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Appendix D

# Screening Criteria

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# King County 2012 Combined Sewer Overflow Control Program Review

Screening of Preliminary Alternatives (H, M, L) – Potential Screening Criteria

DRAFT – Screening criteria are preliminary and are for discussion purposes only

Category	Criteria	Question	High	Medium	Low
<b>Technical Considerations</b>					
	<b>Technical Complexity</b>	<i>Does implementation require complex instrumentation and controls (I&amp;C)? Will the technology reliably meet CSO control objectives using the required controls? How many individual sites are needed to implement CSO control strategy?  Is a SPU I&amp;C interface required? What CSO control technology is included in this alternative?</i>	Routing of flows is simple, with overflow weirs, automatic gates, or similar controls. Alternative is located adjacent to or part of the infrastructure. Flow measurement is simple, and I&C require only simple 'on/off' controls.  No SPU I&C interface is required. CSO control technology generally includes increased conveyance or storage.	Implementation requires remote measurement of flows, measurement of flows in downstream infrastructure to coordinate and control routing of flows to the CSO control facility. Location of the alternative is remote from the measurement point.  Simple SPU I&C interface is required. CSO control technology generally includes storage or treatment.	There are more than two locations included in flow control. The alternative includes modifications to existing infrastructure and complex controls to route flow, including complex measurement of upstream and downstream flows. Pump stations may be required to route flows to the CSO control facility.  Complex SPU I&C interface is required. Control technology generally includes storage or treatment.
	<b>Flexibility/ Adaptive Management</b>	<i>Can the alternative meet changing CSO control criteria and flow conditions (potential future water quality standards, climate change, etc.)?  What CSO control technology is included in this alternative? Is land available for improvements? Are the facilities located above or below grade? Are there green stormwater infrastructure (GSI) opportunities available in the basin?</i>	Yes, with minimal modifications to I&C and infrastructure. Proposed facilities and I&C could be retrofitted or upgraded to handle additional requirements and flows.  CSO control technology generally includes treatment. Land appears to be readily available for improvements. Facilities are generally located above grade. High potential for GSI opportunities in the basin.	Yes, with moderate modifications to I&C and infrastructure. Construction of additional facilities may be required.  CSO control technology generally includes storage or treatment. Land appears available for improvements. Storage facilities are generally located below grade. Low potential for GSI opportunities in the basin.	Yes, with significant modifications to I&C and infrastructure. Removal and replacement of proposed facilities may be required.  CSO control technology generally includes storage or increased conveyance. There appears to be no land available for improvements. Facilities are generally located below grade. There appears to be no potential for GSI opportunities in the basin.
	<b>Constructability</b>	<i>Are construction risks associated with the alternative significant?  Are conventional construction methods anticipated? Are facilities located above or below grade?</i>	Potential site is likely not constrained, is on stable, low-slope sites, with groundwater elevations not affected during construction or operation.  Conventional construction methods are anticipated. Facilities are generally located above grade.	Potential site may be constrained, low to moderate slopes, requires some dewatering, and robust foundations including piles or tiebacks; access and staging are not required for adequate construction sequencing.  Conventional construction methods are anticipated. Facilities are generally located below grade.	Potential site is likely constrained, steep slopes with groundwater and soils conditions that increase instability if disturbed, requiring careful construction sequencing, with several move-in, move-out stages to accommodate specialty contractors as well as conventional construction.  Specialized construction methods are anticipated. Facilities are generally located below grade.
	<b>Implementation Schedule</b>	<i>Can the alternative meet the project schedule?  Is coordination and negotiations with other agencies required for implementation of project?  Are regulators familiar with the CSO control technology? Is public opposition to project anticipated?</i>	High potential to meet the project schedule.  No inter-agency coordination and negotiations are anticipated.  Regulators are familiar with the CSO control technology (e.g., increased conveyance, storage). Low public concern regarding project is anticipated.	Schedule may need to be modified.  Inter-agency coordination and negotiations may cause the schedule to be delayed.  Regulators are somewhat familiar with CSO control technology (e.g., treatment, complex storage or conveyance). Public concern regarding project is anticipated.	Low potential to meet the project schedule.  Inter-agency coordination and negotiations will likely cause the schedule to be delayed.  Significant effort is required to educate regulators that complex CSO control technology (which regulators may not be familiar with) is required. High public concern regarding project is anticipated.

