CSO BEACH PROJECTS

Public Participation in the Decision Process

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

PROJECT TEAM	PUBLIC
Evaluate Approaches to CSO Control in Basins • On-site treatment • Peak flow reduction • Storage • Convey/treat	*Learn more about the problem and control approaches*
Identify and Evaluate a Broad Range of Alternatives for Each Basin • Alternatives=approach+potential Site • All technically feasible alternatives considered	*Attend community meetings and provide input*
Short list and Refine Alternatives for Each Basin • Short list based on comprehensive criteria • Further develop/refine most favorable alternatives	*Attend community meetings and provide input*
Decide on a Proposal for Each Basin King County decides on proposals for environmental review	*Learn about proposals and opportunities to provide input*
SEPA (State Environmental Policy Act) Review • Threshold determination issued • Public comment period	*Provide comments during public comment period*
Regulatory Review and Approval Period • Agency comment and approval • Basis for design	*Agencies confirm public participation process*
Facility Design Phase • Design level detail added • Project permit applications	*Public coordination continues. Public comment on some permits.*
Construction • Provide public updates and notification • Maintain 24-hour construction hotline	*Public access for construction questions and concerns*

Planning

Design

Construction

WE ARE HERE

King County will decide on a proposal for CSO control in each of the four project basins: Barton, Murray, North Beach, and South Magnolia. The public will have opportunities to inform the county's decision process. Sign up for progress updates and meeting notices to stay informed and to provide input.

This diagram will help you keep track of the decision process and opportunities for participation.

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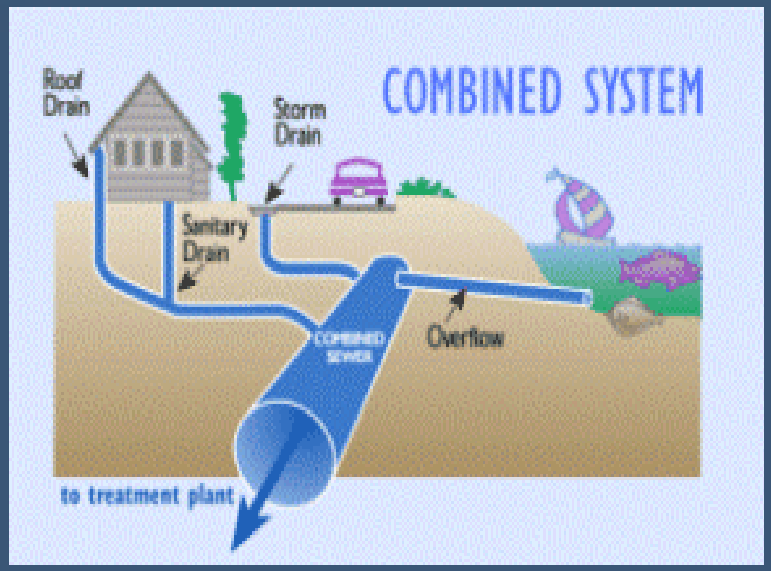
The Combined Sewer System



- Conveys wastewater & stormwater to treatment plants
- Pipelines & pump stations were sized to captured most of the flow
- Relief points – CSOs – were built to discharge when flows exceed capacity
- Newer systems manage sewage and stormwater separately

What is the CSO Control Requirement?

- Set by State Ecology Regulations (WAC 173-245)
- No more than one untreated event per year on a 20 year average
- CSO control schedule to protect public health, environment, and aquatic life by 2030.
- Department of Ecology set deadlines for project milestones in the West Point NPDES permit.
  - CSOs must be controlled to the state regulation
  - Ecology & EPA can use various means of enforcement, including fines and court issued compliance orders
  - EPA is tracking King County's compliance schedule

