King County

South Magnolia CSO Control Project




Community Meeting

October 20, 2012

TETRA TECH TEAM

Meeting Purpose

- Session 1
  - Project update
  - New information about conveyance pipeline installation
  - Next steps
- Session 2
  - Respond to community questions, suggestions and input from June 13
  - Landscape and architecture update
  - Next steps

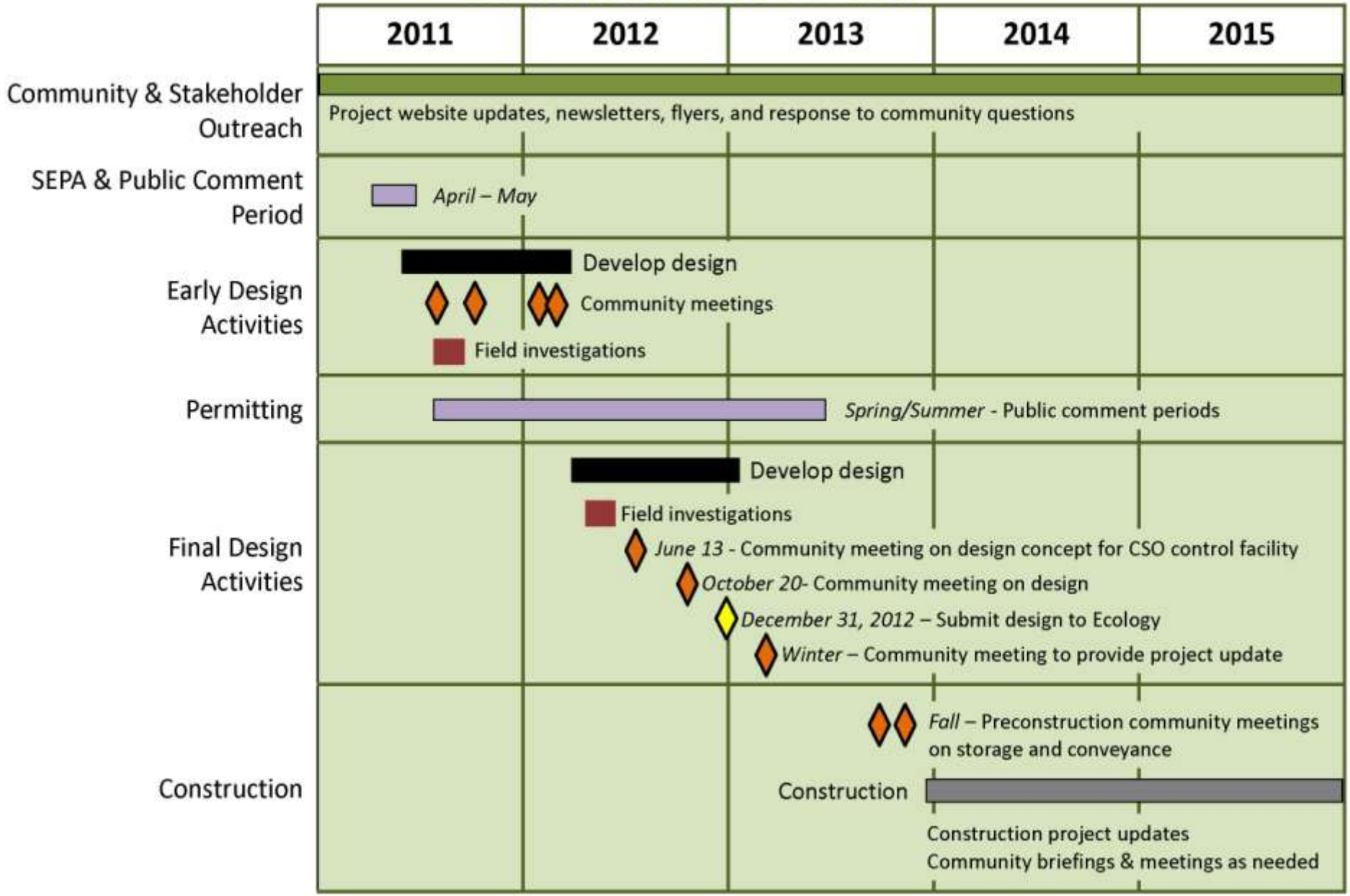
Session 1 Agenda

- Introductions
- Project status
- Latest geotechnical information
- Additional trenchless installation method
  - Purpose for including
  - Contracting methodology
  - Description of method
  - Implementation (32nd)
- Working with the community
- Next steps

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

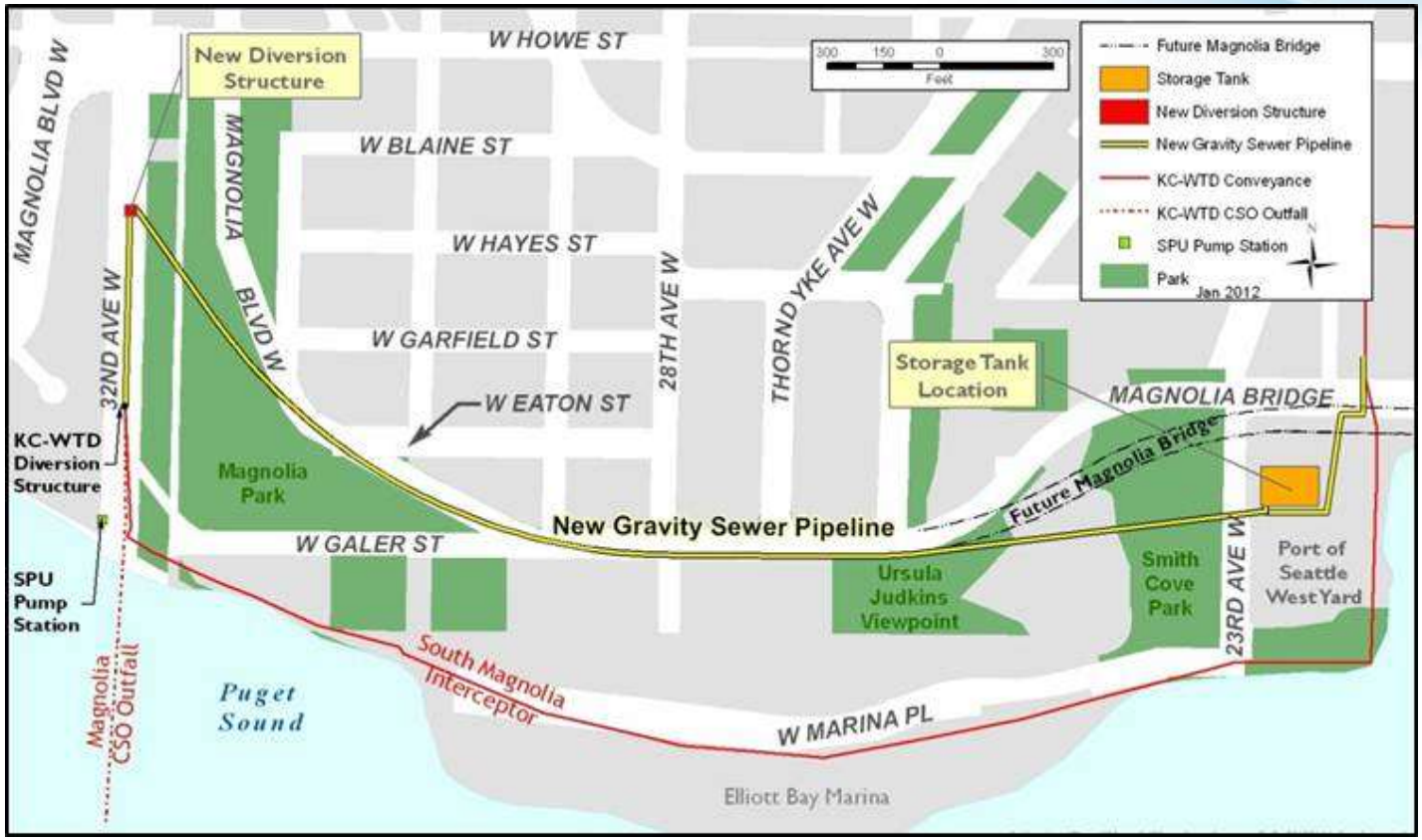
SOUTH MAGNOLIA CSO CONTROL PROJECT TIMELINE

OCTOBER 2012



Overview of Design Elements

- Underground storage tank
- Gravity sewer pipeline
- Diversion structure



January Recommended Alignment

- Recommended HDD installation method
- Galer alignment with new upper diversion structure required for HDD installation

What Has Changed

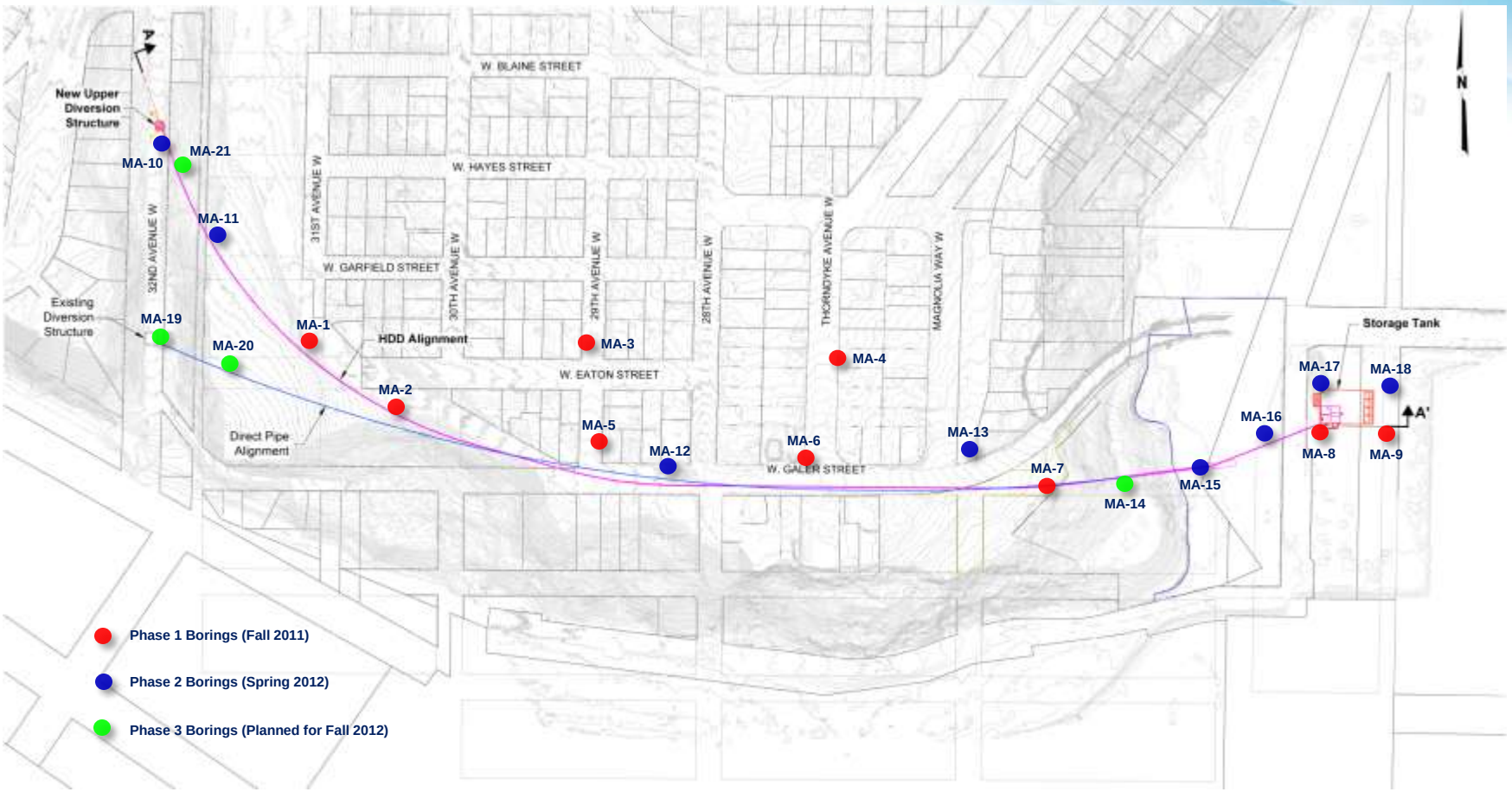
- HDD
  - Investigating construction options
- Direct Pipe™ technology
  - Helps maintain project schedule by expanding potential pool of contractors
- Contracting methodology

Results of Preliminary Geotechnical Investigations

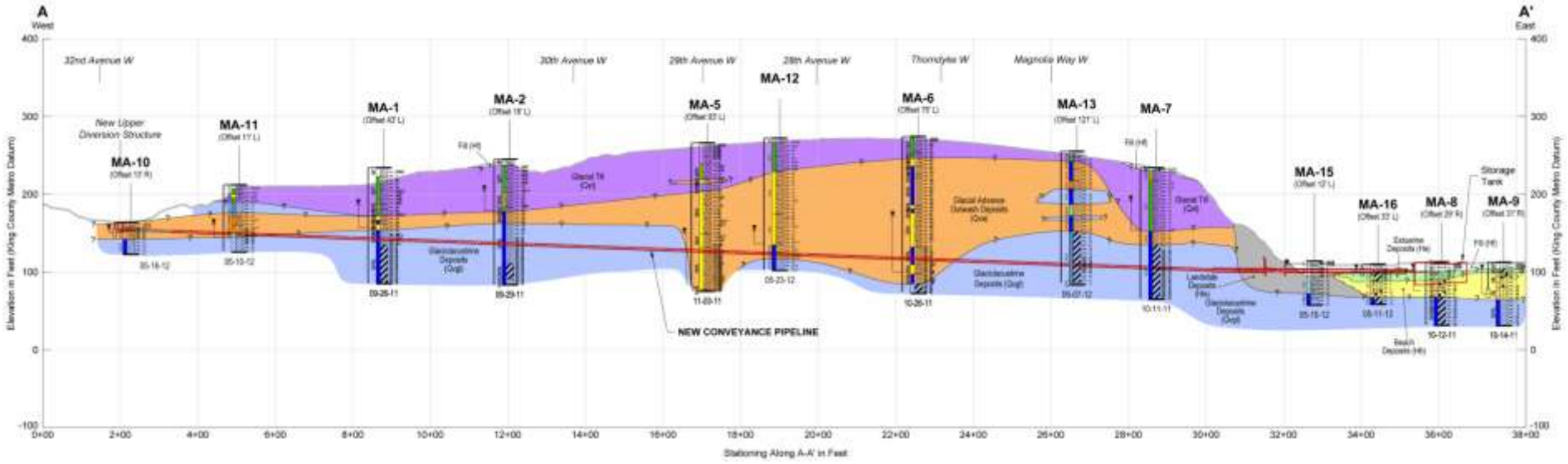
- Glacially consolidated materials
- Typical of soils in region
- Good construction soils
- Many successful projects

