North Henderson Area Combined Sewer Overflow Reduction Projects

RESTORE OUR WATERS
SEATTLE PUBLIC UTILITIES
COMBINED SEWER OVERFLOW REDUCTION

North Henderson Community Meeting

January 19, 2011

AGENDA:

I. Welcome & Workshop Overview *(Trish Rhay, Dan Speicher)*

II. Alternatives Presentation *(Andrew Lee)*

III. Work Groups *(Dan Speicher)*

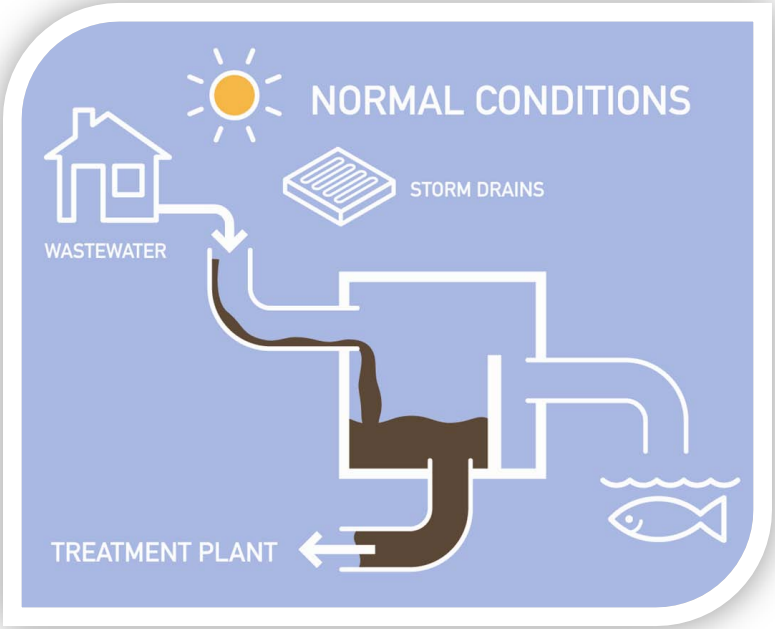
   I. Community Criteria Weighting Exercise

   II. Scoring the North Henderson Alternatives

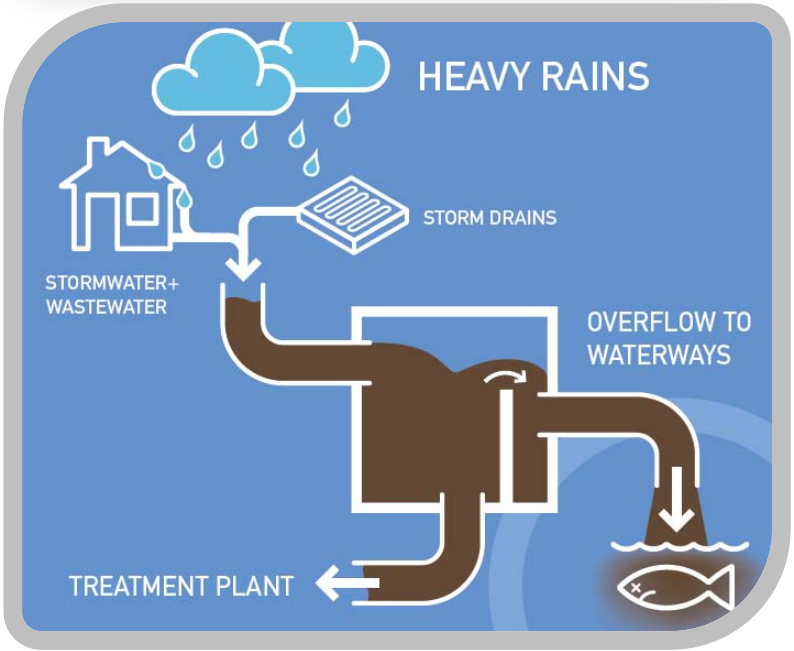
IV. Report Out *(Dan Speicher)*

V. Next Steps *(Trish Rhay)*

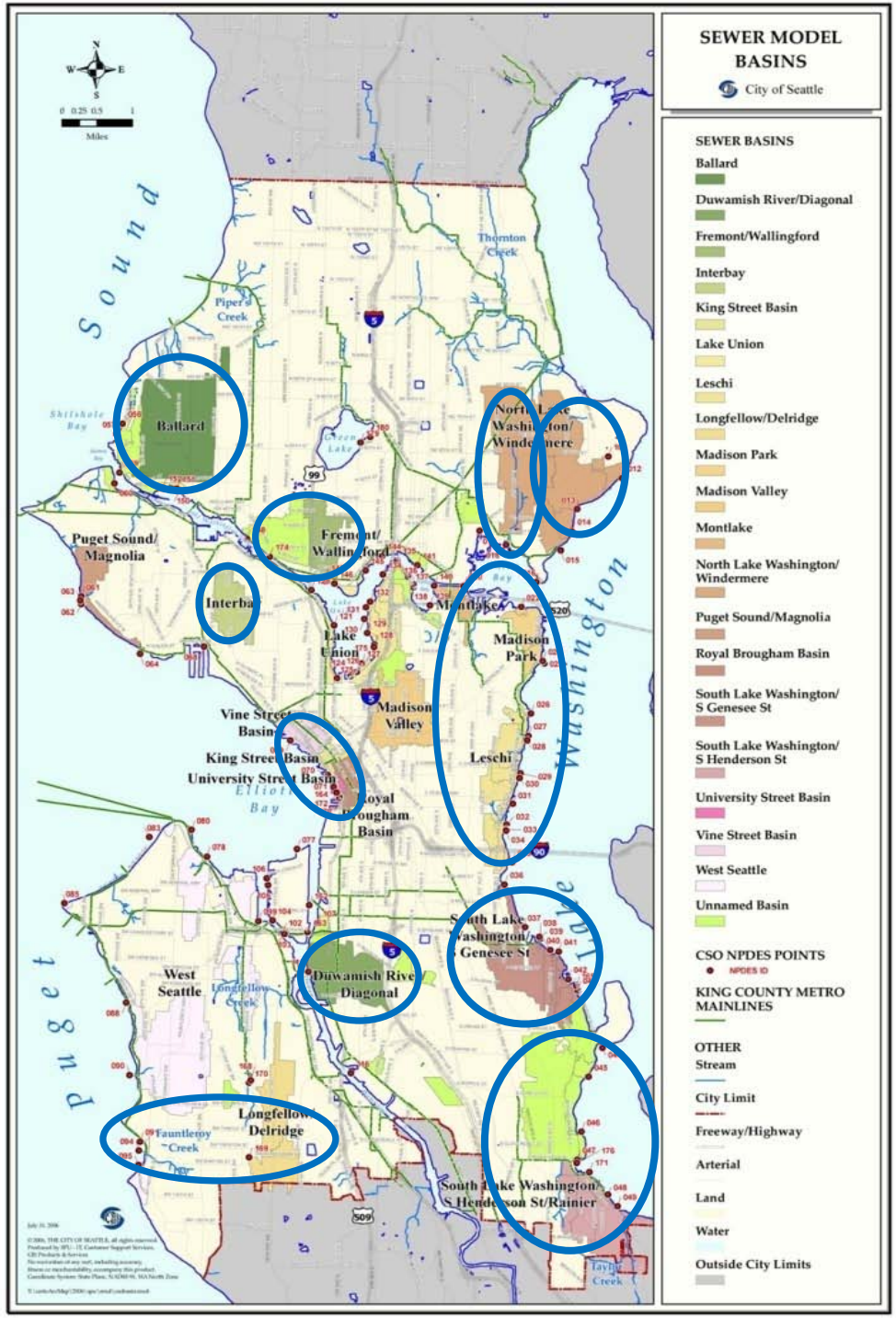
What is a Combined Sewer Overflow?



