

SUMMARY
Public Workshop on Alternatives Review
(Public Workshop #3)

June 22, 2006, 1 PM – 3 PM
Port Townsend Fire Station
701 Harrison Street
Port Townsend, WA 98368-6519

In response to the 1990 Growth Management Act (GMA), Jefferson County pursued the designation of an Urban Growth Area (UGA) in the Irondale/Port Hadlock area. As part of the requirements for establishing a UGA, Jefferson County is conducting a study of alternatives for developing a sewer system. There are currently no sewer facilities in the area, and existing residences and businesses are served by on-site treatment and disposal (septic) systems.

The sewer study will enable the County to identify 1) the final preferred alternative or method of collection, treatment, and disposal/reuse of wastewater, 2) the service area, 3) the phasing and implementation of sewers throughout the service area, 4) the anticipated cost for individual connections to sewer, and 5) revenue sources. The goal of the study is to produce a sewer facilities plan that will help the County plan for growth in the area over the next 20 years; that will satisfy RCW 36.94 concerning County's sewerage, water, and drainage system responsibilities; and that will be approved by the Department of Ecology.

Workshop Summary

A public workshop was held at the Port Townsend Fire Station on Thursday, June 22 from 1:00 pm to 3:00 pm. The workshop was open to the public.

The purpose of the workshop was to:

- Present combined system alternatives
- Review advantages and drawbacks of each alternative
- Present technical recommendations
- Take questions and comments
- Decide preferred alternative

Jefferson County Commissioners, County staff, local agency staff, and several community leaders and other interested parties were invited to the workshop. The County had identified local agencies whose facilities might be sewerred and/or whose activities might be affected by the installation or operation of a sewer. The County also identified representatives of business and community organizations and citizens who had been active previously in the process to establish a UGA. These parties were contacted by mail. A notice of the workshop was available on the project website (www.porthadlocksewer.org), the County's website, and in the Port Townsend Leader.

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County Commissioner David Sullivan (District 2) and County Commissioner Pat Rodgers (District 3) attended the workshop. The consultants to the County were represented by Kevin Dour, P.E. and Jim Santroch, P.E. of TetraTech/KCM and Bob Wheeler and Ellen Blair of Triangle Associates. A complete list of workshop participants is attached to this summary.

Introductions & Workshop Overview

Mr. Wheeler, workshop facilitator, opened the meeting at 1:10 pm. He led introductions and explained the purpose of the workshop. He reviewed the workshop agenda and the steps that would lead to selection of a complete sewer system, including public involvement opportunities, technical work, and the development of cost estimates and funding options.

Mr. Wheeler announced that project information could be found and comments could be submitted at the project website, www.porthadlocksewer.org.

Overview of Recent Developments

Mr. Dour, consultant team project manager, indicated the sewer service area boundaries on a map, including the 6-year planning area, or core area, and the 20-year planning area. His PowerPoint presentation is attached to this summary. He then reported on new developments for issues that were raised at the previous public workshop on May 25.

- **Hydrogeology – Groundwater & Creek Flows**

Mr. Dour reviewed a question about the potential contribution of land-based effluent disposal/reuse to the recharge of Chimacum Creek. The consultant team had done a rough calculation with available data to estimate the order of magnitude of creek recharge. The team found that with the estimated number of initial sewer participants in 2010, land-based disposal/reuse might contribute 0.5% of the creek's flow on average, and up to 1% during low flows. In 2030, assuming full participating in the sewer system, land-based disposal/reuse could contribute 10% of creek flow on average, and up to 20% during the lowest flows.

- **Ecology Meeting – Marine Outfall & Project Teaming**

As announced at the previous public workshop on May 25, the project team met with a representative of the Department of Ecology on June 13. Mr. Dour reported that the project team had learned that Department of Ecology policy stipulates that no marine outfall may be permitted if a reasonably viable alternative exists for disposal of treated effluent. Mr. Dour said that since viable land-based disposal/reuse methods existed, a marine outfall was no longer under consideration. He said the project team and the Department of Ecology representative had identified methods of coordination to ensure the most efficient and successful development of the sewer facilities plan.

