Chapter 5

CSO Control Policies

RWSP combined sewer overflow (CSO) policies are intended to guide King County in controlling CSO discharges so that all CSO locations meet state and federal regulations. In setting schedules for implementing CSO control projects, the county is to give highest priority to locations with the greatest potential to impact human health, bathing beaches, and species listed under the Endangered Species Act. The policies call for regular assessment of CSO projects, priorities, and opportunities using the most current studies. In particular, the King County Executive is to submit a CSO program review to the Regional Water Quality Committee in preparation for each CSO plan update.[1] Another CSO control policy addresses the cleanup of contaminated sediments near county CSOs. The policy directs the county to implement its long-range sediment management strategy and, where applicable, to participate with partners in sharing responsibilities and costs of cleaning up sites such as the Superfund sites in the Lower Duwamish Waterway.

This chapter provides an overview on implementation of the CSO control policies from 2004 through 2006. In accordance with the RWSP reporting policies, this chapter also includes a summary of the activities carried out in 2006. The complete text of all the CSO control policies, including information on policy amendments and a brief summary of how each policy was implemented in 2004–2006, is provided in Appendix D. Chapter 9 provides information on CSO volumes and frequencies.

5.1 Implementation of CSO Control Policies from 2004 through 2006

This section describes King County's activities in 2004 through 2006 to implement RWSP CSO control and sediment management policies.

5.1.1 CSO Control

CSOs are discharges of wastewater and stormwater from combined sewers into water bodies during heavy rainstorms when sewers are full. Combined sewers, which carry both wastewater and clean stormwater, exist in many parts of older cities across the nation, including Seattle. To protect treatment plants and avoid sewer backups into homes, businesses, and streets, combined sewers in Seattle sometimes overflow into Puget Sound, the Duwamish Waterway, Elliott Bay,

[1] The CSO plan updates are submitted to the Washington State Department of Ecology (Ecology) every five to seven years in conjunction with the renewal of the National Pollutant Discharge Elimination System (NPDES) permit for the West Point Treatment Plant.

Lake Union, the Lake Washington Ship Canal, and Lake Washington. Although the wastewater in CSOs is greatly diluted by stormwater, CSOs may be harmful to public health and aquatic life because they can carry chemicals and disease-causing pathogens.

In response to the Clean Water Act of 1972, Metro adopted the *Combined Sewer Overflow Program* in 1979. Since adoption of this first program, Metro and then King County have prepared plans to respond to evolving CSO regulations, including the Washington State Department of Ecology's "control" standard of no more than an average of one untreated discharge per year at each CSO location. The most recent CSO control plan was adopted as part of the RWSP.

Strategies for reducing or mitigating the effects of CSOs include pollution prevention through source control, operational controls, upgrades of existing facilities, and construction of additional facilities to provide storage and treatment of excess flows prior to discharge. A number of such improvements were implemented before adoption of the RWSP. These improvements included sewer separation and storage projects, conversion of the Alki and Carkeek treatment plants to CSO treatment plants, and control system improvements to maximize storage and transfer of combined flows to treatment plants.

The RWSP calls for continued improvements to control King County's CSOs by 2030. It identifies 21 projects (Table 5-1). By May 2005, after projects that were under way prior to RWSP adoption were brought online, about half of King County's 38 CSOs were controlled to Ecology's standard. The remaining 21 uncontrolled CSOs will meet state standards as capital improvement projects are completed between 2012 and 2030.[2] Figure 5–1 shows the locations of county CSOs.

A major accomplishment during 2004–2006 was construction of two projects that were under way prior to RWSP adoption: the Mercer/Elliott West CSO and Henderson/Norfolk CSO control systems.[3] Both systems were brought online in 2005. The Mercer/Elliott West system—undertaken as a joint project with the City of Seattle—consists of several facilities to store and treat CSOs from the county's Dexter Regulator Station and the city's CSOs around Lake Union and to control the county's largest CSO at Denny Regulator Station on Elliott Bay. The Henderson/Norfolk system was built to control the Henderson and Martin Luther King CSOs into Lake Washington and the Norfolk CSO into the Duwamish River.

A History of CSO Plans

1979—Metro adopted its first *Combined Sewer Overflow Control Program.*

1985 and 1986—The *Plan for Combined Sewer Overflow Control* and the *Supplemental Plan for Combined Sewer Overflow Control* were prepared as part of a system-wide planning effort

1988—The *1988 Combined Sewer Overflow Control Plan* was prepared in response to Ecology's 1987 definition of control as one untreated discharge per year.

