



Murray Basin CSO Alternatives (Community-suggested and King County-suggested)

Alternative	Alternative Description	Key Components
CAG 1	Install storage in Lincoln Park parking lot (mid-park location), size it large enough to manage overflows from Barton and Murray.	<ul style="list-style-type: none">• Barton pump station expansion• New pump station at Murray or 0.10 mgd storage at bottom of Murray basin• New forcemains
CAG 2	Install storage in Lincoln Park near waterfront and Colman Pool	<ul style="list-style-type: none">• New pump station at Murray or 0.10 mg storage at bottom of Murray basin• New forcemain from Murray to storage facility (Note: 2a suggestion places new pump station near Colman Pool instead of Barton PS expansion and installs forcemains from Colman Pool pump station to pump flows to storage under parking lot (mid-park location))
CAG 3	Explore combination of green infrastructure and additional storage in Barton to reduce peak flows to Murray	<ul style="list-style-type: none">• Implement roadside rain gardens in sub-basin 416• Implement residential RainWise basin wide (31 acres)• 0.5 mg storage tank at bottom of basin near Barton Pump Station• Hold pumping capacity at Barton Pump station to 22 mgd• 0.6 mg of storage at the Murray Pump station
CAG 4	Separate all sewer and stormwater flows in the basins	<ul style="list-style-type: none">• Requires construction of new MS4 system in southeast corner of Murray basin• Requires disconnecting over 1200 homes and 230 non-residential properties in Murray Basin• Requires construction of new MS4 system in northeast corner of Barton basin• Requires disconnecting over 1550 homes and 80 non-residential properties in Barton Basin• Would require some level of water quality treatment in areas with new MS4 systems
CAG 5 (similar to KC 1E)	Use upgraded Barton Pump Station and pump overflow volumes up the hill to a higher point in the Murray Basin (example – Gatewood Elementary)	<ul style="list-style-type: none">• 1.26 mg storage tank in Gatewood Elementary School playground• Barton pump station expansion• New pump station at Murray or 0.10 mg storage at bottom of Murray basin
CAG 6 (similar to KC 2A)	Use Barton Pump Station to pump to Alki and Murray continues to pump north in a separate pipe	<ul style="list-style-type: none">• 0.10 mg storage at bottom of Murray basin• New forcemain starting at Lowman Beach Park, up Beach Drive to Alki (13,500’ of force main)• Significant expansion of Barton Pump Station• Significant expansion of Alki Wet Weather Treatment Facility and outfall pipe
CAG 7	Combine green stormwater infrastructure and storage in Murray Basin to reduce needed size of storage	<ul style="list-style-type: none">• Private property work• Public participation installing GSI techniques such as permeable paving, rain gardens and rainwater cisterns• Roadside Raingardens would mitigate approximately 10 acres of impervious area (approx 140,000 gallons of storage reduction)• Requires 0.85 mg of storage at bottom of basin in Murray
CAG 8	Install distributed storage at the following locations: Dry cleaners on California Avenue, Gatewood Elementary School, 48 th & Holly, Solstice Park and divert existing flooding problem on Graham St. to storage at dry cleaner	<ul style="list-style-type: none">• Tanks located at 4 locations• Telemetry and control required to monitor flow and anticipate a potential CSO event OR size tanks large enough manage all peak flow• Additional storage required at bottom of Murray basin
KC 1A	1.0 mg rectangular storage at bottom of Murray basin	<ul style="list-style-type: none">• Sited in Lowman Park
KC 1B	1.0 mg circular storage at intersection of Murray Ave SW and Lincoln Parkway SW	<ul style="list-style-type: none">• New pump station required near Murray pump station to pump excess Barton PS and Murray basin flows to storage
KC 1C	Distributed storage along Beach Drive and Murray Avenue SW	<ul style="list-style-type: none">• 900 lf of large diameter storage pipeline under Beach Drive SW• 350 lf of large diameter storage pipeline under Murray Ave SW



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Department of Natural Resources and Parks
Wastewater Treatment Division

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KC 1D	Pipe storage at bottom of Murray basin by tunneling	<ul style="list-style-type: none">• 1,250 lf of large diameter storage pipeline tunneled under Beach Drive
KC 1E (similar to CAG 5)	Upper Murray basin storage	<ul style="list-style-type: none">• Rectangular storage tank located up basin (example: Gatewood Elementary School Playground)• New 28.5 mgd pump station near existing Murray pump station• 2,550 lf of forcemain to pump flows from Lowman Park to storage tank
KC 1F	Combined pipe and rectangular storage at bottom of Murray basin	<ul style="list-style-type: none">• 0.6 to 1.0 mg storage tank (on acquired property)• 0.0 to 0.4 mg storage pipe (under Beach Drive)
KC 2A (similar to CAG 6)	Convey and treat at Alki	<ul style="list-style-type: none">• New 28.5 mgd pump station near Murray pump station• 13,350 lf of forcemain along Beach Drive• Upgrade existing 63rd Street pump station• Upgrade Alki Treatment Facility and outfall
KC 3A	End-of-pipe treatment at bottom of Murray Basin	<ul style="list-style-type: none">• New 28.5 mgd, 160' x 80' x 20' buried, rectangular treatment system in concrete tank
KC 5A	Peak flow reduction by roof drain disconnection, combined with storage	<ul style="list-style-type: none">• Disconnect 10 acres of roof and street storm water connections from combined sewer system• Construction of 6,800 lf of storm sewer pipe along 34th, 35th and 36th Ave SW streets• Combine with 1,075 lf of large diameter storage pipeline on Beach Drive SW