

Clean Water Plan

Making the right investments at the right time



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Regional Water Quality Committee Supplemental Briefing Document September 1, 2021

Introduction

This supplemental briefing document provides Regional Water Quality Committee (RWQC) members with an introduction to work-in-progress Clean Water Plan Strategies. The briefing packet is provided as a supplement to the PowerPoint presentation for the September 1, 2021 RWQC meeting.

Developing Work-in-Progress Strategies in the Clean Water Plan

At the July 7, 2021 RWQC meeting, the Clean Water Plan team provided a high-level briefing on how the Actions are moving forward into the Strategies, the objectives and major areas of emphasis of the Strategies in development, and what the team will do next to further explore and evaluate the Strategies and engage in a regional discussion with the public about them. More information on the work-in-progress Strategies is provided in this supplemental briefing document.

Development of the Work-in-Progress Strategies

The Clean Water Plan team identified these work-in-progress Strategies through reviewing the results of the Actions characterization, considering regional engagement and community input since 2019, and grouping the Actions to highlight distinct choices and opportunities for regional discussion. These elements are further described below.

Grouping Actions into Strategies – Overview of Strategies Under Development

At this point in the process, the Clean Water Plan team has identified the objectives and initial components of five work-in-progress Strategies (identified as Strategy A–E) that reflect different approaches the region could take to investing in the regional wastewater system and water quality, along with the related decisions that need to be considered. In the coming months, the team will continue to develop the specific details of these Strategies by molding and shaping the Actions to account for interrelationships, timing, and sequencing before fully analyzing the performance and outcomes of each Strategy.

As this process progresses, the team will share the Strategies and a characterization of their outcomes with RWQC. By developing these Strategies as distinct alternative approaches that reveal different choices and opportunities for the future of our region's wastewater system and water quality, King County intends to facilitate a robust regional conversation. This conversation is also intended to help our community clearly understand these choices and opportunities and to reveal, through regional engagement efforts, what preferences there are for the various outcomes that the distinct Strategies

provide. ***The County will use input from the regional discussion about the Strategies, along with technical analysis, to assemble a Preferred Strategy. The Preferred Strategy is likely to reflect a combination of approaches explored within the five Strategies.***

The five work-in-progress Strategies are connected to the drivers for the Plan (e.g., prepare for population growth, address aging infrastructure, meet regulatory requirements) and the community priorities identified during the planning process (e.g., avoid sewer system failures, keep rates affordable, and protect water quality). A full list of regional priorities is in [Attachment A](#). Once fully developed, the Strategies will allow the region to see different potential paths forward, such as making large investments in the first half of the planning horizon, modulating investments over the full planning horizon, focusing more investments in a particular Decision Area, and/or exploring new programs, policies, and practices. ***Some Strategies address the regional water quality and wastewater challenges by emphasizing traditional or conventional approaches (e.g., gray infrastructure, current regulatory timelines) and others explore alternative paths by emphasizing approaches that have been proven effective and implemented in other settings or regions (e.g., gray infrastructure combined with expanded green approaches, alternative compliance).*** Describing and evaluating the Strategies will be critical to demonstrate the value of—and need for—water quality and wastewater system investments prior to King County committing billions of dollars.

Overview of Work-in-Progress Strategies in the Clean Water Plan

To provide an overview of Strategy development to date, seven tables detailing the key objectives, areas of emphasis, and individual work-in-progress Strategies are included at the end of this document.

- **Table 1** summarizes “at-a-glance” current draft objectives of each work-in-progress Strategy.
- **Table 2** presents an overview of draft areas of emphasis for each Strategy by Decision Area (or Decision Area component). Shading within the table is used to delineate any changes to areas of emphasis for the approach indicated by that Strategy’s objective.
- **Tables 3 through 7** list the objectives of each individual work-in-progress Strategy, along with a summary of the major investments, the performance features explored, and the timing of major investments for the individual Strategy for the next 40 years broken down by Decision Area.

