Clean Water Plan

Making the Right Investments at the Right Time

Regional Water Quality Committee

June 2, 2021

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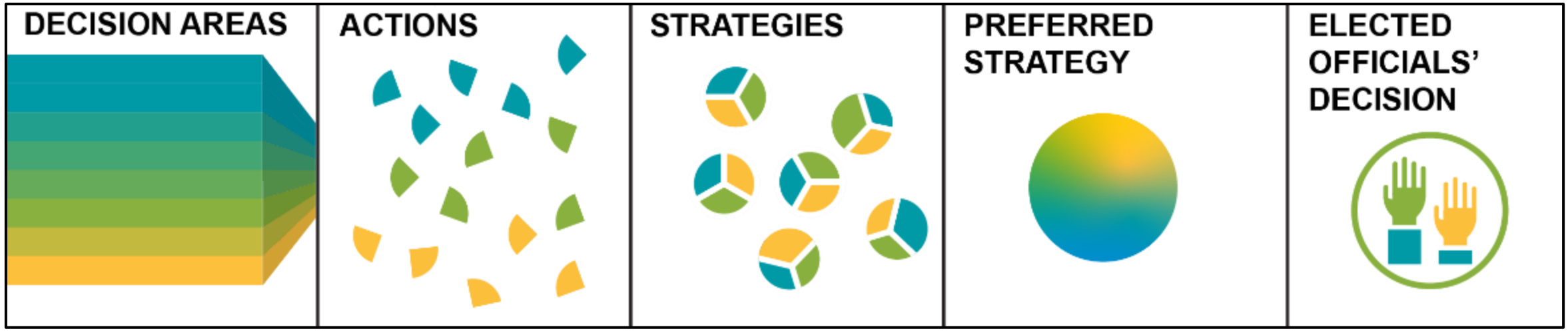
Clean Water Plan Planning Process Overview



Action: A specific program or set of projects that addresses one of the Decision Areas.

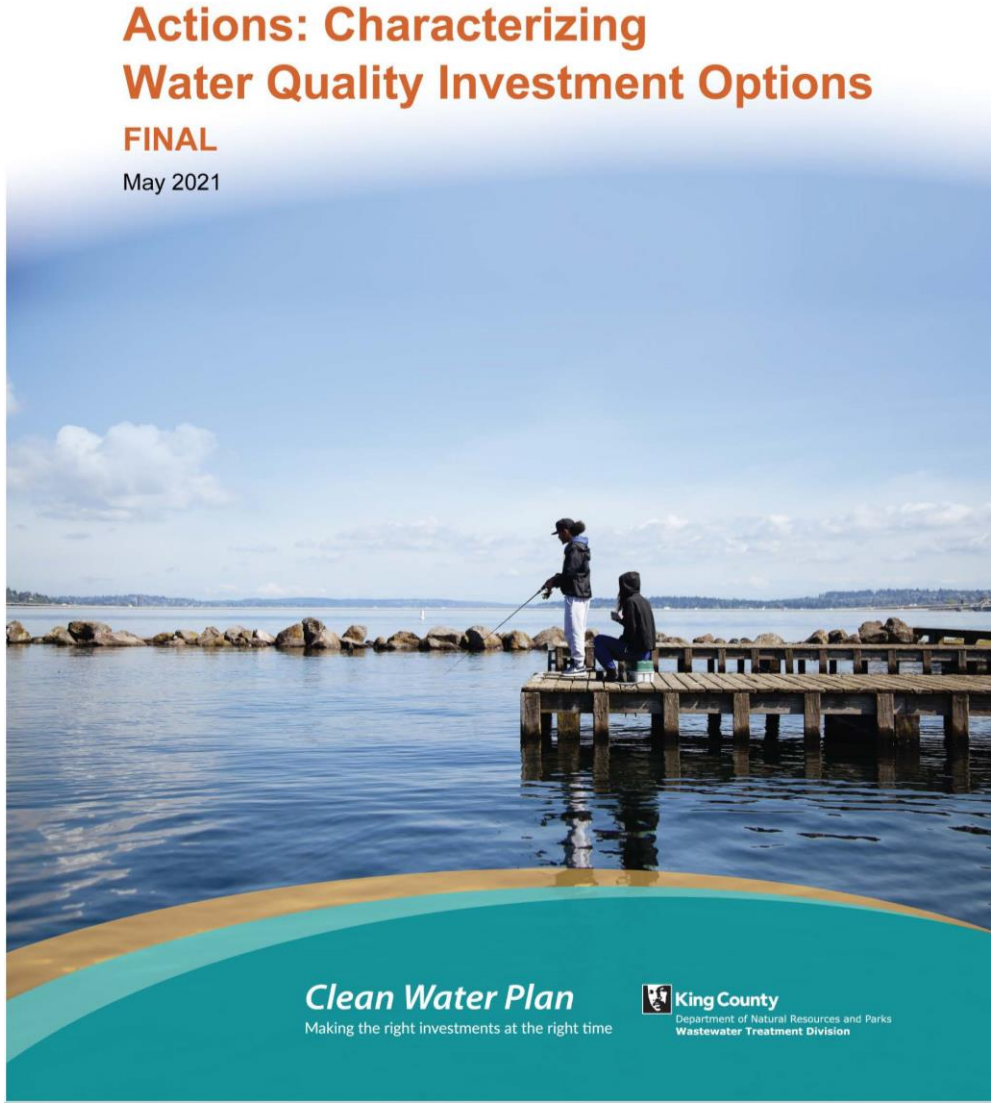
Actions are not standalone solutions, but building blocks that will be shaped and combined in different ways to form Strategies.

