

Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects

Murray Basin

Technical Information Session

Summary of Discussion

June 19, 2010, 9:30-4:30 pm (field trip at 3:00 pm)

Gatewood Elementary School, 4320 SW Myrtle St., Seattle, WA

Overview

On June 19, 2010, the King County Wastewater Treatment Division (WTD) hosted a public meeting to share technical information about the combined sewer overflow (CSO) control project in the Murray basin. The meeting was organized in response to citizen requests for additional technical information about how the wastewater system works in the Murray basin and how WTD developed and evaluated CSO control alternatives for the basin.

A tour of the Murray Pump Station and the 53rd Ave Pump Station was offered at 3 pm.

Approximately 36 members of the public attended the meeting, including several members of the newly formed Citizen Advisory Group (CAG) for the Murray basin.

Presentations

Through presentations from the project team, meeting participants learned about the nature of the CSO problem and the project decision-making process. There were detailed discussions of flow requirements in the Murray Basin, with hydrographs demonstrating various scenarios. A detailed discussion of Green Stormwater Infrastructure followed and the nine alternatives that were considered for the Murray Basin were reviewed.

Summary of Questions and Input

Questions and input from the meeting attendees are summarized below.

CSO legal requirements

The group discussed improvements WTD is making to water quality sampling procedures after receiving fines from the Department of Ecology relating to CSO treatment plants.

In response to a question, the team clarified that the Puget Sound Beaches CSOs are priorities because they are located near waterfront recreation areas.

Relationship of Barton basin system, Murray basin system, and downstream system

WTD staff confirmed that the schedule for proposing a CSO control alternative for the Barton basin had been extended to correspond with the extended schedule for Murray basin.

Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects
Murray Technical Information Session Meeting Summary

The group discussed a planned Barton Pump Station upgrade project that will increase the capacity to send flow to the Murray Pump Station. WTD staff said that the Barton Pump Station is being upgraded for several reasons, including adding a back-up generator and odor control and replacing mechanical equipment. The additional cost to the project to increase pumping capacity is about \$300,000. WTD management decided it was worthwhile to invest this comparatively small marginal cost while the opportunity exists. This will provide flexibility in the system in the long-term and provide flexibility in controlling CSOs in the Barton basin. WTD staff said that flow data had shown that building storage or other upgrades in the Murray basin was inescapable regardless of whether pumping capacity of the Barton Pump Station is increased. WTD staff said that the Barton Pump Station, like most pump stations, typically pumps at less than capacity.

An attendee asked if it was possible to “balance” the amount of storage in the Barton and Murray basins so that storage would fit into street right-of-way in both basins.

Acknowledging community concerns that flows from the Barton basin affect the Murray basin, staff reminded the group that the Barton and Murray basins are both upstream in a regional system, and both basins send flow through neighborhoods that are downstream, all the way to West Point Treatment Plant. They noted that there is pressure to keep sewer rates low, and WTD must consider using its facilities in the most efficient manner.

In response to a question, WTD staff said that the areas of the Barton basin that have separated systems will not be added into the combined system. An attendee asked how much capacity exists in the wastewater system downstream of the Murray Pump Station. WTD staff said that the capacity at the SW Alaska St. overflow point constrains capacity to 1-2 MGD above the capacity of the Murray Pump Station.

Stormwater separation

Meeting attendees commented that removing stormwater from the wastewater system would reduce the flows that WTD’s wastewater system has to handle. While stormwater contributes to most of the flow during CSO events, separating stormwater often requires building a dedicated stormwater system, which is very expensive. A separate storm system might need to include treatment facilities which would create additional costs and impacts.

Meeting attendees said there were locations in the Murray basin where surface water was suspected to reconnect with the combined sewer system. Basin residents were encouraged to tell WTD staff of the locations where they suspected this was happening. WTD staff said that in general the way the stormwater and sewer systems interact is understood, but the community may know details about specific connections that WTD does not have on record.

In response to a question, WTD staff confirmed that the stormwater system is the City of Seattle’s responsibility.

Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects
Murray Technical Information Session Meeting Summary

Green stormwater infrastructure

Much discussion centered on where green stormwater infrastructure (GSI) techniques can be applied, what techniques are available, and how well GSI is understood. Attendees also questioned why there is no GSI alternative in the Murray basin that focuses on street right-of-way like there is in the Barton basin.

Understanding of GSI

WTD staff and consultants emphasized that a great deal of research is still ongoing about where and how to implement GSI. Attendees asked about the use of GSI in the High Point development and its effectiveness. The GSI consultant for the Barton and Murray CSO projects, who also worked on the High Point project, noted that research and understanding of GSI techniques has improved even in the few years since the High Point development was built.

In response to a question, WTD staff said that the City of Seattle has not adopted a program to replace concrete panels in the street with porous concrete because the standards and specifications are evolving rapidly as research progresses.

WTD staff and consultants explained that most GSI projects that have been built to date were designed to reduce or slow stormwater into stormwater systems, not to control CSOs. They said that designing GSI to control CSOs is much different, and that there must be a high degree of certainty that the CSO regulation will be met for the Department of Ecology and EPA to approve the project.