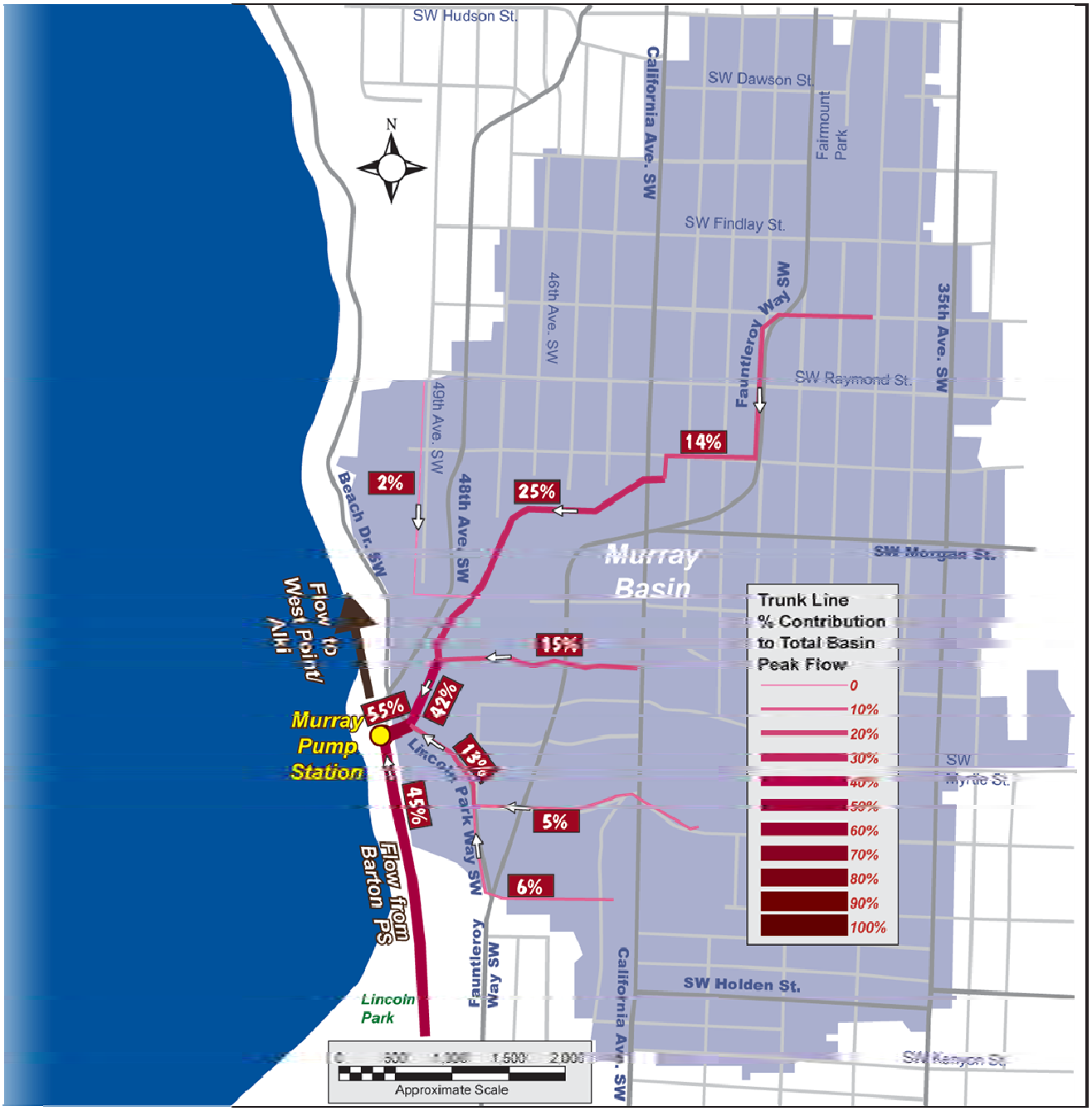
CSO Control Projects

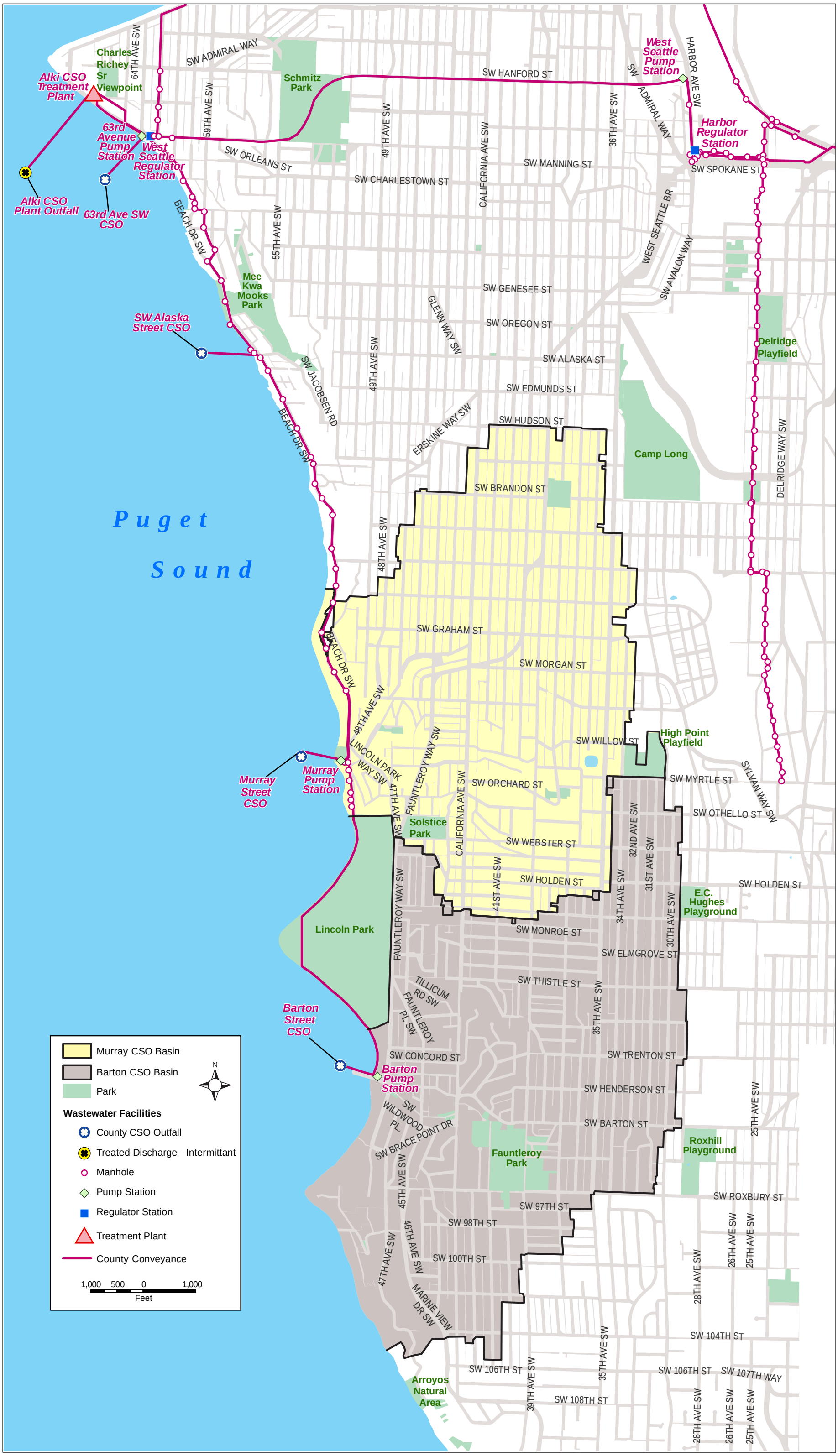
- King County has 38 CSOs
- Over half are controlled
- CSO Beach projects are a priority due to location near popular beaches.
- CSO Beach projects under construction 2013