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	<b>Siting</b>	<i>What is the relative ease to locate a site for the permanent CSO control facilities associated with this alternative? What is the land use of the available sites? What is the likelihood for public acceptance of the potential sites being considered based on existing land use, location, potential benefits, and impacts?</i>  <i>Does the project reduce the number of potential King County CSO control facilities and sites required?</i>	There are several potential sites available for the permanent CSO control facilities associated with this alternative. Potential sites available include government-owned property, street right of way, underutilized land, and inexpensive private property. Potential for acquiring or adapting property is high with low public concern anticipated.  Project controls multiple CSO sites and reduces the number of potential King County CSO control facilities and sites required.	There are some potential sites available for the permanent CSO control facilities associated with this alternative. Potential sites available include government-owned property, street right of way, underutilized land, and moderately expensive private property. Potential for acquiring or adapting property is moderate with public concern anticipated.  Project controls one CSO site and does not reduce the number of potential King County CSO control facilities and sites required.	Locating a site is difficult; there is a limited number of potential sites available for the permanent CSO control facilities associated with this alternative.  Expensive private property or parks land will likely be candidate sites. It may be difficult to acquire or adapt the property with high public concern anticipated.
	<b>Coordination with Other King County Projects</b>	<i>Does the alternative provide an opportunity for a joint project with another King County project?</i>	Yes, the alternative provides an opportunity for a joint project with another King County project. All projects mutually benefit from the joint opportunity.	Alternative may provide an opportunity for a King County joint project. However, one project benefits more than the other.	No, opportunities are not readily available, and there are no obvious benefits.
<b>Cost Effectiveness</b>					
	<b>Relative Project Costs<sup>i</sup></b>	<i>Where does the alternative's construction cost fall in the range of costs of all the alternatives?</i>	Low end of range.	Mid-Range.	High end of range.
	<b>Relative Life-Cycle Costs</b>	<i>Where do the alternative's life-cycle costs fall in the range of life-cycle costs of all the alternatives?</i>	Low end of range.	Mid-Range.	High end of range.
	<b>Cost Risks/Variability<sup>i</sup></b>	<i>How much confidence is there in the components of the cost estimate?</i>	Cost estimate is based on well-established component costs.	The most costly alternative components are based on well-established estimates.	Alternative components lack well-established cost estimates.
<b>Community and Public Health</b>					
	<b>Construction Impacts</b>	<i>What level of disruption will occur during construction (disruption to business access, construction noise, vibration, traffic disturbance, etc.)?</i>  <i>Construction activities will impact what type of land use? Is there a convenient staging area for ease of moving people, equipment, and materials to limit disruption?</i>  <i>Does the alternative reduce the number of potential King County CSO control facilities required in general area to reduce overall construction impacts to community?</i>	Disruption will be minimal during construction, and impacts could be easily mitigated.  Alternative is located in an industrial area with convenient staging areas to move people, equipment, and materials with minimal challenges.  Alternative controls multiple CSO sites and reduces the number of potential King County CSO control facilities, reducing potential disruption to the community.	Disruption will be high during construction, but impacts could be easily mitigated.  Alternative is located in a commercial or industrial area with convenient staging areas to move people, equipment, and materials with moderate challenges.  Alternative may increase the number of potential King County CSO control facilities required; however, the potential King County facilities are located far enough apart not to have a significant increase on disruption to the community.	Disruption will be high during construction, and impacts cannot be easily mitigated.  Alternative is located in a residential area with inconvenient staging areas to move people, equipment, and materials with significant challenges.  Alternative controls one CSO site or alternative increases the number of potential King County CSO control facilities required, increasing potential disruption to the community.
	<b>Potential Community Impacts</b>	<i>Can the facility be designed to be compatible with the community, and how will O&amp;M activities impact the community?</i>  <i>Are O&amp;M activities appropriate for land use?</i>	Facility is compatible with the surrounding community, and project could provide community benefits and amenities.  Operational staff/impacts are minimal; any impacts can be readily mitigated and are appropriate for land use.	Facility and grounds can be designed to screen facility. There is unlikely to be any community benefits or amenities.  Minimal staff visits are necessary for operations and maintenance, and O&M activities may not be appropriate for land use.	The facility will impact the surrounding community. There will be no community benefits or amenities.  There will be staff on-site regularly, and O&M activities will need to be adapted for land use considerations.