- *Wastewater* (from homes) and *stormwater* (from rooftops, streets) flow in a single pipe - a “combined sewer.”



- During heavy rains, stormwater (~90%) and sewage (~10%) exceed the system, causing a combined sewer overflow (CSO) into nearest waterway.

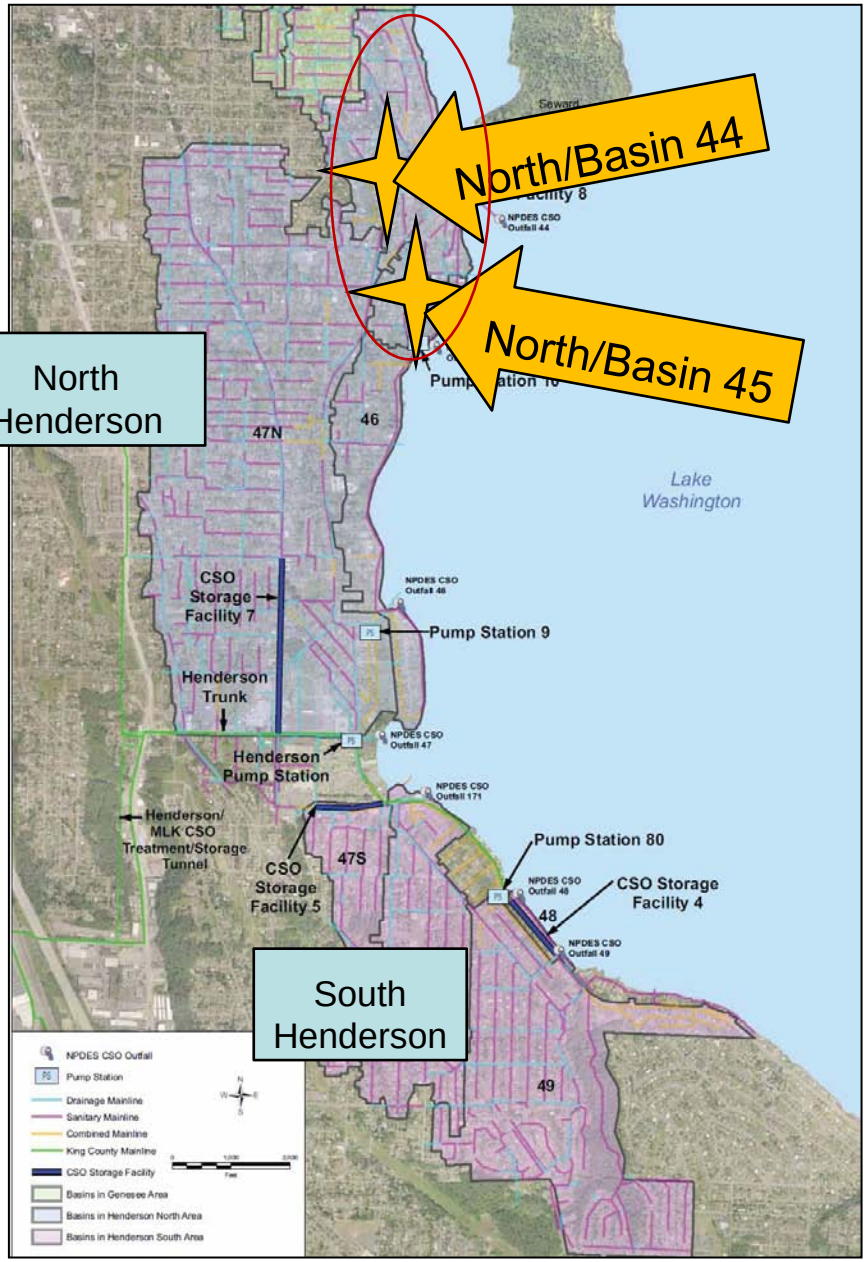


Focus on Next 5 Years

Comply with Clean Water Act, state/federal regulations by:

- Improving existing system through retrofits
- Constructing CSO reduction projects
  - Windermere, Genesee, and Henderson basins
- Piloting green infrastructure projects
- Completing Long-term Control Plan

Henderson CSO Basins



- Top-Priority for CSO reduction
- 1,800 Acres
- Seven basins
- CSOs discharge approximately 17 times per year
- Construction projects to reduce CSOs must begin in 2015

