South Magnolia Combined Sewer Overflow (CSO) Control Project
Summary of Technical Information Session
January 21, 2012

Overview

King County's South Magnolia CSO Control Project team held a technical information session at the Discovery Park Learning Center on Saturday, January 21 from 11 a.m. – 2 p.m. The session focused on design and installation methods for the new gravity sewer pipeline and associated conveyance elements.

Meeting Purpose

The purpose of this technical information session was to:

- Provide a project update
- Give a summary of geotechnical field investigations and soil profiles on the preferred pipeline alignment
- Describe how the South Magnolia conveyance system will operate
- Discuss work planned for 32nd Avenue West
- Describe the trenchless construction method for pipeline installation
- Provide next steps and opportunities for public participation
- Address questions and concerns, and receive input from the community

Presentation Overview

A PowerPoint presentation from the technical information session can be found at http://www.kingcounty.gov/environment/wtd/Construction/Seattle/SMagnoliaCSOStorage/MeetingCalendar or provided upon request.

The presentation includes:

- Overview of the CSO problem in Magnolia
- Project status update
  - Upcoming public meetings
  - Project schedule
  - Upcoming milestones
- Overview of project elements
  - Gravity sewer pipeline alignment
  - Overview of the pipeline alignments considered
  - Challenges and benefits for alignments
  - Recommended alignment
- Geotechnical investigations
  - Overview of current boring/analysis work
  - Soils findings
  - Upcoming geotechnical work
- Pipeline construction method – horizontal directional drilling (HDD)

  - Overview of soils profile for HDD
  - Method of installation in recommended alignment
  - Examples of construction management techniques from other HDD projects
- Diversion structure location and operations
- Next steps
  - Project activities
  - Public participation
  - Contact information

Summary of Questions and Input

Questions, feedback, and discussion from meeting attendees are summarized below.

Underground storage tank

Are the Port of Seattle and City of Seattle Parks still considering a land swap?
Land use discussions are still occurring regarding the West Yard. King County is continuing the property acquisition process for easements on the Port of Seattle's West Yard property. While a condemnation ordinance was requested and approved to insure that the CSO Control project stays on schedule, King County continues to negotiate with the Port of Seattle on needed easements.

Have there been studies conducted about the fill and soil under the Parks property and Port of Seattle's West Yard?
There is information on both locations from geotechnical borings completed on the West Yard, but this information is specific to the tank site and does not address the remainder of the property. Further environmental studies related to the potential land swap would be completed by the City of Seattle.

How will the tank be maintained to address suspended solids? Will suspended solids be pumped or trucked out?
The tank will have flushing channels, which will flush potable water through the channels and wash the solids down to a series of pumps. The pumps will then transfer the solids from the tank to the Interbay Pump Station and then to the West Point Treatment Plant for processing.

Geotechnical investigations

How deep was the landslide at the Admiral's house 35-40 years ago?
The landslide at the Admiral's house was a *surficial landslide*, that is, a landslide that occurred at the surface. The drilling for the South Magnolia CSO control project will take place deep underground (up to 200 feet). Steel casings will be installed before drilling through landslide deposits at the foot of the hill in Smith Cove Park.

How does the location of the groundwater affect the pipeline?
Geotechnical borings have indicated the presence of water-bearing soils above portions of the pipeline alignment. The pipeline installation is not significantly affected by the groundwater because it is located 50-60 feet below the major groundwater. The pressure exerted by groundwater will influence design: a thicker-walled pipe will be used to accommodate this additional pressure.

How will rainwater affect the groundwater levels, and in turn, affect the pipeline?
Groundwater comes from rainwater slowly permeating down into the ground. As noted above, the pipeline will not be significantly affected by the groundwater because it is located 50-60 feet below the major groundwater.

How will the pipeline be affected by earthquakes and tsunamis?
The pipeline is located up to 200 feet below the surface and during an earthquake, the pipeline will move with the soil. The pipeline planned for Magnolia will be continuously fused, thick-walled, and made of flexible material. The pipeline would not be affected by a tsunami because of its location deep in the bluff, away from the face that could be impacted by tsunami waves.

Will the pipeline be affected differently in the glacial outwash (sand, silt and gravel) areas during an earthquake because it is less stable than glacial clay? Would the effect of an earthquake be different in these soils on a horizontal plane (side to side) than a vertical plane (up and down)?
These are glacially consolidated soils that have been highly compressed. The glacial outwash areas are very dense, with space between larger sediments filled by finer deposits. The glacial outwash is so dense, a standard backhoe would not be able to dig through it; it behaves more like a solid mass. Once the pipeline is installed in these very dense soils, it will move with the soil in these areas if an earthquake occurs, just as it would move in glacial clay.

