



King County

Barton, Murray, Magnolia, and North Beach



CAG Meeting #6
August 30, 2010

CSO Facilities



Engineers...Working Wonders With Water™



TETRA TECH

And Associated Firms

Observations To Date

- **CAG Alternatives** are focused on minimizing or eliminating need for construction at bottom of Murray Basin.
 - Emphasis on reducing or eliminating flow impacts from Barton Pump station.
- **Guiding Principles** are well aligned with King County factors for alternative evaluation.
- Now is the time for initial review of alternatives to establish level of **achievability**.

How is “Achievability” Defined?

- To be considered achievable, final alternative must:
 - Meet schedule established by NPDES permit:
 - December 2010: Facilities Plan for review by Ecology
 - December 2012: Design for review by Ecology
 - December 2013: Begin construction
 - Comply with CSO regulations
 - Reliably control CSOs to no more than 1 per year

Process for Initial Alternative Review

- Ultimate decision will consider comprehensive range of factors and CAG Guiding Principles.
- Initial assessment of “Achievability” is focused on key differentiators:
 - Stakeholder Involvement
 - Parks Impacts
 - Reliability
 - Constructability
 - Cost



Achievability Considerations: Construction in Parks

Key Feature/ Alternatives	Stakeholder Involvement	Park Impacts	Reliability/ Control Compliance	Constructability
Construction in Park/ KC1A, KC3A, CAG2				

Achievability Considerations for Alternatives Sited in Parks

- Stakeholder Involvement
 - New set of stakeholders associated with some alternatives.
 - Impacts public process and project schedule.
- Park Impacts
 - Must demonstrate no other feasible alternative is available.
 - Requires Seattle City Council action which can impact implementation schedule.
 - Compensation and mitigation for park use is required.







Achievability Considerations: Expand Barton Pump Station

Key Feature/ Alternatives	Stakeholder Involvement	Park Impacts	Reliability/ Control Compliance	Constructability
Construction in Park/ KC1A, KC3A, CAG2				
Expand Barton Pump Station/ CAG1, CAG5, CAG6				

Achievability Considerations for Alternatives That Expand Barton PS

- Stakeholder Involvement
 - Undoing of current Barton PS planning, permitting and design efforts.
- Constructability
 - Barton PS expansion must address impacts on Fauntleroy Ferry Terminal.
 - Marine construction access could be required to mitigate ferry traffic impacts.

Achievability Considerations: Upper Basin Storage

Key Feature/ Alternatives	Stakeholder Involvement	Park Impacts	Reliability/ Control Compliance	Constructability
Construction in Park/ KC1A, KC3A, CAG2				
Expand Barton Pump Station/ CAG1, CAG5, CAG6				
Upper Basin Storage/ CAG8				

Achievability Considerations for Upper Basin Storage Alternatives

- Stakeholder Involvement
 - Additional stakeholders associated multiple storage sites.
 - Impacts public process and project schedule.
- Reliability/Control Compliance
 - Upper basin storage volumes must be oversized to achieve control at the bottom of the basin or complex control systems required.
 - Level of certainty in peak flow rates and volumes decreases as you move higher in the basin.

Achievability Considerations: Reliance on GSI

Key Feature/ Alternatives	Stakeholder Involvement	Park Impacts	Reliability/ Control Compliance	Constructability
Construction in Park/ KC1A, KC3A, CAG2				
Expand Barton Pump Station/ CAG1, CAG5, CAG6				
Upper Basin Storage/ CAG8				
Reliance on GSI/ CAG3, CAG4, CAG7				

Achievability Considerations for Alternatives That Rely on GSI

- Reliability
 - What degree of public participation can be counted on for voluntary programs?
 - GSI is a relatively new CSO control measure – what level of reduction should be assumed when used in combination with other control measures?
 - Phased implementation of GSI allows future flexibility to use as an adaptive management tool.

Other Achievability Considerations

- Cost Effectiveness
 - Alternatives with significantly higher project costs must be justified to ratepayers and stakeholders.

