satisfying four fundamentals elements: (1) meeting all existing and anticipated regulatory requirements, including those for ammonia; (2) producing Class A biosolids by 2015; (3) producing a Class IV effluent (i.e., meeting a 10/10 mg/l limit for both BOD-5 and TSS); and (4) meeting existing and future capacity needs for both treatment and conveyance (ultimately 16.6 mgd based on dry weather flows in the year 2030).

Under those guidelines, the CAC agreed to examine the following five main alternatives:

1. *Preserve Kellogg and Move Future Flows to Tri-City*: Under this alternative, Kellogg would be preserved under a de-rated state (i.e., assumed 4.8 mgd) to meet the ammonia limits established under the plant's new discharge permit and all remaining capacity needs (11.8 mgd) would be conveyed and treated at the Tri-City plant. Remedies at Kellogg would be limited to using the existing major infrastructure (such as clarifiers, basins, etc.) without substantial capital modifications.

2. *Preserve Kellogg and Move Future Flows to a New Treatment Facility*: The same conditions as those defined under Alternative 1 with the exception that all future flows (11.8 mgd) would be sent to a new conventional-type plant to be situated on 30 acres along the industrial corridor south of Highway 212/224. For purposes of this study, it is assumed that this location sits adjacent (east) to the existing Fred Meyer warehouse.

3. *Expand Kellogg to Meet the Existing System's Conveyance Capacity*: Under this option, Kellogg would be rehabilitated using new treatment technology such as high-rate clarifiers or membrane bio-reactors to achieve a treatment capacity on the existing plant's footprint that would serve 12.5 mgd (i.e., the estimated capacity of the existing conveyance system) with the residual future flow (4.1 mgd) to be sent to the Tri-City plant.

4. *Abandon Kellogg and Move Flows to the Tri-City*: The focus of this option would be to transition the flows (ultimately 16.6 mgd) over the next 5-10 years to the Tri-City and decommission the existing Kellogg facility.

5. *Abandon Kellogg and Move Flows to a New Plant*: Similar to Alternative 4 in its plan to decommission Kellogg, this option would transition the flows (ultimately 16.6 mgd) over the next 5-10 years to a new plant situated on 30 acres along the industrial corridor south of Highway 212/224 (as described in Alternative 1).

Technically, the advantage to Alternative 1 is associated with its reliance on the existing infrastructure either at Kellogg or the Tri-City plants. Although the Kellogg facility may provide as little as 4.8 mgd of treatment capacity under its new ammonia permit, it does provide an important cornerstone within the District's current infrastructure. Its replacement would be expensive; moreover, the District is simply under capacity with regard to treatment. At a minimum, Kellogg would have to remain in operation until sufficient capacity could be built to replace it or meet treatment needs through other options. Keeping Kellogg offers a low incremental cost in terms of treatment capacity. Additionally, remedies to meet the ammonia permit may also be relatively inexpensive – weighed against rising maintenance costs to preserve the operation of a plant over 30 years old. By contrast, buildout or expansion at the Tri-City plant is thought to be relatively easy, given there is ample room and an existing infrastructure that can be shared, creating potential savings in terms of scales of economies. The main disadvantage to this alternative is that of added pumping and conveyance required to redirect the flows from Kellogg to the Tri-City plant.

Similarly, Alternative 2 takes advantage of keeping Kellogg and its potentially low incremental costs for baseline treatment capacity, with added capacity being directed at the construction of a new plant. The new plant offers the ease of construction at an open site and autonomy from having to form an intergovernmental agreement with

another agency or District for treatment. The potential for locating the new plant centrally within the District also offers the most economical position regarding future reuse of its discharge. The main disadvantages, however, are those of acquiring a new site (i.e., possible condemnation), potentially protracted permitting of a new plant (which could delay the addition of needed capacity in meeting future flow and load demands), and the extra pumping and conveyance costs associated with the redirection of collected flows to the new plant and their discharge to an outfall.

Alternative 3 would not only retain Kellogg, but would also build it out to meet the capacity of the existing conveyance system. Unlike the other alternatives, this option makes the greatest use of existing pipes, leaving the remaining treatment capacity to be built out at the Tri-City location. In addition, the option will make use of more modern treatment technology in the form of a membrane bioreactor, which allows for the expansion of capacity within the existing Kellogg site beyond the plant's original capacity. The main disadvantage is the need to preserve the old Kellogg plant while renovations at that site are completed; hence, the need to build new capacity at the Tri-City plant before Kellogg could be built out. Moreover, the cost of membrane technology is relatively high and its installation would have to occur while maintaining a fully functioning conventional plant at the Kellogg site. The logistics of that implementation would greatly increase construction costs at the Kellogg site.

Alternatives 4 and 5 are variants of Alternatives 1 and 2. The entire treatment capacity is directed either at buildout at the Tri-City plant or a new treatment plant location. The advantages and disadvantages are similar to those outlined for Alternatives 1 and 2, except that Kellogg is abandoned permanently as quickly as new treatment capacity can be built at either of the two alternative locations. The examination of these alternatives, however, affords a look at the potential economies of scale for construction at the Tri-City site and the ease of implementation of full treatment capacity at each alternative location.

It is important to note that the various alternatives selected were also designed to cover a range of options. These options were identified as feasible in providing sufficient treatment and conveyance capacity for the District over the next 30 years. As such, each alternative could in whole or part provide a key element to the actual preferred option to either an interim or long-term solution to the District's need for wastewater treatment and conveyance.

4.2 Capital and Operation and Maintenance Plans

For each of the five selected alternatives, separate capital plans were created, each intended to meet the infrastructure needs of the District over the next 30 years. Engineering cost estimates for relevant improvements were developed under present day (2006) dollars, along with supporting costs for operation and maintenance. The scheduling of projects was also designed to meet the capacity requirements for projected flows and loads through 2030.

The key time horizons begin early, noting current system flows are at or near the existing treatment capacity for both Kellogg and the diversions to Tri-City. Because of

this, the system will demand early expansion of treatment capacity to a level beyond 10 mgd (average dry weather flow) by 2010 and 14.5 mgd by 2020, with final capacity reaching between 16 and 17 mgd by 2030.

Cost numbers were generated using a variety of data sources, including existing reports, construction costs estimates for similar facilities in the Northwest, and the experience of senior HDR engineering staff. During the analysis, estimates were prepared for approximately 25 major capital elements associated with the various alternatives, including (but not limited to): influent pumping, screening, grit removal, primary and secondary clarifiers, aeration basins, blowers, membrane bioreactors, high-rate clarifiers, effluent filters, disinfection (ultraviolet), sludge thickening, digestion, and dewatering, odor control, chemical feed systems, effluent pumping, diffuser upgrades, land acquisition, demolition, force main and gravity pipelines, and pump stations. In order to present these costs in a manageable form, similar process elements were aggregated into main capital categories. On the treatment side, aggregate categories were created for liquid processes, solids processes, outfall facilities, and others; on the conveyance side, aggregate categories were created for pipeline and pump stations. Summaries of the cost estimates for each of the alternatives shown by aggregate capital elements are displayed in Table 6. It is important to note the dollar figures shown in this table reflect only the portion of financial responsibility born by the District. Similar costs associated with plans by Tri-City to expand or modify its own facilities are not included.

