

DRAFT TEAM MEMORANDUM

Project Name: Puget Sound Beaches Project **Date:** 8/19/09
Client: KCDNRP WTD **Project Number:** 7562A.10
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Subject: Selecting Candidate Sites for CSO Control Approaches
Distribution: Team

Introduction:

The Project Team for the Puget Sound Beaches Project will develop and evaluate CSO control alternatives for each of the four CSO basins. This memorandum describes the process that will be used to develop alternatives for evaluation.

Alternative Development Process:

In a conventional "siting study" the objective is to identify a preferred site for a given facility. In such studies the facility to be sited is typically developed prior to siting, and information about the facility type and size is known. For the Puget Sound Beaches Project the type and size of the facility has not been selected, and will actually change depending on available site constraints. Therefore, the initial objective is to identify CSO control *alternatives* rather than *sites* on which to locate those alternatives.

In order to develop CSO control alternatives, the team must consider three elements together, as described below and illustrated in Figure 1:

1. What is the preferred CSO control approach (e.g. storage, peak flow reduction, etc.);
2. What is the preferred configuration for that approach (e.g. liner (pipe) storage, rectangular storage, deep tunnel storage); and
3. What site requirements must be met to support the preferred approach and configuration.

Table 1 summarizes the alternative development process, and shows how minimum requirements are developed for potential sites. Each alternative will have specific technical and sizing criteria based on the basin-specific needs. Sites to support the CSO control approach will be identified using the minimum requirements as a guide.

INSERT FIGURE 1

INSERT TABLE 1

Table 2 below summarizes the steps to be included in the alternative development and evaluation phases of this project. Evaluation criteria for use in Phase 2 are considered as alternatives are developed in Phase 1.

| Table 2 Alternative Development and Evaluation Steps |
|---|
| Phase 1 - Alternative Development |
| <p><u>Inputs</u></p> <ul style="list-style-type: none"> • Initiate agency and public involvement • Develop initial alternative evaluation criteria • Define basic technical and engineering requirements for CSO control approaches • Establish technically feasible CSO control approaches • Establish potential configurations for CSO control approaches • Develop conceptual layouts for CSO control approaches • Define basic technical and engineering constraints for sites • Establish minimum site requirements based on these constraints • Identify potential sites through GIS review and field investigation <p><u>Results</u></p> <ul style="list-style-type: none"> • Up to nine (9) alternatives per CSO basin are developed by matching CSO control approaches and configurations to potential sites |
| Phase 2 - Alternative Evaluation |
| <p><u>Inputs</u></p> <ul style="list-style-type: none"> • Continue agency and public involvement • Develop layouts for CSO control alternatives • Evaluate 9 alternatives using initial evaluation criteria, and develop short list of up to three (3) alternatives per CSO basin • Refine alternative evaluation criteria based on agency/public input • Refine short-listed CSO control alternatives based on agency/public input • Conduct additional site evaluations • Further evaluate short-listed alternatives using refined evaluation criteria <p><u>Results</u></p> <ul style="list-style-type: none"> • Select recommended CSO control alternative in each CSO basin |