North Henderson Workshops

November 18, 2010

- Presented CSO reduction options (storage, transfer, separation, treatment)
- Obtained feedback to consider separation, inflow/infiltration reduction, and more innovative technologies to reduce CSOs.
- Obtained input on community values and concerns

December 14, 2010

- Present site-specific CSO reduction alternatives
- Obtain feedback on alternatives
- Confirm evaluation criteria (i.e., community values and concerns)
- Weight relative importance of evaluation criteria

January 19, 2011 (Today)

- Present results of alternatives evaluation
- Obtain feedback on results
- Narrow down site-specific alternatives

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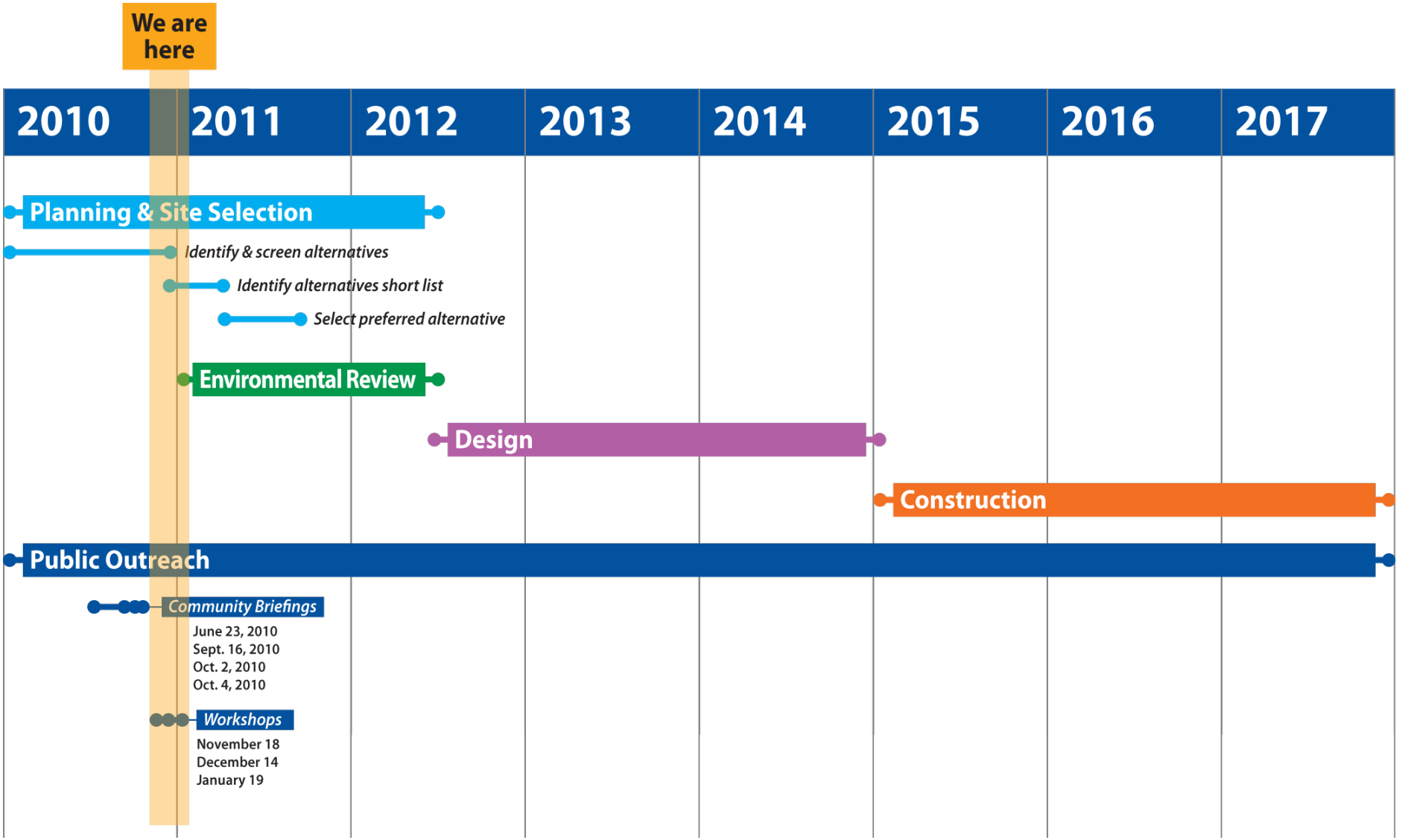
North Henderson Project Schedule



Multi-Objective Decision Analysis (MODA) Reduction Options-

What it is

- Clearly defined, thorough decision support tool that captures stakeholders values
- A transparent approach for assessing the triple bottom line of a set of alternatives
- Clear communication and understanding of options
- Weighting exercises bring stakeholders values and policies into alternative evaluation

Rating of performance x weight = Decision Score

- A decision aide NOT a decision maker

MODA Example: Choosing a Car

MODA Example: Choosing a Car
Criteria and Performance Measures

Triple Bottom Line Goal	Environment - minimize the impact to the natural environment	Social - maximize social benefit					Financial
	ENV1	SOC1	SOC2	SOC3	SOC 4	SOC 5	FIN1
Criteria	Minimize air pollution and greenhouse gas emissions	Maximize exterior styling	Maximize safety	Maximize "fun" to drive	Maximize comfort in the interior	Maximize cargo capacity	Cost per mile
Measure-ment Scale	miles per gallon (mpg)	1-3; 3 is best, 2 is average, 1 is worst	1-3; 3 is best, 2 is average, 1 is worst	1-3; 3 is best, 2 is average, 1 is worst	1-3; 3 is best, 2 is average, 1 is worst	Cubic feet	Published life cycle cost