The table also reveals the relevant operation and maintenance costs for each alternative displayed under six main elements: labor, utilities, chemicals, laboratory, maintenance and equipment, and general (administration). The source of data used to define these costs came largely from recent summaries compiled for similar costs for the Kellogg and Tri-City plants. In addition, cost information was obtained from published reports related to chemical enhanced sedimentation and energy costs for membrane bioreactors and high-rate ballasted clarifiers. In applying this information, labor costs were estimated from known rates and projected staffing demands obtained from reported standards within the industry, utility (energy) and chemical costs from known and reported data scaled by flow, laboratory costs from known data and reported standards, and maintenance and equipment costs from known data and scaled by plant capacity, and general (administration) costs from known data and scaled by staffing levels. Summaries of the operation and maintenance cost estimates for each of the alternatives are also shown in Table 6.

The results indicate that Alternative 1 is potentially the least cost option, followed closely by Alternative 4. Although these options require all or a good portion of the flow to be moved to the Tri-City, they take advantage of the lower incremental treatment costs associated with the expansion of an existing, operational plant offering economies of scale and few site restrictions. The higher cost for Alternative 4 comes from additional pumping demands and added treatment infrastructure in comparison to those of Alternative 1, where 4.8 mgd at Kellogg is preserved and less is required to be rerouted to the Tri-City.

By contrast, Alternatives 2 and 5 rely on the construction of a new plant in the future. And though the treatment costs for this plant are competitive, the associated pumping and pipe costs are high. In each Alternative 2 and 5, wastewater that is currently being collected and conveyed under gravity is being pumped back (i.e., uphill) to the proposed new treatment plant site and then in turn repumped as part of final disposal via the original Kellogg outfall. This situation creates high pumping and piping costs for these options, especially if a site is selected away from the Clackamas River and the existing Kellogg facility. The ultimate cost for this option will rely on the final selection of a new plant location.

The option that makes best use of the existing conveyance system is that of Alternative 3. Here, piping and pumping costs are greatly reduced by taking advantage of all of the existing conveyance capacity that currently serves Kellogg. Those low conveyance costs, however, are accomplished by relatively high treatment costs. Here, newer technologies, such as high-rate clarifiers and membrane bioreactors, allow for adequate capacity to be constructed on the existing Kellogg site amid the operational units now in place. That reduced footprint technology, along with potentially difficult site conditions during construction (i.e., a 30% contingency is added for this factor), make the treatment costs for this option relatively expensive.

In summary, under the assumptions used for this study, the least expensive alternative(s), in terms of present day dollars, are those involving the diversion of a portion of the District's wastewater flows to the Tri-City, while preserving as much of the existing capacity at Kellogg without requiring substantial modification in altering its present form (technology) of treatment or abandoning the facility.

Table 6: Summary of 30-Year Capital and Operation/Maintenance Costs (2006 $ Millions)

	Alternative 1					Alternative 2					Alternative 3				
	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**
Liquid Process	$44.59	$28.50	$26.28	$0.00	**$99.36**	$75.41	$12.91	$27.45	$0.00	**$115.77**	$118.46	$32.58	$19.56	$3.30	**$173.90**
Solids Process	$11.05	$20.36	$7.20	$0.00	**$38.61**	$24.21	$13.16	$12.11	$0.00	**$49.48**	$9.75	$28.25	$1.34	$0.00	**$39.34**
Outfall	$4.67	$7.89	$0.93	$0.00	**$13.50**	$4.73	$0.00	$0.00	$0.00	**$4.73**	$3.94	$6.83	$0.00	$0.00	**$10.76**
Other	$18.46	$8.61	$2.17	$0.00	**$29.24**	$37.59	$3.90	$5.50	$0.00	**$46.99**	$20.57	$7.84	$0.44	$0.00	**$28.85**
Subtotal	**$78.76**	**$65.37**	**$36.58**	**$0.00**	$180.71	**$141.93**	**$29.97**	**$45.06**	**$0.00**	$216.96	**$152.72**	**$75.49**	**$21.34**	**$3.30**	$252.85
Pipelines	$23.03	$8.24	$0.00	$0.00	**$31.27**	$34.38	$5.59	$0.00	$0.00	**$39.97**	$11.79	$5.22	$0.00	$0.00	**$17.01**
Pump Stations	$16.39	$6.89	$0.00	$0.00	**$23.29**	$16.56	$7.31	$0.00	$0.00	**$23.87**	$5.36	$1.34	$0.00	$0.00	**$6.70**
Subtotal	**$39.42**	**$15.13**	**$0.00**	**$0.00**	$54.56	**$50.94**	**$12.91**	**$0.00**	**$0.00**	$63.85	**$17.15**	**$6.56**	**$0.00**	**$0.00**	$23.71
Labor	$3.66	$4.49	$4.73	$9.70	**$22.58**	$3.66	$6.65	$7.37	$16.18	**$33.86**	$3.66	$4.32	$5.64	$11.88	**$25.50**
Utilities (Power)	$2.58	$4.12	$5.55	$12.74	**$24.99**	$3.14	$5.61	$6.61	$15.19	**$30.55**	$2.05	$4.72	$6.83	$14.40	**$28.00**
Chemicals	$2.20	$2.61	$3.09	$6.65	**$14.55**	$2.20	$2.85	$3.09	$6.65	**$14.79**	$2.20	$1.95	$2.44	$5.11	**$11.70**
Lab	$0.90	$1.36	$1.43	$2.85	**$6.54**	$1.50	$1.90	$2.02	$4.20	**$9.62**	$0.90	$1.25	$1.58	$3.33	**$7.05**
Maint./Equip.	$1.00	$1.86	$2.43	$5.24	**$10.52**	$1.00	$1.61	$2.14	$4.80	**$9.54**	$1.00	$1.16	$1.86	$3.89	**$7.90**
General	$1.44	$1.74	$1.83	$3.75	**$8.76**	$1.44	$2.60	$2.88	$6.32	**$13.24**	$1.44	$1.68	$2.19	$4.37	**$9.68**
Subtotal	**$11.78**	**$16.18**	**$19.05**	**$40.93**	$87.94	**$12.94**	**$21.22**	**$24.10**	**$53.33**	$111.60	**$11.25**	**$15.07**	**$20.52**	**$42.98**	$89.82
	$129.96	$96.68	$55.63	$40.93	**$323.20**	$205.81	$64.10	$69.16	$53.33	**$392.40**	$181.13	$97.12	$41.86	$46.28	**$366.39**