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

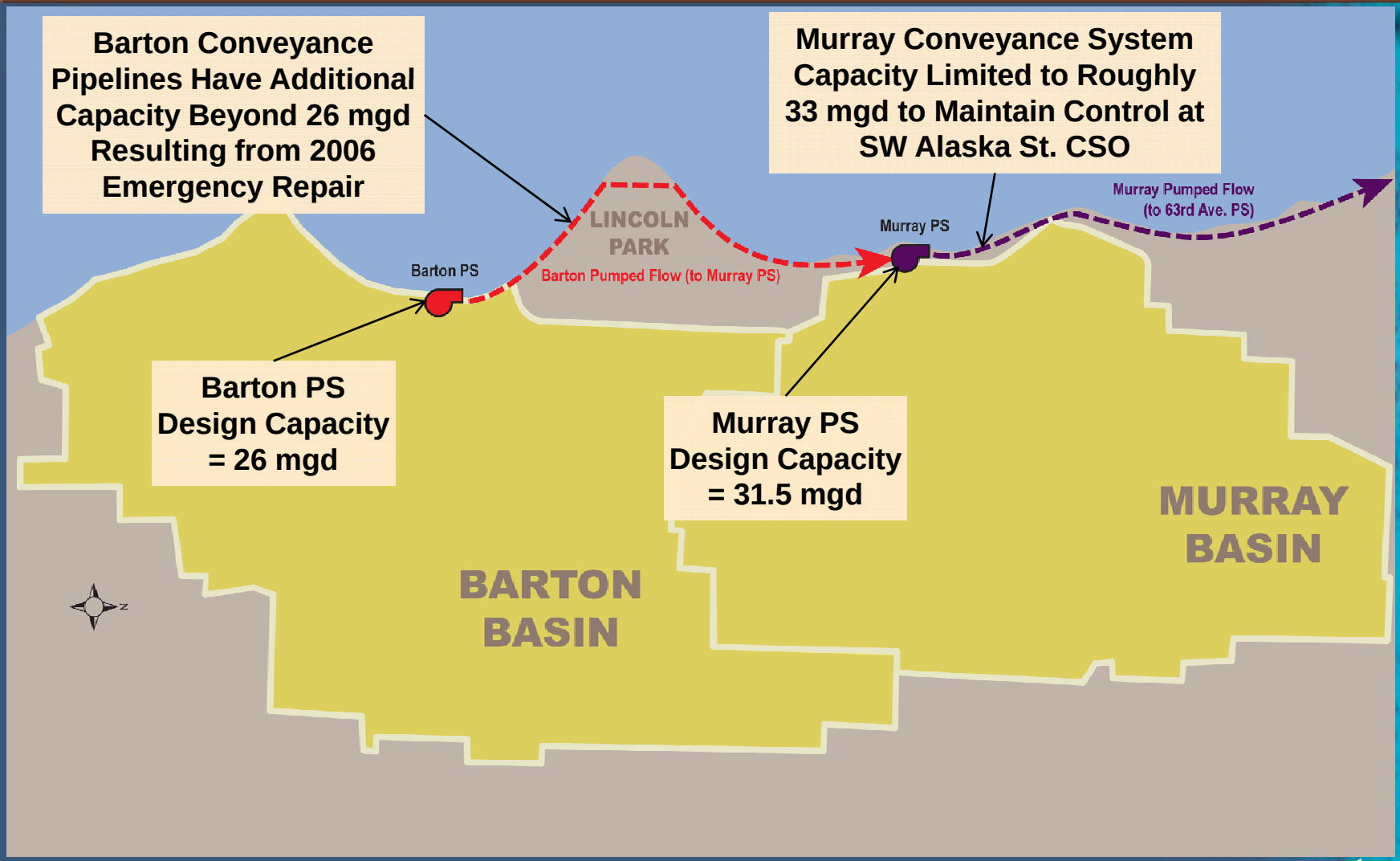
Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects

Murray Basin Flows




Puget Sound
Alki CSO Treatment Plant
Charles Richey Sr Viewpoint
64TH AVE SW
SW ADMIRAL WAY
Schmitz Park
SW HANFORD ST
West Seattle Pump Station
HARBOR AVE SW
SW ADMIRAL WAY
Harbor Regulator Station
SW SPOKANE ST
63rd Avenue Pump Station
West Seattle Regulator Station
59TH AVE SW
SW ORLEANS ST
49TH AVE SW
CALIFORNIA AVE SW
SW MANNING ST
36TH AVE SW
SW CHARLESTOWN ST
Alki CSO Plant Outfall
63rd Ave SW CSO
BEACH DR SW
55TH AVE SW
WEST SEATTLE BR
SW AVALON WAY
Mee Kwa Mooks Park
SW GENESEE ST
GLENN WAY SW
SW OREGON ST
SW Alaska Street CSO
SW ALASKA ST
Delridge Playfield
SW JACOBSEN RD
49TH AVE SW
SW EDMUNDS ST
BEACH DR SW
ERSKINE WAY SW
SW HUDSON ST
Camp Long
DELRIDGE WAY SW
SW BRANDON ST
48TH AVE SW
SW GRAHAM ST
BEACH DR SW
SW MORGAN ST
48TH AVE SW
FAUNTLEROY WAY SW
SW WILLOW ST
High Point Playfield
LINCOLN PARK WAY SW
Murray Street CSO
Murray Pump Station
47TH AVE SW
SW ORCHARD ST
SW MYRTLE ST
SYLVAN WAY SW
SW OTHELLO ST
Solstice Park
CALIFORNIA AVE SW
SW WEBSTER ST
32ND AVE SW
31ST AVE SW
41ST AVE SW
SW HOLDEN ST
SW HOLDEN ST
E.C. Hughes Playground
34TH AVE SW
30TH AVE SW
Lincoln Park
FAUNTLEROY WAY SW
SW MONROE ST
SW ELMGROVE ST
SW THISTLE ST
TILLICUM RD SW
FAUNTLEROY PL SW
35TH AVE SW
Barton Street CSO
SW CONCORD ST
SW TRENTON ST
Barton Pump Station
SW HENDERSON ST
SW WILDWOOD PL.
SW BARTON ST
25TH AVE SW
SW BRACE POINT DR
Fauntleroy Park
Roxhill Playground
45TH AVE SW
SW ROXBURY ST
SW 97TH ST
SW 98TH ST
46TH AVE SW
26TH AVE SW
25TH AVE SW
SW 100TH ST
47TH AVE SW
28TH AVE SW
MARINE VIEW DR SW
SW 104TH ST
35TH AVE SW
SW 106TH ST
SW 106TH ST
SW 107TH WAY
Arroyos Natural Area
39TH AVE SW
SW 108TH ST
28TH AVE SW
26TH AVE SW
25TH AVE SW
Murray CSO Basin
Barton CSO Basin
Park
Wastewater Facilities
County CSO Outfall
Treated Discharge - Intermittant
Manhole
Pump Station
Regulator Station
Treatment Plant
County Conveyance
1,000 500 0 1,000
Feet
N

Current Barton and Murray Conveyance System Capacity



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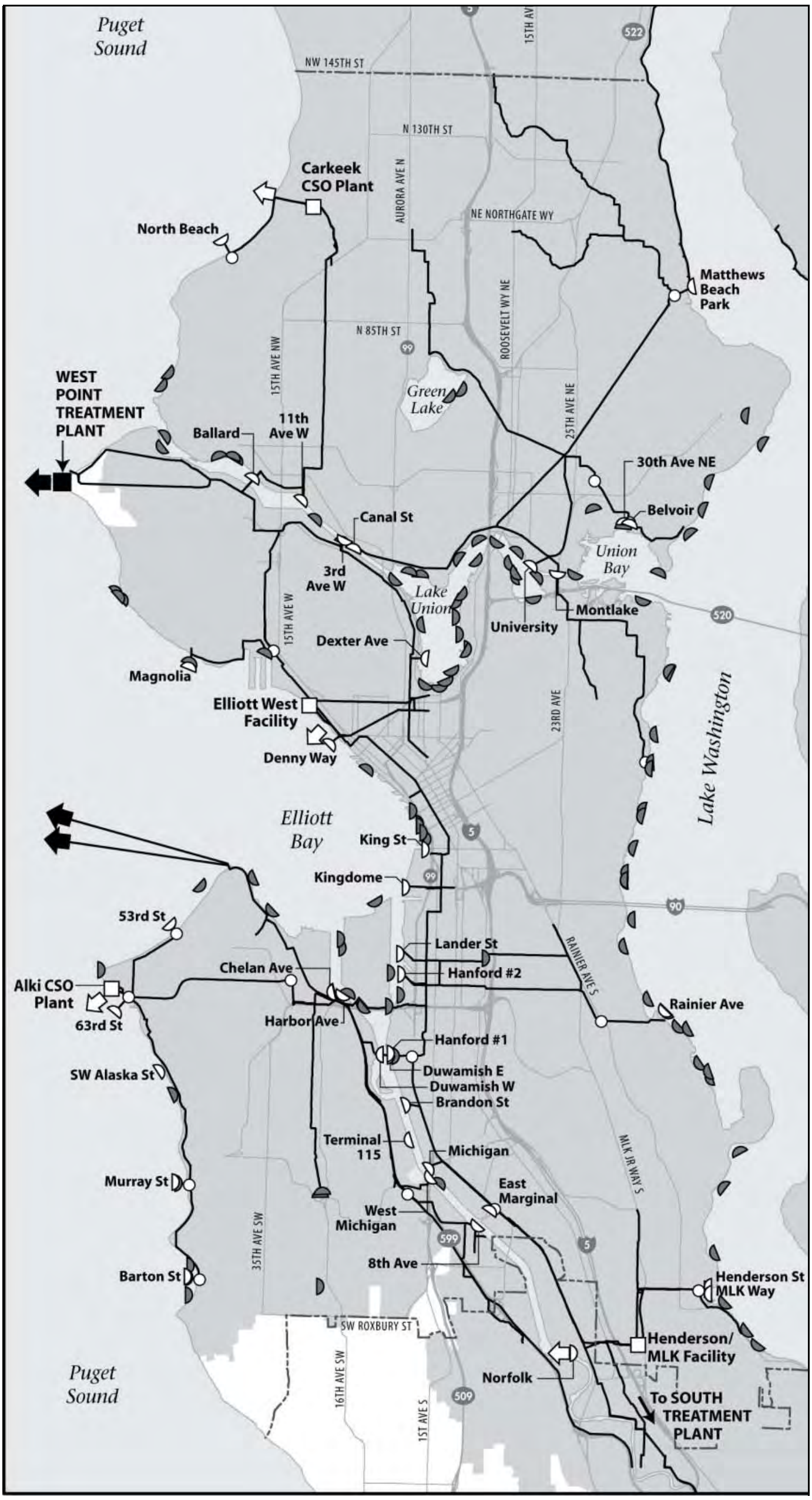
Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects

Regional Conveyance Map



King County
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Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects

Factors for Comparing Alternatives

LAND USE AND PERMITTING

City Of Seattle Comprehensive Plan
Seattle Municipal Code
Shoreline Master Program
Permitting Complexity
Property Acquisition Complexity

ENVIRONMENT

Cultural Resources
Fish and Wildlife
Wetlands, Streams, and Shoreline
Soils and Sediments
Water Quality

TECHNICAL

Technical Complexity
Compatibility with Existing WW System
Flexibility/Adaptive Management
Constructability/Implementation Schedule

O&M

Staffing
Training
Reliability
Maintenance
Safety

COST EFFECTIVENESS

Relative Project Costs
Relative Life-Cycle Costs
Relative Variability/Risk

COMMUNITY IMPACT

Location
Potential Community Impacts
Construction Impacts

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

June 2010

Green Stormwater Infrastructure for Combined Sewer Overflow Control

The oldest parts of King County's sewer system were designed to carry stormwater from streets and roofs as well as wastewater from homes and businesses to the nearest water body. Today, that water is sent to a wastewater treatment plant. During heavy rains, however, the pipes can fill and overflow into waterways. These are called Combined Sewer Overflows or CSOs. King County's Wastewater Treatment Division plans to control all of its 38 combined sewer overflow (CSO) sites to an average of no more than one overflow per year by 2030, as required by regulatory agencies. Green Stormwater Infrastructure (GSI) is one method that could be used to reduce peak flows of stormwater and groundwater into the combined sewer system (also called "demand management").

What is Green Stormwater Infrastructure (GSI)?

The concept of green infrastructure originated in the conservation field. In this context, large forests, wetlands, greenbelts, and so forth—all part of the natural environment—are viewed as infrastructure because they support essential ecosystem functions. The term is increasingly being used to refer to engineered infrastructure at a smaller scale in relation to green stormwater management practices such as rain gardens and green roofs. These practices make use of soils and vegetation, in combination with other approaches such as rain barrels and permeable pavement, to infiltrate, evaporate, capture, and reuse stormwater.

In addition to helping reduce combined sewer overflows (CSOs) and the amount of untreated stormwater that finds its way to surface water, green stormwater management facilitates natural processes that recharge groundwater, preserve baseflow in streams, moderate impacts to water and air temperature, and protect hydrologic and hydraulic stability. Other names for green stormwater management include low impact development (LID), natural drainage, and water-sensitive design.

What are some GSI techniques?