MODA Example: Choosing a Car

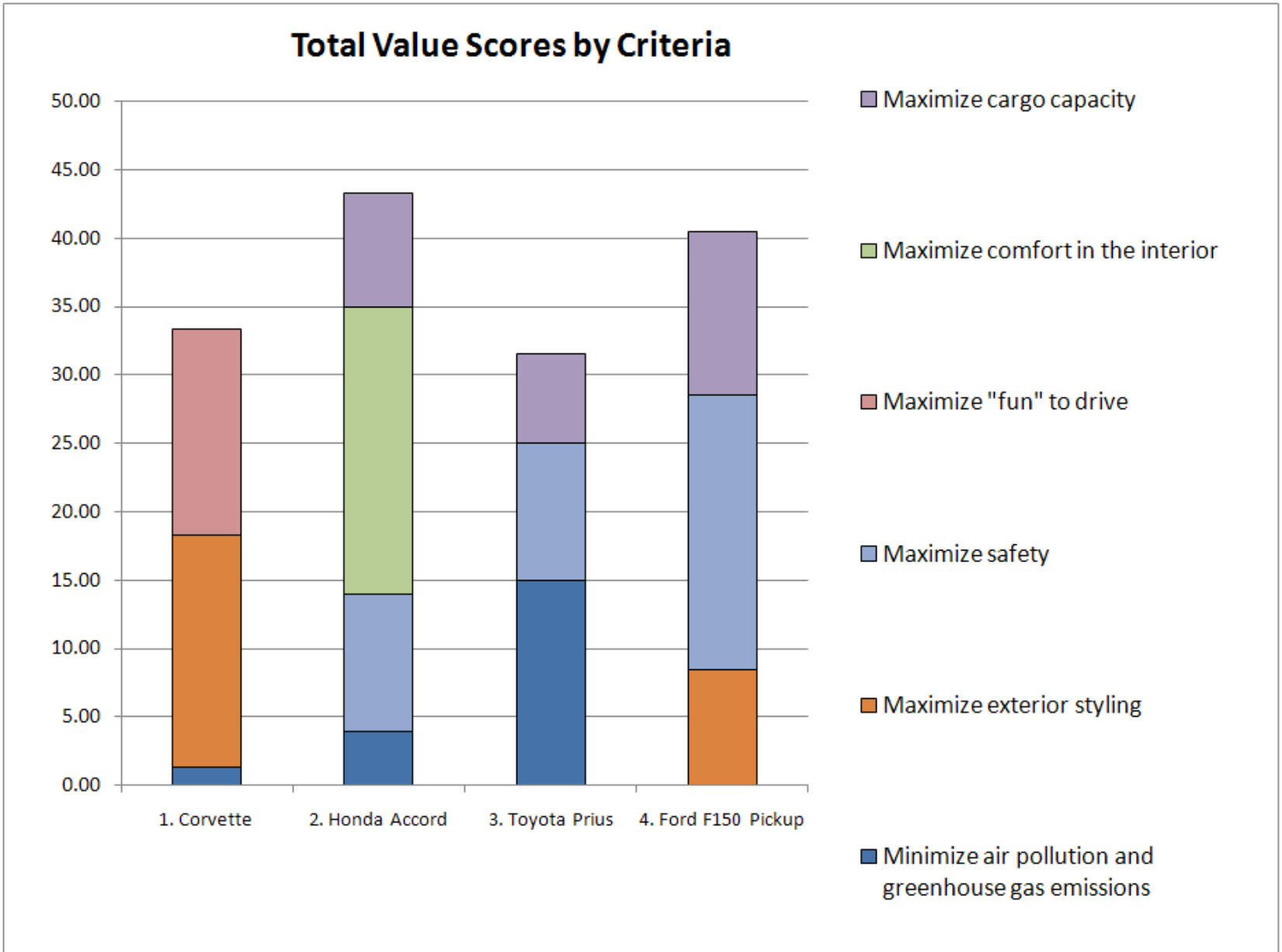
Relative Value Weights

	Relative Value Weights (percent)					
	ENV1	**SOC1**	**SOC2**	**SOC3**	**SOC 4**	**SOC 5**
Name	**Minimize air pollution and greenhouse gas emissions**	**Maximize exterior styling**	**Maximize safety**	**Maximize "fun" to drive**	**Maximize comfort in the interior**	**Maximize cargo capacity**
Mom	25	5	30	5	20	15
Dad	5	25	20	30	5	15
Johnny	15	20	10	20	30	5
Mary	15	20	20	5	30	10
Consensus	15	17	20	15	21	12
Average	15.0	17.5	20.0	15.0	21.3	11.3