	Alternative 4					Alternative 5				
	2006-2010	2011-2015	2016-2020	2021-2030	**Total**	2006-2010	2011-2015	2016-2020	2021-2030	**Total**
Liquid Process	$56.67	$28.34	$28.34	$0.00	**$113.34**	$71.42	$20.60	$30.16	$6.19	**$128.36**
Solids Process	$16.40	$8.20	$8.20	$0.00	**$32.80**	$29.20	$9.61	$9.61	$0.00	**$48.42**
Outfall	$2.37	$10.08	$1.19	$0.00	**$13.64**	$2.25	$0.00	$0.00	$0.00	**$2.25**
Other	$14.02	$6.42	$1.11	$0.00	**$21.55**	$33.18	$6.35	$4.73	$0.00	**$44.25**
Subtotal	**$89.46**	**$53.03**	**$38.84**	**$0.00**	$181.32	**$136.04**	**$36.55**	**$44.49**	**$6.19**	$223.28
Pipelines	$40.14	$5.22	$0.00	$0.00	**$45.36**	$55.94	$2.57	$0.00	$0.00	**$58.51**
Pump Stations	$16.32	$4.08	$0.00	$0.00	**$20.40**	$17.02	$4.25	$0.00	$0.00	**$21.27**
Subtotal	**$56.46**	**$9.30**	**$0.00**	**$0.00**	$65.76	**$72.96**	**$6.82**	**$0.00**	**$0.00**	$79.78
Labor	$3.66	$2.52	$3.02	$7.06	**$16.26**	$3.66	$4.32	$5.04	$10.08	**$23.10**
Utilities (Power)	$3.62	$5.86	$6.93	$16.07	**$32.48**	$4.51	$7.27	$8.67	$20.09	**$40.53**
Chemicals	$2.20	$1.19	$1.43	$3.33	**$8.14**	$2.20	$1.19	$1.43	$3.33	**$8.14**
Lab	$0.90	$1.25	$1.40	$3.00	**$6.55**	$0.90	$1.25	$1.40	$3.00	**$6.55**
Maint./Equip.	$1.00	$1.16	$1.68	$3.64	**$7.48**	$1.00	$0.79	$1.40	$3.50	**$6.69**
General	$1.44	$0.98	$1.18	$2.74	**$6.34**	$1.44	$1.68	$1.96	$3.92	**$9.00**
Subtotal	**$12.82**	**$12.96**	**$15.63**	**$35.84**	$77.25	**$13.71**	**$16.49**	**$19.90**	**$43.91**	$94.01
	$158.74	$75.28	$54.47	$35.84	**$324.33**	$222.71	$59.87	$64.39	$50.10	**$397.07**

Section 5 - Financial Assessment

5.1 Overview of the Financial Planning Process

After estimating the capital and operation and maintenance cost for each alternative, an analysis was conducted to assess the financial impact of each alternative over the 30-year planning horizon, allowing the influence of the "time value of money" to come into play in determining potential least cost alternatives. The basic model used is one formulated on a "cash basis" approach. The resulting model analyzes the revenue requirements for constructing, operating, and maintaining the noted capital planning elements and balances that financial need among various (assumed) funding sources, including rates, system development charges (SDCs), debt (bonds), and other funding sources (e.g., grants or capital reserves).

The results are presented in different ways, allowing the most financially viable option to be shown based on the reader's perspective. The results are presented for each alternative based on the net present value (NPV) of the rate revenues over the projection period, the rates for year 1, 5, 10, 30, and level unit rates. Each of these measures is important in evaluating the financial viability of each alternative.

The net present value of revenues provides a measure of the total cost of each alternative viewed from the perspective of the total cost measured in today's dollars. This is the total amount of money that would need to be invested today in order to fund the operation and maintenance, debt service, and capital over the 30-year planning horizon.

The service rates in dollars per 1,000 gallons for year 1, 5, 10, and 30 allow for the evaluation of the impacts of each alternative on short run, mid-period, and long run rates.

The last measure of the financial analysis, levelized unit rates, allows for an "apples to apples" comparison of rates averaged over the entire 30 year planning period. The purpose of a levelized unit rate is to make the ratepayer indifferent as the rate paid over the period. That is to say, that the consumer can pay the levelized unit rate or the actual rates over the period and be financially indifferent at the end of the period. While the levelized rate may be higher than the actual rate initially, the excess funds are invested and used to make up any differences in the long run, when the levelized unit rate is lower than the actual rate.

As a word of caution to the reader, the results shown in this section should not be considered definitive. While one alternative may appear to be more financial viable than another, differences in the rates can be misleading because the underlying costs may include substantial variances from what may actually be paid and the assumptions used in the financial plan also have a significant impact on the results shown for each alternative and most certainly will not hold

at the same rate over the entire 30 year period. Therefore, the rates shown should be viewed in a range (such as plus or minus 10 %)

5.2 Summary of Financial Planning Results

Based on the assumptions detailed in Task Memorandum 2.7, the results of the financial analysis for each of the alternatives are presented in Table 7. The results include the cost per 1,000 gallons for year 1, 5, 10, and 30, the level unit rate, and the net present value of the revenue requirements (to convert to EDUs, multiply by 7.48). A graphic representation of the cost in $1,000 for each year of the study period is provided in Figure 6. This same representation in $1,000 is shown in Figure 7.

Table 7: Financial Results
Clackamas County Service District No. 1
Strategic Infrastructure Planning Study

	Unit Cost ($/1,000 gallon)					
Description	**Year 1**	**Year 5**	**Year 10**	**Year 30**	**Level Unit Rate**	**NPV of Service Revenues ($1,000)**
Alternative 1	1.99	2.54	3.50	1.69	2.85	218,666
Alternative 2	1.99	3.63	4.07	2.78	3.62	277,725
Alternative 3	1.99	2.21	4.27	1.24	3.08	236,102
Alternative 4	1.99	2.72	3.26	1.64	2.79	214,280
Alternative 5	1.99	3.89	4.14	2.45	3.64	279,375

As shown in Table 7, both Alternatives 1 and 4 are the most economical options over the long run. Alternative 4 has slightly higher rates in year 5 due to the need to finance capital in the first five years. Alternatives 2 and 5 appear to be the most expensive options due to the need to build a new plant and do not take advantage of existing infrastructure and economies of scale. Alternative 3 is slightly higher than alternatives 1 and 4 due to the cost of construction. The lower rates in the first few years for Alternative 3 are due to the timing of the capital improvements. The major improvements costs are assumed not to occur until year five and beyond.

The intent of the financial analysis was to provide an “apples to apples” comparison of the cost each alternative and not to determine the impact on individual rates. However, an indication of the impact on individual rates can be inferred. The impact on individual rates should be viewed as an “order of magnitude” impact and not as an exact rate. The exact rates for each option would need to be determined based on a preliminary engineering report and detailed rated model. However, the relative differences in the alternative would be the same. To determine the approximate individual rate for each alternative, an additional cost of $10 to 15 dollars per EDU can be added to the cost as shown in Figure 3. The additional cost would cover the cost of overhead and collection.