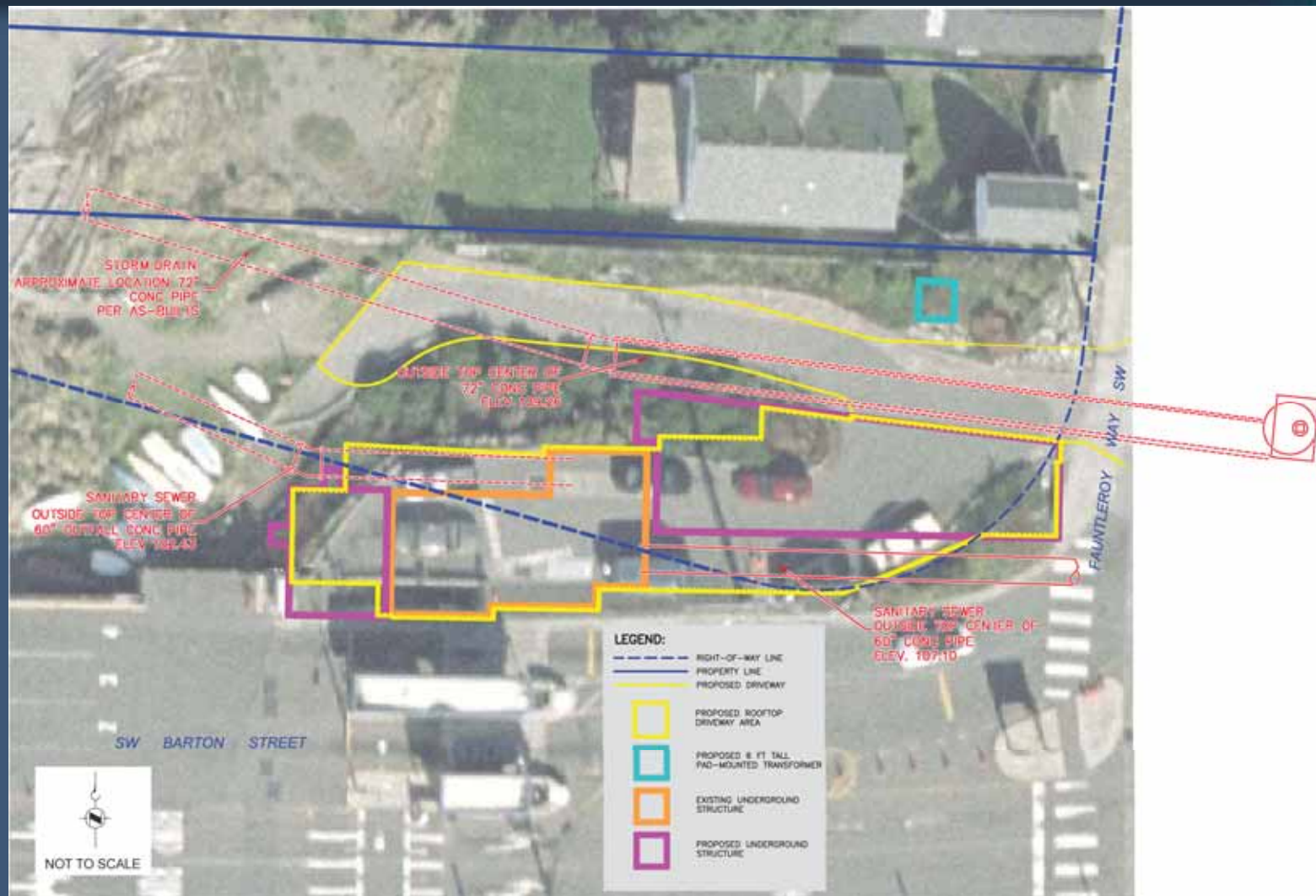
Alternatives Comparison

* Relative Cost: Ratio of alternative's cost to cost of lowest-cost alternative
 1.0 – 1.5: Green
 1.6 – 3.0: Yellow
 ≥3.0: Red
 † Includes park mitigation cost of \$8.0M.
 Δ Includes park mitigation cost of \$1.0M

	Construction, Land & Permitting Cost	Relative Cost*	Stakeholder Involvement	Park Impacts	Reliability/ Control Compliance	Constructability
CAG1 – Storage in Lincoln Park Parking Lot Δ	\$56,700,000	3.1				
CAG2 – Storage at Lincoln Park Colman Pool †	\$28,800,000	1.6				
CAG3 – Combine GSI with Additional Storage in Barton	\$45,00,000	2.5				
CAG4 – Separate All Sewer and Stormwater Flows	\$54,900,000	3.0				
CAG5 – Storage at Gatewood Elementary School	\$65,300,000	3.6				
CAG6 – Barton Pump Station Pumps Directly to Alki	\$62,500,000	3.4				
CAG7 – GSI in Murray to Reduce Storage Volume	\$29,200,000	1.6				
CAG8 – Upper Basin Storage for Murray Peak Flows	\$34,200,000	1.9				
KC1A – Rectangular Storage at Bottom of Basin †	\$21,300,000	1.2				
KC1B – Circular Storage in Vicinity of Murray Ave. and Lincoln Park Way	\$18,100,000	1.0				
KC1C – Distributed Storage Along Beach Drive and Murray Ave. SW	\$26,500,000	1.5				
KC1D – Pipe Storage at Bottom of Basin by Tunneling	\$26,700,000	1.5				
KC1E – Upper Basin Storage	\$48,000,000	2.7				
KC1F – Combined Pipe/Rectangular Storage at Bottom of Basin	\$21,700,000	1.2				
KC2A – Convey and Treat at Alki	\$61,600,000	3.4				
KC3A – End of Pipe Treatment at Bottom of Basin †	\$78,300,000	4.3				
KC5A – Peak Flow Reduction Combined with Storage	\$26,400,000	1.5				

Questions & Discussion

Barton Pump Station Expansion: Currently Under Design



Bottom of Murray Basin