1995—As part of the 1995 West Point NPDES permit renewal, King County prepared an update and amendment to the 1988 plan.

1999—A CSO control plan was adopted as part of the RWSP. The plan lists 21 control projects to bring all CSOs into control by 2030.

2000—The RWSP CSO control plan was updated as part of the West Point NPDES permit renewal. No changes to the RWSP CSO control plan were recommended.

[2] An update and calibration of the hydraulic model, expected to be ready in 2008, will help verify the control status of King County CSOs. More information on the update of the hydraulic model is provided later on this chapter.
[3] These systems were formerly called the Denny Way/Lake Union and Henderson/MLK/Norfolk CSO control projects.

Table 5-1. CSO Projects in Order of Priority in RWSP

Project Name	DSN[a]	Project Description	Projected Year of Control	Water Body
South Magnolia	006	1.3 MG storage tank	2012[c]	Puget Sound
SW Alaska Street[b]	055	0.7 MG storage tank	Controlled	Puget Sound
Murray Avenue	056	0.8 MG storage	2012[c]	Puget Sound
Barton Street	057	Pump station upgrade	2012[c]	Puget Sound
North Beach	048	Storage tank and pump station expansion	2012[c]	Puget Sound
University/Montlake	015/ 014	7.5 MG storage	2015	Lake Union/ East Ship Canal
Hanford #2	032	3.3 MG storage/treatment tank	2017	Duwamish River
West Point Treatment Plant Improvements		Primary/secondary enhancements	2018	Puget Sound
Lander Street	030	1.5 MG storage/treatment at Hanford	2019	Duwamish River
Michigan	039	2.2 MG storage/treatment tank	2022	Duwamish River
Brandon Street	041	0.8 MG storage/treatment tank	2022	Duwamish River
Chelan Avenue	036	4 MG storage tank	2024	Duwamish River
Connecticut Street	029	2.1 MG storage/treatment tank	2026	Elliott Bay
King Street	028	Conveyance to Connecticut Street treatment	2026	Elliott Bay
Hanford at Rainier Avenue	031	0.6 MG storage tank	2026	Duwamish River
8th Avenue S	040	1.0 MG storage tank	2027	Duwamish River
West Michigan	042	Conveyance upgrade	2027	Duwamish River
Terminal 115	038	0.5 MG storage tank	2027	Duwamish River
3rd Avenue W	008	5.5 MG storage tank	2029	West Ship Canal
Ballard	003	1.0 MG storage tank (40% King County)	2029	West Ship Canal
11th Avenue West	004	2.0 MG storage tank	2030	West Ship Canal

[a] DSN refers to the Discharge Serial Number, an identifier set in the NPDES permit for an individual CSO location. See Figure 1-3 in Chapter 1 for locations of CSOs.

[b] Updated monitoring and modeling data indicate that the SW Alaska Street CSO is already controlled; thus, the project is no longer needed.

[c] In the RWSP, the Barton, Murray, North Beach, and South Magnolia projects were scheduled to be completed in 2010 or 2011.They are now scheduled to be completed in 2012.

As expected, the startup period for these systems has extended over a couple of wet seasons because of the size and complexity and the seasonal and intermittent operation of the systems.[4] The Mercer/Elliott West system significantly reduced the volume and frequency of CSOs at the Denny and Dexter Regulator Stations during its first wet season of operation (2005–2006); data for 2006–2007 are still being analyzed. The system is expected to be fully controlled in the 2007–2008 wet season after further system refinements are made. The Henderson Tunnel in the Henderson/Norfolk system did not operate in 2005–2006 because of programming errors that have since been identified and corrected. No discharges occurred from the locations controlled by this system during this period. The system operated in full starting late in 2006, providing more startup experience that is currently under analysis.

Early in 2006, the King County Executive submitted the first CSO control program review to the King County Council.[5] The review meets RWSP policy and sets the stage for the next CSO plan update. The update is scheduled to be submitted to Ecology in 2008 as part of West Point's next NPDES permit renewal application. The CSO program review concluded that based on information accumulated since RWSP adoption, the priorities set for CSO control projects in the RWSP remain sound. Following completion of the review, WTD selected the predesign consultant and began public involvement work on the four highest priority projects located along Puget Sound beaches.