Figure 6: Clackamas County Service District No. 1 Wastewater Conveyance/Treatment Annual Costs Per $/1000 Gallons

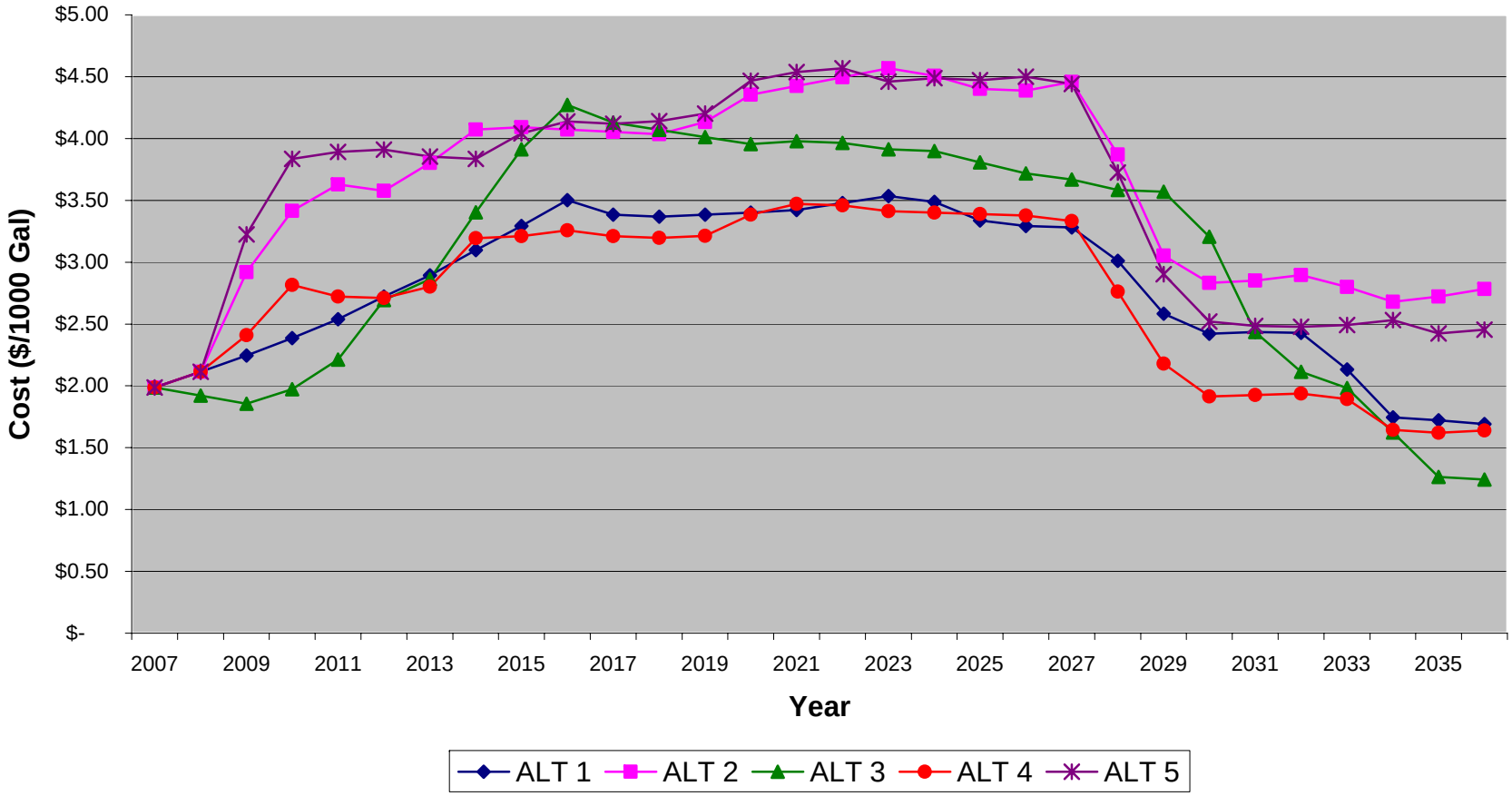
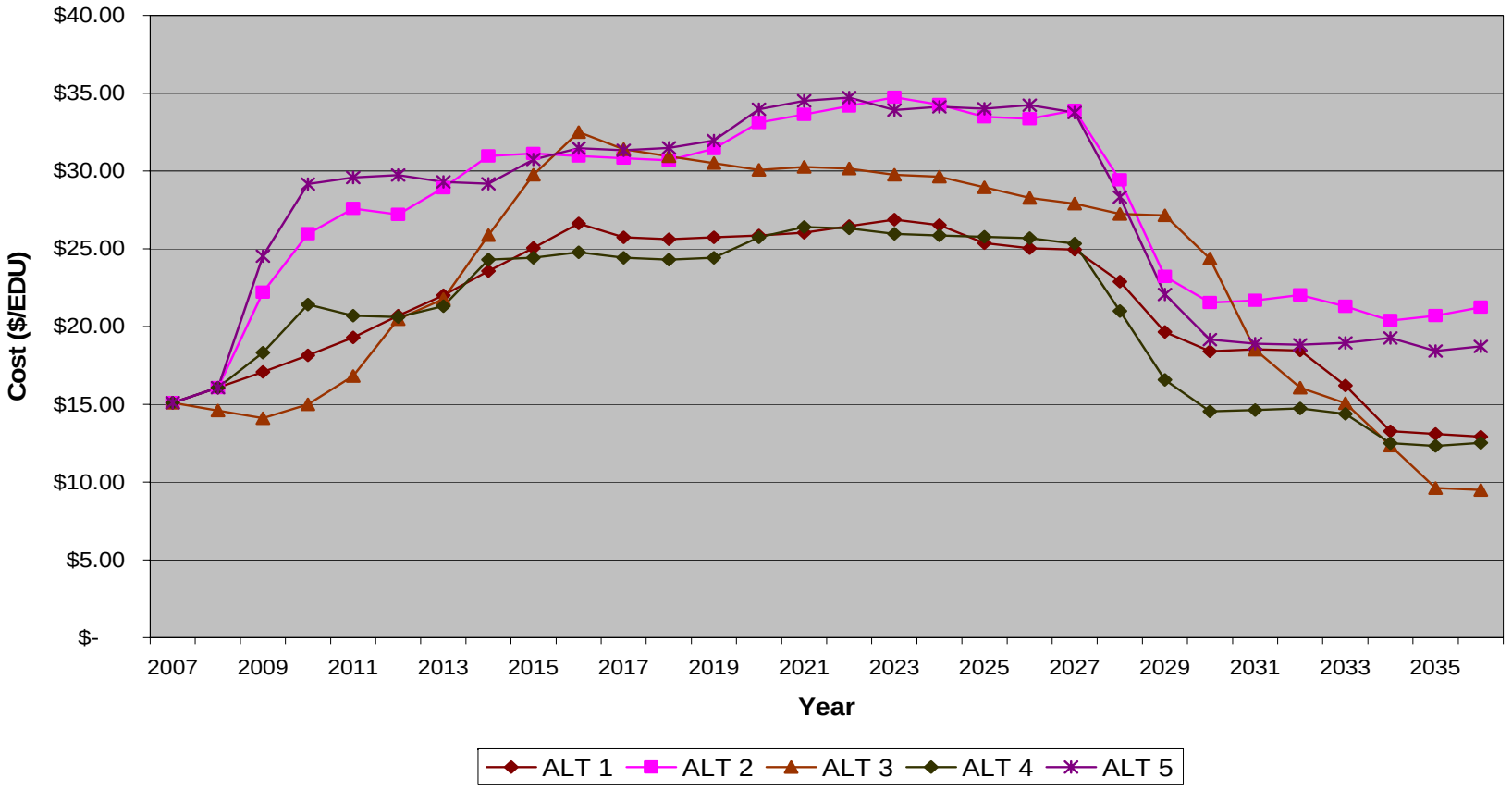