All Strategies would include regional treatment plant capacity expansion to address projected population growth. Asset management investments to address aging infrastructure (including pumps, pipes, and treatment plants) would also be consistent across the five Strategies, except for Strategy E, which would include enhanced investments in system resiliency. Note that Table 2 does not reflect detailed information related to sequencing of investments, investment levels, and geographic distribution of investments; these details will be included in future Strategy exploratory materials.

Table 1. Work-in-Progress Strategies: At-a-Glance Objectives

Note: All Strategies include regional wastewater treatment capacity expansion to address population growth and similar asset management investments, except Strategy E, which includes enhanced investments in system resiliency.

Strategy Descriptor	Strategy Objective
Strategy A	Meet regional wastewater system needs on current and anticipated regulatory timelines through continuation of operational, project, and organizational approaches consistent with historical practices. This Strategy emphasizes traditional/conventional gray infrastructure and compliance approaches.
Strategy B	Meet current and anticipated regional wastewater system needs over an extended timeline to moderate rate increases. Regional wastewater system and water quality investments would be sequenced and paced over the 40-year planning horizon to avoid cost spikes and short-term revenue pressure. This Strategy emphasizes incremental and predictable rate increases and traditional/conventional gray infrastructure approaches.
Strategy C	Explore potential to produce greater water quality benefits by drawing on alternative programs, projects, operational, and regulatory approaches that are proven effective in other settings and/or demonstrate potential to meet regional wastewater system and water quality needs. This Strategy emphasizes combining gray infrastructure with expanded approaches to: stormwater management, preventing clean rainwater from entering the sewer system, addressing historical pollution, and/or pollution source control that are geographically focused on areas most impacted and/or likely to experience improved water quality outcomes.
Strategy D	Explore potential to meet wastewater system and water quality needs through expanded focus on multi-benefit, resource recovery, and enhanced regional collaboration and partnership approaches. Wastewater system investments would include decentralized treatment and draw on approaches that expand the recovery of resources (recycled water, energy, nutrients) from wastewater. This Strategy emphasizes combining gray infrastructure with multi-benefit approaches that consider enhanced community benefits, decentralized and green stormwater management options, climate mitigation and adaptation, preventing clean rainwater from entering the sewer system, and addressing historical pollution.
Strategy E	Enhance the reliability and resiliency of the regional wastewater system by focusing investments on wastewater system health while generally maintaining or extending the timing of the existing approach for other regional wastewater system and water quality investments. This Strategy emphasizes asset management, earthquake retrofits, power systems reliability, climate impacts, and preventing clean rainwater from entering the sewer system.

Table 2. Work-in-Progress Strategies: At-a-Glance Areas of Emphasis

Notes:

- **Increased emphasis** – Decision Area has an increased implementation emphasis compared to existing program. For example, depending on Decision Area, emphasis may include new programs, expanded programs, additional projects, and/or faster implementation timeline.
- **Decreased emphasis** – Decision Area has a decreased implementation emphasis compared to existing program. For example, depending on Decision Area, emphasis may include lower design standard, modified program, and/or extended implementation timeline.
- **Existing program/approach** – Implementation of existing program or approach for Decision Area. Not applicable [n/a] is shown where existing program does not currently exist.
- Detailed information related to sequencing of investments, investment levels, and geographic distribution of investments is not included in the snapshot table below.