Improvements to the CSO control program and facilities, identified as a part of the program review, have been implemented or are in progress. The hydraulic model used to predict the effectiveness of CSO control and to design CSO control projects is being updated and recalibrated. The updated model, expected to be ready in 2008, will provide more accurate information on remaining control needs. Promising new CSO treatment technologies that may offer greater cost-effectiveness will be pilot tested from 2007 through 2009. (Project scoping occurred in 2006.)

The total project capital cost estimate for CSO control projects is $388 million (2006$). This amount represents the 1998 preliminary planning-level estimates for the projects listed in Table 5-1, adjusted for inflation. Planning-level cost estimates are based on generic facility concepts. Specific details of a project such as location, technologies, and environmental impacts and potential mitigation of such impacts are determined later during project predesign. The accuracy of a project's cost estimate will increase as the project progresses through the project life cycle. Costs for projects in planning can have a rough order of magnitude estimate in the range of - 50 to +100 percent.[6] No additional analysis of the CSO project costs has been done because the update of the hydraulic model will likely change sizes, definitions, and thus costs of several planned control projects. Cost estimates may also increase as the result of design changes made to accommodate evolving regulations, odor control policies adopted in 2003, and increases in materials and contractor costs in this competitive construction environment.

When the hydraulic model is updated, projects may be resized, any necessary technology changes will be incorporated, and new cost estimates will then be developed. This information, including any recommended schedule changes to address new scientific information, should be available for discussion in the next CSO control program review in 2010.

[4] See the 2006 activities section later in this chapter for more details.
[5] The CSO control program review is available on the Web at http://dnr.metrokc.gov/wtd/cso/library.htm#plans
[6] Project Management Institute's *A Guide to the Project Management Body of Knowledge*, third edition

King County CSO Locator Map

Figure 5-1. CSO Locations

Results of the 2006 program review underscore the importance of WTD's practice of transferring as much CSO flow as possible to regional treatment plants for optimal treatment. This and other operational practices serve to improve water quality before completion of the more expensive capital CSO control projects in the plan.[7] Over the past few years, SCADA (supervisory control and data acquisition) system hardware and software at West Point were replaced with a new system to bolster the reliability of monitoring and control of offsite regulator and pump stations. The new system will include a predictive control program that can monitor rainfall and conditions in the major trunks and interceptors, predict inflows to the sewer system, and optimize the regulation of flow through the regulators to further reduce CSOs. Development and calibration of the predictive control model has been taking place since 2005. The first phase of the effort, a new "rules-based" control program, is expected in 2007–2009. These and other improvements could reduce CSO volumes by as much as 150 million gallons per year.

In 2005, the pumping capacity of the Carkeek Pump Station was upgraded from 8.4 to 9.2 mgd to increase the volume of flows conveyed to West Point for secondary treatment and discharge. Ecology modified the NPDES permit limits to reflect these new conditions. Flows in excess of 9.2 mgd are stored at Carkeek CSO Treatment Plant. Stored flows that cannot be sent to West Point receive treatment, disinfection, and dechlorination before being discharged to Puget Sound.

During the past three years, WTD continued to find opportunities to optimize cost-effectiveness by coordinating CSO control with other WTD projects. The Ballard Siphon replacement project is one example of such coordination. The project—initiated in 2006 and scheduled for completion in 2010—will protect water quality in the Lake Washington Ship Canal by replacing the 70-year-old wooden sewer pipe that extends across the floor of Salmon Bay near the Hiram M. Chittenden Locks. In addition, the project is being designed to bring the CSO at the Ballard Regulator Station under control and, thus, eliminate the need for the CSO storage project at this location scheduled in the RWSP for completion in 2029. The project also holds the potential to reduce CSOs at the 11th Avenue Regulator Station and thus reduce the size of the CSO storage project planned to be completed at this location in 2030.

Coordination of county and City of Seattle CSO programs continued during this period. The coordination helps to identify mutual project opportunities, minimize community impacts, and ensure equitable and cost-effective programs.

WTD submitted annual reports to Ecology on the operation of the CSO system, volumes and frequencies of CSOs, and progress toward CSO control. Work on the next CSO plan update, due to Ecology in 2008, will begin in late 2007. Annual reports and previous plan updates are available at http://dnr.metrokc.gov/wtd/cso/library.htm#annualreport.