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	<b>Human Health</b>	<b>What is the risk of human exposure to untreated CSOs?</b>	Low risk of human exposure to untreated CSOs (low volume of untreated CSOs or low contact recreation at point of discharge).	Moderate risk of human exposure to untreated CSOs (moderate volume of untreated CSOs or moderate contact recreation at point of discharge).	High risk of human exposure to untreated CSOs (high volume of untreated CSOs or high contact recreation at point of discharge).
	<b>Environmental/ Social Justice</b>	<b>Where are the alternative's overflow and operation impacts and benefits experienced? Does the alternative change impacts and benefits on other communities?</b>	Alternative provides social, environmental, and economic benefits to minority and low-income populations.  Management of CSO has been transferred to an industrial area or existing treatment facility.	No net change in social, environmental, and economic impacts or benefits to minority and low-income populations.  Management of CSO has been transferred to a similar area or has not been transferred.	Alternative causes adverse social, environmental, and economic impacts to minority and low-income communities.  Management of CSO has been transferred to a lower economic and minority community or residential area.
<b>Environmental Impacts</b>					
	<b>Overall Environmental<sup>i</sup></b>	<b>Will operation of the facility impact threatened and endangered species?  Are there habitat improvement opportunities available with other projects?  Does the alternative move the discharge location to a more sensitive water body habitat? What is the potential for sediment recontamination?</b>	It is unlikely that the alternative will impact threatened and endangered species.  Habitat improvement opportunities have been identified at the CSO outfall.  The alternative moves the CSO discharge location to a less sensitive water body habitat. There is low potential for sediment recontamination.	The alternative may impact threatened and endangered species.  Potential habitat improvement opportunities have been identified at the CSO outfall.  The alternative moves the CSO discharge location to a similar sensitive water body or does not move the CSO discharge. There is moderate potential for sediment recontamination.	It is likely that the alternative will impact threatened and endangered species.  No habitat improvement opportunities have been identified.  The alternative moves the CSO discharge location to a more sensitive water body habitat. There is high potential for sediment recontamination.
	<b>Surface Water<sup>i</sup></b>	<b>Will the construction impact wetlands, streams and/or shorelines?</b>	It is unlikely that the alternative will impact wetlands, streams or shorelines.	It is likely that the alternative will directly impact stream and/or wetland buffers, and/or piped streams shorelines, but not wetlands, non-pipe streams or shoreline areas.	It is likely that the alternative will impact wetlands, non-piped streams and/or shorelines.
	<b>Suspect Soils<sup>i</sup></b>	<b>Will construction of the alternative impact known contaminated sites?</b>	It is unlikely that the alternative will impact contaminated soils.	There is potential that the site is contaminated based on site characteristics.	It is likely that the alternative will result in long-term impacts; the site is a known contaminated site.
	<b>Cultural Resources<sup>i</sup></b>	<b>Will the construction impact known or suspected cultural resources?</b>	There is low potential for encountering archeological sites, and/or there are no known historical properties on-site.	Based on site characteristics, there is potential for cultural resources and/or potential for historic properties to be impacted.	The project site has known archeological site(s), and/or the alternative will impact historical properties.
	<b>Air Quality/Odor Control<sup>i</sup></b>	<b>How does the alternative compare to other alternatives with odor generation and degradation of air quality?</b>	Low end of range. The alternative is likely to generate less odors and less degradation of air quality than other alternatives.	Mid-Range.	High end of range. The alternative is likely to generate more odors and more degradation of air quality than other alternatives.
	<b>Endangered Species<sup>i</sup></b>	<b>Will the construction impact threatened and endangered species?</b>	It is unlikely that the alternative will impact threatened and endangered species.	There is potential that the alternative will impact threatened and endangered species.	It is likely that the alternative will impact threatened and endangered species.
	<b>Sustainability</b>	<b>How does the alternative compare to other alternatives with promoting sustainability, including - but not limited to - green technology and carbon footprint (energy usage)?</b>	Low end of range. The alternative generally promotes more sustainability than other alternatives, and its carbon footprint (energy usage) is generally less than other alternatives.	Mid-Range.	High end of range. The alternative generally promotes less sustainability than other alternatives, and its carbon footprint (energy usage) is generally more than other alternatives.