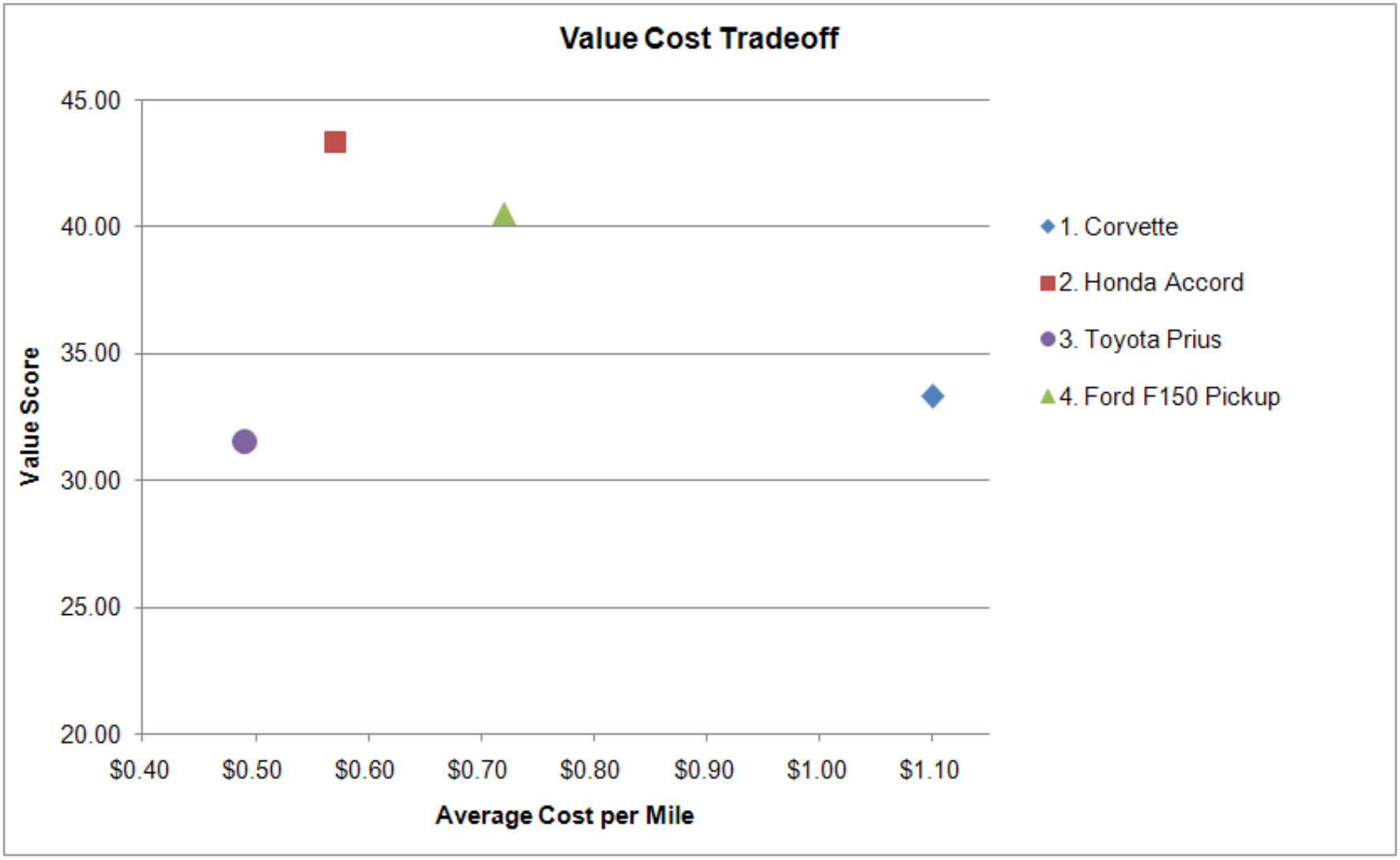
MODA Example: Choosing a Car

Score How Well Options Meet Criteria

MODA Example: Stacked Bar Chart



MODA Example: Scatter Diagram



Summary of Alternatives

- Distributed Storage
  - **Basin 44** (Storage under private property, Seward Park parking lot, or Lake Washington Blvd)
  - **Basin 45** (Storage under private property, Martha Wahsington Park open space, or 57th Ave S.)
- Tunnel Storage
- Conveyance and Storage
- Complete Sewer Separation *(includes Inflow & Infiltration Reduction)*

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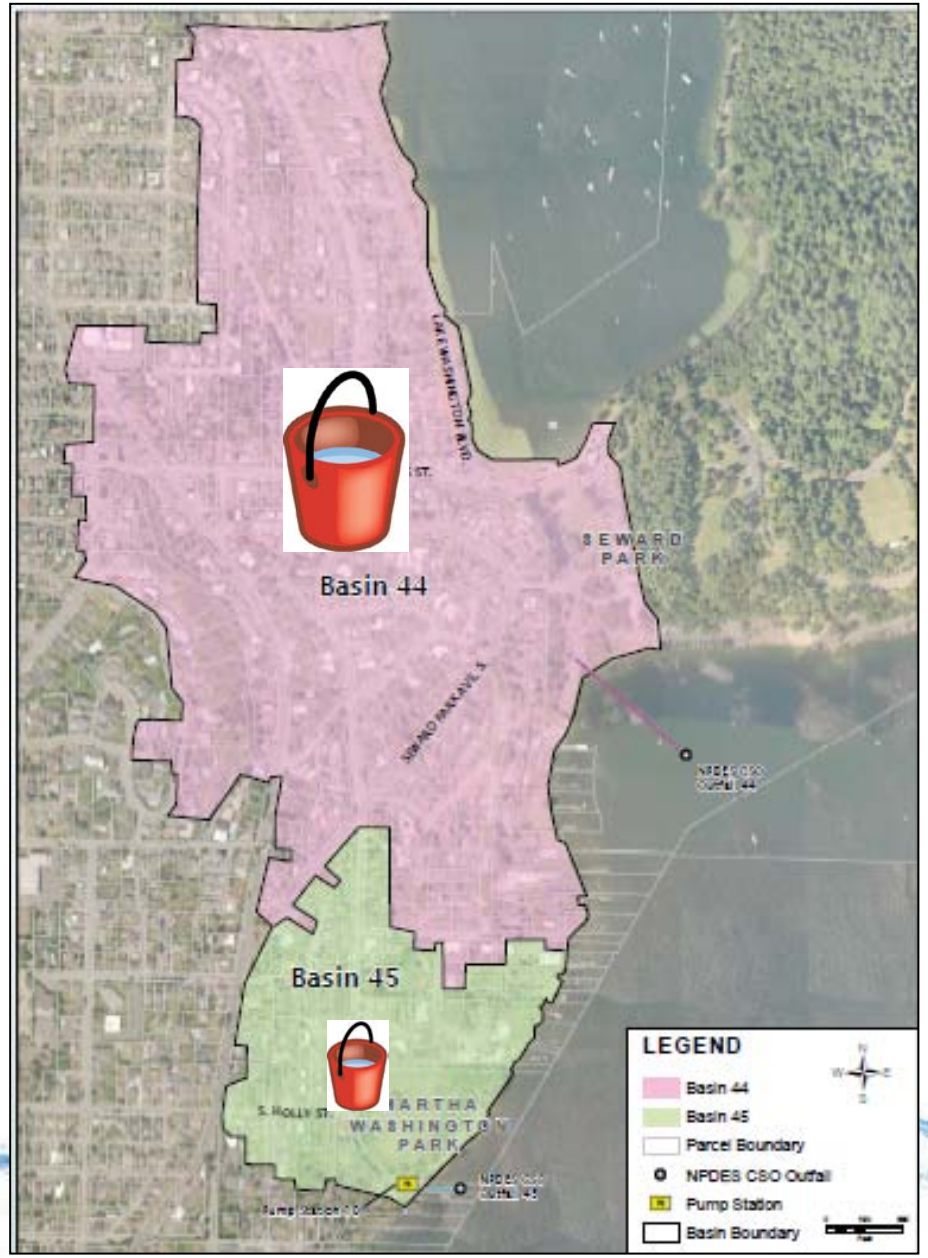
Distributed Storage Alternative