5.1.2 Sediment Management

King County is responsible for cleaning up sediment contamination related to CSOs under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

[7] King County documents its CSO-related operations and maintenance practices to comply with the U.S. Environmental Agency's CSO Control Policy. The policy requires implementation of Nine Minimum Controls for CSOs.

and the state Model Toxics Control Act (MTCA).[8] To meet RWSP policies, WTD is carrying out a sediment management plan developed in the late 1990s to remediate sediment near CSO outfalls that are contaminated with a variety of heavy metals (lead, copper, zinc), phthalates, polychlorinated biphenyls (PCBs), and hydrocarbons.[9] Most of the contamination is from the first half of the 20th century.

Work on three projects is under way—cleanup of the Denny Way and Hanford/Lander CSOs and development of a prediction model:

- In mid 2007, design was completed for cleanup of the old Denny Way CSO site and the Cleanup Action Plan has been released by Ecology for public review. Dredging, which must be done in the winter, is expected to occur November 2007–January 2008.
- The Hanford/Lander CSOs are part of the Duwamish East Waterway cleanup—a joint effort among King County, the Port of Seattle, and the City of Seattle. The U.S. Environmental Protection Agency (EPA) has approved the scope of the remedial investigation/feasibility study, and work has started.
- The model to better predict deposition of contaminants around CSO outfalls will be ready by the end of 2007. The model will help to identify which CSOs are likely to have contaminated sediments and will inform cleanup decisions.

Work on another project—the King Street CSO—was scheduled for 2007–2008. The work has been delayed, however, because City of Seattle and Washington State Department of Transportation negotiations over Colman Dock renovations have caused the state to drop its share of the funding for the renovation from this biennium's budget. It may be possible to proceed without an agreement between these two parties if a pier in the area of the CSO is removed so that cleanup can begin.

The county continues to work to improve water quality in the Lower Duwamish Waterway through actions such as reducing CSOs, restoring habitats, capping and cleaning up sediments, and controlling toxicants from industries and stormwater runoff. WTD is partnering with the City of Seattle, the Port of Seattle, and the Boeing Company under a consent agreement with EPA and Ecology to prepare a remedial investigation and feasibility study for the Lower Duwamish Waterway Superfund Site. The remedial investigation, which defines the extent and inherent risks of contamination, will be ready for public review in autumn 2007. The feasibility study, which will identify cleanup alternatives, is scheduled to be completed in 2009.

The county is participating in two early action sites—the Diagonal/Duwamish CSO/Storm Drain and Slip 4 CSO—to clean up portions of the waterway earlier than required. The cleanup at Diagonal/Duwamish was completed in February 2004. The dredged area was capped with three to six feet of clean sediment and gravel to provide new fish habitat. Follow-up work was completed at the site in February 2005, and monitoring of these actions is providing critical

[8] CERCLA is commonly known as Superfund.
[9] The sediment management plan is available on the Web at http://dnr.metrokc.gov/WTD/sediment/library.htm

information on cleanup alternatives for the Superfund site.[10] Monitoring activities in 2005 showed accumulations of phthalates and some other chemicals in front of the Diagonal/Duwamish outfall. This discovery led to formation of the Sediment Phthalate Work Group, composed of representatives from EPA, Ecology, King County, and the cities of Seattle and Tacoma. The work group is looking at environmental occurrence, sources, risks and receptors, source control and treatment, and regulatory aspects of phthalate sediment contamination.

Phthalates come from a variety of sources, mainly in low levels that add up across many inputs.[11] The King County Industrial Waste Program's sampling efforts, including air deposition sampling, helped to define the problem. It appears that air deposition to stormwater runoff may be the dominant source of phthalates to river sediments. These findings may prompt considerations regarding the acceleration of CSO control; however, remedying the causes of recontamination will be more complex than simply controlling CSOs because stormwater far outweighs CSOs as the primary source of these contaminants. The county will continue to investigate effective ways to reduce phthalates. Phthalate removal efficiency will be included in the pilot tests of promising CSO treatment technologies. Other pilot studies to investigate ways to break the phthalate air-water-sediment pathway are being explored.