There are several homes on the bluff that have put up protective covering to mitigate for potential slides. Will the project affect those coverings?
The protective covering near those homes is shotcrete, or concrete that is sprayed onto the slope to reinforce the slope and prevent the glacial fill from weathering. Since the drilling is occurring deep underground, it will not have an effect on those protective coverings.

Pipeline construction method – horizontal directional drilling (HDD)

What happens to groundwater when the pilot hole is drilled? Does it travel along the pipeline and will it come out of the hillside?
The majority of the drilled hole will be filled with highly impermeable mud beneath the pockets of groundwater. At the drilling entrance and exit, there could be some groundwater which will be pumped out by the drill itself. Once the pipeline is installed, a grout plug will be installed that will prevent groundwater from following the pipeline at each end.

Has the project done a survey of water outlets, springs and streams in the project area? How will the project prevent the type of problem that occurred when drilling mud came up into a creek at Carkeek Park?
The project team is aware of the various water outlets and streams in the project area. The unfortunate incident at Carkeek Park was unrelated to King County's Carkeek Park Wet Weather Facility and conveyance pipelines in the park. It was caused from too much pressure beneath the ground and not enough soil aboveground to hold that pressure in, which resulted in a column of mud escaping to the surface, in this case in a creek.

King County will design and build the project to avoid the type of problem that occurred in that instance. In the South Magnolia CSO Control project area, the locations of highest potential for mud to escape to the surface from drilling pressure are along the drill entrance and exit locations. To prevent this from occurring at the drill entrance near 23rd Avenue West, steel casing will be installed from the entrance to about 100 feet into the bluff. At that point, the drilling is occurring so far beneath the surface that steel casing is not necessary, as the zone of influence around the pipeline is approximately 12 feet. Steel casing will also be installed at the drilling exit near 32nd Avenue. Steel casing around the drilling activities in these locations will prevent any mud from being able to escape to the surface and protect surface soils.

During installation, a construction management team, including an inspector who is present on site, will monitor activities and conditions. The contractor can monitor the process to insure that no pressure related issues are occurring.

Construction impacts

Will the road to the Elliott Bay Marina be closed?
The road to the Marina will be kept open throughout the project's duration. It will be written into the contract that the road must be kept open during construction. Some traffic impacts may be expected due to truck traffic.

How will you control dust at the construction area?
King County's permit conditions require environmental controls, including control of dust and dirt on streets. Contractors can control dust and tracked dirt by various means such as site watering, wheel washes and periodic street sweeping. There will be a pre-construction community meeting with the contractor to discuss construction issues and concerns such as these, and learn how the contractor will implement environmental controls. Additionally, King County staff will be onsite when the contractor is working to ensure that the contractor is complying with permit conditions.

What is the haul route going to be for trucks? Please consider not letting the trucks go across the Magnolia Bridge and then down to the site- the 90 degree turn is a big concern and it would be better to bring trucks in a different way, such as through the Port Property.
Haul routes have not yet been determined but this suggestion will be noted and considered. We will provide updated information on details like this as we proceed through design.

Which construction contractors do you expect to bid on this project? Are there local contractors who can do this project?
The project is likely to be separated into two construction contracts: the storage tank and the gravity sewer pipeline. It is expected there will be more contractors bidding on the tank, including local contractors. The pool of qualified drillers for this type of project is somewhat limited and the contractor may come from a distance to do the job.

Will the contract for the project be fixed price?
King County will take the lead on contracting and will have to comply with the public process. The contracts will be low bid, lump sum contracts and the contractor will get paid at milestones. In addition to submitting a low bid, the Contractor will be required to meet specified qualification requirements in the contract. Bidding documents are publically available once the contract is awarded. Contractors can obtain information and documents from King County Procurement and Contract Services (http://www.kingcounty.gov/operations/procurement.aspx). Interested citizens can contact Monica Van der Vieren with King County to request documents.

System operations

Who will close the gates at the tank and at the diversion structure if the tank is full?
The gates will close automatically. There will be standby power at the storage facility that will operate the gates in case of power failure. Additionally, operations staff at the West Point Treatment Plant are watching the entire system 24 hours a day/7 days a week and can close the gates manually if needed.

Why doesn't this project address separating stormwater from sewage?
During the alternatives analysis phase of the project separating stormwater from sewage was studied but was found to be prohibitively expensive. The stormwater conveyance infrastructure in the whole Magnolia Basin would need to be retrofitted to accommodate additional flows. In addition, under new stormwater management rules, some surface water sources could require treatment, not just redirection into the storm system. In addition, the majority of stormwater and sewer infrastructure in Magnolia is owned by City of Seattle. Please visit the planning phase project Web page at http://www.kingcounty.gov/environment/wtd/Construction/Seattle/BeachCSO.aspx or contact Monica Van der Vieren for more information on the alternatives analysis and why the storage option was chosen.