Where GSI can be applied

WTD staff and consultants explained that the requirements for using GSI to control CSOs include the following: 1) the existence of a combined system, 2) relatively flat topography, and 3) space to implement green features such as rain gardens. They pointed out that it is easier to implement GSI in Portland because they have better soils for infiltration.

GSI Alternatives in Barton and Murray

The team described a GSI alternative in the Barton basin, which would include rain gardens built in the public right-of-way. Street run-off in the potential project area is currently connected to the combined sewer system. Under this option, any GSI on private property would be voluntary and would improve the control of CSOs. WTD staff clarified that implementing GSI in Barton could reduce the flow to the Murray basin and through the regional system.

WTD staff said that the Murray basin differs from the Barton basin because it lacks a large area where stormwater in the public street right-of-way is connected to the wastewater system. In the Murray basin, most of the stormwater enters the combined sewers from private property rather than from street run-off. A GSI alternative would require work on private property to reduce the amount of storage needed in the Murray basin. Preliminary results of a recent study showed that GSI on private property in the Murray Basin may be able to reduce storage needs in the Murray basin, but it cannot eliminate storage.

GSI options for private property include cisterns with typical volume of 1600 gallons, and rain gardens. The City of Seattle does not currently have an incentive program to install rain gardens

Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects
Murray Technical Information Session Meeting Summary

in the Murray basin, although if WTD proposes GSI to help control CSOs in the Murray basin, an incentive program would probably be needed to achieve enough voluntary participation.

Analysis and Data

Meeting attendees discussed how the impact of GSI on the combined sewer system was evaluated. A technical memo summarizing the process and the results is available on the project website.

The group discussed the complexity of managing the combined sewer system, noting the variability of rainfall over Seattle and what happens when the ground becomes saturated. By releasing excess water into the environment, CSOs prevent back-ups into homes and businesses and protect treatment facilities. The West Point treatment facility has an active management process to handle flows and prevent overflows.

Techniques

The effectiveness of permeable pavement was discussed. In response to a question, the GSI consultant said that drilling holes in regular pavement does not make “permeable” pavement. The soil under regular pavement is compacted to be very dense and resist water.

Existing Murray Pump Station

A meeting attendee encouraged WTD to establish an emergency preparedness plan for the Murray Pump Station, including plans for keeping a back-up generator running during an emergency. Overflows at the Murray Pump Station occur about once every three years due to power outages.

WTD staff explained that the planned upgrade to the Murray Pump Station, which may be combined with the Murray CSO project if possible, is intended to upgrade the station, including a back-up generator and odor control, but the pumping capacity would not be increased because of downstream limitations.

Sizing of CSO control alternatives

Meeting attendees asked WTD to make available the calculations that led to the sizing of the CSO control alternatives.

Other CSO control alternatives that WTD considered

The potential to increase the capacity of the Murray Pump Station and downstream system to get flows out of basin was also discussed. WTD staff said that alternative would involve a lengthy new pipeline and upgrading the Alki CSO treatment plant to handle additional flows.

The group clarified:

- Portals for the tunneling alternative would be required during construction only. The structures on either end of the storage tunnel would be underground.
- If flows were pumped to a higher elevation in the basin for storage, gravity could be used to release flows back to the bottom of the basin.
- On-site treatment alternative would have to be above ground. WTD is no longer considering that alternative at this time.

Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects
Murray Technical Information Session Meeting Summary

- A storage facility at the bottom of the basin can be placed underground. If a facility were to be built underground at the Lowman Beach Park, WTD would work with the community on design, construction, and how the park would be restored.

Potential additional CSO control alternatives

Participants asked about other alternatives, such as building a shorter pipe under the street near the park and adding length to another storage pipe uphill, or using one of the private properties shown in Alternative 1F. A suggestion was made for pumping straight from Barton Pump Station to Gatewood Elementary via a new pipeline, rather than pumping to the Murray Pump Station, and putting a storage facility at the school to control CSOs.

A meeting attendee asked if the force mains in Lincoln Park could be used for storage, since they have excess capacity above what Barton Pump Station will be able to pump. WTD staff replied that it would not be possible to use the force mains for storage because a pressure pipe and storage are not compatible components of a system.

Staff Attendance

The following project team members attended the technical information session:

King County Wastewater Treatment Division

Linda J. Sullivan, Capital Projects Managing Supervisor; Shahrzad Namini, Project Manager for Puget Sound Beach CSO Control Projects; Chris Okuda, Project Management; John Phillips, CSO Control Program; Erika Peterson, Community Relations; Martha Tuttle, Community Relations; Elizabeth Elliott, Community Relations

Carollo Engineers

Brian Matson, consultant team project manager

Tetra Tech

Jeff Lykken, Murray Basin Lead; Kevin Dour, Murray project engineer

Triangle Associates

Bob Wheeler, facilitator; Ellen Blair, community relations support

EnviroIssues

Penny Mabie, CAG facilitator