Ecoroofs (green roofs) consist of shallow layers of growing medium, low-growing vegetation, subsurface drainage, and a waterproof membrane.

Roof disconnection removes water that flows from a roof through a downspout to a combined sewer and redirects it to some other location. It is not considered a GSI technique, but may be combined with "green" features such as rain gardens.

Street trees retain some rain in their canopies and take up a portion of the rain that infiltrates to the soil.

Bioretention involves dispersed small scale landscape features designed to attenuate and treat stormwater. These features are typically vegetation-filled areas, such as rain gardens and swales, with a drainage mechanism, often located in parking lots, median strips, or streets. Bioretention is an element of Seattle's Residential RainWise program on private property and natural drainage systems on neighborhood streets.

Permeable pavement allows rainfall to penetrate the pavement into a porous material that retains stormwater before it enters a combined sewer, limiting or removing the effects of the stormwater on the sewer system. Permeable pavement is not suited for high traffic areas.

What is required for GSI to work for CSO Control?

While GSI can provide benefits in stormwater control, neighborhood enhancements, water quality, and reduction in CSOs, there are several factors that must be considered for successful implementation of GSI for CSO control.

- Enough sources of stormwater- streets, roofs, and other impervious surfaces - that can be disconnected from the sewer system to limit CSOs and meet state standards for no more than one overflow per year on a long term average. If GSI alone cannot control the entire volume added traditional infrastructure may need to be constructed to insure compliance with regulations for CSO control.
- Land area available for GSI. Rain gardens, street trees, swales, and other GSI elements require sufficient space for installation. GSI features may be sited in existing planting strips, in parking lots, on private property, and in other existing space.
- Appropriate soils and topography. GSI benefits from flat areas where water can infiltrate into soils. Steep slopes and poorly draining soils are not recommended for GSI techniques.
- Supporting conveyance infrastructure for large storm events. In order to accommodate storms beyond design capacity, it may be necessary to direct excess flows into a stormwater or sewer system.
- Community support for GSI projects. Installing GSI, like other stormwater and sewer projects, has effects on the community during and after construction. Community understanding of GSI projects and support for their implementation is a critical success factor for this type of infrastructure.

Learn how King County evaluated GSI techniques as part of the Puget Sound Beaches CSO Control Projects.

Visit the project Web page at www.kingcounty.gov\CSOBeachProjects to view and download technical documents describing GSI evaluation for the project basins.

For more information on Seattle Public Utility's stormwater control programs
Residential RainWise
https://rainwise.seattle.gov/systems/water

Natural Drainage Projects
http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/GreenStormwaterInfrastructure/NaturalDrainageProjects/index.htm

Alternate Formats available upon request

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Murray Basin Community Advisory Group

Purpose: The County will convene the Murray Basin Community Advisory Group (CAG) to provide a forum for dialog and information sharing, and to consult with representatives of the community on alternatives to reduce Combined Sewer Overflow episodes.

Membership: The Murray Basin CAG will have up to 12 members who represent: residents who live near the proposed three potential facility sites; residents from the broader Murray Basin; representative(s) from the Morgan Community Association (MoCA) and the Fauntleroy Community Association; representatives from environmental protection organizations; and one representative from the King County Wastewater Treatment Division. The Seattle Parks Department will be invited to participate as an ex-officio member of the CAG.

King County conducted stakeholder interviews to inform the list of potential members and identify interested parties as well as community issues and concerns to be addressed with the CAG.

Members are listed on the back of this sheet.

King County's goal for the CAG: Develop a stronger connection with the community as the County moves forward with identifying and implementing a Combined Sewer Overflow (CSO) solution.

Roles and responsibilities of the CAG:

- CAG members will represent themselves and their community members
- CAG members will advise King County on CSO solutions in the Murray basin. The CAG will help King County make a stronger connection with the community
- The CAG will help King County provide information to the community so community members can provide meaningful input, help the County solve the serious problems of combined sewer overflows, and help the County reach a reasonable and technically feasibly solution
- The CAG will provide advice, as community representatives, on potential solutions and ways to address community concerns.