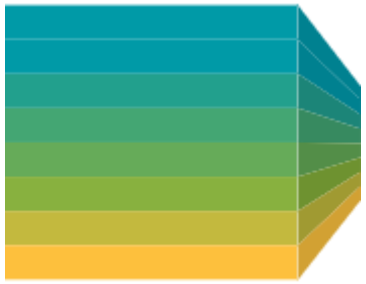
Strategy: A group of multiple Actions.

Each Strategy reflects a complete water quality investment approach the County could take for water quality and the regional wastewater system.

Engagement with the Region on Actions

- Elected Officials Workshops
  - March 31
  - May 21
- Technical Document
  - ***Actions: Characterizing Water Quality Investment Options***
- Technical Workshops
  - April 20: Wastewater Treatment
  - May 13: Wastewater Systems Operations and Health
  - May 25: Wet Weather Management





Exploring a Range of Actions Within Each Decision Area

Wastewater Treatment

What treatment plant and wet weather facility investments should be made?

Pollution Source Control and Product Stewardship

Are there more efficient or effective methods to address pollutants of concern than wastewater treatment?

Today's Discussion

Wet Weather Management

What approach should be taken to address stormwater and combined sewer overflows in King County's system?

Today's Discussion

Wastewater Conveyance

What are the best investments in collections systems to ensure sufficient capacity and improve system condition?

Asset Management, Resiliency, and Redundancy

What investments should be made to care for an aging regional wastewater system and protect the investments that have been made?

Legacy Pollution

What are the opportunities to address legacy pollution?

Today's Discussion

Resource Recovery

How should King County recover resources in wastewater?

Finance

How will regional water quality investments be financed?

Wet Weather Management, Legacy Pollution, and Pollution Source Control Policy Considerations – Existing Policies

Metropolitan Functions - King County Code 28.86

- **Wastewater Treatment**
  - Treatment plant policies (TPP).
  - Conveyance policies (CP).
  - I/I policies (I/IP).
  - **Combined sewer overflow control policies (CSOCP).**
  - Biosolids policies (BP).
  - Water reuse policies (WRP).
  - Wastewater services policies (WWSP).
  - Water quality protection policies (WQPP).
  - Wastewater planning policies (WWPP).
  - Environmental mitigation policies (EMP).
  - Public involvement policies (PIP).
  - Financial policies (FP).
  - Reporting policies.