Early phase borings were completed Fall 2011

Geotechnical Investigations



HDD Alignment Soils



What's next

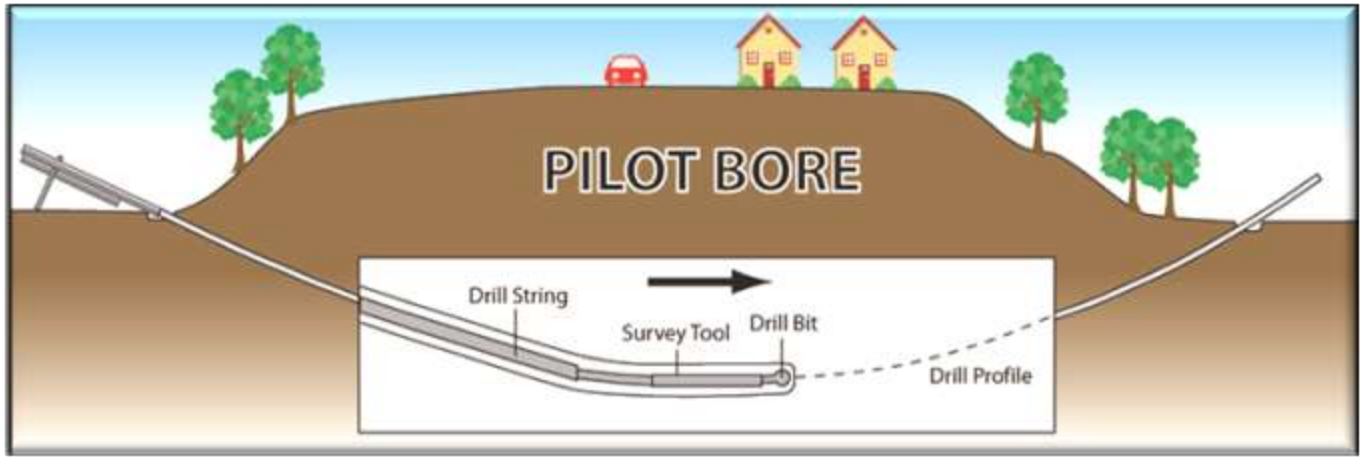
- Additional soil borings
- Utility potholing on 32nd Ave W and 23rd Ave W

Conveyance Options

- HDD process
- Direct Pipe technology ™

Step 1 - Drilling the Pilot Bore

An initial drilling step establishes a pilot hole. The surrounding soils are stabilized with drilling mud



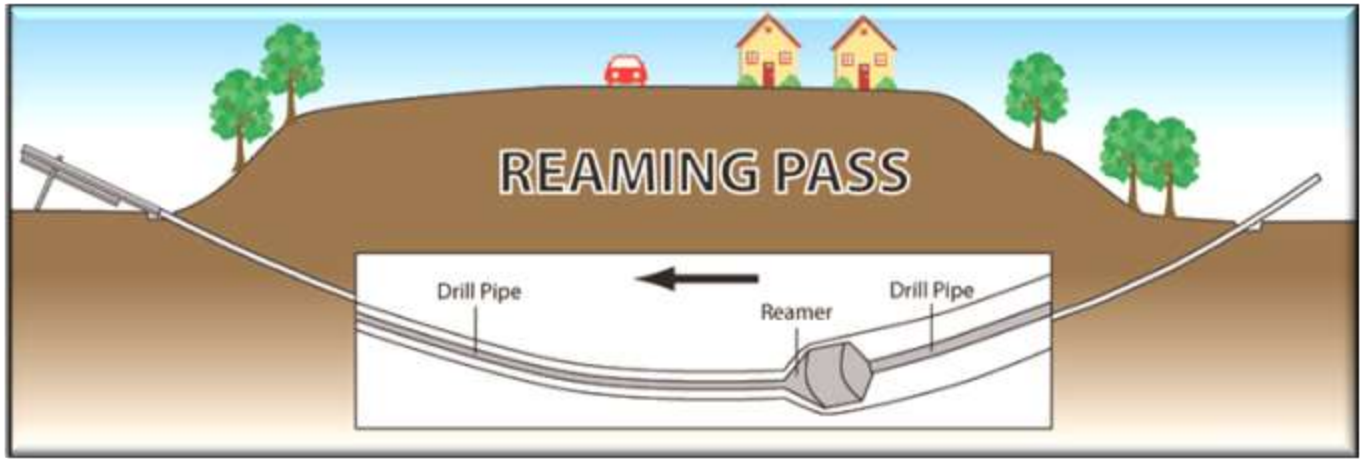
A drilling engineer steers the drill bit using special survey tools

Horizontal Directional Drilling (HDD) Rig used for Drilling and Reaming

Tracking devices at the surface track the drill bit location during the initial bore

Step 2 - Reaming Pass

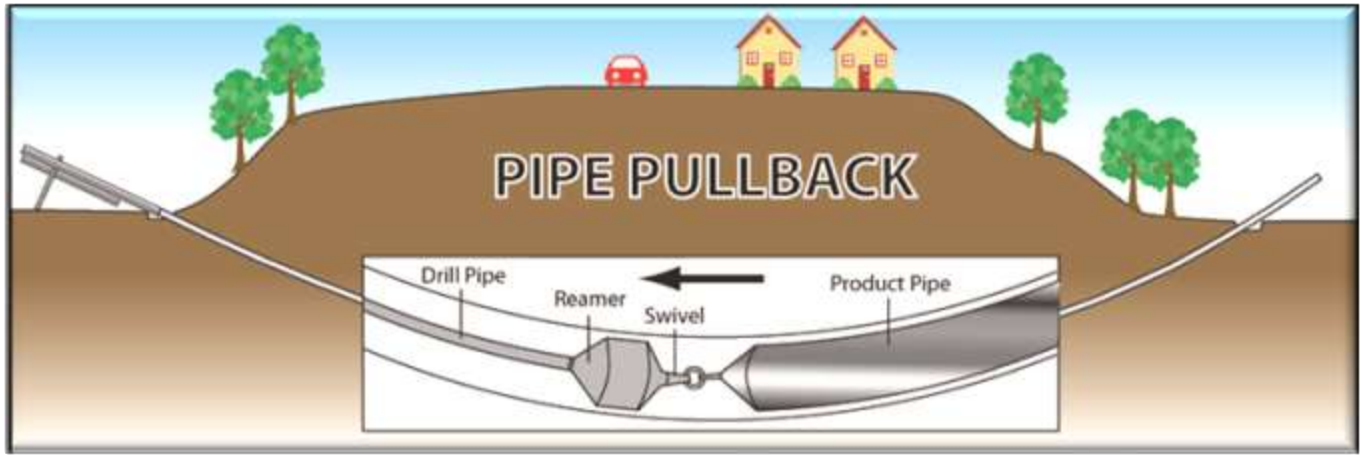
The pilot hole is then enlarged to the final pipe size using a reamer. The drilling mud excavated in this step is collected and recycled.



Specific equipment is used for drilling in different conditions. Both drill bits and reaming heads for the Magnolia Project will be selected based on the soil types found at the drill depth

Step 3 - Pipe Pullback

The final pipeline is then pulled back through the prepared bore hole



Heavy equipment is used to lift the pipe and pull it through the prepared bore hole

Drilling and Pipe Pullback Options

- Drilling from Smith Cove Park or 32nd
- Drill Rig on 32nd for Pullback
- Pipe Layout in Port Property
- Considerations
  - Cruise season
  - Impacts to 23rd

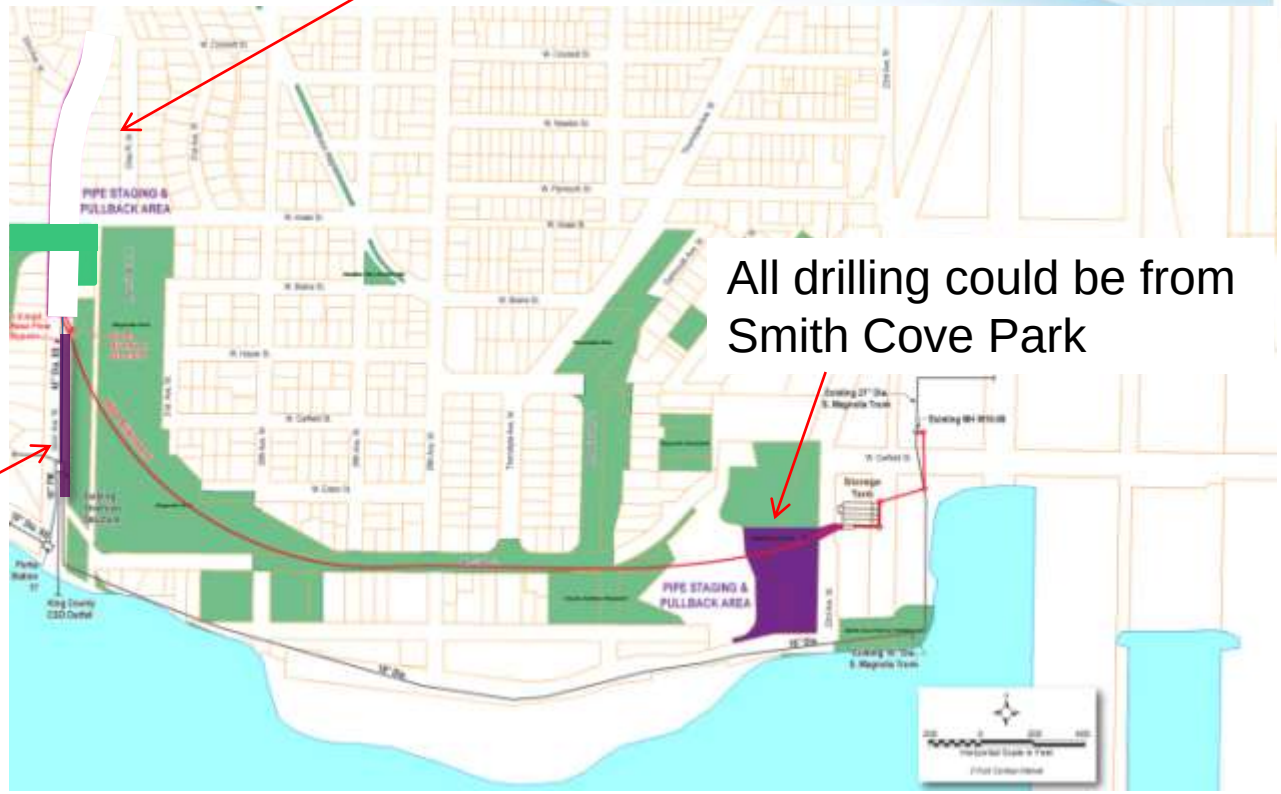
Potential Pipe Pullback from Port of Seattle

- Duration
  - Pipe delivery, assembly and testing – 2 months
  - Pipe pullback – Up to 1-2 days

Drilling and Potential Pipe Pullback Options

- Considerations
  - Pipe pullback up to 1-2 days on 32nd Ave W
  - Emergency access

Possible Pipe Pullback
1-2 days



All drilling could be from Smith Cove Park

Potential Pipe Layout Area

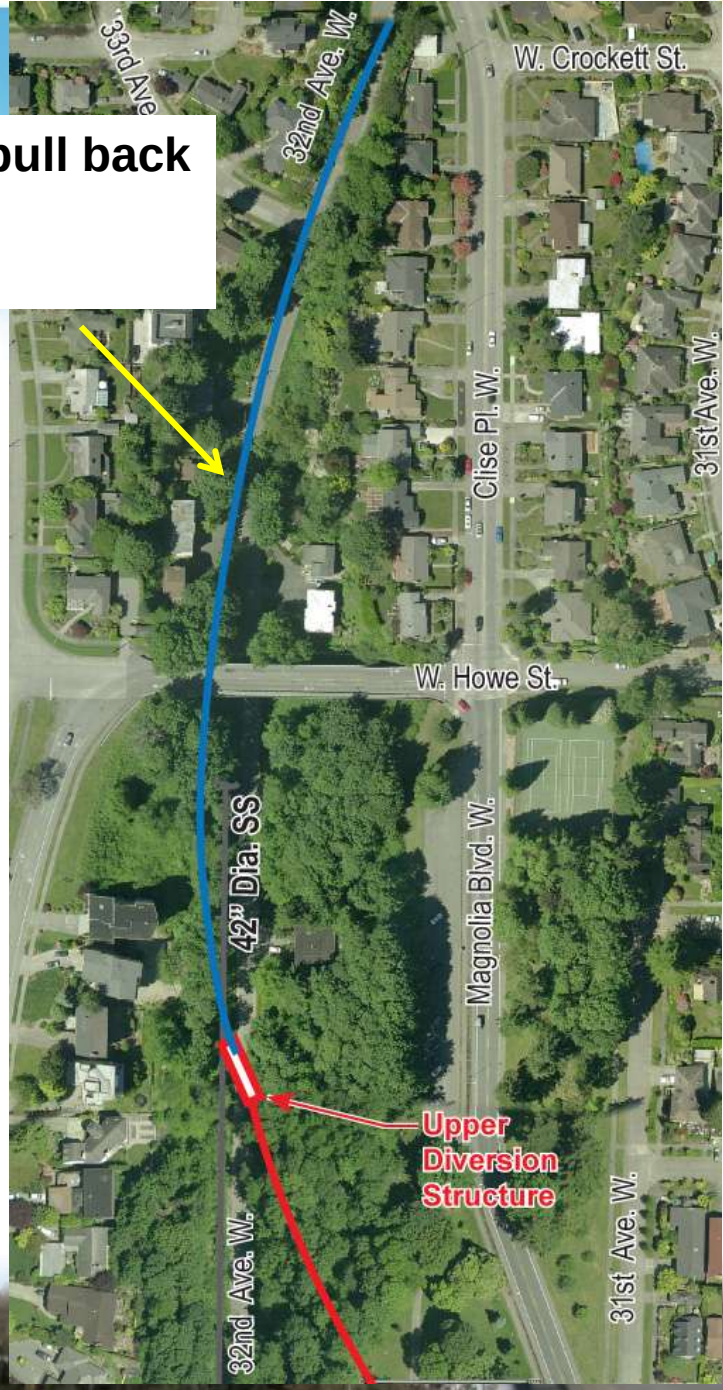
HDD Layout Designed to Limit Impact on 32nd