In 2006, EPA approved a cleanup plan for Slip 4 CSO sediments. Sediments with the highest contamination will be removed, and the remaining sediments will be capped. The cleanup will create shallow fish habitat along the northern banks of the slip. Salmon migrating through the waterway will be able to feed and grow in the area before continuing their journey to Puget Sound. Design of the cleanup began in 2005, and cleanup is hoped to be completed in 2008. The discovery of ongoing PCB sources into the slip has put the cleanup on hold until the sources are effectively controlled.

5.2 CSO Control Activities in 2006

The key achievements of the CSO control program in 2006 are as follows:

- Startup of Mercer/Elliott West CSO and Henderson/Norfolk CSO control systems
- Completion of the CSO control program review
- Start of predesign for Puget Sound beach CSO control projects
- Incorporated Ballard CSO control needs in design of Ballard Siphon replacement project
- Scoping for CSO treatment technology pilot projects
- Submission to Ecology of the report on public notification of overflows
- Continued coordination with the City of Seattle on CSO and stormwater management

[10] The Diagonal/Duwamish remediation closure report issued in July 2005 summarizes the purpose for and details of the follow-up work. The closure report is available on the Web at http://dnr.metrokc.gov/wtd/duwamish/diagonal.htm.

[11] Inputs may include stormwater (via vehicular traffic), wastewater (via everyday products), and air deposition.

- Continued work on the projects identified in the sediment management plan and on the response to the Environmental Protection Agency's Superfund listing of the Lower Duwamish Waterway

5.2.1 Startup of Mercer/Elliott West CSO Control System

The Mercer/Elliott West CSO control project was under way prior to the adoption of the RWSP. This project was a joint effort of King County and the City of Seattle to control CSOs into Lake Union and Elliott Bay. The new system was brought online in May 2005. It will control several of Seattle's CSOs in addition to the largest CSO in the county's system.

The system operated during the 2005–2006 and 2006–2007 CSO reporting periods (June through May). Although volumes and frequencies at the county's Denny and Dexter CSO locations were substantially reduced, the locations are not yet controlled to the state standard. Seattle and the county have made adjustments to improve system operation and are continuing to assess the need for other refinements to address permit compliance issues (see Chapter 9). Both entities will try to complete identified actions before the start of the 2007–2008 wet season, with the goal of meeting permit requirements.

5.2.2 Startup of Henderson/Norfolk CSO Control System

The Henderson/Norfolk CSO control project was under way prior to the adoption of the RWSP. The new system was brought online in May 2005. This system was built to control two CSOs in Lake Washington and one CSO on the Duwamish River at Norfolk. With completion of this system, all of the county's CSOs along Lake Washington are controlled.

The system started full operation in late 2006. Programming errors, which have since been identified and corrected, prevented the Henderson treatment tunnel from operating during the 2005–2006 period.

5.2.3 CSO Control Program Review

In accordance with the RWSP CSO control policies, WTD carried out a CSO control program review to evaluate the benefits of continuing the CSO control program identified in the RWSP. The CSO control program review was completed and transmitted to the Metropolitan King County Council in spring 2006.

The review assessed whether adjustments in the CSO control program were needed to respond to changing conditions, ongoing regulatory requirements, and county business needs. Results of the review indicate that current scientific information supports the approach and direction of the RWSP CSO control program. The review confirmed that the current WTD priority of using conveyance improvements or storage facilities to capture and then transfer CSOs to the secondary plants provides the best CSO control management and that satellite CSO treatment should be used where transfer is not feasible. The review also confirmed that the schedule for completing the CSO control projects meets the RWSP's direction to prioritize projects according

to their potential to protect human health, the environment, and endangered species. The project priorities (Figure 5-2) are as follows:

- **Priority 1, CSOs near Puget Sound Beaches.** The current schedule calls for completion of the Barton, Murray, North Beach, and South Magnolia projects in 2012.
- **Priority 2, University/Montlake CSO.** This CSO is located at the east end of the Ship Canal. The control project was given a high priority because of the high level of boating in that area, which could result in secondary contact with the water. The current schedule calls for completion of this project in 2015.
- **Priority 3, CSOs Along the Duwamish River and in Elliott Bay.** The RWSP designated that nine projects at CSOs along the Duwamish River and in Elliott Bay be completed between 2017 and 2027. These projects were given third priority because King County's 1998 *Combined Sewer Overflow Water Quality Assessment for the Duwamish River and Elliott Bay* indicated that the level of bacterial pollution originating upstream of CSOs was high enough to dwarf improvements by CSO control projects.
- **Priority 4, CSOs at the West End of the Ship Canal.** Three projects to control CSOs at the west end of the Ship Canal (Ballard, 3rd Avenue West, and 11th Avenue West) are scheduled to be completed by 2030. These are the last projects to be completed because significant CSO control had already been accomplished in this area prior to the adoption of the RWSP. As noted earlier in this chapter, it is possible that the Ballard CSO will be controlled in coordination with the Ballard Siphon replacement project.