Wet Weather Management and Legacy Pollution Policy Examples:

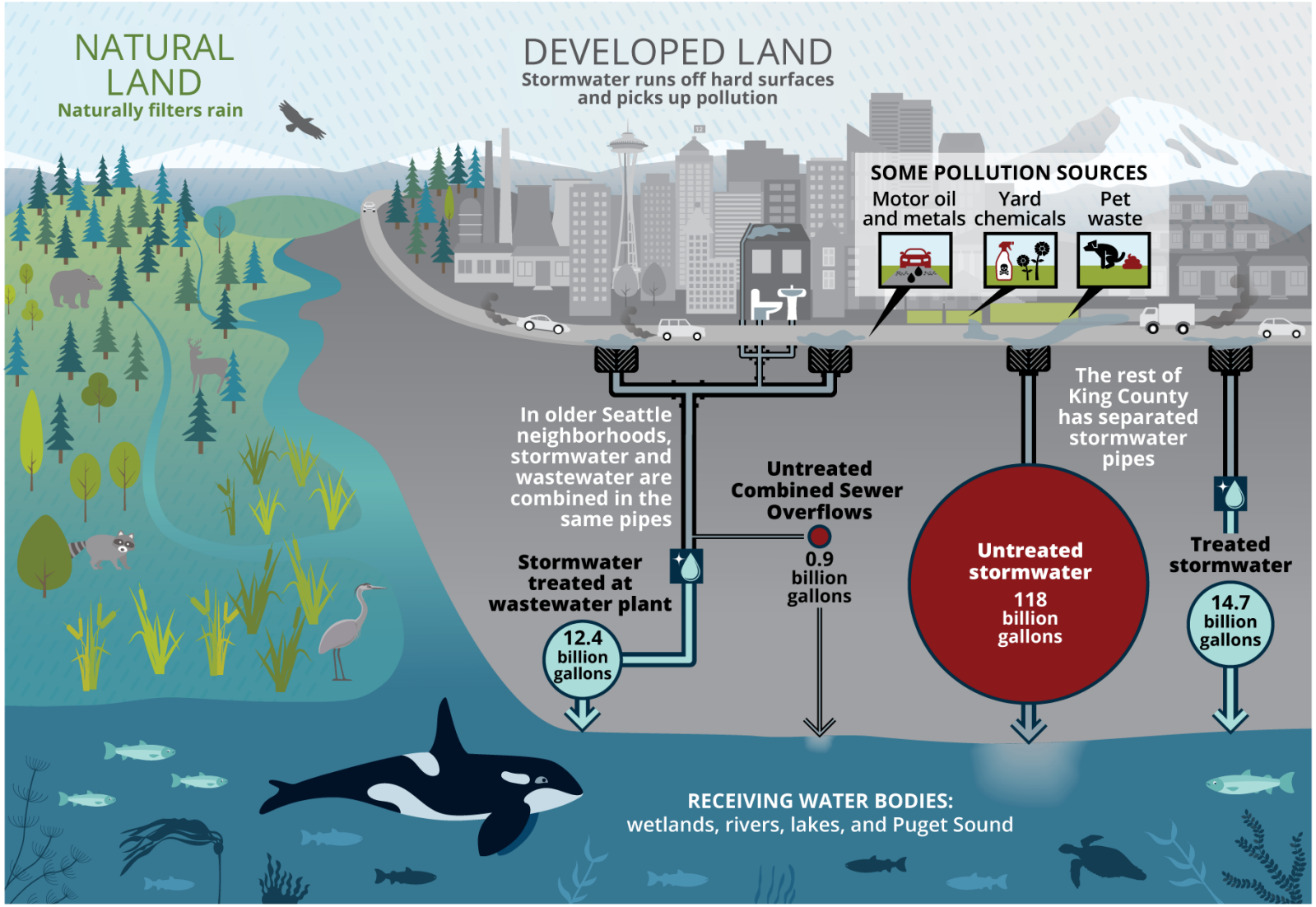
- **CSOCP-1**: "King County shall plan to control its CSO discharges by the end of 2030..."
- **CSOCP-7**: 'King County shall consider implementing green stormwater infrastructure projects to control CSOs…"
- **CSOCP-9**: "King County shall implement its long-range sediment management strategy…"

Existing Pollution Source Control policies, rules, and regulations in KCC 28.84.060

Wet Weather Management Decision Area

King County

What happens to the rain that falls each year in King County?