- **Phasing – Initial Treatment Systems**

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Mr. Dour said that in response to stakeholder interest in using small, skid-mounted starter treatment plants to minimize sewer start-up costs, further investigation had been done and it had shown that such starter treatment plants would provide adequate capacity for only two or three years. The consultant team thought it more prudent to build a permanent facility of adequate size at the outset that would be of service longer and can be expanded to accommodate future phases of sewer system development.

- **Treatment Cost – Refinements**

Mr. Dour said that further investigation, research, and detailed cost estimating had shown that membrane bioreactor (MBR) treatment likely would be no more than 20% more costly than sequencing batch reactor & filter (SBR) treatment, in contrast to the 20 – 100% range that had been reported at the May 25 workshop.

- **Solids Disposal Costs – Contract Disposal**

Mr. Dour reported that the Port Townsend composting facility had been posited as the most promising option for solids disposal at the May 25 workshop. He said that further investigation had shown that contract disposal with a company called Biorecycle appeared to be the most economical option, and, at least at the onset, substantially less costly than the Port Townsend composting facility option.

Development of Recommended Alternative from Technical Perspective

Mr. Dour reviewed the technical perspectives on collection and discharge that had been presented at the previous public workshop. He explained that, from a technical perspective, the consultant team now preferred the gravity collection system to the pressure collection system, at least at the outset in the core area. He said that while gravity entailed somewhat higher start-up costs, the total cost of a pressure system would be more after eight to ten years (including capital costs, on-site costs, and operations & maintenance costs). He noted that by starting with gravity, the community would have flexibility in choosing between gravity and pressure in the outlying areas.

Mr. Dour said that the consultant team now recommended rapid-rate infiltration for effluent discharge, as opposed to a marine outfall or slow-rate infiltration. He reiterated the Department of Ecology's policy restricting the approval of marine outfalls, and he noted that rapid-rate infiltration would require a smaller footprint on the land and cost less than slow-rate infiltration.

Mr. Santroch reviewed the technical perspectives on wastewater treatment that had been presented at the May 25 workshop. He said that these perspectives had remained unchanged. He said that MBR was still the recommended treatment alternative because of its superior effluent quality, but that SBR remained a viable alternative that had a lower estimated cost. Mr. Santroch explained that chemical compounds from pharmaceuticals and personal care products (PPCPs) were being detected in effluent from wastewater treatment plants, and that stories of these compounds causing water quality problems in streams, despite concentrations almost too low to detect, were on the rise. He noted that MBR was the most effective treatment technology for removing PPCPs and that the consultant team thought MBR was worth pursuing since the treated

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effluent for the Irondale/Port Hadlock sewer system would eventually reach groundwater that would likely make its way to Chimacum Creek.

Mr. Santroch reviewed the technical perspectives on solids handling that had been presented at the May 25 workshop. He reiterated the point that private, contract disposal appeared to be a better, more economical alternative than hauling to the Port Townsend composting facility. He explained that hauling to another public treatment facility, such as Poulsbo, Bremerton, or Renton, would be more costly. He said forest application would also be costly as additional solids treatment would be required. Mr. Santroch showed a chart comparing the estimated, planning-level costs of each solids handling alternative. He noted that the solids handling costs constituted just a fraction of the estimated costs for treatment and other sewer system components, and thus would have less influence on the total sewer system cost.

Mr. Dour reviewed the components of the technical recommendation and the main advantages of each:

- Collection
 - Gravity Collection in core area
 - Gravity in outlying areas
 - Have flexibility to use STEP or grinder pumps in outlying areas
 - More reliable, convenient, and economical in the long term
- Treatment
 - MBR for treatment technology
 - Provides best effluent quality on a consistent basis, easily expandable
 - Appropriate odor control & aesthetics
- Effluent Disposal/Reuse
 - Rapid Rate Infiltration
 - Least costly and easy to implement, has smallest footprint
- Solids Handling
 - Contracted haul and disposal to Biorecycle Co. in South Kitsap County
 - Least costly, can change strategy as system develops

Sewer System Implementation

Mr. Dour described the planning assumptions that were made to project how the sewer system would be implemented. He showed a map with six color-coded planning subareas and explained that the core area was expected to develop first, followed by the Rhody Drive area, and subsequently the outlying residential areas. He emphasized that these were planning assumptions, which would not dictate how development actually occurred.