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Category	Criteria	Question	High	Medium	Low
<b>Land Use and Permitting</b>					
	<b>Permitting Complexity</b>	<p><i>Will discretionary permits be required? What is the expected permitting complexity and how difficult is it expected to obtain permits?</i></p> <p><i>Does the project reduce the number of potential King County facilities required, reducing the number of permits required?</i></p>	<p>SEPA environmental checklist and DNS/MDNS required.</p> <p>Non-environmental state and local permits required only.</p> <p>It is likely that obtaining permits will not impact the schedule.</p> <p>Project controls multiple CSO sites and significantly reduces the number of potential King County CSO control facilities and permits required.</p>	<p>SEPA environmental checklist and DNS/MDNS required.</p> <p>In addition to state and local non-environmental permits, conditional use and/or variance required.</p> <p>Shoreline Substantial Development Permit required with City of Seattle Director approval.</p> <p>It is likely that obtaining the permits will not significantly impact the schedule.</p> <p>Project controls multiple CSO sites and reduces the number of potential King County CSO control facilities and permits required.</p>	<p>Environmental Impact Statement required.</p> <p>COE Section 10 or 404 permit (individual or nationwide permit), HPA and shoreline permit and ECA reviews will be required.</p> <p>Shoreline Substantial Development Permit required with City of Seattle Council approval.</p> <p>Obtaining the permits is likely to be difficult and will impact the schedule.</p> <p>Project controls one CSO site and does not reduce the number of potential King County CSO control facilities and permits required.</p>
	<i>City of Seattle Comprehensive Plan<sup>i</sup></i>	<i>Will location of facility be consistent with Seattle's short and long-term planning policies?</i>	Yes	Partially	No
	<i>Seattle Municipal Code<sup>i</sup></i>	<i>Is the location and type of construction consistent with Seattle's Municipal Code (SMC) and the Growth Management Act (GMA) requirements?</i>	Yes	Partially	No
	<i>Shoreline Master Program<sup>i</sup></i>	<i>Will location of facility be consistent with the City of Seattle Shoreline Master Program</i>	Potential site is not located in Shoreline Zone.	Potential site is located in Shoreline Zone but consistent with Shoreline Master Program.	Potential site is located in Shoreline Zone but is potentially inconsistent with Shoreline Master Program.
<b>Operations &amp; Maintenance</b>					