Note: The SW Alaska Storage project is no longer needed; updated monitoring and modeling data indicate that this CSO is already controlled.

Figure 5-2. Prioritized CSO RWSP projects

WTD will continue to monitor the information that is being generated through the Lower Duwamish Waterway Superfund project for factors that could lead to recommending future schedule changes to CSO control projects. For example, if an ongoing human health risk in the Duwamish River is identified as resulting from CSOs, recommendations for changes in the schedule may be considered to accelerate the CSO control projects in these locations.

Information from the review will inform the CSO plan update, due for submittal to Ecology in 2008. The next CSO program review, scheduled for 2010, will include information on the results of the updated hydraulic model and the pilot tests of CSO treatment technologies, as well as updated schedules and cost estimates for the CSO control program projects.

The CSO control program review is available at
http://dnr.metrokc.gov/wtd/cso/library.htm#plans

5.2.4 Predesign of Puget Sound Beach Projects

In 2006, predesign and public involvement began on the four CSO control projects along Puget Sound beaches—Murray and Barton in West Seattle, Magnolia along north Elliott Bay, and North Beach near Carkeek Park. Because the Barton Pump Station sends flow to the Murray Pump Station and anything that happens at one affects the other, design and construction of the pump station upgrades and CSO control projects are being coordinated.

Alternative control options and sites will be identified based on evaluation criteria developed in 2007. The projects are scheduled for completion in 2012.

Control options to be considered, either alone or in combination, are as follows:

- Store peak flows during large storms and send flows to the existing treatment plant once the storm passes
- Increase pumping and conveyance capacity to direct peak flows to existing treatment facilities
- Reduce peak flows of stormwater and groundwater into the wastewater collection system through separation of storm and sanitary sewers, low-impact “green” solutions, or other measures
- Treat peak flows at a new local treatment facility during large storms

Visit the Puget Sound beach projects Web site for more information:
http://dnr.metrokc.gov/wtd/projects/cso/index.htm

5.2.5 CSO Treatment Technology Pilot Tests

The RWSP calls for satellite CSO treatment for four CSO sites—King/Kingdome, Hanford/Lander, Brandon, and Michigan. Flows at these CSO sites are so high that storage facilities to hold all the flows would be large, difficult to site, and prohibitively expensive. Even if such storage facilities could be built, they could not be drained to regional plants before the next storm begins to fill them again.

In support of the CSO program review, studies on the newer solids removal and disinfection technologies were reviewed for quantifiable performance data that could be directly compared with performance and associated costs of the more conventional technologies. In 2005, two workshops were held to examine the results of this literature review, to present new information, and to discuss the suitability of the technology to meet county needs and objectives. Conclusions from both workshops were that little new information has come to light that warrants a change from the RWSP approach of storage, conventional primary treatment, and chlorine (typically hypochlorite) disinfection. It was recommended that WTD continue to monitor the ballasted sedimentation and ultraviolet disinfection processes for performance data from other entities. In addition, because of the potential cost savings of smaller footprint facilities, it was recommended that pilot tests be conducted and detailed cost estimates be developed for variations of the ballasted sedimentation process that hold the most promise.

In 2006, scoping for pilot testing took place to identify a range of technologies of interest. The scoping narrowed the tests to variations of the high-rate sedimentation process. A request for proposals went out in January 2007, and the consultant contract was signed mid-year. The pilot tests will be implemented through 2009.

5.2.6 Public Notification Report to Ecology

King County, the City of Seattle, and Public Health–Seattle and King County operate a joint public outreach effort to inform the public about the location of CSOs, their actual occurrence, and the possible health or environmental impacts of CSOs. Signs are posted near CSO outfalls. In addition, the outreach effort includes media releases and a brochure, fact sheet, Web site (http://www.metrokc.gov/health/hazard/cso.htm), and CSO information telephone number to answer health concerns about CSOs.