Mr. Dour reviewed a table that showed the estimated year that each planning subarea would be sewerred, along with the assumed sewerred acreage, the assumed number of sewerred equivalent residential units (ERUs), and the estimated maximum monthly flow for each planning subarea. He explained that adding up the planning subareas resulted in a total maximum average daily flow estimated at about one million gallons per day (gpd) by 2030. Mr. Dour noted that the

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estimated schedule might be more aggressive than actual development, but that the GMA required the sewer facilities plan to show how sewer system would be implemented over 20 years.

Mr. Dour used a graph to illustrate the rates at which the project team anticipated the local population would connect to the sewer system. This graph was developed using population forecast data provided by the Jefferson County Planning Department. The graph showed several lines representing different data in support of the team's assumptions and analysis. The graph showed a line representing the residential population forecast in the Port Hadlock area from the County planning numbers. The graph also showed a line representing an anticipated equivalent population from commercial growth in the area in relation to the residential population forecast. Finally, the graph showed a line representing the population anticipated to be connected to sewers starting in the year 2010, through 2030 (the 20-year planning horizon), and on to area buildout. The line representing the population anticipated to be connected to sewers was developed using a compound rate of growth, rather than a linear rate, which was standard for most planning efforts and was in agreement with the method used by Jefferson County Planning to forecast the residential population in the area.

Sewer System Costs

Mr. Dour presented a series of charts that showed estimated, planning level, 20-year life cycle costs for each collection alternative, treatment alternative, and disposal/reuse alternative. The estimated costs were broken down to show cumulative cost at each phase of implementation. Mr. Santroch explained that the plan was to build two treatment trains at Phase 1, 20-day storage at Phase 2, and two additional treatment trains at Phase 3. He said that with further research he expected to be able to reduce the estimated, planning level cost for wastewater treatment.

Mr. Santroch pointed out the relative magnitude of the total estimated costs, noting that the collection technology was on the order of \$100 million for all phases over 20 years, treatment was on the order of \$30 million for all phases over 20 years, and the disposal/reuse options were on the order of less than \$5 million for all phases over 20 years. He explained that choosing different alternatives for collection or treatment would have far more impact on total system cost than choosing different disposal/reuse options.

Mr. Santroch then showed a chart that compared the total estimated, planning level, 20-year life cycle costs for the following four sewer system alternatives (all systems were assumed to use rapid infiltration disposal/reuse, sodium hypochlorite disinfection, and private contract solids handling):

- Gravity system/MBR treatment
- STEP system/MBR treatment
- Gravity system/SBR treatment
- STEP system/MBR treatment

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The costs were broken down by sewer system component: collection, treatment, disinfection, effluent disposal/reuse, and solids handling. Mr. Santroch pointed out that the estimated, planning level, Phase 1 20-year life cycle cost of the least expensive alternative, STEP system/SBR treatment, was \$26 million, while the estimated, planning level, Phase 1 20-year life cycle cost of the recommended and most costly alternative, gravity system/MBR treatment, was \$34 million.

For the gravity collection/MBR treatment alternative, Mr. Dour used a chart to show the cumulative system-wide cost at different points over 20 years. A second chart showed the cost per ERU at different points over 20 years. Mr. Dour demonstrated that as more users were connected to the sewer system, the lower the estimated cost per ERU was. He explained that a goal for the financing plan was to make the cost per ERU for the early sewer customers equivalent to what the cost per ERU would be after 20 years when many more customers would be connected.

Sewer Facility Siting

Mr. Dour showed a map of potential sites for wastewater treatment facilities and/or effluent disposal/reuse facilities. He said that the treatment facility and the disposal/reuse facility could be sited at the same or separate locations. The five potential sites were at or near the following locations:

- Sheriff's Facility
- H.J. Carroll Park Vicinity
- Central Port Hadlock (near Mason St. and Cedar Ave.)
- Jefferson County Airport
- Chimacum High School

Mr. Dour reviewed a slide of the advantages and drawbacks of each potential location. He said that based on cost considerations, the suitability based on surrounding land uses, and mitigation requirements, the consultant team was currently focused on the Sheriff's facility as the best alternative, with the H.J. Carroll Park vicinity as a potential back-up. He said that more analysis would be done to better understand the sites' suitability for treatment and/or disposal/reuse facilities. Mr. Wheeler noted that an area near H.J. Carroll Park, not the park itself, was being considered as a treatment facility site. He said the project team was aware that wetlands in the area could potentially impact facility siting.