Construct two underground storage tanks to hold approximately 2.4 million gallons (Basin 44) and 200,000 gallons (Basin 45)

- Requires location in both Basin 44 and Basin 45
- Location could be under park, under street, or under private property
- Cost Range: $35 - $75 million

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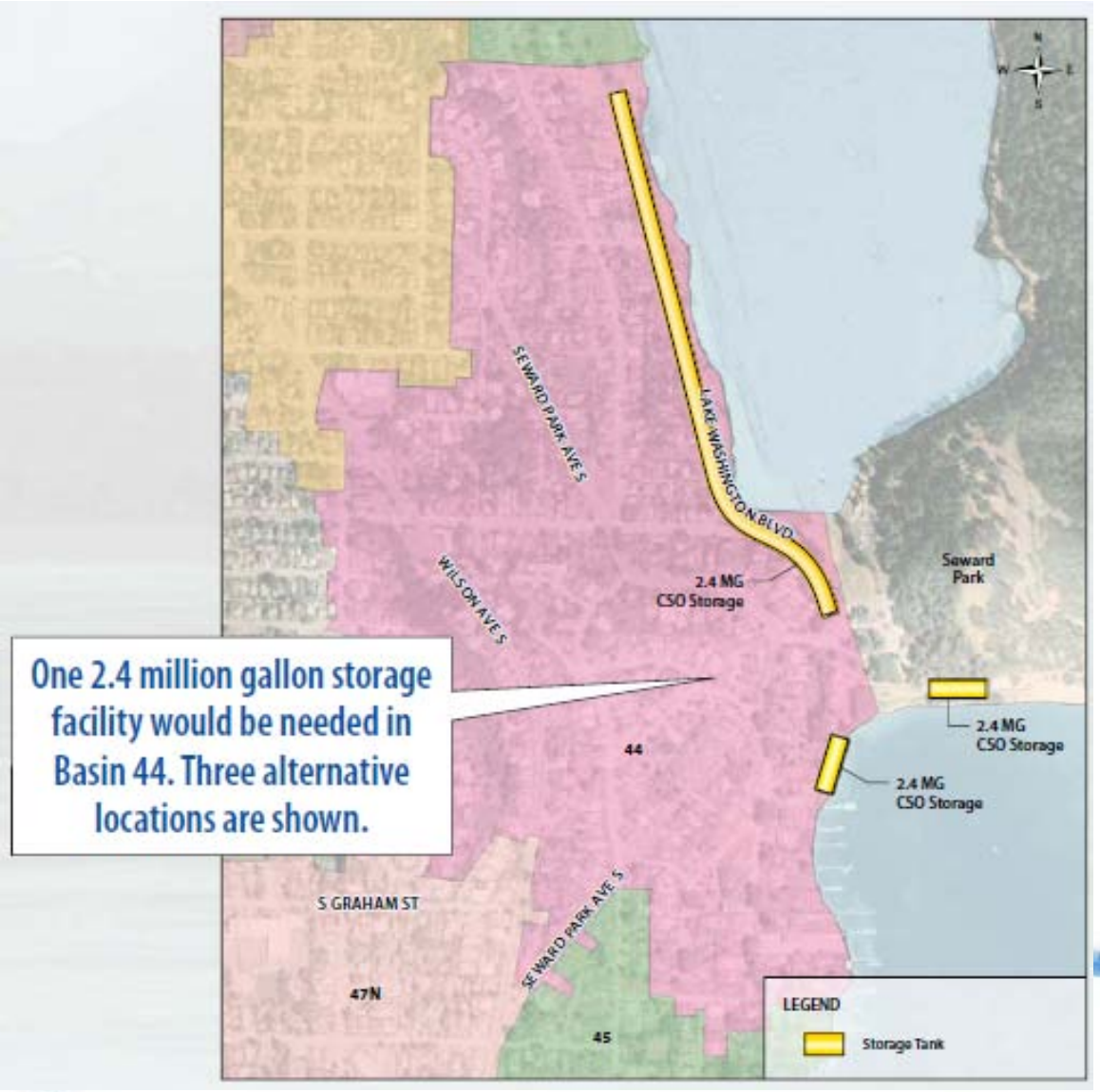
Distributed Storage (Basin 44) Potential Storage Locations



2.4 million gallons (Basin 44) could be constructed under:

- Seward Park parking lot ($31-$67 million)
- Lake Washington Boulevard ($55-$118 million)
- Private property ($34-$72 million)

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Distributed Storage (Basin 45) Potential Storage Locations

200,000 gallons of underground storage (Basin 45) could be constructed under:

- 57th Ave S. ($6-12 million)
- Martha Washington Park ($4-9 million)
- Private property ($5-10 million)