CAG Meetings: The Murray Basin CAG will meet approximately four (8) times between June and September 2010. CAG meetings will likely be held on weeknights between 6:00 and 8:00 p.m., dependent on the availability of the CAG members. CAG meetings will be open to the public to observe, and an opportunity for public comment to the CAG will be offered at each meeting. CAG meetings will be facilitated by a neutral facilitator provided by King County and summaries of each CAG meeting will be made available to the CAG and to the public on the King County website.

Contact: For more information about the Murray Basin CAG, please contact Martha Tuttle, King County WTD Community Relations Planner at (206) 684-1207.

Members: All members are West Seattle community members, except as identified:

William Beyers
John Comick
Kate Dee
Patrick Gordon
Scott Gunderson
Chris Jansen
Vlad Oustimovitch
Chas Redmond
Donna Sandstrom
Don Stark
Ron Sterling
Cheryl Eastberg, Seattle Parks

King County
Wastewater Treatment Division
Department of Natural Resources and Parks

Murray Technical Workshop
June 19, 2010
Related Technical Documents

These documents are located in the CSO Beach Project Library
http://www.kingcounty.gov/environment/wtd/Construction/Seattle/BeachCSO/Library/TechInfo.aspx

1. **Alternatives Development and Screening Process Overview, Feb. 19, 2010**

   Describes the process used in all four basins to develop, evaluate and screen potential CSO control alternatives.

2. **Technical Memorandum 207.1 CSO Beach Project GIS Analysis, Sept. 2008**

   Describes the methods and results of a geographic information system (GIS) analysis conducted by King County to identify sources and destinations for stormwater flow in Barton, Murray, Magnolia, and North Beach Basins. The data will be used as input for the design of combined sewer overflow (CSO) control projects in the basins. The data from this report was also used in the evaluation of the potential effectiveness of demand management options in each basin.

3. **Model Results Summary and Basis of Planning, June 2010**

   Describes the volume and peak flows in each of the four basins that was used for the basis of alternative development and storage volumes. It also includes the distribution of the peak flows within each of the individual sub-basins based on 2009 flow monitoring.

4. **Technical Review meetings (Oct. 21, 2009; Oct. 22, 2009; Oct. 28, 2009, Oct. 29, 2009), Control Approaches Schematics and Criteria Information Needs**

   These documents describe the design criteria used for developing CSO control approaches. These documents include schematics of typical CSO control facilities for storage, conveyance, and treatment.

5. **Summary of Discussion - Alternative Screening Workshop for Murray Basin (Dec. 9, 2009; Dec. 16, 2009; and Jan. 27, 2010)**

   These documents provide a summary of workshops held in December 2009 and January 2010. They summaries and describe the workshop process and capture the discussion themes that supported alternative evaluation and recommendations for further consideration of CSO control project alternatives in the Murray Basin.

6. **Nine Alternatives, Dec. 8, 2009**

   Drawings and technical summaries of the nine alternatives developed and evaluated by the project team. These alternatives were evaluated during the December 2009 and January 2010 Alternative Screening Workshops.

7. Alternatives Analysis, May 12, 2010 - 13MB

These matrix tables present the results of preliminary screening of the nine Murray CSO controls alternatives against a range of evaluation factors.

8. Technical Memorandum 600.1 and 600.5

These technical memoranda documents the analysis of CSO basins for the implementation of green stormwater infrastructure (GSI).

Technical Information Session for Murray Basin, June 19, 2010 Feedback Form

Please take a few minutes to fill out this feedback form. Your ideas are important to us and we would like to understand your concerns and information needs for this project.

1. Do you have any additional comments about this project?

_____
_____
_____
_____
_____
_____
_____

2a. Did this meeting give you a better understanding of the technical issues this project adresses?

_____
_____
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_____
_____

2b. Did this meeting format meet your expectations? If not, what advice do you have for future meetings?

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MONICA VAN DER VIEREN
DEPARTMENT OF NATURAL RESOURCES AND PARKS
WASTEWATER TREATMENT DIVISION KSC-NR-0505
201 S JACKSON ST
SEATTLE WA 98104-9887

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3. How did you learn about this meeting?

_____

_____

_____

_____

_____

If you want to be included on the project mailing list, please provide the following:

Name _____

Mailing Address _____

City, State, Zip _____

E-mail _____

Telephone _____

Available in alternative formats. Call 206-263-6534 or TTY Relay: 711.

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