Continuous access through pipe assembly area

Pipe Pullback Options from 32nd Ave W

Potential pipe pull back
Up to 1-2 days

- Considerations:
  - 24 hour emergency access maintained
  - Potential for short-term street closure during pipe pullback
  - Staff will work with community to assess access needs



When We Will Know More

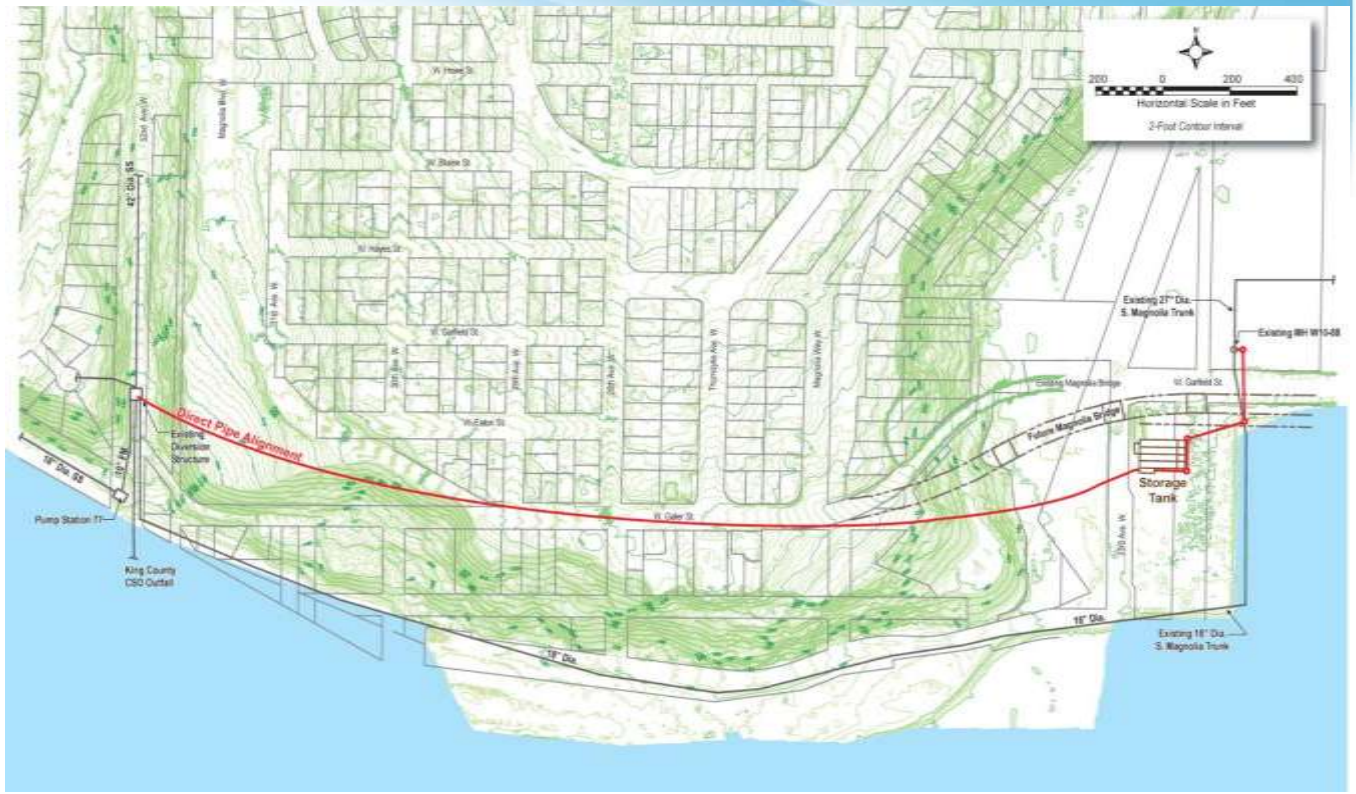
- Definition of installation option will come after bid opening
- Contractor will provide detail on work areas and timing as first step of construction
- King County and Contractor will meet with community to discuss details and timing

Direct Pipe

- Direct Pipe™ technology
  - Helps maintain project schedule by expanding potential pool of contractors
- Contracting methodology

Direct Pipe Alignment

- Connects at existing diversion structure
- Same alignment as HDD from 29th Ave W to storage facility



Latest Technology – Pipe Thruster

THE HERRENKNECHT PIPE THRUSTER – KEY INNOVATION IN PIPELINE CONSTRUCTION.

Direct Pipe

- LAUNCH SITUATION

- **Product pipe connected to MTBM**
- **Thruster pushes the MTBM**
- **Long pipe sections in one push**
- **Less complicated shaft design**
- **Pipeline held by side booms**

The Direct Pipe Process

THE DIRECT PIPE® METHOD. TUNNELLING PROCESS.

- Applicable in all geological conditions.
- Borehole is supported at all times.
- Power supply through the pipeline.
- Slurry discharge through the pipeline.
- Almost continuous operation (minimum interruptions for the pipe extension).
- High tunneling accuracy compared to HDD.
- Low thrust loads.

Direct Pipe Experience To Date

- Experience in Europe since 2007
  - Seven Contractors
  - Diameters up to 56-inches
  - Lengths up to 3,000 ft
- Experience in United States
  - Two Contractors
  - 4 total installations (contractor proposed changes)
  - Longest – 735 feet

Details of Direct Pipe Design We Know Now

- Primary staging and tunneling from launch shaft in Smith Cove Park
- Receiving shaft and addition to existing diversion structure on 32nd Ave W

Details of Direct Pipe We Are Currently Developing

- Length of individual pipe sections
- Size of launch shaft in Smith Cove Park
- Haul routes
- Construction details at existing diversion structure on 32nd

Community Meeting Early January 2013

Next Steps for Conveyance

- Utility plans
- Permitting
- Restoration plans
- Haul routes

Session 2 - Facility and Site Design at the West Yard

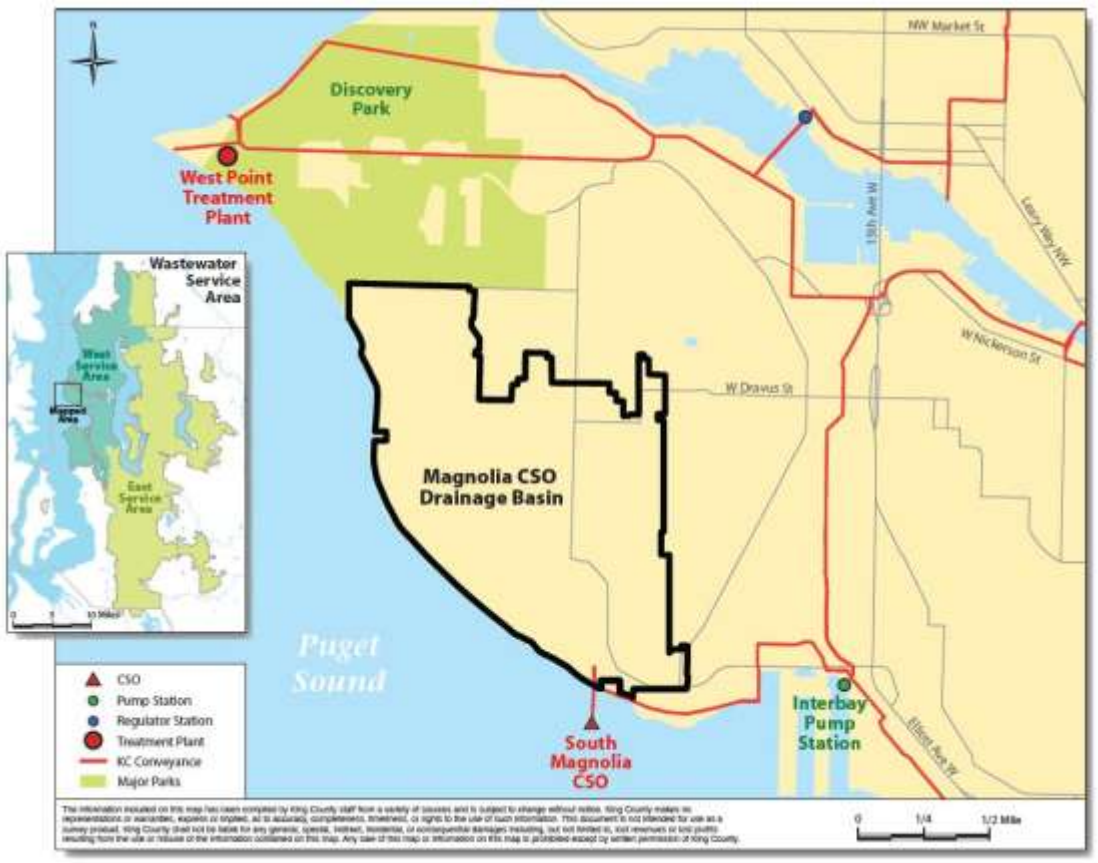
- Introductions
- Meeting purpose

Session 2 Agenda

- Summary of design process to date
- Operations & Maintenance at the West Yard site
- Sustainable elements in site design
- Architecture options and discussion
- Landscape update, fencing options and discussion
- Next steps

South Magnolia CSO Control

- Department of Ecology requirements: no more than one untreated overflow per year on a long term average
- During most conditions flows from the South Magnolia basin are conveyed to West Point Treatment Plant.
- Flows exceeding system capacity are discharged untreated to Puget Sound on average 19 times per year

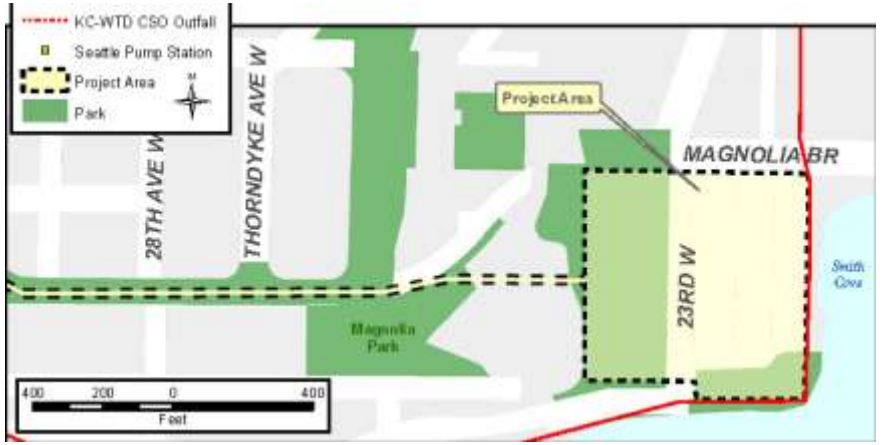


Project Decision Factors

Identifying a Preferred Tank Location:

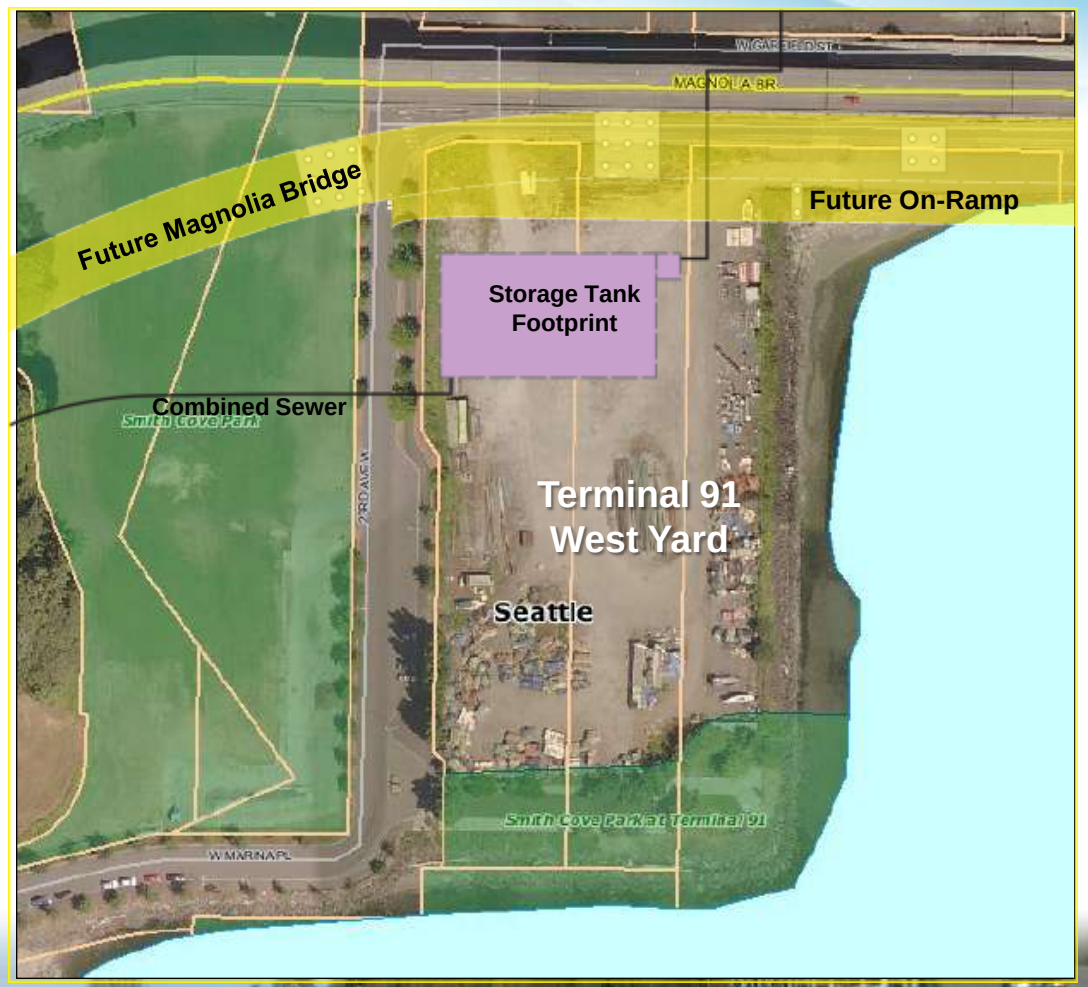
- Community input during March 2010, March 2011 public meetings
- Meetings beginning July 2010 with Port of Seattle, and Seattle Parks Department
- Technical evaluation workshops in 2011