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	<b>Operations &amp; Maintenance (O&amp;M)</b>	<p><i>What level of staffing is required for operation and shutdown (how often is the facility used, how long is the facility in use, how many operators are required, what level of operator experience is required, what are travel times)? What are peak staff requirements? What is the level of monitoring and sampling required?</i></p> <p><i>What is the level of normal maintenance? How many mechanical/instrumentation components are required? Does the equipment easily respond and hold up to intermittent use? Are parts easily available?</i></p> <p><i>Does the project reduce the number of potential King County facilities required, reducing the overall O&amp;M for proposed facilities?</i></p>	<p>The facility requires no operating staff or can be remotely operated and monitored. Peak staff times require &lt; 1 operator. The facility can be shut down with minimal staff time. Cleanup work is automated or can be scheduled to be integrated with other staff duties. If required, sampling can be automated.</p> <p>The facilities only require preventive maintenance and inspection. The processes have minimal mechanical/instrumentation components (i.e., storage tank). Reliable in intermittent use.</p> <p>Project controls multiple CSO sites and significantly reduces the number of potential King County CSO control facilities, reducing the overall O&amp;M for proposed facilities.</p>	<p>The facility can generally be remotely operated and monitored. An operator may need to be present periodically for sampling, chemical make-up, chemical delivery acceptance or other discrete tasks. Peak staff times require 1 operator. The facility can be shut down with minimal staff time. Cleanup work is generally automated; however, 1 to 2 personnel may be required. If required, sampling can be automated.</p> <p>The facilities require monthly maintenance such as bumping pumps (testing pump operation). The processes have an increasing level of mechanical/instrumentation components (i.e., pump station).</p> <p>Project controls multiple CSO sites and reduces the number of potential King County CSO control facilities, reducing the overall O&amp;M for proposed facilities.</p>	<p>The facility requires operator attention during the event. Staff may also be required to monitor and sample for metals, organics, and sediment during the event. Peak staff times require more than 1 operator. The facility requires significant effort for shut down (e.g., vac/boom truck, several days for cleanup). Cleanup work is generally manual with 2 or more personnel required for more than one day. Most procedures of shutdown need to be conducted immediately.</p> <p>The facilities require monthly maintenance such as bumping pumps (testing pump operation). The processes have an increasing level of mechanical/instrumentation components (i.e., treatment facility). Equipment is prone to failure with intermittent use.</p> <p>Project controls one CSO site rather than combined facilities and does not reduce the number of potential King County CSO control facilities and O&amp;M required.</p>
	<b>Training<sup>i</sup></b>	<p><i>What level and frequency of training is required? Is the existing staff familiar with the technology? Is specialized training required? Is equipment &amp; operation familiar?</i></p>	<p>Minimal routine annual training is required. Staff is familiar with the technology and similar processes are used at other CSO control projects.</p>	<p>Minimal routine annual training is required. Staff does not routinely operate similar processes or the processes are distinctly different than those used at other CSO control projects.</p>	<p>Significant routine annual training is required. Staff does not routinely operate similar processes, and the processes are distinctly different than those used at other CSO control projects.</p>
	<b>Employee Safety</b>	<p><i>Do the proposed facilities have access requirements in the right of way or require confined space entry? Are traffic control procedures required? Does access require a street use permit or lane closure?</i></p> <p><i>How often does the alternative require the use of hazardous chemicals? Does the alternative require specialized training to handle hazardous chemicals?</i></p>	<p>The proposed facilities do not have right-of-way access requirements or require confined space entry. No traffic control procedures are required during operations and maintenance.</p> <p>The alternative requires specialized training for the use of hazardous chemicals for rare maintenance.</p>	<p>The proposed facilities have potential for right-of-way access requirements or confined space entry during non-routine operation and/or maintenance procedures. Traffic control procedures are required during non-routine operations and maintenance procedures.</p> <p>The alternative requires specialized training for the use of hazardous chemicals for routine maintenance.</p>	<p>The proposed facilities have potential for right-of-way access requirements or confined space entry during routine operation and/or maintenance procedures. Traffic control procedures are required during routine operations and maintenance procedures.</p> <p>The alternative requires specialized training for the use of hazardous chemicals for CSO treatment.</p>

<sup>i</sup> Grey Text = Criteria that are not being evaluated as part of the preliminary alternative screening process. These criteria may be evaluated when alternatives are further developed.