Wet Weather Management Actions

- Expanded Stormwater Treatment at Existing Wastewater Facilities
- Regional Stormwater Facilities Program
- Regional Stormwater Retrofit Program
- CSO Program – Current CSO Long-Term Control Plan Implementation
- CSO Program – Extended CSO Control Implementation

Expanded Stormwater Treatment at Existing Wastewater Facilities

- Why explore
  - In many areas, stormwater drains directly to water bodies with no treatment
  - At times, some capacity available in regional wastewater system
- Conceptual components
  - Untreated runoff from small to medium storms diverted from stormwater systems to existing wastewater treatment facilities
- Water quality
  - Reduces stormwater flows and wide range of pollutants
  - Resulting loads shift to Puget Sound (plant outfall)
- Conceptual program planning estimate (order of magnitude over 40-years)
  - $0.21B to $0.53B for capital infrastructure
  - $0.02B to $0.05B for administrative, operations, maintenance
  - Somewhat scalable

Regional Stormwater Program Actions

- Regional Stormwater Facilities Program
  - New stormwater management and treatment where none (or substandard) currently exists
  - Includes regional stormwater treatment facilities and green stormwater infrastructure
  - Focused on public land and the right-of-way
- Regional Stormwater Retrofit Program
  - Manage stormwater at its source
  - New stormwater retrofit infrastructure in areas developed before recent stormwater codes
  - Provide incentive program for stormwater controls on private property (e.g., rain gardens, bioretention, permeable pavement, cisterns, etc.)
  - Create partnerships with property owners for installation and maintenance

Example green stormwater infrastructure
Image source: Tacoma Environmental Services

Cistern collecting runoff from a roof

Regional Stormwater Program Actions (cont.)

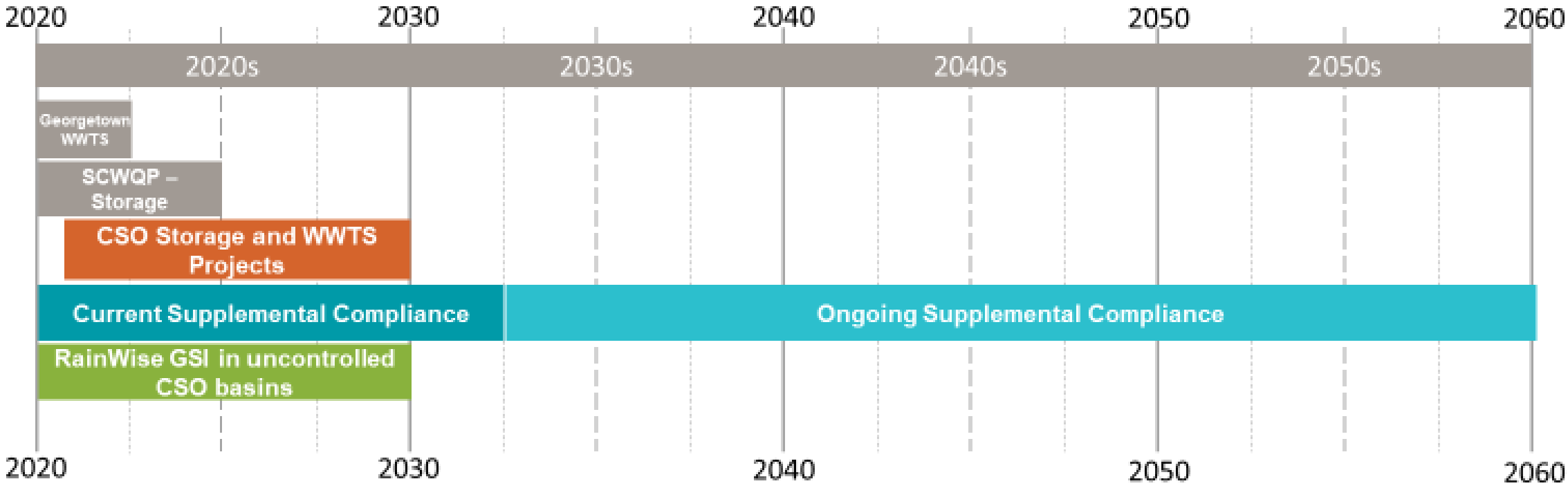
- Water quality
  - Reduces stormwater flows and a wide range of pollutants
  - For example:
    - Up to 90% total suspended solids and toxics
    - Up to 70% metals and bacteria
- Scalable and geographically flexible
- Partnership and collaboration opportunities for implementation and cost sharing