Area identified in 2010 for the underground storage tank

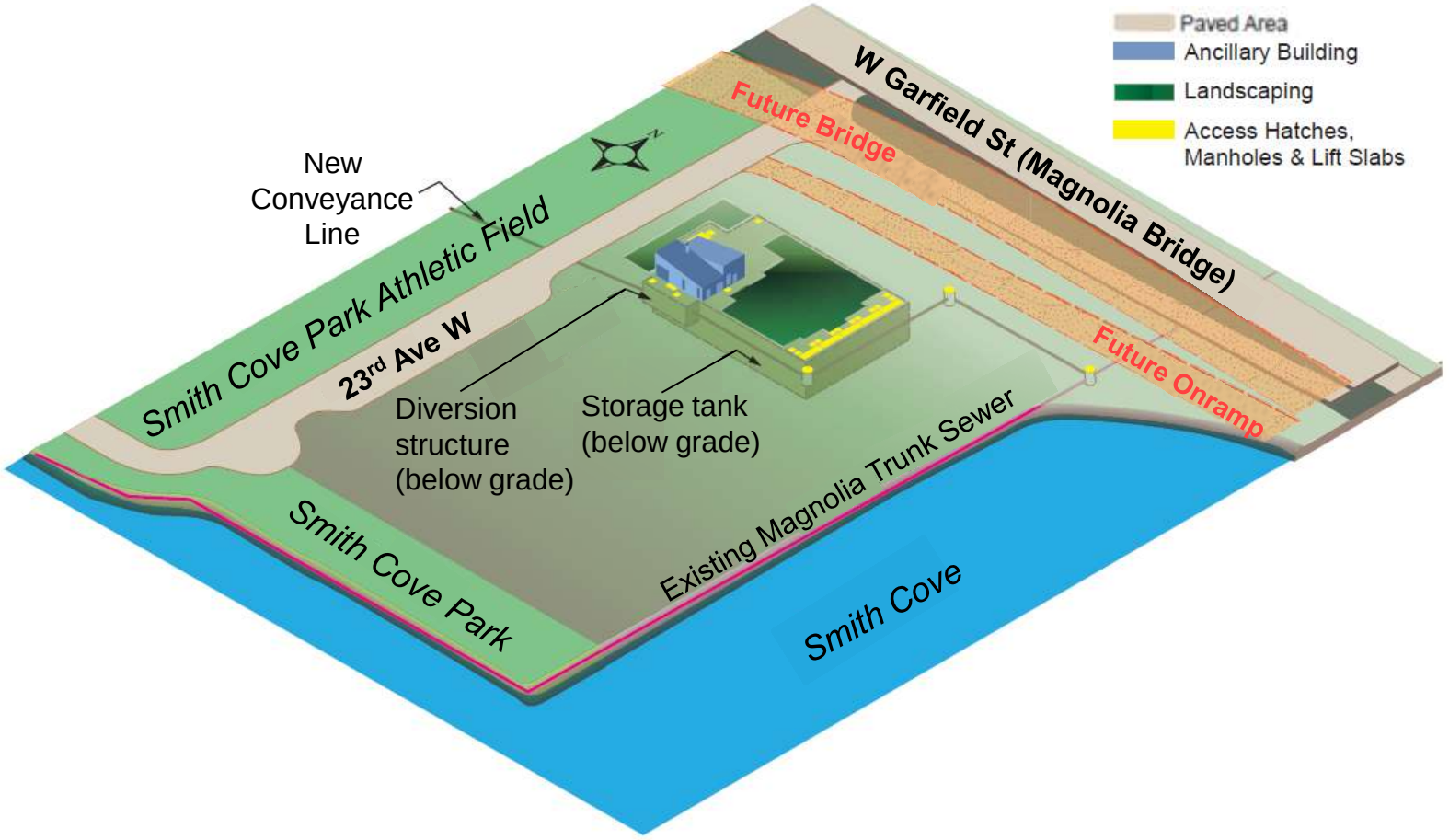


October 20, 2011 Predesign Concept

- Facility sited to maximize future land use opportunities:
  - Shoreline access
  - Proximity to future bridge
  - Position building to reduce footprint



February 15, 2012- Facility Configuration at the West Yard

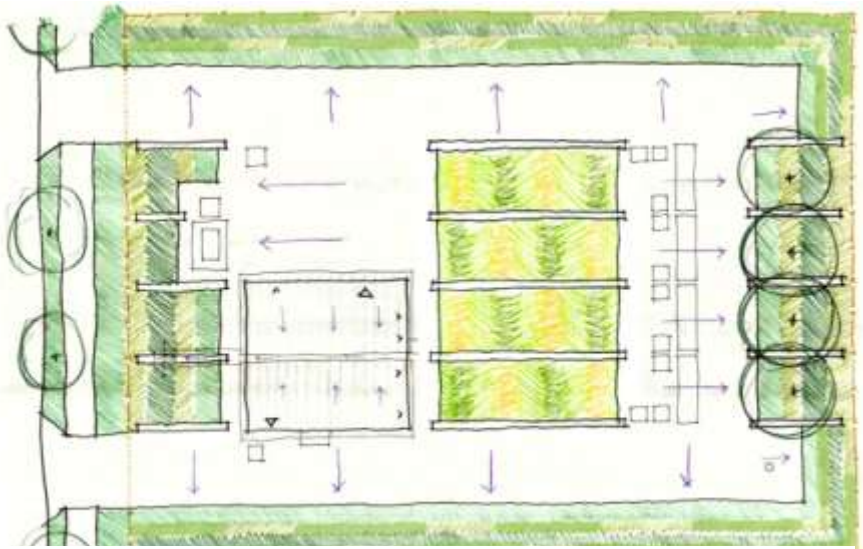


Developing Landscape and Architecture Concept

- Assessment of O/M access needs
- Investigation of stormwater management requirements
- Evaluation of site safety and security needs
- Review of community input on site elements (lighting, landscape, etc)
- Development of a site vision

June 13, 2012- Landscape and Architecture Concept

Acknowledging that the CSO control facility is a distinct part of an as-yet un-designed whole, we will design the landscape and architecture to express King County Wastewater Treatment Division's mission of protecting water quality.



Landscape Concept

Architectural Concept

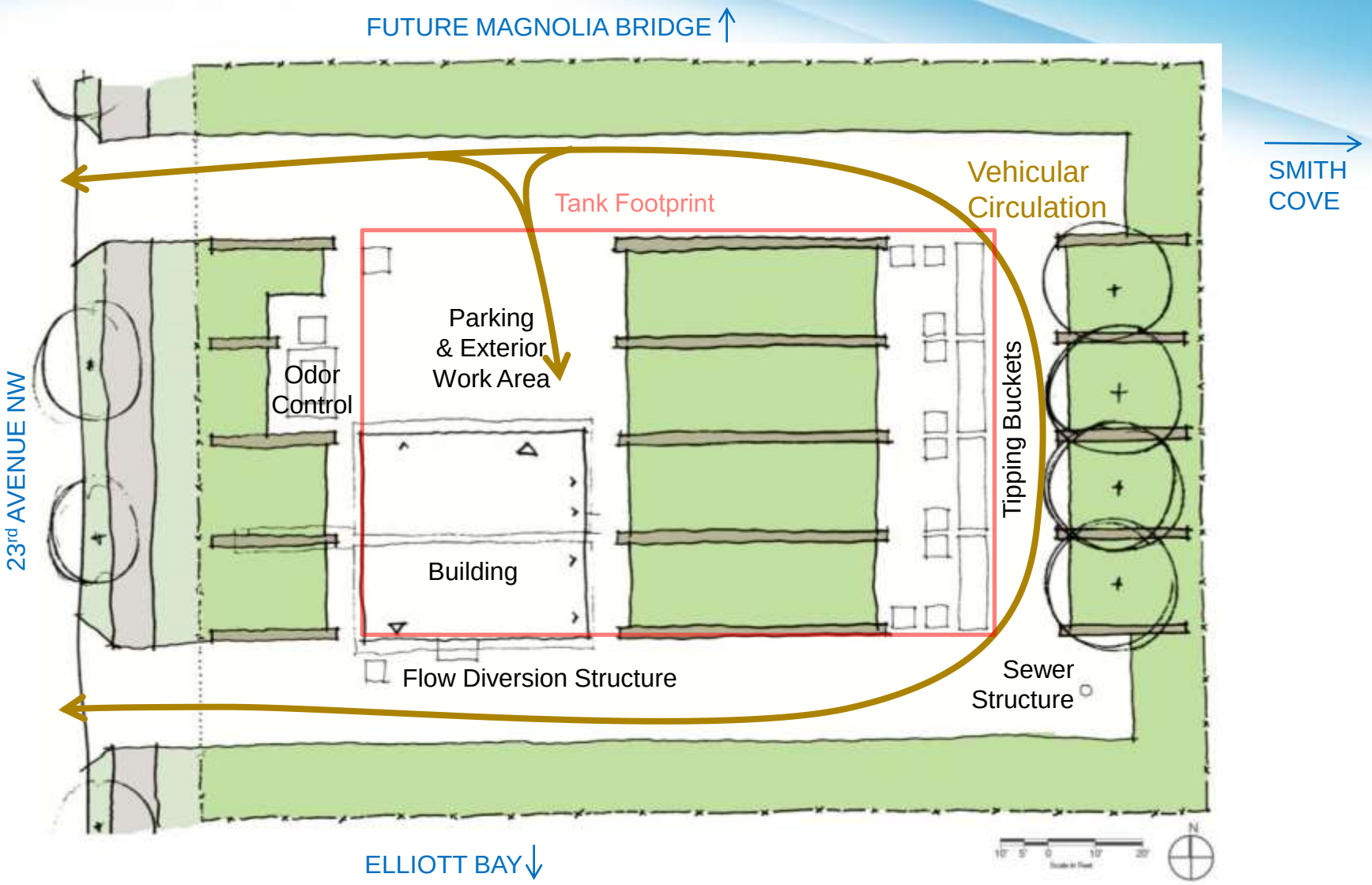
Following Up- Community Input

- Request for additional opportunities for community input
- Suggestions for additional sustainable elements
- Questions about stormwater management options
- Plant and habitat feature suggestions
- Questions about need for fencing and suggestions for fencing look/feel

WTD's West Section Offsite Facilities

- Four CSO Treatment Plants (Alki, Henderson, Elliott West, Carkeek)
- 21 Pump Stations
- 19 Regulator Stations
- Operated and maintained by 25 staff- operators, electricians, instrument technicians, and a gardener

O&M at the CSO Storage Site



Operations and Maintenance Activities at Storage Site

- 24/7- Response to alarm conditions
- Weekly- Inspection and testing
- Monthly- Testing standby generator, preventative maintenance
- Annually- Change carbon, preventative maintenance on tipping buckets, inspecting tank
- 5/10 years- Cleaning tank, structural inspection

Lift Slabs for Equipment Access

- Tipping Bucket Lift Slabs
  - 8 ft x 10 ft
  - 12,500 lbs each
- Odor Control Lift Slab
  - 15 ft x 11 ft
  - 17,300 lbs

Boom Truck

- 64,000 lb gross weight capacity
- 36 feet long by 10 feet wide
- 24 foot span for outriggers

Vactor Truck

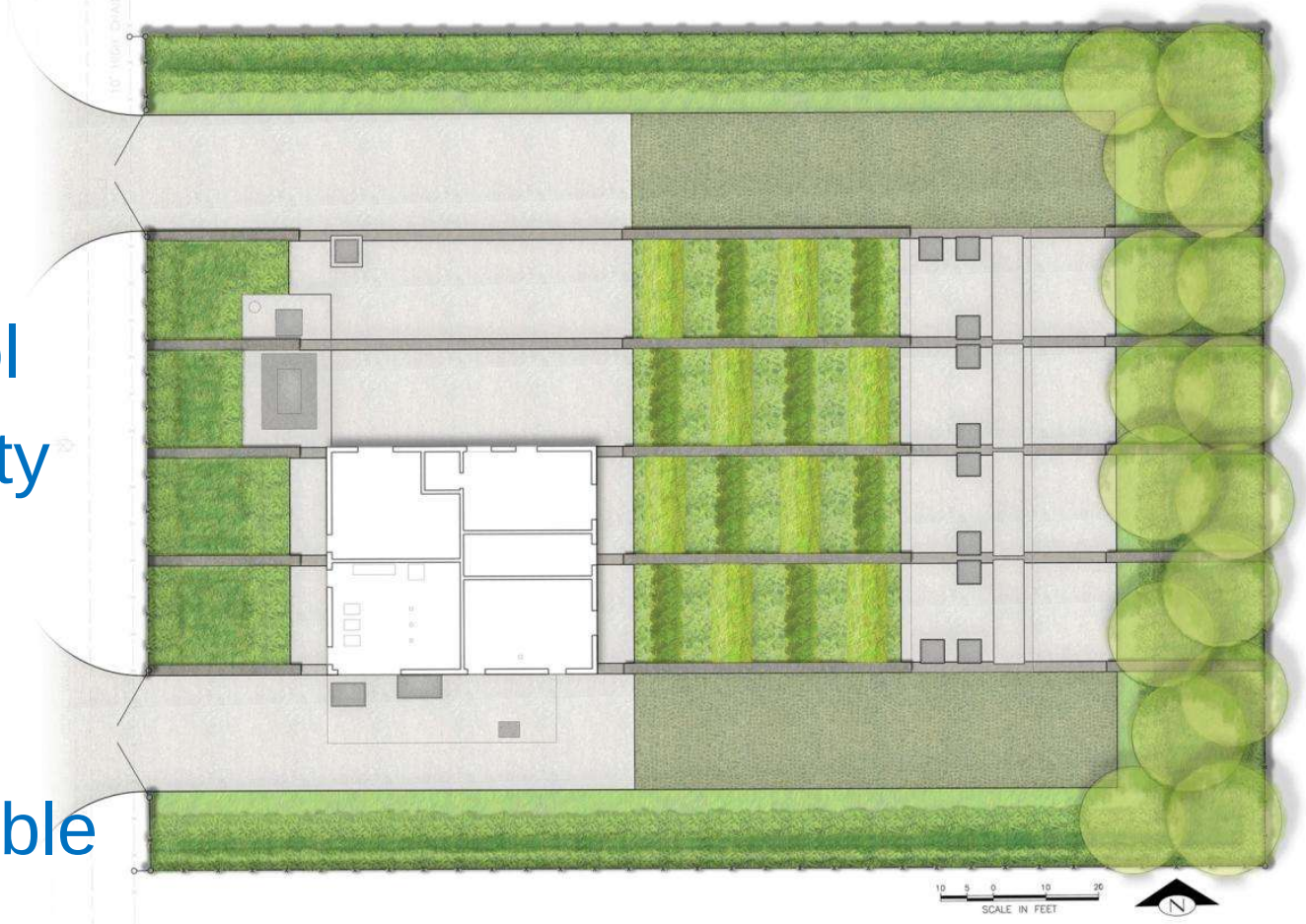
- Carbon removal at odor control vault
- Tank cleaning