Questions & Comments

Workshop participants commented and asked questions during the presentation and during the discussion period at the end of the workshop. Their comments and questions, as well as the project team's responses, are grouped by topic below.

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Sewer System Costs

Comment: Although a gravity collection system would cost less than pressure in the long-run, it would mean higher initial costs.

Question: Would homeowners be responsible for onsite operation and maintenance (O&M) costs associated with STEP systems?

Response (Dour): We assumed that homeowners would not be individually responsible for those costs, and we included those O&M costs in our sewer system cost estimates. My experience has been that STEP tanks are considered part of the treatment system that is maintained by the sewer authority.

Comment: While certain sewer system components may be less expensive in the long run or they may be technologically superior, we have to face what can be financed up front. That hurdle may dictate some of the components that we choose in the end.

Question: On the graph of treatment cost estimates, do you add the bars together to get the total cost, or are the bars cumulative over time?

Response (Santroch): These are cumulative, present-worth costs, not additive costs.

Collection System Considerations

Question: Don't STEP and gravity systems both require pump stations?

Response (Dour): With a STEP system, there is actually a little pump on every customer's property. With STEP, those pumps could probably generate enough pressure so that a large influent pump station would be unnecessary. That might be the case for a grinder system as well, but we would have to look at the hydraulics. With gravity, all of the wastewater flows downhill to a low point and is then pumped uphill at a pump station, so a gravity system would probably require a few larger pump stations.

Comment: It can be difficult to access private property. It would be a problem if the sewer authority were responsible for maintenance of STEP or grinder equipment on private property. Also, if property owners are not responsible for the equipment on their own property, they will be less vigilant about preventing problems. Maybe there is space in the street right of way so equipment wouldn't have to be on private property.

Wastewater Treatment Considerations

Question: Is there any difference in reliability between the MBR and SBR treatment systems? For example, does one perform better during power outages?

Response (Santroch): Both federal and state regulatory agencies have standards and guidelines to ensure reliable service. Treatment plants are required to have a back-up generator to ensure that plant operation is continuous. The treatment system for the Irondale/Port Hadlock area will be subject to other requirements as well, since the effluent will be discharged to land and therefore to groundwater. To build redundancy into the treatment system, it is necessary to

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construct either a storage pond to hold untreated wastewater or an additional treatment train beyond the facility's intended capacity to be used in the event of a treatment system malfunction. Whether to use "n plus one" treatment trains or storage is a design judgment.

That said, past experience has shown that during treatment process disruptions, such as power outages, MBR systems may provide greater protection of effluent quality than SBR systems provide. At this point in the planning process, the consultant team has not looked in detail at potential differences in reliability. As system design moves forward, I will further investigate the factors involved in keeping the treatment system running smoothly.

Question: Have you considered using a biomembrane system? In this system, there is a biological film on the surface of the membrane, so a biological reaction and the straining action happen simultaneously.

Response (Santroch): I am not familiar with that technology, but I would be interested in talking with you about it after the workshop.

Question: Is there a significant difference in energy costs between SBR and MBR?

Response (Santroch): Vendors currently tell us that MBR has 50% higher energy costs. A few years ago they said it was 100% higher.

Question: When biosolids are shipped out, do they still have germs or are they clean?

Response (Santroch): The biosolids would be partially stabilized before they are shipped away, but they would not be dewatered or disinfected at that point. We have found that there would be a tremendous initial capital investment required to do additional dewatering and stabilization. The design team has made a strategic call that it makes financial sense to contract out the hauling and reuse of the facility's biosolids. One identified contractor, Kitsap Biorecycle, mixes the biosolids with lime to produce an "artificial soil." This soil is then applied to fields and immediately plowed under to minimize the potential for odors and pests.