Will this project's new operations affect the West Point Treatment Plant's capacity?
The new system will be used (i.e. the tank will fill up) when the West Point Treatment Plant is also experiencing peak flows. There will be approximately a 12-hour lag time before the flows stored in the tank are pumped to West Point, and therefore will not affect the treatment plant capacity.

What is the expected service life of this system? Will this system be able to handle population growth, as is occurring in Ballard, if it occurs in Magnolia?
The system is designed for a 50-year life, but we expect it to last much longer than that because there is not the type of the development in this area that would require more capacity.
The base flows are very low coming from occupancy compared to the amount coming from stormwater flows.

One issue that contributes to the projected lifespan of this system is that side sewers are failing and there is a significant amount of inflow and infiltration. When groundwater seeps into people's side sewers, it increases flow in the overall system. The County encourages people to be proactive and repair their side sewers if inflow and infiltration is a problem with their side sewer.

From a cost-benefit analysis perspective, what are the benefits we will see from this project? Will CSO control help restore salmon populations?
CSOs can create a public health issue for people exposed to the waters around the outfall for 48 hours after the CSO occurrence. The four Puget Sound Beaches CSO Control Projects were prioritized because discharges occur near recreational beaches. In Magnolia, people sail, kayak, sailboard, scuba dive, and crab in the area of the South Magnolia CSO outfall. From January to November, 2011, 21 discharges occurred, resulting in 42 days that the water was considered unsafe for recreation. Reducing the number of days that this area needs to be avoided will benefit all who use this area.

CSO control also reduces the input from one pollution source in Puget Sound. This project will reduce the amount of pollutants discharged in the area of the South Magnolia CSO outfall.

There are many factors influencing the decline in regional salmon populations. Because CSOs occur during rainy months when salmon runs may occur, juvenile and adult salmon may be exposed to chemicals in untreated wastewater and stormwater. Controlling CSOs reduces the number of incidents that can expose fish to this source of pollutants.

Does King County receive complaints from kayakers or recreationalists who have become sick after boating during an overflow?
King County has received calls from individuals after sanitary and CSO overflows; however, it is difficult to determine where a sickness came from. In order to try to prevent the public from entering the water near CSO outfalls, King County posts signs near outfalls and provides

educational materials to help people understand the health risks associated with exposure to water after a discharge.

Is this project being performed under a consent decree or is it tied to a permit condition?
The four Puget Sound Beaches CSO Control Projects- Magnolia, North Beach, Barton, and Murray- are currently described permit condition milestones in the West Point Treatment Plant NPDES (National Pollutant Discharge Elimination System) permit. None of these projects is currently being performed under a consent decree, which is an enforcement method utilized by federal agencies to ensure compliance. Compliance schedule milestone deadlines are described in the permit, which can be found at http://www.kingcounty.gov/environment/wtd/About/System/NPDES.aspx.

Will the US Environmental Protection Agency and Washington State Department of Ecology pursue a consent decree for King County's CSO Control Program?
US EPA has been working with utilities and states across the country to establish enforceable mechanisms such as Consent Decrees for CSO programs that are expected to take more than a few more years to complete. King County has a CSO control program, has been carrying out CSO control projects for many years and has reduced CSO discharges from the County system significantly. The CSO Program is currently completing a review of priorities and control approaches, and has recommended that 9 additional projects beyond two completed and the four currently underway be completed by 2030. While King County has made progress in CSO control and continues to carry out projects to insure compliance is met for all permitted County CSO facilities, the EPA is discussing consent decrees with both King County and Seattle; for recent news coverage of these issues in our region, see http://seattletimes.nwsource.com/html/localnews/2017147361_cso03m.html.

Are there any environmental groups that have been engaged on CSO control?
You can find comments on a range of NPDES permit issues, including CSO control, associated with the permit. Groups like People for Puget Sound and Puget Soundkeeper Alliance have been actively engaged with a range of wastewater issues and CSO control in the region. A representative from People for Puget Sound attended King County's South Magnolia community meeting in March 2010.

Project Team Attendance

Shahrzad Namini	*King County Wastewater Treatment Division*	Project Manager
Monica Van der Vieren	*King County Wastewater Treatment Division*	Community Relations Lead
Adair Muth	*King County Wastewater Treatment Division*	Community Relations
Jeff Lykken	*Tetra Tech*	Project Manager
Mike Kucker	*Shannon and Wilson*	Geotechnical Analyst
Kim Staheli	*Staheli Trenchless Consultants*	Principle Engineer
Robert Wheeler	*Triangle Associates, Inc.*	Community Relations
Julia Salinas	*Triangle Associates, Inc.*	Community Relations

ALTERNATIVE FORMATS AVAILABLE 206-684-1280 / 711 (TTY Relay)