Service Truck

- Carbon placement at odor control vault
- Routine maintenance

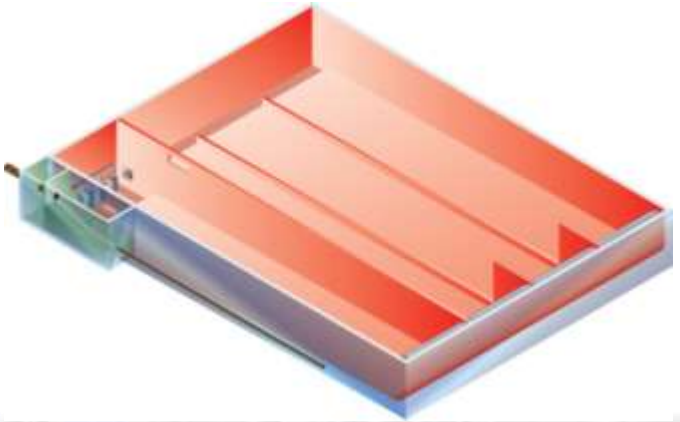
Stormwater Management

- 21,600 SF of new impervious surface
- Requirements
  - Flow control
  - Water quality treatment
  - GSI to the maximum extent feasible



Incorporating Sustainability in Facility Design

- Tank configuration reduces cleaning and water use
- Pump design reduces energy use
- Stormwater design maximizes on-site infiltration of stormwater
- Maximizing existing conveyance system capacity reduced required tank and building size



Site Vision

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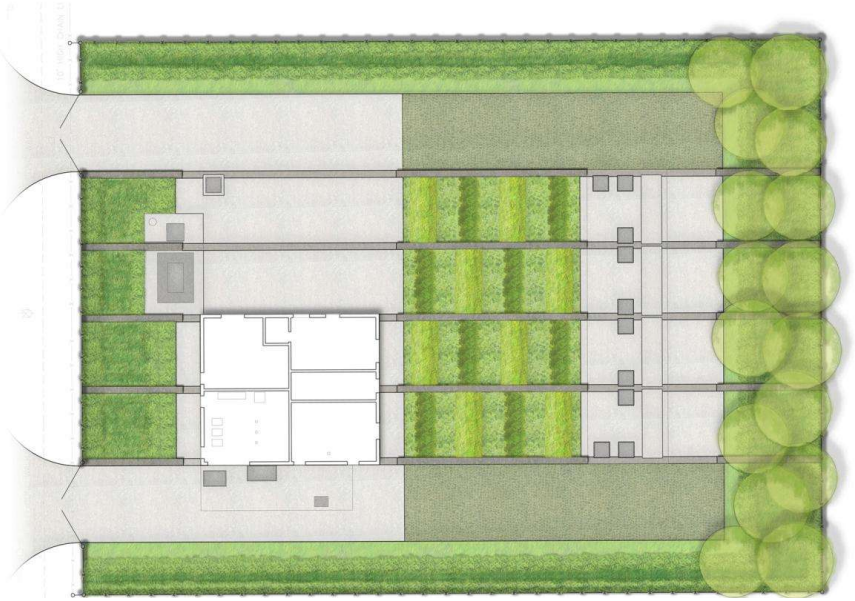


Landscape Concept

Architectural Concept

Guiding Principles: Architecture

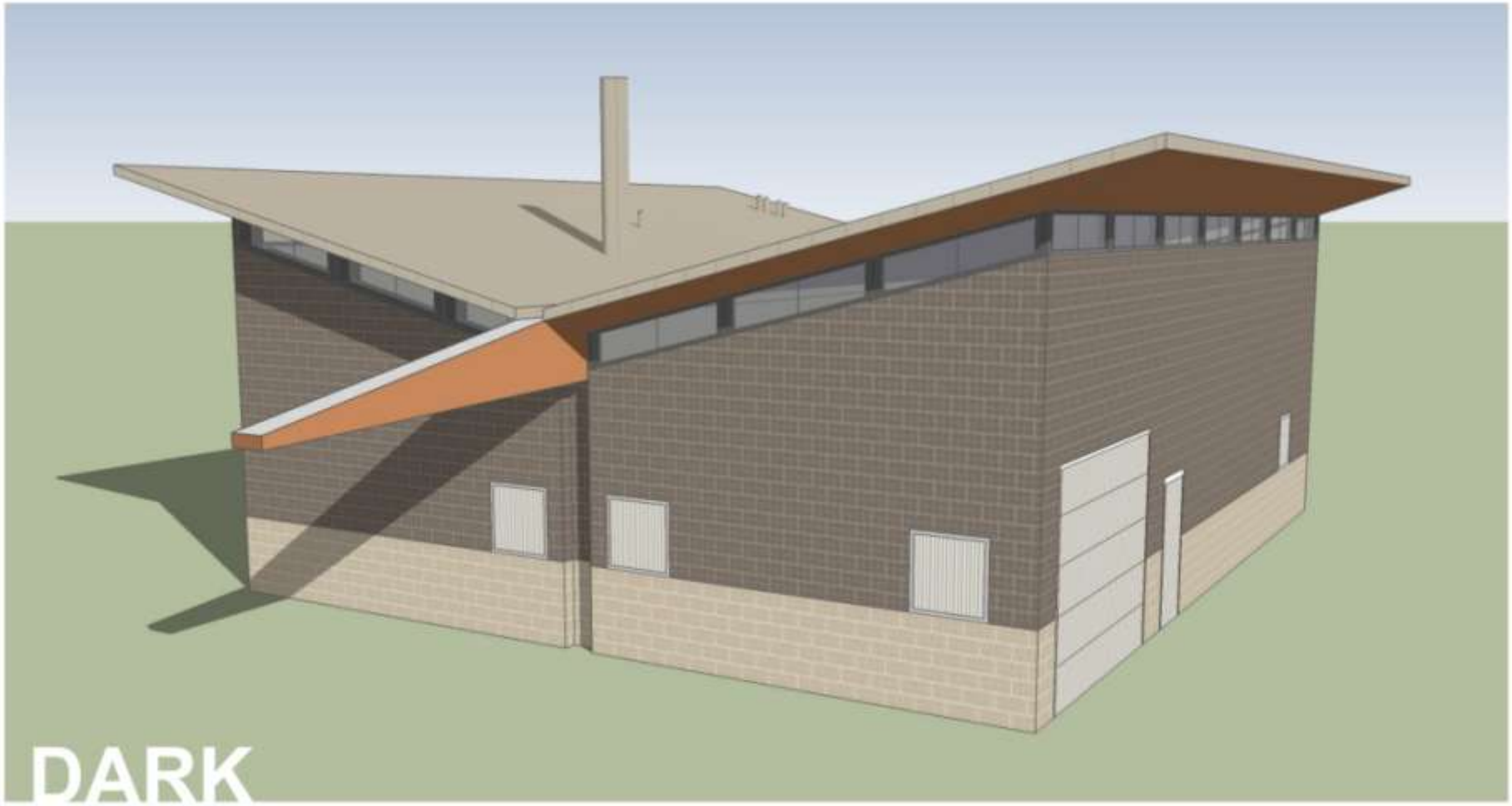
- Limit building height and visual impact
- Use natural and muted color palette and materials
- Specify durable and low maintenance materials
- Harmonize building with landscape design
- Emphasize WTD mission of protecting water quality
  - Utilize roof to collect and direct rainwater
  - Integrate custom gutter as educational feature

Building Concept

- Building aligns with bays to integrate building and landscape design
- Roof form collects and center gutter directs rainwater to the west for infiltration
- Visible expression of sustainable water management

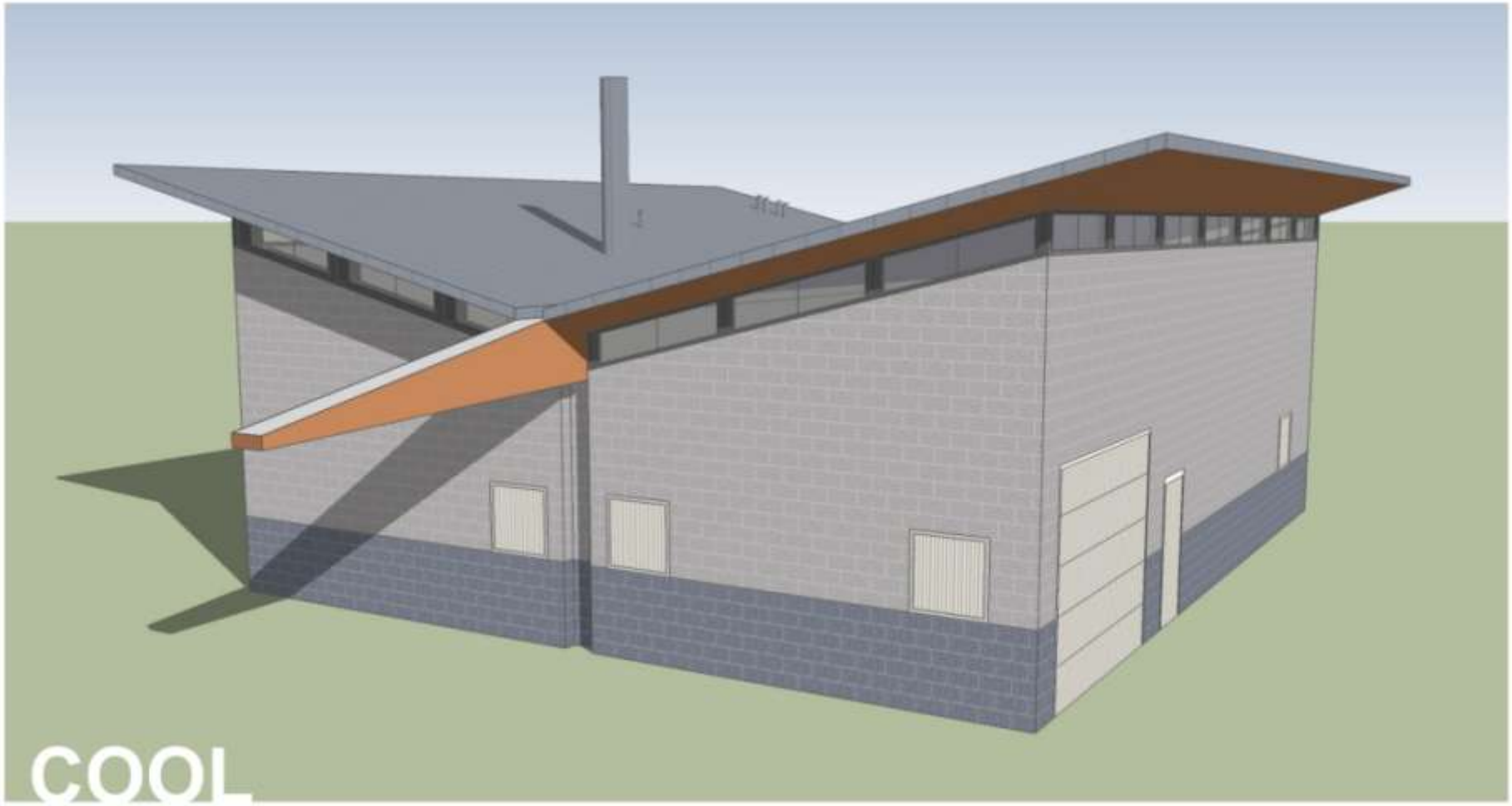
The use of the color green on the roof evokes a parklike setting and is complemented by neutral wall colors.

ROOF	Hemlock Green
WALL	Sandstone
BASE	Rose Brown



The use of a muted, darker wall color allows the building to be less prominent, while showcasing the unique gutter.

ROOF	Parchment
WALL	Rose Brown
BASE	Sandstone



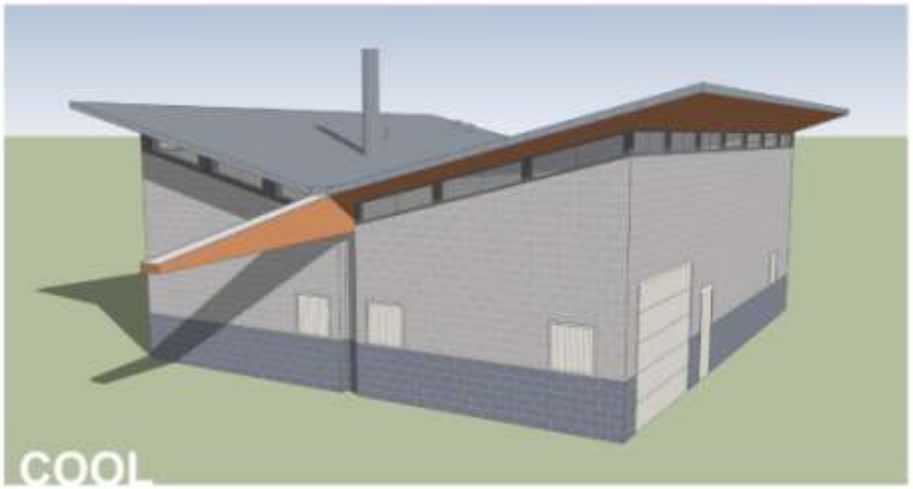
The use of gray tones creates a cool feel, reminiscent of water and winter skies, that is offset by the gutter feature.

ROOF	Old Town Gray
WALL	Natural
BASE	Charcoal

The use of a light colored wall surface appears clean and bright, while being anchored by the strong dark base and coordinating roof.