Combined Sewer Overflow Control and Treatment Actions

- Why explore
  - Bring each of County's 39 CSO locations into compliance with the Washington State standard
  - Renegotiate timelines for projects and establish new requirements via Consent Decree
- Conceptual components
  - Construct increased conveyance, storage, green infrastructure, optimization, water quality, and CSO treatment
  - Minimize CSOs by increasing treatment
  - Maintain control status at controlled CSOs

HLKK WWTS = Hanford, Lander, Kingdome, King Wet Weather Treatment Station

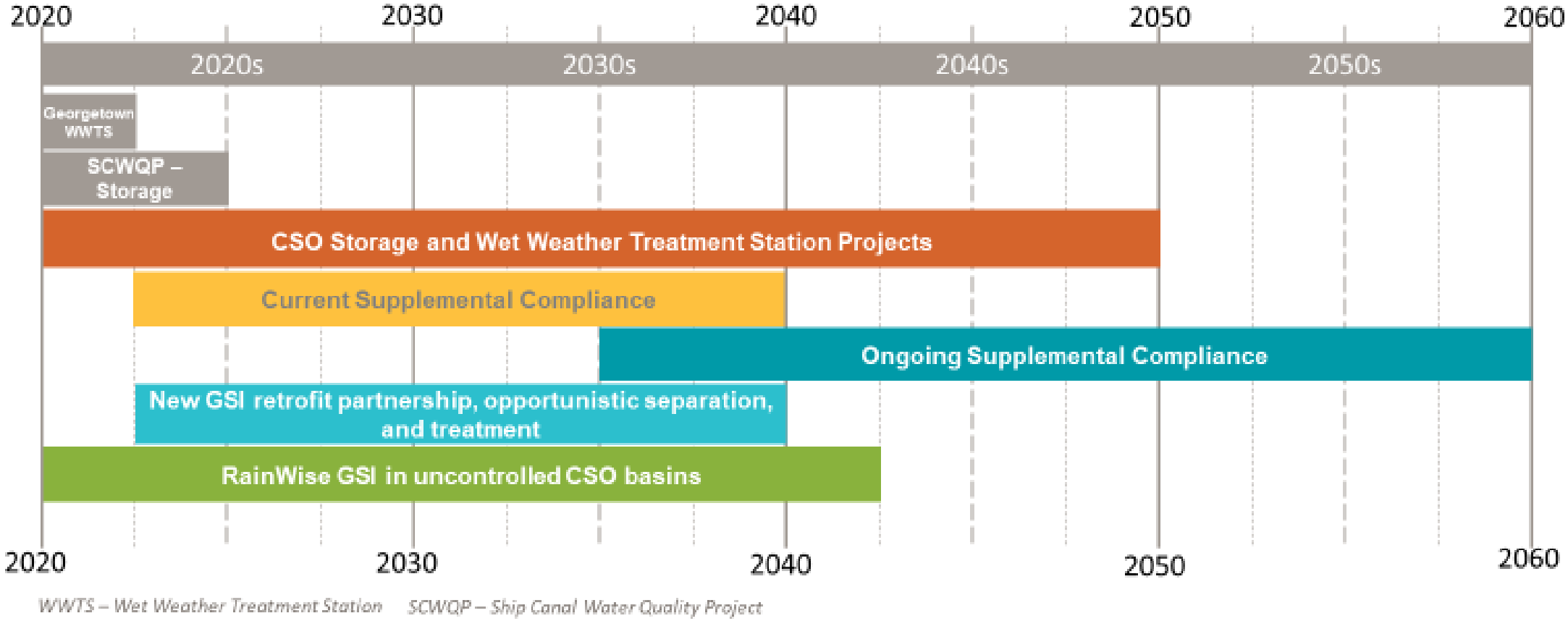
CSO Program – Current CSO Long-Term Control Plan Implementation