Figure 7: Clackamas County Service District No. 1 Wastewater Conveyance/Treatment Annual Costs Per EDU



Section 6 - Evaluation of Alternatives

6.1 Criteria Assessment

Early in the development of this plan, the Citizen's Advisory Council established a series of basic principles for guiding the process of discovery and eventual decision making. These principles were intended to reflect the overall interests and priorities of the District and its customers, as represented by the CAC, which included:

- Maintain Regulatory Compliance
- Preserve Self-Determination
- Fair Allocation of Costs and Impacts
- Cost Effective and Timely Solution
- Coordinate with Other Districts and Jurisdictions

These principles, in turn, served as a foundation in the creation of series of fundamental assumptions that set the stage for conducting the planning effort. A summary of those principles and the associated assumptions are outlined in Technical Memorandum 2.1.

In addition, those principles were used to create a series of criteria for evaluating the various treatment and conveyance alternatives. A full description of those criteria is presented in Technical Memorandum 2.2. Following that guidance, the five selected alternatives were evaluated against those criteria, subject to a qualifying scoring system denoting each alternative in terms of being favorable, unfavorable, or neutral. The summary of that criteria assessment is outlined in Table 8.

The evaluation of alternatives indicates that Alternative 4 provides the greatest number of "favorable" ratings among the various criteria. The advantages to Alternative 4 include a high degree for maintaining regulatory compliance, relatively low cost and low impact on rates, ease of implementation of permitting and constructability, timely implementation, and overall efficiency regarding regional coordination. The disadvantages, however, stem largely from the lack of self-determination, requiring intergovernmental agreements with the Tri-City Service District (TCSD). This alternative was predicated on the assumption that "an ownership interest" could be established with the TCSD for the District's portion of assets at the combined treatment plant location. That assumption leaves a number of unanswered questions as to the acceptance of this alternative by TCSD or the ability to establish a mutually acceptable agreement between the two districts.

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Maintain Regulatory Compliance						
Impacts to Wetlands or Cultural Resources	Various lands are protected under federal, state, and local regulations. Impact to these areas may restrict siting and construction of facilities. May also increase cost and time delays.	Favorable	Neutral	Favorable	Favorable	Neutral
Impacts on Water Quality Standards or Discharge Limits	Treated effluent must meet regulatory standards in relation to federal and state water quality protection.	Neutral	Neutral	Favorable	Favorable	Favorable
Impacts to Fish and Wildlife	Impacts to threatened or endangered species are regulated by federal and state law and may restrict siting and construction of facilities. May also increase cost and time delays.	Favorable	Neutral	Favorable	Favorable	Neutral
Preserve Self-Determination						
Maintains Ownership of Assets	Ownership of existing or future assets establishes a high degree of control regarding their use and management.	Neutral[1]	Favorable	Neutral	Neutral[1]	Favorable
Provides for On-going Role in Implementation	Besides actual ownership, an alternative may provide a role in implementation and operation activities.	Neutral[1]	Favorable	Favorable	Neutral[1]	Favorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Meets Capacity Demands of the District	An alternative that meets the demands of the District may be preferred over those that do not. The latter forcing the District to rely on outside interest to cover their "capacity" needs.	Neutral[1]	Favorable	Neutral	Neutral[1]	Favorable
Fair Allocation of Costs and Impacts						
Requires Growth-Related Costs to by Paid by Growth	An alternative may create greater equity in terms of financial responsibility among growth and non-growth-related elements.	Neutral[1]	Favorable	Favorable	Neutral[1]	Favorable
Impacts to Landowners and Businesses	The need for easements or access to right-of-way may impact access by landowners and/or operations of businesses.	Neutral	Unfavorable	Neutral	Neutral	Unfavorable
Impact to Residences and Neighborhoods	The need for new facilities or expanded operations may result in undesired impacts on adjacent residences or surrounding neighborhoods.	Neutral	Unfavorable	Neutral	Neutral	Unfavorable
Impact on Rates and Fees	The need for new facilities or expanded operations may result in undesired impacts on rate and fees.	Favorable	Unfavorable	Neutral	Favorable	Unfavorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Cost Effective and Timely Solution						
Construction Costs	Costs associated with building new facilities or improving or expanding existing facilities (i.e., capital costs).	Favorable	Unfavorable	Unfavorable	Favorable	Unfavorable
Lifecycle Costs	Long-term costs associated with an option that includes both capital construction and ongoing operation and maintenance.	Favorable	Unfavorable	Neutral	Favorable	Unfavorable
Constructibility	Ease and timeliness of implementation in terms of design, permitting, and construction. Impacts associated with unique technology selection, poor construction conditions, or difficult permitting conditions may delay implementation.	Favorable	Unfavorable	Unfavorable	Favorable	Unfavorable

Table 8: Definition of Evaluation Criteria

Clackamas County Service District #1
Strategic Wastewater Plan

Criteria	Measure	Alternatives				
		Maintain Kellogg (4.8 mgd), Excess Flow to Tri-City (11.8 mgd)	Maintain Kellogg (4.8 mgd), Excess Flow to New Plant (11.8 mgd)	Expand Kellogg (12.5 mgd), Excess Flow to Tri-City (4.1 mgd)	Abandon Kellogg, All Flow to Tri-City (16.6 mgd)	Abandon Kellogg, All Flow to New Plant (16.6 mgd)
Coordinate with Other Districts and Jurisdictions						
Meets Regional Land Use and Comprehensive Plans Where Possible	An alternative compatible with regional land use and comprehensive plans is more likely to gain support for implementation.	Neutral	Unfavorable	Unfavorable	Favorable	Unfavorable
Promotes Regional or Interagency Efficiencies	An alternative that offers regional or shared use of facilities is likely to take advantage of economies of scale and be more efficient.	Neutral	Unfavorable	Neutral	Favorable	Unfavorable
Impacts Rates and Fees to other Jurisdictions	An alternative that creates a burden to other jurisdiction(s) may be more difficult to approve.	Favorable	Neutral	Favorable	Favorable	Neutral

1 – These tanks are dependent on the type of agreement reached with Tri-City.