ROOF	Zinc Gray
WALL	Castle White
BASE	Mountain Brown

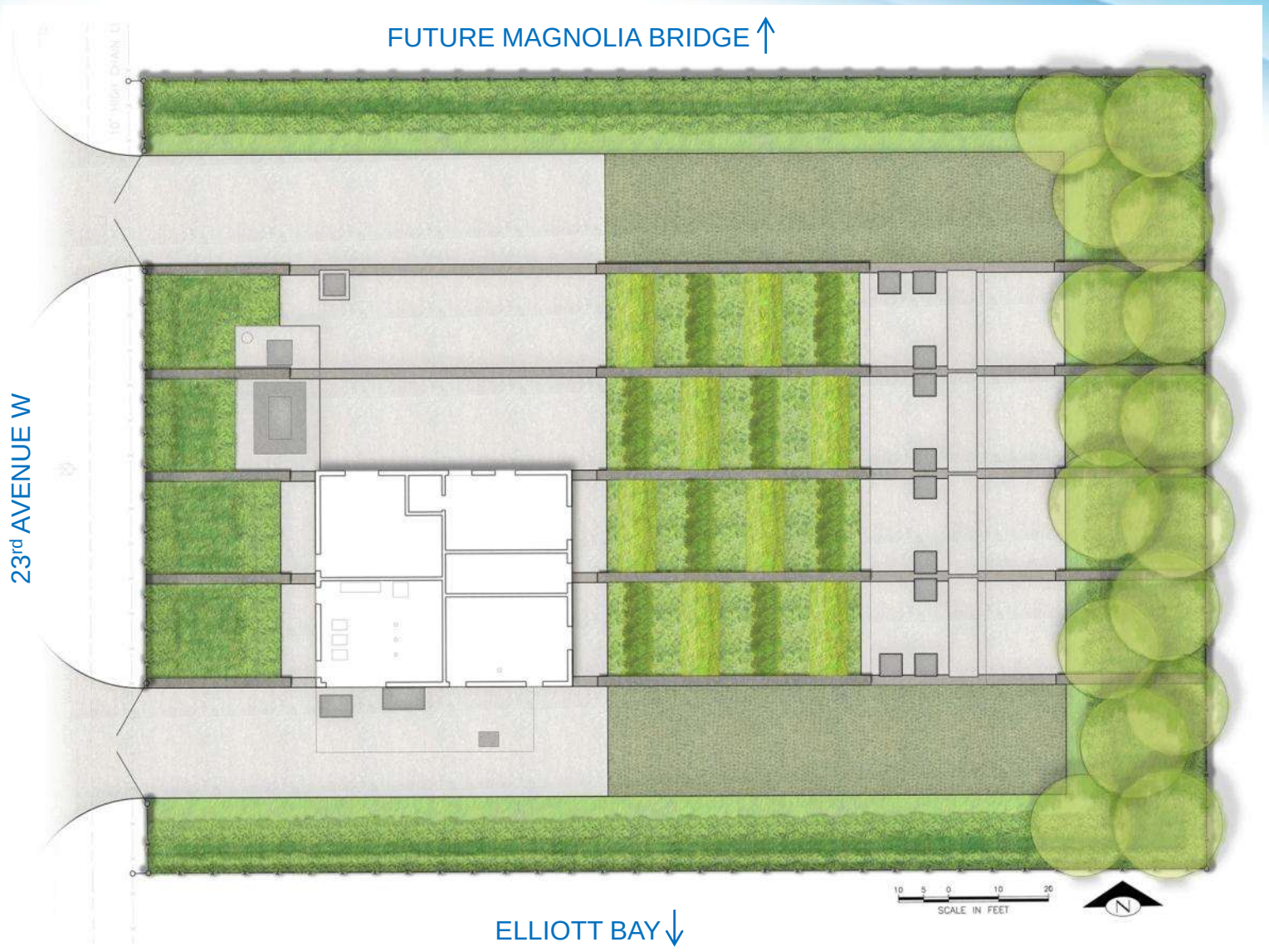
Thoughts?



Landscape Guiding Principles

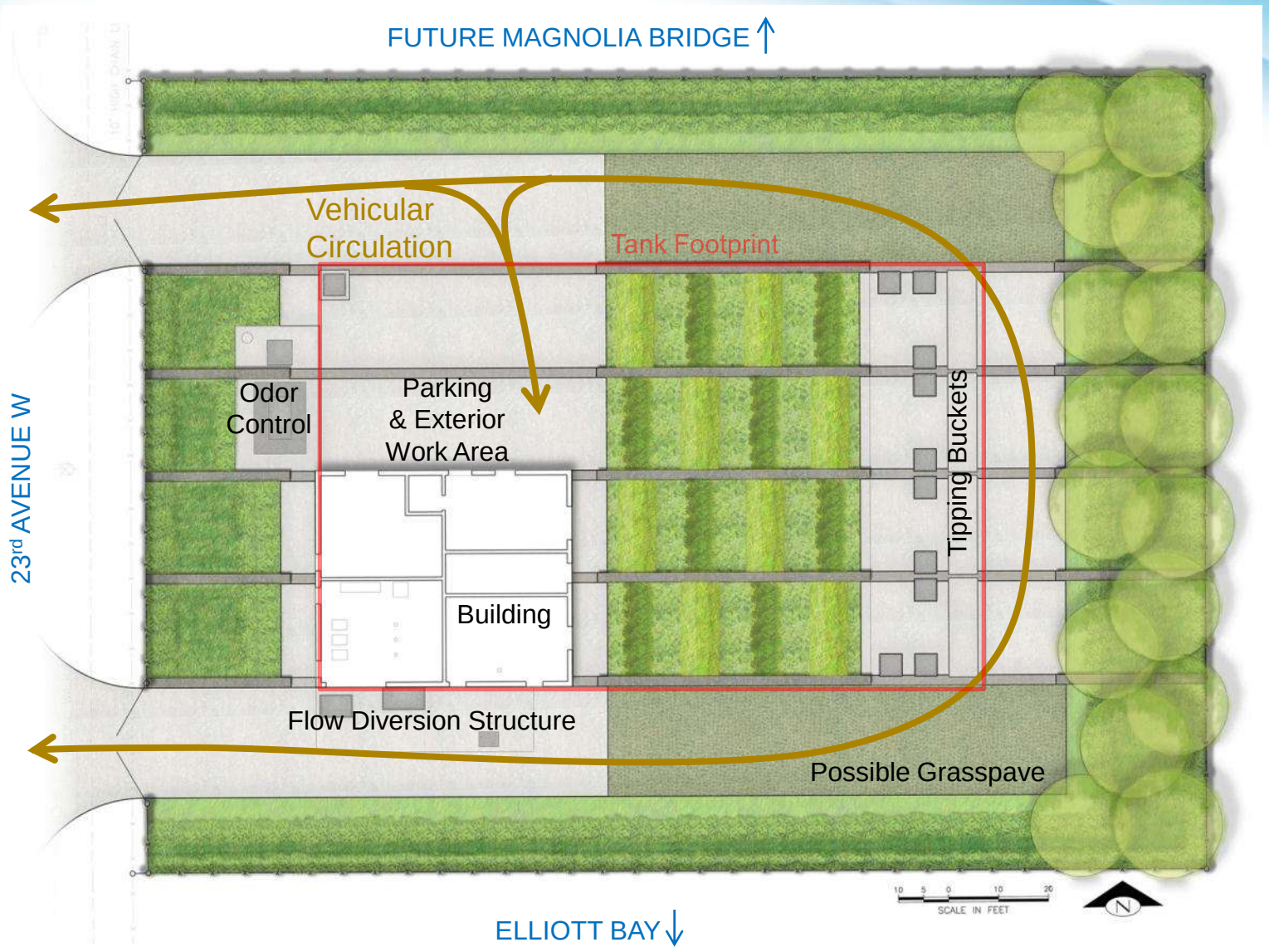
- Consider sightlines and views towards Puget Sound
- Develop an engaging design that is compatible with future adjacent use
- Balance vision with cost-effective solutions for implementation and maintenance
- Incorporate sustainable, wildlife-friendly design
- Meet City green stormwater infrastructure (GSI) requirements
- Meet County and City landscape design guidelines for:
  - low maintenance
  - drought tolerant plantings
  - use of native plants