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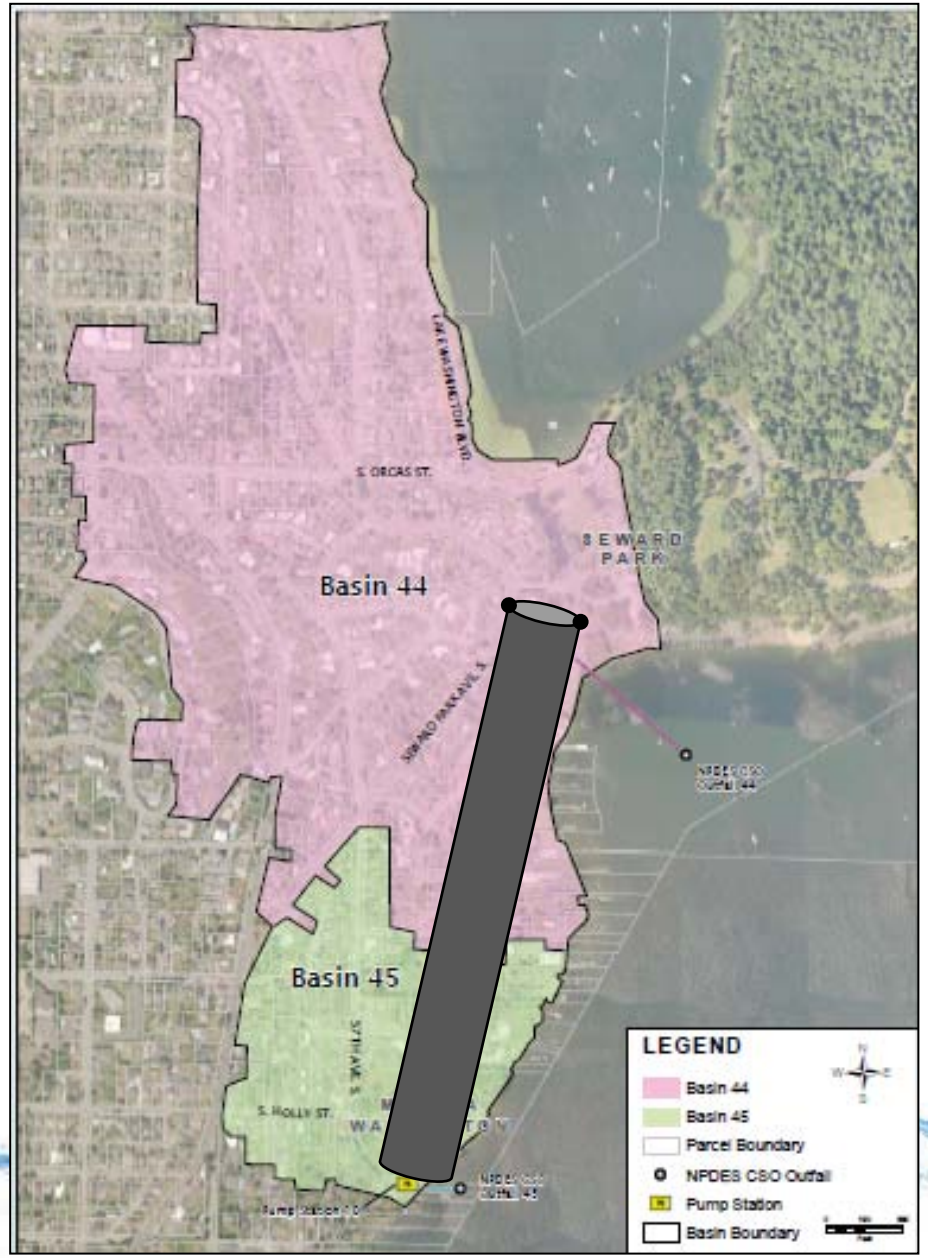
Tunnel Storage Alternative



Store 2.6 million gallons in a tunnel underneath streets and private properties between Seward Park and Martha Washington Park

- Requires tunnel launch shaft and receiving shaft
- Inherent risks associated with tunneling technologies
- Cost Range: $45 - $96 million

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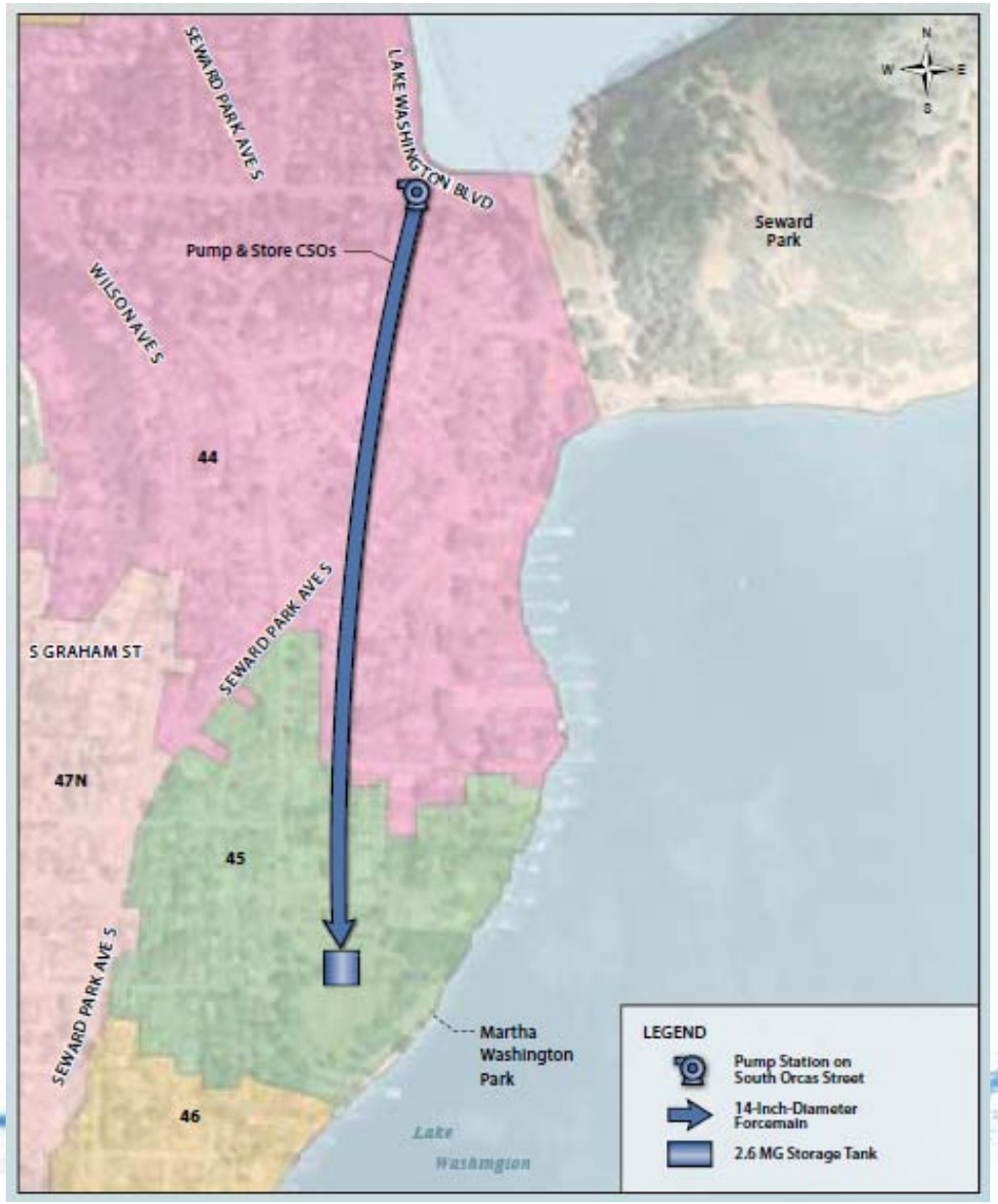
Convey and Store Alternative