WWTS – Wet Weather Treatment Station *SCWQP – Ship Canal Water Quality Project*

- Conceptual program planning estimate (order of magnitude over 40 years)
  - $4.4B to $11B for new CSO storage and treatment facilities
- Water Quality
  - Fecal coliform removal is generally associated with limited, short duration CSO events

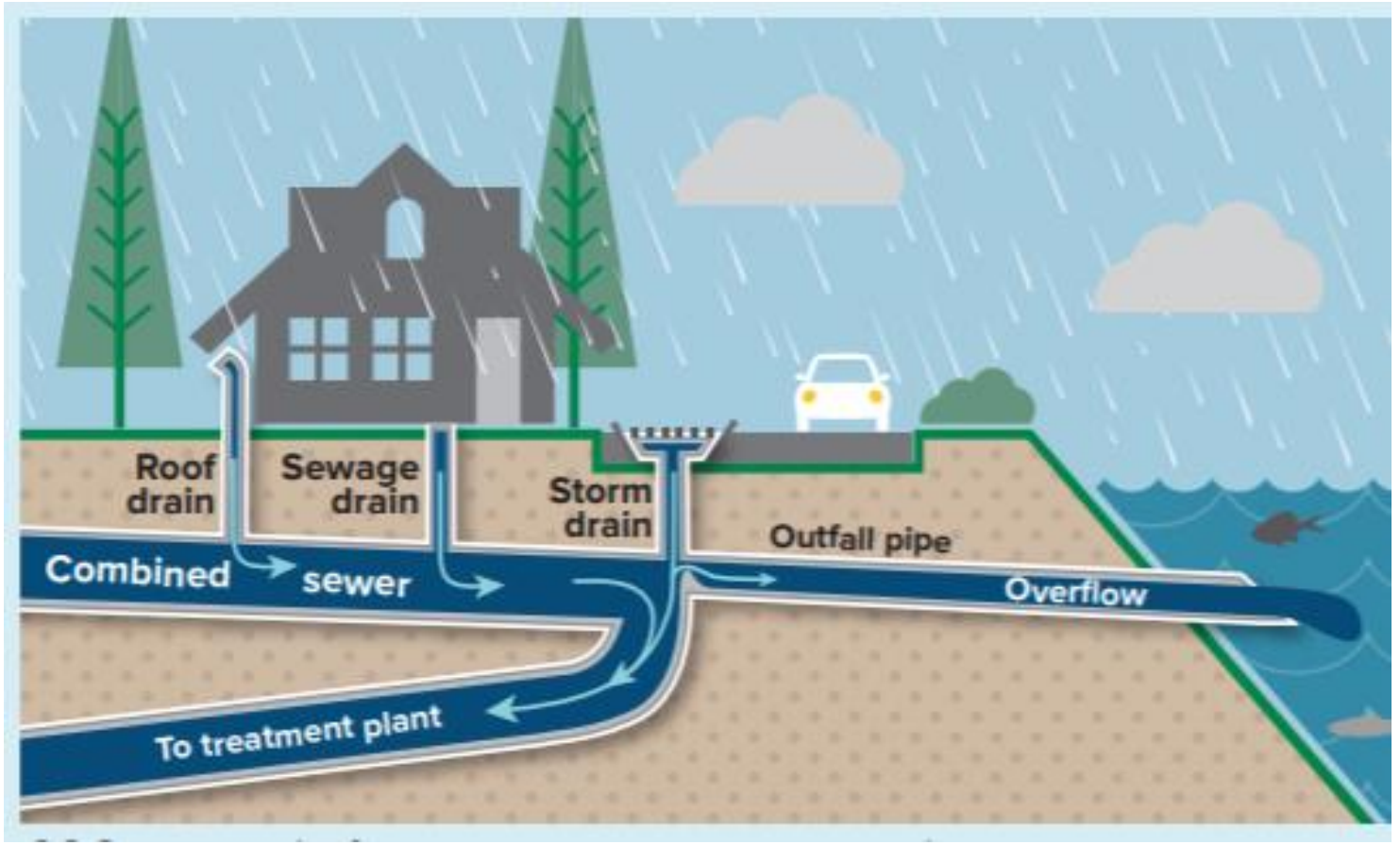
CSO Program – Extended CSO Control Implementation



WWTS – Wet Weather Treatment Station *SCWQP – Ship Canal Water Quality Project*

- Conceptual program planning estimate (order of magnitude over 40 years)
  - $3.3B to $8.4B for new CSO storage and treatment facilities
- Water Quality
  - Fecal coliform removal is generally associated with limited, short duration CSO events

Wet Weather Management – Questions and Discussion



Legacy Pollution Decision Area

Legacy pollutants refers to contaminants that have been left in the environment by historical sources.