Landscape Concept

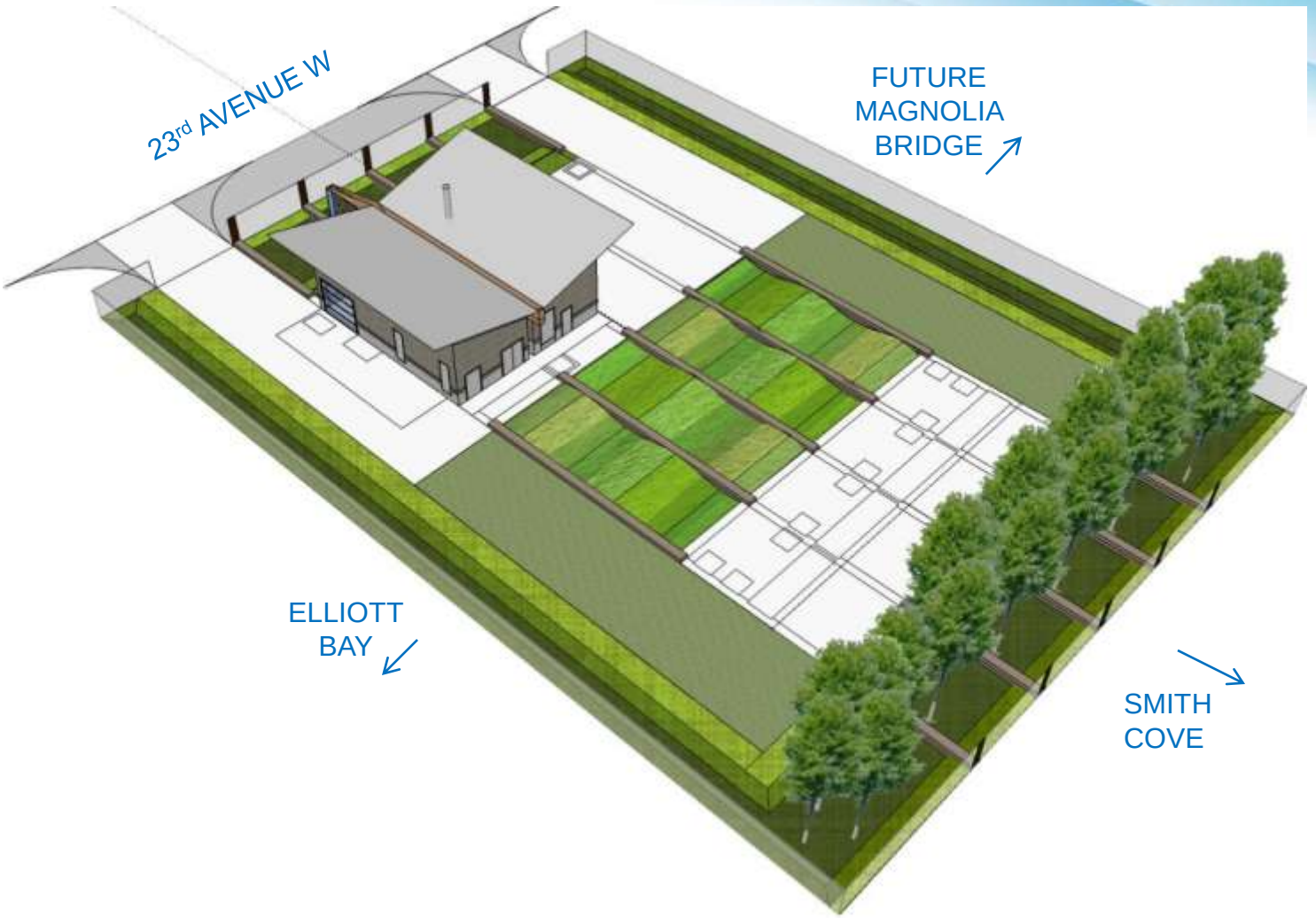


- **Bays**
- **Filters**
- **Frames**

Program and Circulation



Birdseye View



Bays

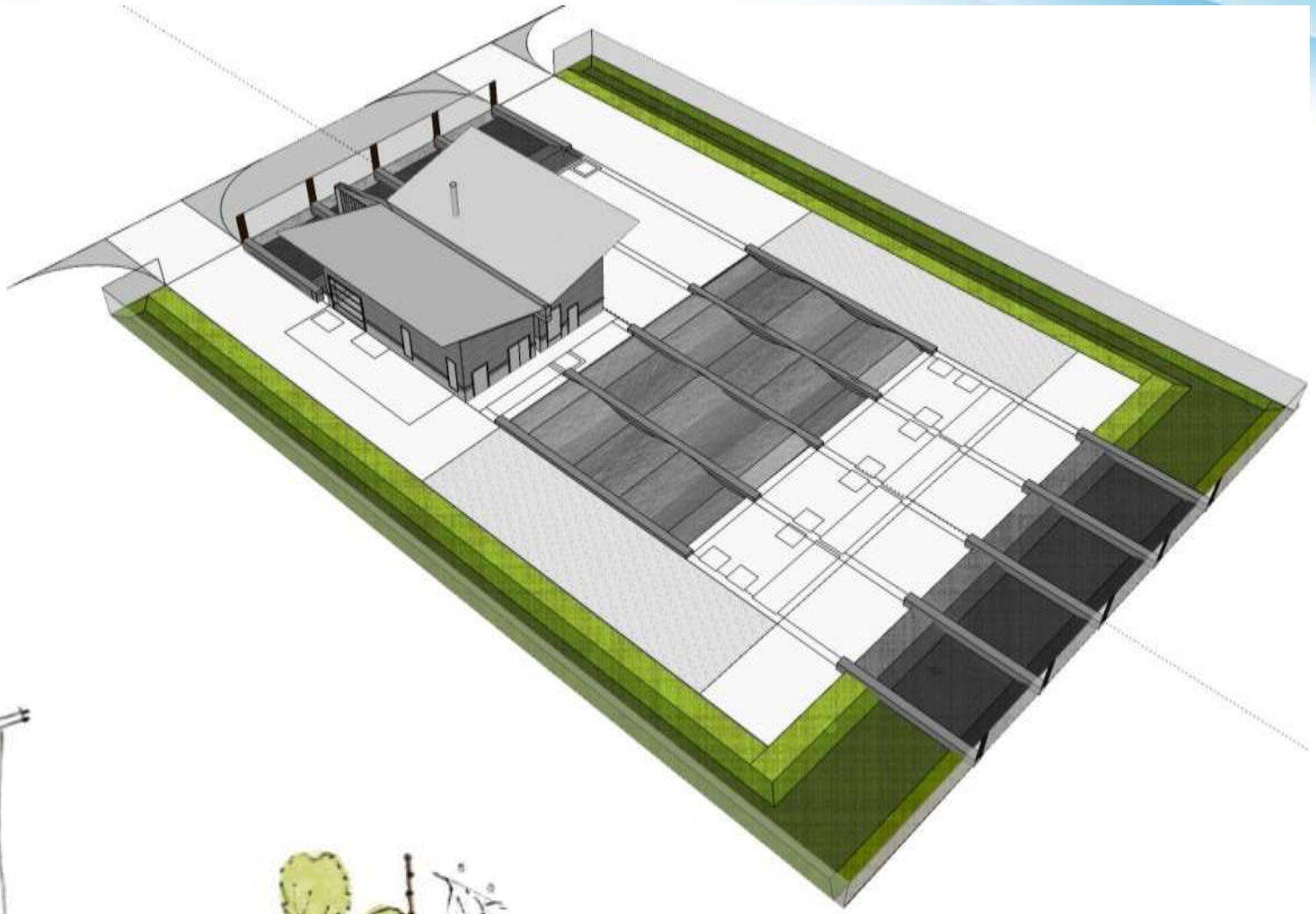
Gabions - Olympic College, Bellevue, WA

Evergreen huckleberry

Shrubby cinquefoil

Dune wildrye

Filters



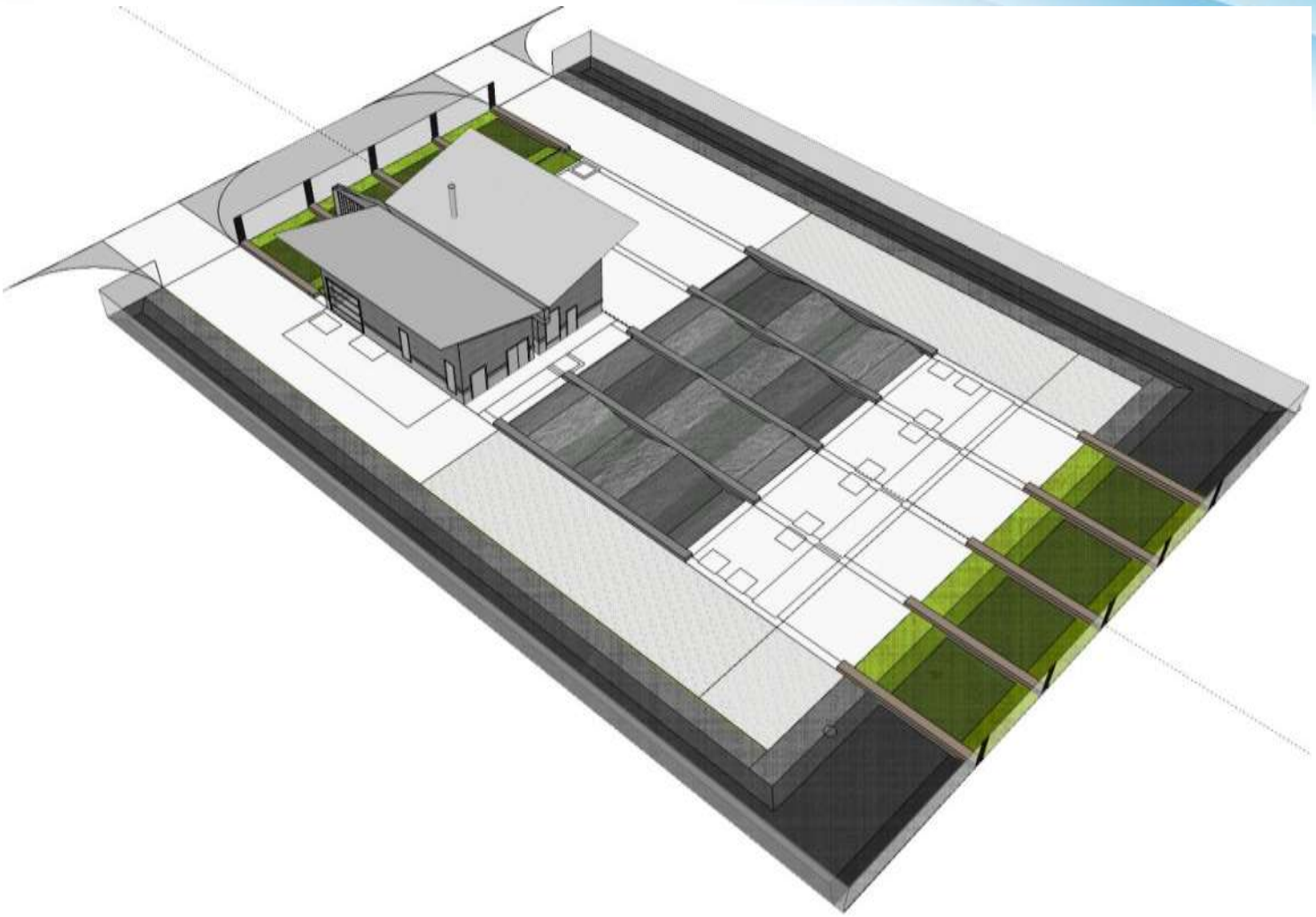
Western honeysuckle

Pacific ninebark

Slough sedge

Redtwig dogwood

Frames



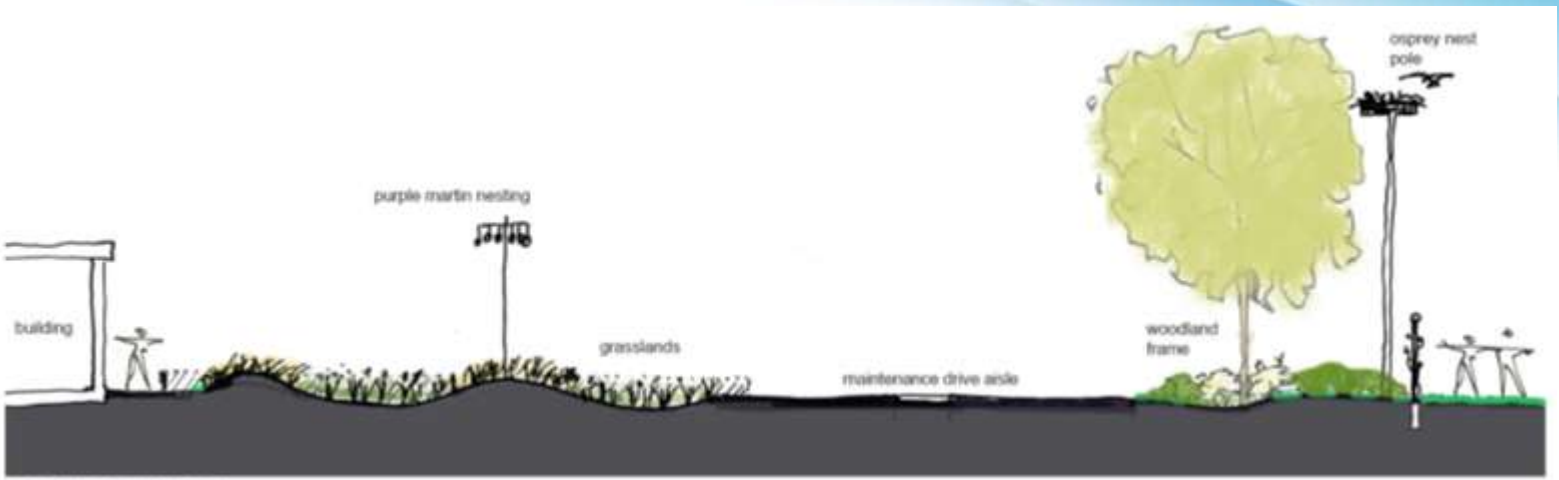
Sword fern

Cascara

Western redcedar

Shore pine

Frames



SECTION LOOKING NORTH

purple martin nesting

purple martin nesting

osprey nest pole

Fence Options from 6/13 Meeting

- Facility fenced for both public and O&M safety
- Criteria:
  - Discourages climbing
  - Height = 8’
  - Visually permeable
  - Low maintenance
- Added benefit includes sheltered area for wildlife in a busy area