The potential preference for Alternative 4 is followed closely by that of Alternative 1. Instead of moving all the treatment capacity to the Tri-City, Alternative 1 makes use of the infrastructure already at Kellogg, thus reducing the need for potential replacement of the necessary treatment capacity for the District. The continuance of Kellogg, however, raises a number of questions regarding the age of the plant, its potential for meeting long-term regulatory compliance, rising maintenance costs, and potential conflict with land use plans within the City of Milwaukie. As such, this alternative increases the risk regarding successful long-term implementation, yet preserves an important element of self-determination for the District by retaining the Kellogg facility.

Alternatives 2 and 5, which rely on the construction of a new plant, provide for the greatest degree of self-determination for the District, offering complete ownership in assets and options for future control in operations and maintenance. Unfortunately, these alternatives are the most costly and risky in terms of implementation. The higher costs are being driven by excessive conveyance and pumping costs associated with the redirection of flows away from Kellogg to a new site and the return of those flows to one of the established outfall (discharge) locations. Those costs, however, are dependent on the actual location of a new plant. Moreover, the time required to permit and build a new plant may be undesirable. It may take 6 to 8 years for site acquisition and to get a new plant permitted and constructed, which could require unique acceptance by the state to approve the dual use of an outfall to the Willamette River at either the Kellogg or Tri-City facility on a interim or permanent basis. In addition, the land required for the new site may not be readily available and may require condemnation, conditional land use permitting, or other delays in its acquisition. Only a site planning process can determine the validity of our conclusions.

Between the two pairings of alternatives is Alternative 3, which relies on the preservation of the Kellogg facility. This alternative is advantageous in that in makes maximum use of the installed infrastructure, both in terms of treatment and conveyance. It also affords the District a high degree of ownership in assets and self-determination. Conversely, this alternative is predicated on the rehabilitation and expansion of treatment capacity at the existing Kellogg site. Implementation requires the maintenance of a fully functioning plant while new technology (high rate primaries and membrane bioreactors) is installed to replace some of the old conventional treatment units. Constructability is of great concern, along with the uncertainty in costs and implementation. Moreover, the Kellogg site may suffer from long-term issues related to land use and acceptance within the City of Milwaukie.

6.2 Recommended Approach

The pressing issue on every alternative is time. The District's present treatment capacity resides solely at the existing Kellogg facility, which is operating near its dry weather flow capacity of 8 mgd at this time. The new ammonia limit substantially infringes on this capacity (up to 40%), which can result in water quality excursions and permit violations. Immediate action is necessary to remedy the problems on an interim or permanent basis.

Because of the urgency to respond and the significant associated costs, plans that rely on the construction of a new plant, such as Alternatives 2 and 5, may be unworkable. Although these alternatives offer the highest degree of self-determination for the District and its customers, the potential for protracted delays in land acquisition and permitting make these options difficult to implement. In addition, plans that look to permanently preserve or expand the existing Kellogg site are burdened by conflict with the goals of the City of Milwaukie and the maintenance of an aged facility.

It is important to note that all of the alternatives have some implementation delay associated with them. Any one of them cannot be completed or employed in months or even a few years and, as such, must rely on the preservation of Kellogg at some level on an interim basis. The best approach for meeting the District's needs is a plan that preserves Kellogg over the next 6-12 years, while phasing in replacement or added treatment capacity at the Tri-City plant. There are several distinct advantages to this approach, including costs, scales of economy, and ease of implementation. But none is more important than the ability to respond quickly and decisively to put needed treatment capacity into service on a timely basis. The success of that implementation, however, is tied to the need for the two districts to work in partnership, allowing an equity interest for CCSD#1 in the Tri-City facility.

Our recommended approach would be for the District to initiate plans and negotiations to build an approximate 6-8 mgd expansion at the Tri-City plant, while maintaining Kellogg at its 8 mgd capacity in the interim. This approach will require some renovation at the Kellogg plant without substantial replacement or modification of existing plant infrastructure. The new capacity at Tri-City could be put into service in approximately 3-5 years. This option may also require the interim increase of the diversion flow currently in place between the District and Tri-City.

As those interim measures are being designed and constructed, plans would continue to examine the phase-out of the Kellogg facility over the following few years, allowing for final plans to be created for the subsequent buildout of District treatment capacity at the Tri-City plant and for the necessary associated conveyance facilities.

As noted earlier, it is important for the reader to understand that the findings and opinions outlined in this report are expressly those of HDR Inc. and it's staff, and does not represent those of any outside parties including those of the Citizens Advisory Council (CAC), it's members or other representatives associated with the planning effort for identifying the 30-year treatment and conveyance alternatives for Clackamas County Service District No. 1 (CCSD#1).

John Lang, P.E. **Public Works and Engineering Management**

September 22, 2006

TO: Members of the CCSD #1 CAC: Jim Knapp, Eric Hofeld, Vern Cameron, John Hilley, Elaine Maxey, and Jeff Winner

FROM: John Lang, P.E.: CAC Technical Advisor

SUBJECT: CCSD #1 Strategic Wastewater Infrastructure Strategic Plan Recommendation

You have come to a conclusion that the best and preferred strategy for meeting the District's future wastewater needs includes developing a new plant for treating wastewater collected by CCSD #1. This has been a difficult decision but one reached based on the information you received during the last eight months of many public meetings, "Roundtable" discussions with your wholesale customers and other affected jurisdictions, the HDR Engineering Report, the Peer Review of Alternatives and Cost, and your recently conducted Public Survey.

Developing a strategic plan for locating and financing wastewater treatment facilities for Clackamas County Service District No. 1 is a major public policy action. It will have long term impacts on the public and environmental health of the District, it will provide a necessary part of the infrastructure needed for years of continued growth and economic vitality of Clackamas County, and implementing it will require the expenditure of approximately $250 to $300 million in public funds. Clearly, decisions of this magnitude must be well thought out and best serve the purpose for which they are intended.

I believe three important questions must be addressed by this strategy.

- First, is this strategy realistic and able to provide wastewater services when needed by the District and as required by regulatory agencies?
- Second, is the cost of implementing this strategy reasonable and acceptable to those who have to pay for it?
- Third, does this strategy meet and/or facilitate achieving the goals of the District, its customers, and the Region?

Following are my thoughts of how a strategy to develop a new plant meets these three purposes.

Is the strategy for a new plant realistic and able to accomplish its purpose of providing wastewater services when needed by the District and as required by the regulatory agencies?

Yes. The CAC considered five different alternatives for meeting the District's future wastewater needs. All of them are considered realistic, able to meet the requirements of State and federal regulators, and will provide adequate capacity for treating the Districts wastewater needs through the year 2036.