"Grab sample" from the Upper Reach of the Lower Duwamish
Image source: Windward Environmental LLC

Creosote pilings are a source of legacy pollution
Image source: *The News Tribune*

Examples are a discharge from an old industry that has since left the area and ongoing leaching of pollutants from historical structures.

Sediment Management Program – Current or Adjusted plan Implementation

- Why explore
  - Reduce pollution sources
  - Clean up historically underserved areas
- Conceptual components
  - Address potential sediment contamination from WTD CSOs
  - Conduct sediment monitoring of 6 CSOs at 5 locations
  - Resolve any natural resource damages legal claims
- Key considerations
  - Some projects may be accelerated
  - Community and public outreach, inter-agency collaboration critical to success
  - Cleanup investigations have long durations

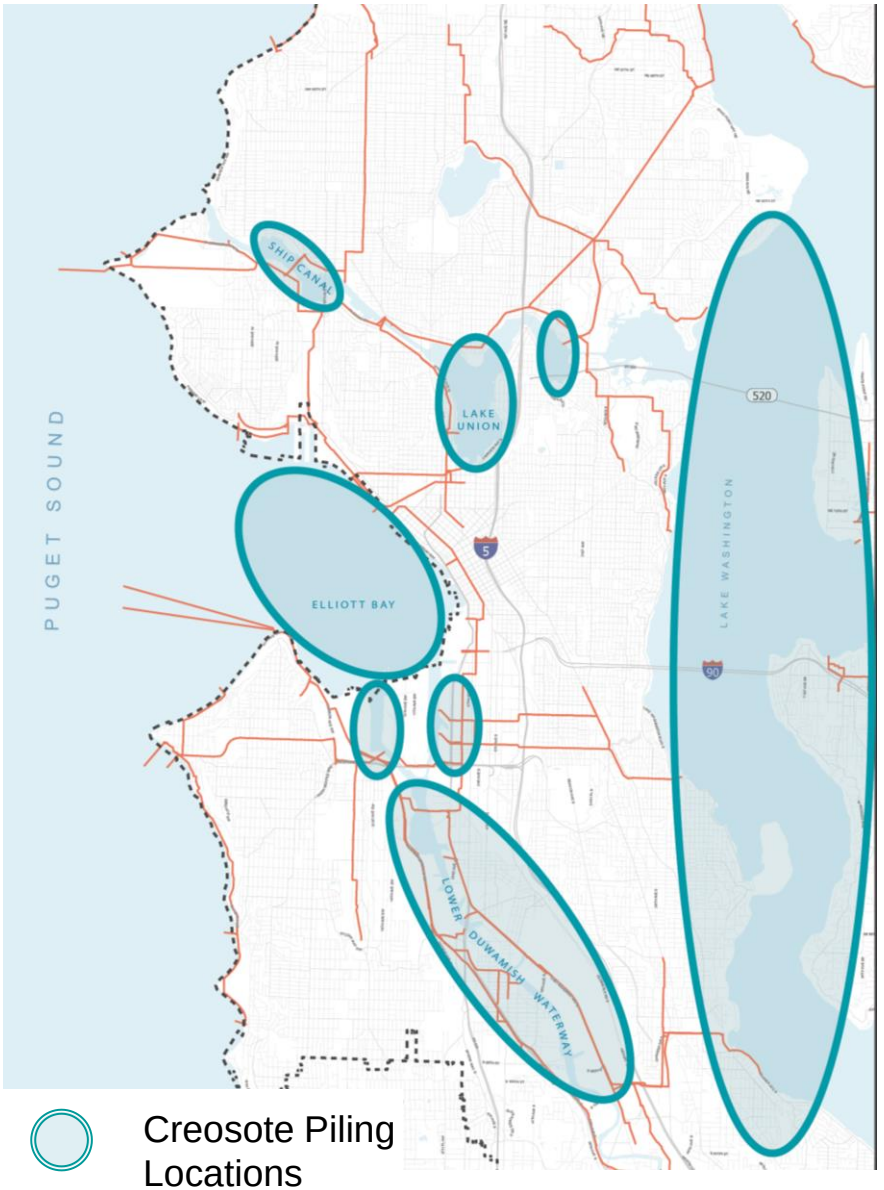
Sediment Management Program – Current or Adjusted plan Implementation (cont.)