Send flows through a pipeline from Basin 44 to Basin 45 and store them in a 2.6 million gallon underground tank near Martha Washington Park

- May require new pump station
- Requires conveyance piping
- 2.6 million gallon underground storage tank could be located in park or underneath private properties
- Cost Range: $43 - $92 million

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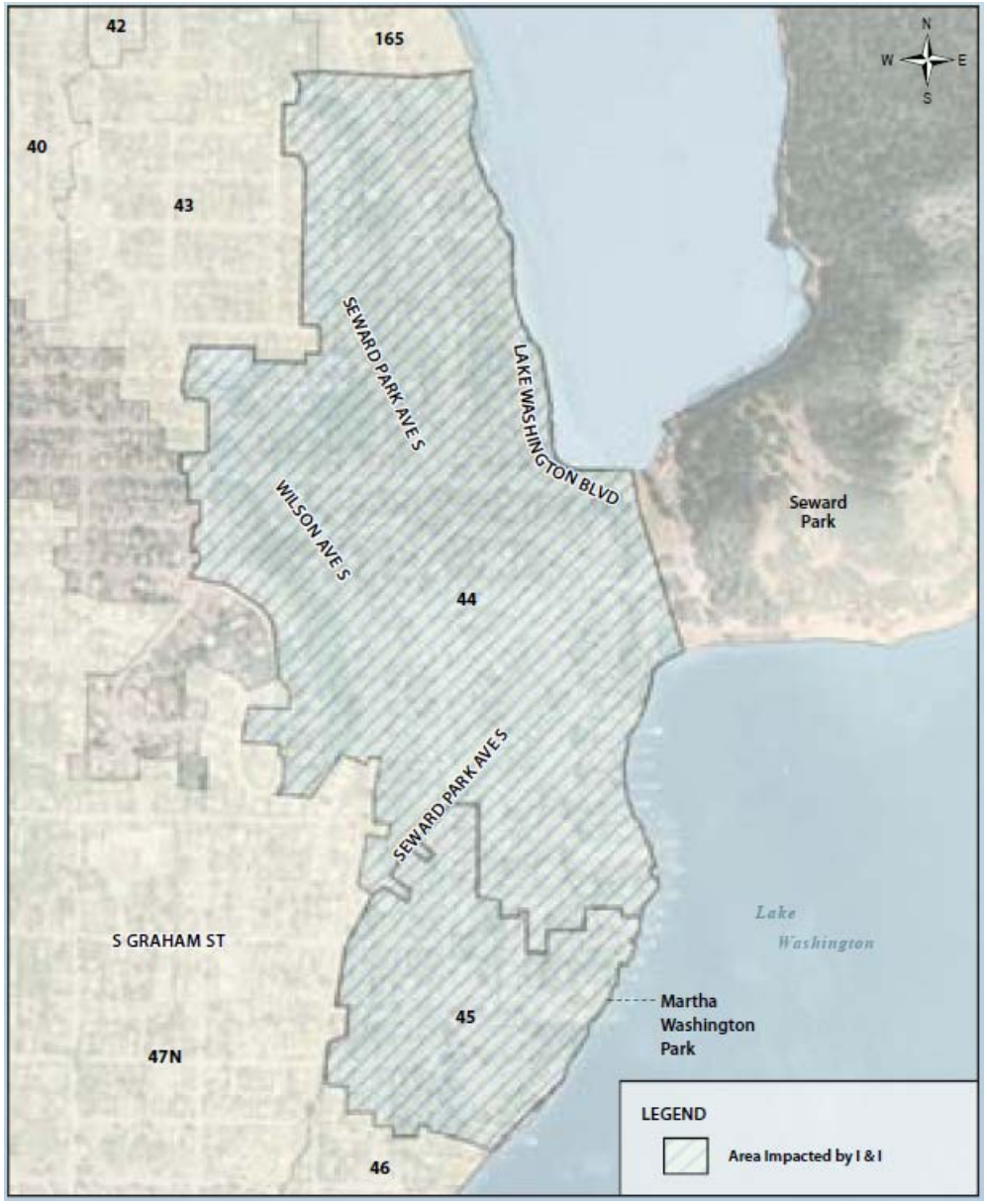
Complete Separation Alternative (Includes Inflow & Infiltration Reduction)



Prevents stormwater runoff and groundwater from entering the combined system. Requires:

- Sewer main replacement
- Side sewer replacement
- Roof leader disconnection
- New storm lateral or raingarden (if feasible)
- Storm main extensions
- Stormwater treatment

*Requires **75% participation** in Basin 45*

*Requires **100% participation** in Basin 44*

Cost Range: $57 - $122 million

Work Groups

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Next Steps

- Design Charettes *(Spring/Summer 2011)*
- EIS Scoping Notification *(Spring 2011)*
- Draft EIS and Announcement of Preferred Alternative *(Fall/Winter 2011)*

Contact Information

Project updates will be sent ongoing to those that signed up to be on the listserv **(sign-up in back)**

PLEASE SEND US YOUR COMMENTS AND QUESTIONS:

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206-826-4767

www.seattle.gov/CSO