Because of the current ammonia limitations and site restrictions for the Kellogg plant, the difficult part this question is "how soon will the various alternatives will be ready to provide wastewater treatment service?" Constructing new wastewater plants or making major expansions to them is often a long and difficult process. All the alternatives will have the capacity to provide

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wastewater services when needed once identified improvements are constructed and put in operation. A "case" can be made that any alternative calling for a new plant will take longer and is more risky to implement than other alternatives requiring only expansion of wastewater facilities at an existing treatment plant site. This is because a new plant, using conventional treatment, requires a site 20 to 30 acres in size. That requires land to be found, acquired and, then the site must go through local land use process to obtain all the necessary construction permits. However, Tri-City and Kellogg are both located in cities that will also require "land use and permitting" processes that have the potential for delaying any expansion. Also, in the case of Tri-Cities, a negotiated agreement for service to the District could additionally prolong and delay the start of constructing expanded treatment facilities at that site.

Another factor to consider in the "length of time" factor is that the existing Kellogg plant requires immediate capacity improvements regardless of which alternative is chosen. Kellogg's new Discharge Permit now requires more ammonia removal from the effluent discharge to the Willamette River than before. Because of this, Kellogg no longer has the capacity to treat all of its existing wastewater flows and will require interim capacity improvements before any of the five alternatives can be implemented and operational. Providing adequate interim capacity improvements now, regardless of which alternative is selected, will buy the District additional time which should minimize concerns about which alternative will take the longest to implement.

Is the cost of implementing the plan reasonable and acceptable to those who have to pay for it?

People are always shocked at how costly major improvements to wastewater treatment plants are. This is the situation you find CCSD #1 to be in. The District is going to be responsible for funding and paying anywhere from $250 million to $300 million in capital costs over the next 25 years for any wastewater strategy and alternative that is adopted. In turn, this creates the need for major increases in monthly sewer rates and Sewer Development Charges to your customers. All five alternatives will require average EDU monthly rate increases that range from $21 to $28 per month. SDC's will also need to be increased to pay the share of costs attributable to new growth in the District.

The fact that all alternatives require an increase in monthly rates in the range of $21 to $28 may render moot the question of "is the strategy's cost reasonable and acceptable?" Improvements must be made and regardless of which alternative is selected, the cost is going to be high and will need to be paid for by the rate payers of CCSD #1.

Perhaps a better way of looking at which alternative has the most acceptable and reasonable cost is to consider what you get for the difference in monthly rates between the alternatives. The alternative requiring the least amount of average monthly rate increases is to abandon Kellogg and treat all of the District's waste at the Tri-Cities plant location for an average monthly EDU rate increase of approximately $20.85. The alternative the CAC may prefer is to abandon Kellogg and treat all of the District's waste at a new plant in a new location requiring an average monthly EDU rate increase of approximately $27.25. The question to consider then is: Does your preferred alternative best meet and facilitate goals of the District, its customers, and Clackamas County for the additional $6.40 in monthly sewer rates? Based on the results of your public process and survey, I think yes.

Does a new plant strategy meet and facilitate the goals of the District, its customers, and the Region?

Building a new wastewater plant in a new location does meet and facilitate many of the goals and desires you have identified for the District and its customers. It can also provide "technical" benefits that are not available at the Kellogg or Tri-Cities sites, as well as meeting a major goal of Milwaukie by removing the Kellogg plant from its waterfront site. And finally, depending on location, can also provide regional benefits to the County.

Technical Benefits: During the Peer Review of the alternatives and their costs, one conclusion was that a new site may be preferable because:

- It provides the opportunity for adequate space to have:
  - An efficient "layout" of plant facilities
  - Flexibility and expansion.
- Construction costs are reduced because:
  - The site does not have interfering underground facilities, contamination, high ground water, or poor foundation conditions such as may be found at Kellogg or Tri-Cities.
  - Construction does not have to occur at or around the operation of an existing treatment plant.
  - Construction scheduling is easier and possibly faster.
  - Both the plant and associated equipment are all new which reduces the need to interface new equipment with old which would be required when expanding older facilities
  - It provides a better opportunity for automated equipment to reduce labor and other costs, and
  - It results in a new facility with a full design life span rather than the ones now reaching half their design life.

District Goals and Desires: During the last eight months, the CAC has identified and evaluated goals and desires for the future of Clackamas County Sewer District #1. These have recently been measured by your recent public survey. The conclusion drawn from that effort is that the alternative of constructing a new plant meets these important goals and desires. I also believe a new plant provides several benefits to the District that are additional to those measured in the survey. Significantly, I believe:

- Self determination is best achieved and preserved by owning and operating your own treatment plant.
- A new plant location has the greatest opportunity for minimizing undesirable operational impacts on residential neighborhoods by locating it outside existing or encroaching residential development.
- The investment of public funds for the construction of a new plant has the potential to stimulate the adjacent local economy through both public and private investments. This benefit makes it desirable to locate the plant within the district whose customers are paying for the plant so they, rather than residents and businesses outside the district, will receive any benefits from such stimulus.
- Constructing a new plant in a new site provides opportunities for multiple uses at the same site. For example, a new plant location might also accommodate park

area or a Tri-Met Park and Ride Station. A new site also be designed to model and provide educational environmental benefits such as using grass swales to collect parking lot runoff?

Regional Goals and Desires

One of the County's goals is to regionalize its responsibilities for wastewater treatment. Regionalism does not necessarily mean only one treatment plant. Rather, it can mean the ability to serve multiple jurisdictions at one location for efficiency and economic benefits. A new plant in a new location for CCSD #1 has the potential to do this. If sighted properly, it could treat sewerage at one location for unincorporated N. Clackamas County, Milwaukie, Happy Valley, and Damascus. I understand there is even some discussion that the Oak Lodge Sewer District may consider having their wastewater treated at a new CCSD #1 plant if its location and cost is less than their current estimated costs for upgrading the Oak Lodge treatment plant.

Summary and Recommendations

I believe there are two important issues associated with the development of a new treatment plant alternative and are the deciding factors for selecting it as the preferred alternative.

1. Is the risk of time delay associated with acquiring the site and obtaining local permits for a new plant acceptable when considering the other alternatives? Probably yes when you consider that critical additional capacity in the immediate future will be met by interim capacity improvements at Kellogg and that all five alternatives have the risk of delays by going through local land use and permitting requirements.

2. Is the additional amount of $6.40 in estimated monthly sewer rates for this alternative more than offset by the additional benefits provided to the District and its customers by having a new plant owned and operated by the District? Based on the goals and desires of the District, as measured in its survey, as well as information received from customers and other impacted agencies, that the benefits do indeed outweigh the additional amount in rates.

Based on your information and discussions, a new wastewater plant located within the District certainly best meets your goals and desires for the future of CCSD #1. Assuming such a plant is part of the strategic plan recommended to the Board of County Commissioners, I strongly recommend that you include the following actions as part of your strategic plan submitted to the BCC:

1. On adoption of your recommended strategic plan immediately begin a "site study" to determine the new plant location and initiate acquisition of the site.
2. Because of the high cost associated with all alternatives, cost reduction ideas should be explored and used wherever possible during the pre-design stage of implementation.