- Characterization
  - Focused mainly in Lake Union/Ship Canal and Duwamish Waterway
  - Expected to remove metals, PCBs, and PAHs
  - Site specific
  - Vary based on extent of monitoring, evaluation, source control, and specific sediment cleanup activities

Contaminated sediment impacts the safety of edible fish
Image source: Seattle-King County Public Health

Sediment Management Program – Expanded Sediment Remediation and Additional cleanup

- Why explore
  - Target source pollution, polyaromatic hydrocarbons
- Conceptual Components
  - Remove creosote-treated wood structures
  - Clean combined sewer and stormwater pipes to remove sediment
- Characterization
  - Expected to remove metals, TSS, and PAHs
  - Site specific, cost and water quality impacts vary based on program extent



Legacy Pollution – Questions and Discussion

Pollution source control Decision Area

- Existing pollution source control programs
- Increased source control of existing pollutants and sources
- Source control for emerging pollutants and sources

Existing pollution source control programs

- Why explore
  - Continue to remove pollutants that are regulated with no changes to existing ordinances, regulations
- Conceptual components
  - Pre-treatment standards for industrial dischargers, education and outreach, safe disposal/take-back, bans, street sweeping
- Water quality
  - New pollutants not considered and some controlled pollutants still entering water bodies
- Conceptual program planning estimate (order of magnitude over 40-years)
  - O&M and administrative costs: $1B to $2.4B
  - Revenues: $0.7B to $1.8B

Increased source control of existing pollutants and sources

- Why explore
  - Remove more of the pollutants currently targeted
- Conceptual components
  - Increase reach of existing programs
  - Introduce more aggressive controls
  - Target new sources of pollutants
- Water quality
  - Effectiveness may be up to 50%-70% for targeted sources (lower when control measures are voluntary)
- Conceptual program planning estimate (order of magnitude over 40-years)
  - Costs to the County: additional $80M to $200M in administrative costs
  - Costs to the region: $300M to $700M (in additional street sweeping)

Pollutants and Sources Targeted
Copper from pesticides, algaecides, and anti-fouling boat paint
Trash and litter from improper disposal
Nutrients from agricultural runoff
Total suspended solids from soil erosion and plant/leaf litter
Zinc from galvanized materials

Source control for emerging pollutants and sources

- Why explore
  - Target pollutants with complex sources
  - Focus on pollutants without current regulations
- Conceptual components
  - Monitoring and modeling; research safer alternatives
  - Local, state, multi-state, and federal coordination
- Water quality
  - Load reductions unknown
  - Estimated effectiveness of removal ranges from 5% for education and outreach to 70% for product bans
- Conceptual program planning estimate (order of magnitude over 40-years)
  - Costs to the County: additional $165M to $400M in administrative costs
  - Costs to the region: $22M to $55M (in structural BMPs)

Pollutant and Sources Targeted
Bacteria
Unregulated phthalates
Microplastics and nanosilvers
Personal care products
PFAS
Antiozonants

Source Control Key Considerations

- Many control measures rely on behavior change; the onus is on consumers and industry
- Programs rely on partnerships and regional collaboration
- Some control measures will require legislative action (e.g., product bans, discharge thresholds)
- In many instances “low-hanging fruit” have been targeted
- Emerging pollutants require significant monitoring to understand sources, pathways, and impacts
- Not all pollutants are good candidates for source control

Pollution Source Control – Questions and Discussion

Thank you!

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