Question: The location of the treatment facility has not been determined yet, but wouldn't the site affect the phasing plan?

Response (Dour): Not necessarily. Wastewater will be collected to a given point, and then the question will just be whether it has to be pumped a short distance or a long distance. I would note that it takes a lot of energy to pump water.

Question: Why did you assume that the ratio of residential to commercial development would be 60:40?

Response (Dour): That is the current breakdown in the Irondale/Port Hadlock area. We also looked at the current zoning of the sewer planning area and the water usage trends for those land uses and came up with an estimated 60:40 ratio for future growth. We also looked at Winslow, which is a UGA similar in size and character to the UGA proposed in the Irondale/Port Hadlock area, and the ratio there is 60:40.

Question: Why are you planning a single treatment plant? Why not multiple smaller treatment facilities?

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Response (Santroch): There are some regulations that relate to that question. If a system handles more than 15,000 gallons per day, it is regulated by the Department of Ecology, and the Department of Ecology tends to avoid having multiple facilities. There is also some economy of scale to building a single, large facility versus several smaller facilities. A treatment facility is very expensive relative to each connection when there are only a few customers, but it gets relatively cheaper per connection when there are more customers. For example, a single treatment facility can be quadrupled in size over time for double the original price.

Comment: Some other states have started to use multiple smaller treatment facilities and it has worked well for them.

Response (Santroch): I have read about such facilities at Cape Cod, although the authority that managed them had mixed results. If the Irondale/Port Hadlock community wants to go that route, the regulatory community would probably approve it since it's the community's money. If Jefferson County is interested in multiple, smaller treatment facilities, we would certainly investigate them.

Question: Is there an advantage to building an extra treatment train instead of a storage pond, in that you can shut down one train for maintenance and use the extra train in the interim?

Response (Santroch): Yes, absolutely.

Question: The treatment facility in Bremerton smelled very bad. How would this treatment facility be different?

Response (Santroch): The Bremerton facility had a “trickling filter” through which air was blown. That is a system prone to odor problems. The technology we are recommending would not have the same level of air/water contact which causes odor. Although the treatment technologies would be different, we are using the Port Townsend wastewater treatment facility as a model for aesthetic and odor mitigation planning.

Solids Handling Considerations

Question: Are there multiple providers for contract hauling? You have to go out to bid, and there should be competitors. Also, the provider being considered now might go out of business.

Response (Santroch): Yes there are five other independent providers. Olympus Terrace Sewer District went out to bid they received five bids.

Effluent Disposal/Reuse Considerations

Question: Are there any health risks associated with rapid rate infiltration?

Response (Dour): The effluent will be disinfected prior to being discharged.

Siting Considerations

Question: Are the potential locations you're showing for treatment or discharge?

Response (Dour): The potential locations could be for treatment or discharge or both. Nothing has been decided at this point. Treatment and discharge can happen at the same site or at separate sites, it's just a matter of moving wastewater from place to place.

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Question: How big a footprint is required at the treatment and/or disposal/reuse site?

Response (Santroch): If you decide to build storage, which can take up to about 8 acres, the total acreage could be about 16 acres. Without storage, the footprint would be smaller.

Comment: We have a dearth of developable land inside of the proposed urban growth area. My concern is that the “Central Site,” one of the potential locations for treatment and/or disposal/reuse, is an area that needs to be available for development. Development would bring in more sewer users who would help pay for the sewer system. It would not be a good location for sewer facilities.

Comment: A good thing about the Sheriff’s facility site is that the nearby ballfields provide an opportunity for water reuse. The ballfields use a lot of water. It would be important to let people know that the treated water is clean enough for reuse.

Question: Are you looking at public land for the potential site near the Sheriff’s facility?

Response (Dour): That is the ideal.

Comment: There are some private properties there, too.

Comment: Kivley Well is near the Sheriff’s facility. You would have to be careful to not impact the well.

Response (Dour): Yes, we would look carefully at the hydrology of the area. Also, there are regulations and required setbacks to protect wells.

Question: Have buffers for wetlands been considered already for the potential sites?

Response (Santroch): Yes.