The most recent modified NPDES permit for West Point requires King County to conduct a study to determine the feasibility of providing more immediate notification of overflows, including the feasibility of providing a Web-based notification system.[12] The county submitted a draft report to Ecology in July 2006 and then incorporated Ecology comments on the draft, solicited public input through briefings and displays, and submitted a final report in July 2007. The technical feasibility of the Web-based system is currently being tested.

[12] The permit was modified in June 2005 to include the new Mercer/Elliot West and Henderson/Norfolk CSO control systems. Public notification programs of CSO events and impacts are required as one of EPA's Nine Minimum Controls.

5.2.7 Coordination with the City of Seattle

Early in 2006, WTD continued to coordinate with the City of Seattle on plans for managing CSO and stormwater in the area to be affected by the Alaskan Way Viaduct and Seawall Replacement project. For example, WTD provided support for and reviewed iterations of a city-developed model in order to ensure that the model accurately described the interface with the county's system. Coordination on the project was no longer necessary after June 2006 when the city withdrew its request for joint management projects in relation to the viaduct project. The city is now planning to reduce stormwater runoff by pursuing green alternatives and low-impact development in the project area.

In addition to the viaduct project and startup of the Mercer/Elliott West CSO control system (see above), the county has worked with the city during the year on development of alternatives for managing stormwater in the Seattle's Madison Valley that could potentially benefit the county's planned Montlake CSO control project, on early planning for the city's Genesee CSO control project in order to optimize opportunities and to avoid adverse impacts to county projects, and on preparation of city and county CSO plan updates, both due for submission to Ecology in 2008.

5.2.8 Sediment Management Activities

Sediment Management Plan

In 2007, King County completed design of the cleanup of sediments in front of the old Denny Way outfall structure. Ecology has released the proposed cleanup plan for public comment. This three-year project will clean up the remaining contaminated sediments in the nearshore area adjacent to the outfall. Dredging is scheduled to be completed by February 2008.

The Lander and Hanford CSOs are part of the Duwamish East Waterway cleanup. EPA has approved a scope of work for the remedial investigation/feasibility study. The Port of Seattle and City of Seattle will split costs with the county for this portion of the work. Costs for the studies, for any further cleanup work, and for previous cleanup work done in the area and borne by the Port will be allocated among the parties once the studies are completed and EPA issues a Record of Decision in 2010. The allocation process for previous cleanups could start earlier than that.

Development of the model to better predict deposition of contaminants near CSO outfalls continued in 2006. The model is expected to be ready in early 2008.

Visit the Sediment Management Program Web site for more information:
http://dnr.metrokc.gov/wtd/sediment/

Lower Duwamish Waterway Superfund Site

In 2006, work continued on the remedial investigation for the Lower Duwamish Waterway Superfund site. The draft remedial investigation is scheduled for public review in autumn 2007. EPA has approved the work plan for the feasibility study, which will identify cleanup alternatives. The remedial investigation and feasibility study will be completed in 2008 and

2009. King County continues to receive 50 percent reimbursement for this work from an Ecology grant. Once the feasibility study is completed and a cleanup plan is selected, then responsibilities will be allocated to participating parties.

Post-remediation monitoring of the Diagonal/Duwamish early-action cleanup site continued in 2006. Monitoring is providing information for cleanup decisions for the entire Superfund site. EPA, Ecology, King County, and the cities of Seattle and Tacoma formed a workgroup to determine appropriate actions and strategies to address runoff problems for ubiquitous contaminants like phthalates. In 2007, sampling to characterize the water quality of CSO events was started. The Industrial Waste Program participated in source control efforts, including sampling and analysis of industrial waste discharges and of rainfall samples for contaminants, such as phthalates, found in the cleanup area (see Chapter 9).

In 2006, EPA approved a cleanup plan for Slip 4—another early-action site.[13] In early 2007, source control sampling from areas upland to Slip 4 indicated that PCBs were still getting into the storm drains that discharge to the slip. EPA put the cleanup of Slip 4 on hold until contamination can be controlled adequately to prevent recontamination of the cleanup.

Visit the Duwamish Waterway Programs Web site for more information: http://dnr.metrokc.gov/WTD/duwamish/

[13] The Slip 4 cleanup is being managed by the City of Seattle. King County is partnering with the city on this cleanup effort.