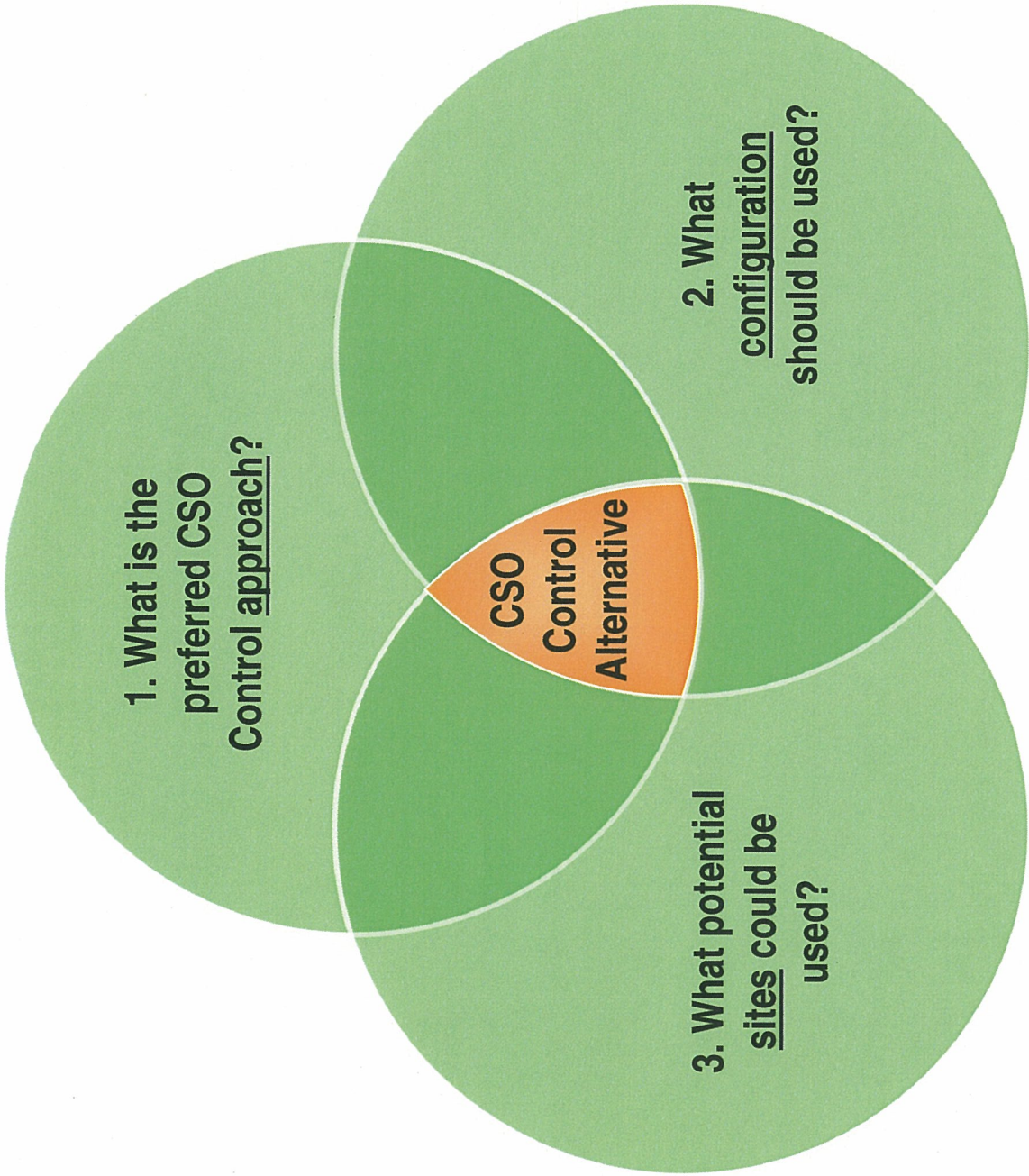


Figure 1

| Table 1 Alternative Development Phase | | |
|--|--|--|
| CSO Control Approach | Configuration | Minimum Requirements for Potential Sites |
| 1. Convey & Treat | Peak flow pump station, pipeline to existing treatment facility | <ul style="list-style-type: none"> • Flat (< 5%) open space near existing CSO • Outside public Right-of-Way • Sized for peak flow pump station |
| 2. Centralized/Distributed Storage | | |
| A. Bottom of Basin | Rectangular/Circular Tank | <ul style="list-style-type: none"> • Flat (< 5%) open space near existing CSO • Outside public Right-of-Way • Size dependent on storage volume |
| | Linear (in-line) Pipe | <ul style="list-style-type: none"> • Linear, flat (< 5%) open space near existing CSO • Inside or outside public Right-of-Way • Minimum 12-feet wide • Length dependent on storage volume |
| | Deep Tunnel | <ul style="list-style-type: none"> • Flat (< 5%) open space near existing CSO • Flat (<5%) open space at access shaft (location dependent on storage volume) • Both sites outside public Right-of-Way |
| B. "Up-Basin" | Rectangular/Circular Tank | <ul style="list-style-type: none"> • Flat (< 5%) open space • Outside public Right-of-Way • Size dependent on storage volume |
| | Linear (in-line) Pipe | <ul style="list-style-type: none"> • Linear, flat (< 5%) open space • Inside or outside public Right-of-Way • Minimum 12-feet wide • Length dependent on storage volume |
| 3. End of Pipe Treatment | | |
| A. Bottom of Basin | New high rate treatment facility | <ul style="list-style-type: none"> • Flat (< 5%) open space near existing CSO • Outside public Right-of-Way • Sized for treatment plant facilities and access |
| B. "Up-Basin" | Peak flow pump station, pipeline to new high rate treatment facility | <ul style="list-style-type: none"> • Flat (< 5%) open space near existing CSO, sized for peak flow pump station • Flat (<5%) open space at treatment plant location, sized for treatment plant facilities and access • Both sites outside public Right-of-Way |
| 4. Peak Flow Reduction | | |
| A. Stormwater Disconnection | Disconnection of impervious areas (roof drains and catch basins) with stormwater re-routed to new or existing MS4. | <ul style="list-style-type: none"> • Available impervious area for disconnection • Inside or outside public Right-of-Way |
| B. Green Stormwater Infrastructure (GSI) | Implementation of GSI techniques to limit stormwater response to rainfall | <ul style="list-style-type: none"> • See GSI analysis for constraints |
| NOTES: | | |