Basic

Abstract

Supergraphic

Narrative

Fence: Chain Link

- Basic 1-1/4” chain link discourages climbing, allows views into site

Fence: Other Possible Materials

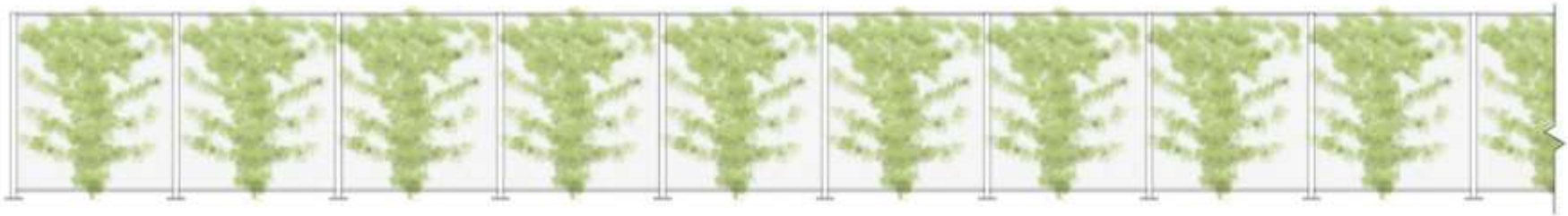
Mesh

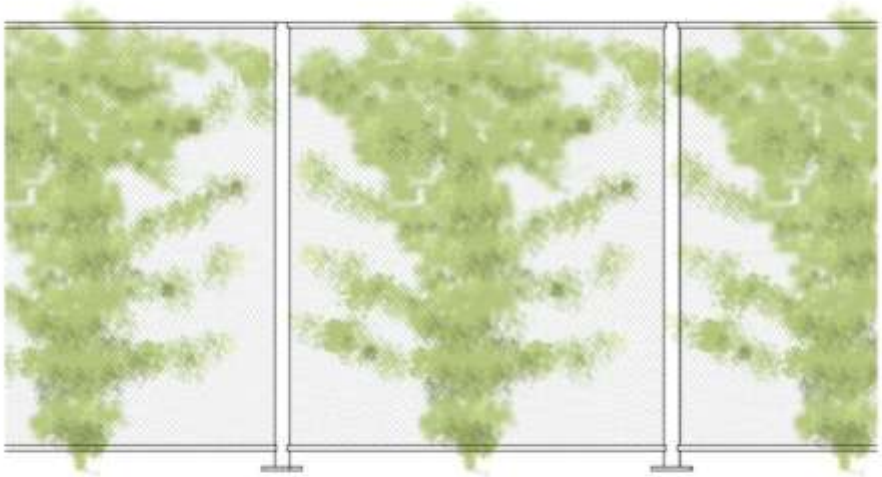
Vertical Rods

Fence: Framing Panels

- Interpretive or contextual graphics incorporated into panels above gabion ends

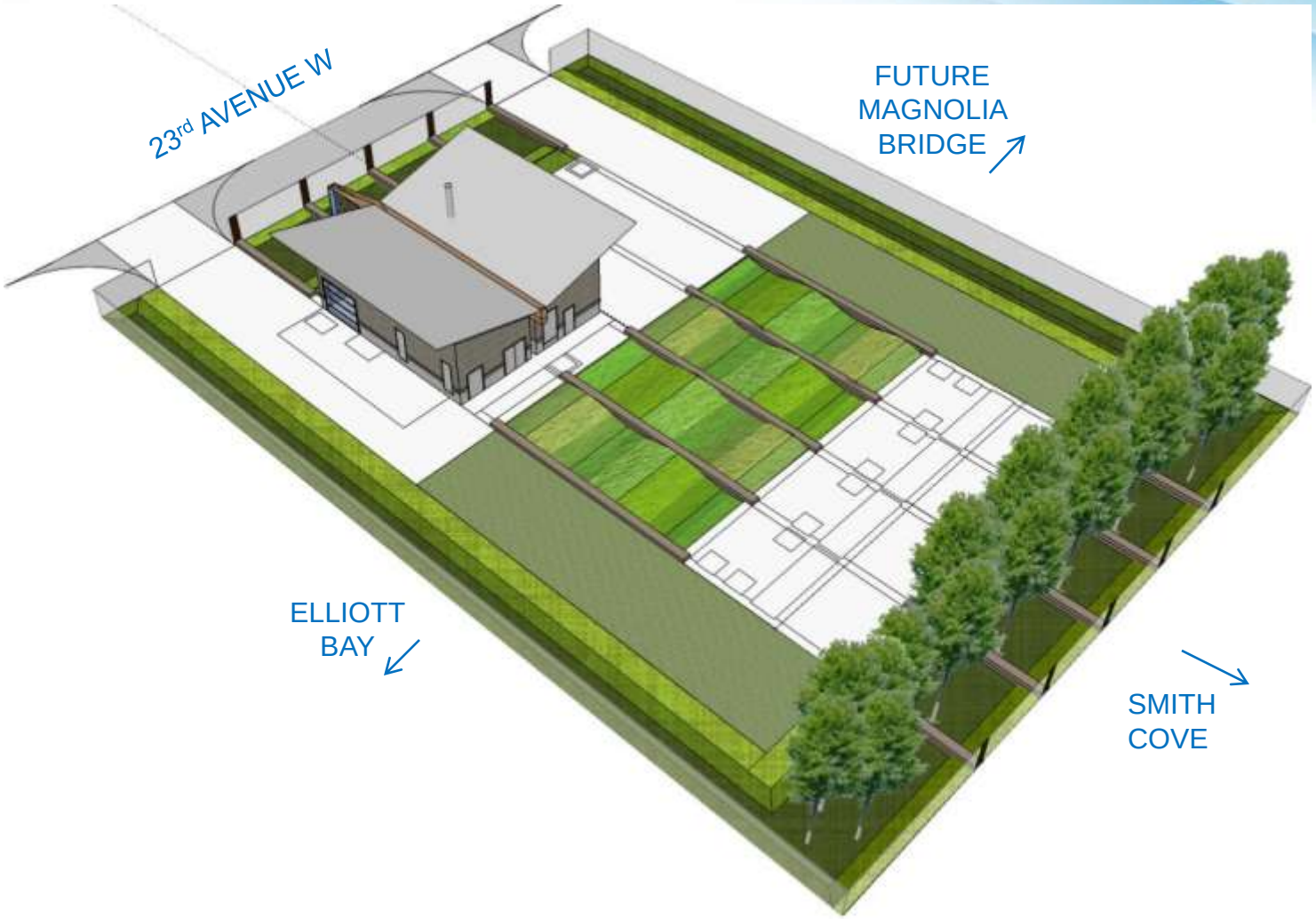
Fence: Climbing Vines





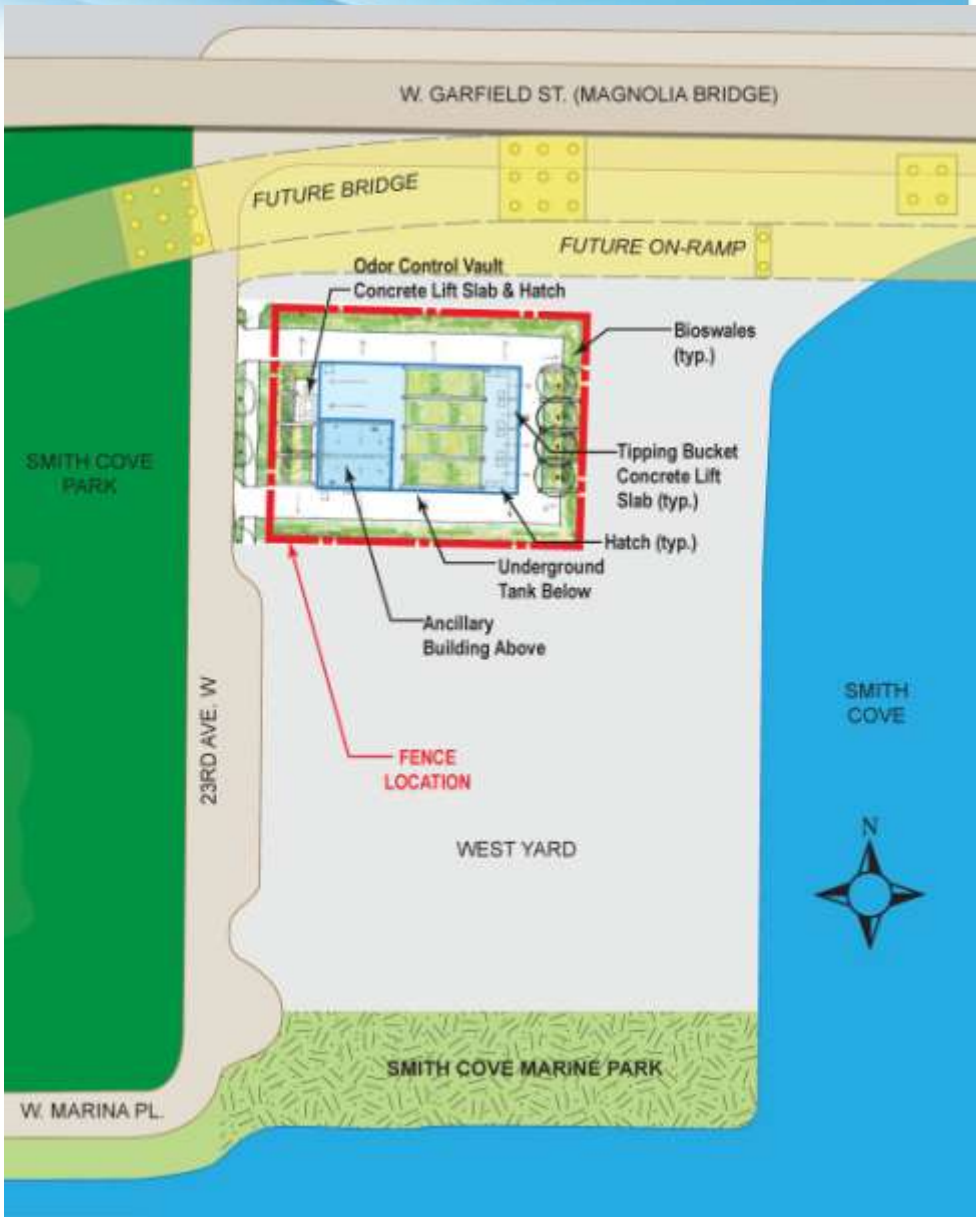
- Climbing vines could provide additional screening, visual interest, and habitat value

Birdseye View



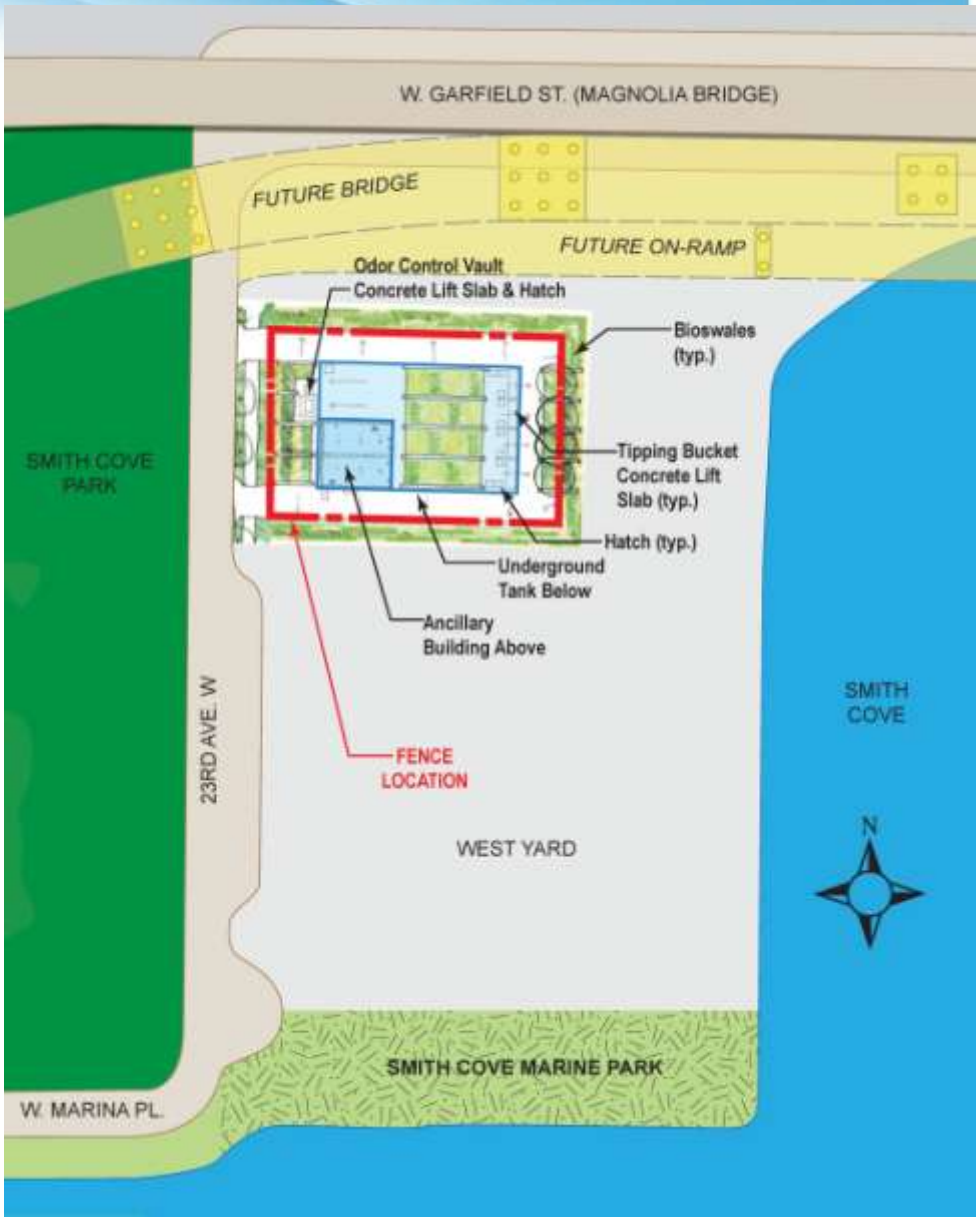
Thoughts?

Fence Concept — Industrial Location



Fence — Potential Location with Surrounding Park— Alternative #1

Fence line indicates location once surrounding property is developed as a city park. Final fence location would be determined in consultation with City of Seattle Parks Department and community input at the time the property is being developed as a city park.



Fence — Potential Location with Surrounding Park— Alternative #2

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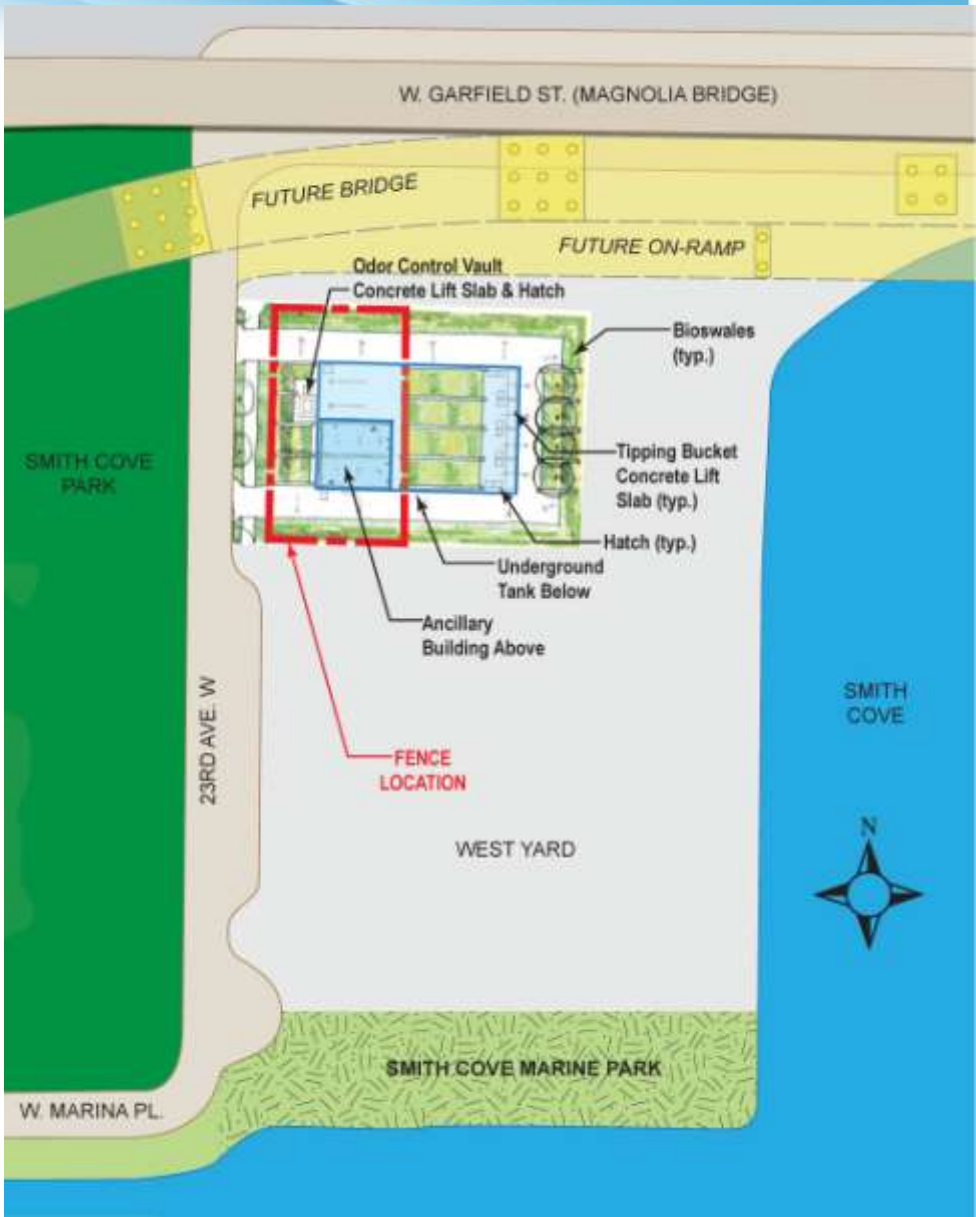

Fence — Potential Location with Surrounding Park— Alternative #3

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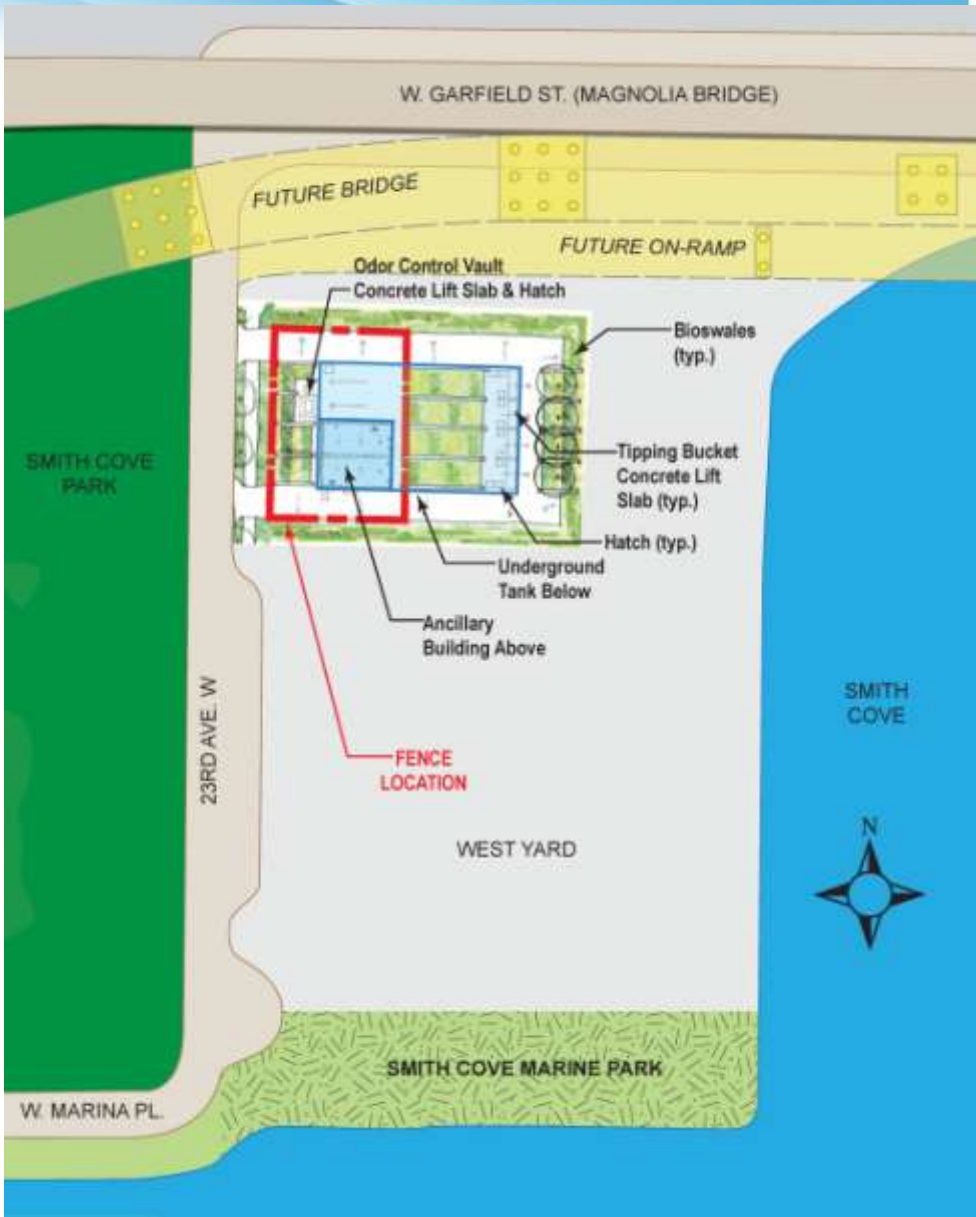

What's Next for the Community?

- Continued discussions on evolving issues
  - Fence configuration
  - Site lighting
  - Restoration on 23rd Avenue West
  - Others?
- Meetings with project neighbors and community groups as requested
- Meeting on conveyance and tank construction in December 2012

Questions?

Open house

- *Talk with the team*

Contact us:

Website:
www.kingcounty.gov/environment/wtd/Construction/Seattle/SMagnoliaCSOStorage

Monica Van der Vieren:

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