"Let's Talk Sewage!"

Public Involvement Process

Updated as of 9/1/06

Overview

On January 12, 2006, the Board of County Commissioners (BCC) acting as the governing body for Clackamas County Service District No. 1 (CCSD1), created the Citizen Advisory Council (CAC). The CAC was appointed *to review, advise, and make recommendations to the District Board regarding the development of a strategic plan for the location and financing of wastewater treatment facilities of the District by September 30, 2006. All viable alternatives will be considered from the standpoint of efficiency, effectiveness, cost and practicality* (Board Order 2006-06).

The CAC plans to submit for review to the Board a single all-inclusive plan for sewage services by September 30, 2006. The CAC has made a commitment to coordinate with and seek input from any advisory groups appointed by the Board of County Commissioners, by Tri-City Service District, and/or representatives who are customers of the District. In addition, the CAC has been responsible for conducting a program of community outreach to inform voters and ratepayers in the District on matters of concern to the District and its operations.

Since February 2006, the CAC has been working diligently with a technical and financial team, HDR Engineering consultants, and Water Environment Services (WES) staff to develop a project timeline that includes a transparent public involvement process.

Alternatives for Further Study

Eight different alternatives for treating sewage were developed for the Citizen Advisory Council (CAC) to consider ranging from full to partial expansion at the Kellogg sewage treatment plant, to completely decommissioning the facility. Each alternative concept was discussed in detail from the standpoint of its technical merits, estimated relative cost and its ability to be implemented. The alternatives, deliberations, and the conclusions of the "charrette" technical workshops were presented to the public for input following each of the workshop deliberations. The CAC then adopted the alternatives that would continue on for more extensive study in the strategic planning process.

These treatment options include the following:

The Kellogg Creek sewage treatment plant is located west of McLoughlin Road in Milwaukie along the Willamette River.

***Alternative A.1** - The Kellogg sewage plant remains in service in its current general configuration. The plant will be upgraded to meet the new ammonia limitation of its permit and to incorporate a higher level of wastewater treatment to allow for future reuse opportunities. The capacity of the plant would remain at somewhere between 4.8 million gallons per day (MGD) to 8.0 MGD average dry weather flow. All flows exceeding the new upgraded capacity would be routed to the Tri-City sewage plant in Oregon City. This alternative would require new and modified conveyance systems and expansion of the Tri-Cities facility.

***Alternative A.2** – The Kellogg sewage treatment plant remains in service similar to Alternative A.1 with flows exceeding the upgraded capacity being routed to a new treatment facility located somewhere within the boundaries of CCSD1. This alternative would require construction of a new sewage plant, modification of the existing conveyance systems to transfer the sewage flows to the new plant, and construction of new conveyance systems to utilize the existing outfall at the Kellogg Plant.

The Tri-City sewage treatment plant is located west of the I-205 Park Place exit near the Clackamette Cove.

Alternative B.1 - Kellogg remains in service with installation of various hydraulic and process upgrades to accept up to 12.5 MGD average dry weather flow which is the current limit of the upstream conveyance system. All excessive flow above that physical limitation would be diverted to the Tri-City sewage plant in Oregon City. This alternative would require new or modified conveyance systems to get the flow to the Tri-City sewage plant and future expansion of the Tri-Cities plant to accommodate the diversion.

Alternative D.1 - Decommission the Kellogg sewage plant and route all flows to the Tri-Cities facility. This alternative would require an expansion of the Tri-Cities sewage plant and new and modified conveyance systems to transfer all sewage flows now being sent to Kellogg.

Alternative D.2 - Decommission the Kellogg sewage plant and route all flows to a new sewage facility located somewhere within the boundaries of CCSD1. This alternative would require construction of a new sewage plant, modification of the existing conveyance systems to transfer the sewage flows to the new plant, and construction of new conveyance systems to utilize the existing outfall at the Kellogg sewage plant.

Sewage Treatment Alternatives For Further Study			Sewage Treatment Plant - Million Gallons per Day (MGD)		
Designation		Features	Kellogg	Tri-Cities (Add capacity)	New CCSD#1 Plant
*A.1	Existing Kellogg	Upgrade Kellogg sewage plant to nitrification and route surplus to Tri-Cities	4.8-8 MGD	11.8 MGD	
*A.2	Existing Kellogg	Upgrade Kellogg sewage plant to nitrification and route surplus to new Plant	4.8-8 MGD		11.8 MGD
B.1	Cap Kellogg	Limit Kellogg sewage plant base flows to the capacity of the influent sewer and route excess to Tri-Cities	12.5 MGD	4.1 MGD	
D.1	Abandon Kellogg	Abandon Kellogg sewage plant and route flows to Tri-Cities		16.6 MGD	
D.2	Abandon Kellogg	Abandon Kellogg sewage plant and route flows to new Plant			16.6 MGD

Other alternatives reviewed by the CAC were eliminated due to concerns about relatively high costs in operations, limitations of land available for expansion, and the CAC's desire to maintain ownership of the sewage plant through an asset partnership.

All of the alternatives have assumed that the District would upgrade to a Class 4 treatment level to provide for future unrestricted re-use of the WWTP effluent, and production of Class A biosolids to anticipated changes in the regulatory environment.

*Many wastewater facilities have ammonia nitrogen limits (NH3-N) in their permits. To accomplish ammonia removal, Kellogg and the Tri-City plants use a biological process known as nitrification. Nitrification is the process whereby ammonia in wastewater is oxidized (meaning chemical addition of oxygen to breakdown pollutants or organic wastes) to nitrite (NO2) and then nitrate (N03) by bacterial or chemical reactions. The danger ammonia poses for fish depends on the water's temperature and pH; the higher the pH and the warmer the temperature, the more toxic the ammonia.

Public Involvement Process – At a Glance

Date	Task
January through February 2006	• Citizen Advisory Council (CAC) is formed • Regular CAC meetings scheduled for 2nd & 4th Monday's of the month • Website page is developed • Current service characteristics and future service area projections
March 2006	• CAC reviews and comments on scope of work for technical and financial services • CAC selects HDR Engineering firm to conduct the technical and financial analysis
April 2006	• Sewer News mailed to CCSD1 ratepayers • HDR Engineering develops sewage treatment alternatives based on basic principles and evaluation criteria set by CAC
May 2006	• Eight alternatives for sewage treatment are selected by CAC
June 2006	• Open house "charrette" takes place June 7th & 8th • CAC adopts alternatives for more extensive study
July 2006	• HDR Engineering develops a capital, operations and financial plan for each alternative • Round table discussions with Cities
August 2006	• Speaker's Bureau on alternatives for further study begins
September 2006	**WE ARE HERE** • CAC makes final recommendation to BCC by September 30, 2006
October 2006	• BCC accepts and implements sewage plan

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