Comment: I know the focus is currently on the Sheriff’s facility alternative with the H.J. Carroll Park vicinity as a potential back-up. Since it’s hard to ensure that a proposed site will actually be acquired, maybe we should rank our priorities for the rest of the potential sites.

Comment: I think the Jefferson County Airport is a good alternative. There may be some advantage to working out an arrangement with the Port of Port Townsend. The Port is interested in getting sewer service and they might be willing to host the wastewater facilities in exchange.

Comment: I have experience working with the Port, and I would be very concerned about FAA and waterfowl issues at the Jefferson County Airport.

Comment: Perhaps a storage pond would not be allowed at the airport site, but the tanks could be covered.

Comment: Think carefully about whether to use the airport site, because that site could be beneficial for development in the county in the long run.

Comment: I oppose the Central Port Hadlock site, because the community has expressed interest through visioning processes in commercial and multi-family development in that area.

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Comment: If either the Chimacum High School site or Jefferson County Airport site were used, there would be very strong community concern about development expanding down Rhody Drive.

Comment: At the Chimacum High School Site, there's a setback for the creek that may limit the amount of space available for a wastewater facility.

Question: Some time ago there was a discussion about the mill tying into the sewer system and sharing its treatment and marine outfall capacity. Is that still under consideration?

Response (Wheeler): The mill is between five and eight miles away and over a hill from the sewer planning area. Pumping wastewater that far and over a hill is a huge cost. It would likely be a challenge to permit additional discharge via the marine outfall, especially because the mill does not currently process wastewater so sharing facilities would introduce shellfish protection issues.

Comment: Jefferson PUD #1 is planning to conduct a groundwater study, including modeling and field observations, for the Chimacum Creek Basin. The sewer project team should contact Bill Graham to coordinate on what information is need.

Sewer System Planning

Comment: Looking at your graph of growth of residential and non-residential ERUs, I think the commercial areas would be sewered faster than you show because there is a lot of pent up demand. However, I think the residential areas would be sewered more slowly than you show, since people will not be required to connect to sewer if they have a functioning septic system. Growth in sewer system connections could be more of a step function.

Response (Dour): Yes, we have made many assumptions in estimating how the sewer system will grow. We have made certain assumptions about how quickly people will hook up to the sewer system, but it may be that one or more of the treatment system expansions create adequate capacity for longer than we show here.

Comment: I think commercial and multi-family residential development will grow faster than shown here.

Response (Dour): That is certainly possible. The way we developed the 12.4% growth curve of the number of sewered ERUs was to look at the estimated number of initial users and the estimated number of users at the end of the 20-year planning period and basically connect those two dots. We assumed a compound growth rate to get the curve you see here.

Next Steps and Wrap Up

Mr. Wheeler thanked the attendees for their input and said that it would help the consultant team to refine the recommended sewer system alternative to present at a public open house in July. Mr. Wheeler asked if, based on the regulations governing marine outfall, it was appropriate to drop marine outfall from consideration for effluent disposal and focus on rapid-rate infiltration. The attendees agreed that it was. The attendees also agreed that it was appropriate to focus on

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gravity as the recommended collection technology in the core area, with a focus on gravity in the outlying areas but the possibility of using a pressure system instead

The meeting was adjourned at 3:20 pm.

Workshop Attendance

The public workshop was attended by County Commissioner David Sullivan (District 2) and County Commissioner Pat Rodgers (District 3). Additional attendees are listed below.

Name	Affiliation
Vanessa Brower	Citizens for the UGA
John Fischbach	Jefferson County, County Administrator
Linda Germeau	Kitsap Bank
Frank Gifford	Jefferson County, Public Works
Syd Lipton	Citizen
Jim Parker	Jefferson PUD #1
Dana Roberts	Jefferson PUD #1
Allen Sartin	Jefferson County, Central Services
Ray Serebrin	Jefferson County Library
Troy Summerill	Inn at Port Hadlock

Consultant Team Staff in Attendance

TetraTech/KCM

Kevin Dour, Project Manager; Jim Santroch, Senior Project Engineer – Treatment

Triangle Associates, Inc.

Bob Wheeler, Facilitator; Ellen Blair, Public Involvement Support