		Work-in-Progress Strategies				
		A	B	C	D	E
Wastewater Treatment	Regional Plant Treatment	N reduction to same level at each plant; New 4 th plant	N reduction to different level at each plant	N reduction to different level at each plant	Advanced treatment at South Plant to potable recycled water quality	Secondary treatment
	Regional Plant Capacity	Increased capacity for population growth	Increased capacity for population growth	Increased capacity for population growth	Increased capacity for population growth	Increased capacity for population growth
	Decentralized	n/a	n/a	n/a	Decentralized for new and re-development	n/a
	Water Quality Trading	n/a	n/a	N WQ trading for point & non-point source	n/a	n/a
Wet Weather Management	CSO	Control by 2030	Control by 2060	Extended timeline and/or alt. investments	Extended timeline and/or alt. investments	Control by 2060
	Stormwater	Existing approach	Existing approach	Regional stormwater facilities & GSI retrofit with WQ focus	Regional stormwater facilities & GSI with multi-benefit focus	Existing approach
Wastewater Conveyance	Peak flow standard	5-year peak flow design standard	5-year peak flow design standard	5-year peak flow design standard	5-year peak flow design standard	20-year peak flow design standard
	Infiltration & Inflow	Private side sewer inspections	Private side sewer inspections & peak flow limitations	Private side sewer inspections	Private side sewer inspections & peak flow limitations	Private side sewer inspections
Resource Recovery		Existing program	Existing program	Existing program	Expanded biosolids & energy programs	Expanded focus on energy reliability
Legacy Pollution		Existing program	Modified to match CSO approach	Expanded cleanup	Expanded cleanup	Modified to match CSO approach
Pollution Source Control		Existing program	Existing program	Increased control & product stewardship	Existing program	Existing program
Asset Management		Proactive asset renewal	Proactive asset renewal	Proactive asset renewal	Proactive asset renewal	Enhanced resilience

Table 3: Work-in-Progress Strategy A

Objective: Meet regional wastewater system needs on current and anticipated regulatory timelines through continuation of operational, project, and organizational approaches consistent with historical practices. This Strategy emphasizes traditional/conventional gray infrastructure and compliance approaches.

Decision Area	Summary of Investments	Performance Features Explored	Timing of Major Investments
Wastewater Treatment	<ul style="list-style-type: none"> Nitrogen reduction to same effluent level at each County regional treatment plant New 4th regional treatment plant Treatment capacity expansion to address projected population growth 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with reduced nitrogen discharge to Puget Sound 	<p>2020-2040</p> <ul style="list-style-type: none"> South Plant and Brightwater nitrogen reduction upgrades <p>2030-2040</p> <ul style="list-style-type: none"> West Point nitrogen reduction upgrades and capacity de-rating New treatment plant with nitrogen reduction in West Point service area <p>2020-2060</p> <ul style="list-style-type: none"> South Plant and Brightwater capacity expansion
Wet Weather Management	<ul style="list-style-type: none"> CSO control by 2030, primarily using wet weather treatment stations or storage Existing stormwater management approaches 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with wet weather treatment stations and storage facilities to control CSOs 	<p>2020-2030</p> <ul style="list-style-type: none"> CHLKK Wet Weather Treatment Station, University and Montlake CSO Storage Tunnel, and other projects to meet current Consent Decree timeline
Wastewater Conveyance	<ul style="list-style-type: none"> Infiltration and inflow reduction through point-of-sale private side sewer inspection program Delayed implementation of separated wastewater conveyance system capacity projects 5-year wastewater conveyance peak flow design standard (20% chance of overflow each year) 	<ul style="list-style-type: none"> Economic development and water quality impacts associated with implementing demand management through infiltration and inflow control and delayed implementation of wastewater conveyance system investments 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of a program requiring point-of-sale private side sewer inspection <p>2035-2060</p> <ul style="list-style-type: none"> Implementation of separated conveyance system capacity projects
Resource Recovery	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing resource recovery approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing resource recovery program approaches
Legacy Pollution	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing legacy pollution (e.g., sediment management) approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing legacy pollution program approaches
Pollution Source Control and Product Stewardship	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing pollution source control and product stewardship approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing pollution source control program approaches
Asset Management, Resiliency, Redundancy	<ul style="list-style-type: none"> Proactive asset management program that results in replacement and renewal of facilities and a minimal backlog of maintenance needs Resiliency investments, including earthquake retrofits and adaptive management to sea level rise 	<ul style="list-style-type: none"> Outcomes of improved regional wastewater system health on risk of regional wastewater system failures and associated impacts 	<p>2020-2060</p> <ul style="list-style-type: none"> Sustained asset management investment across the entire regional wastewater system

Notes:

Green = increased emphasis – Decision Area has an increased implementation emphasis compared to existing program.

Orange = decreased emphasis – Decision Area has a decreased implementation emphasis compared to existing program.

Teal = focus of investment(s) primarily occurs later than 2020's or ends earlier than 2060 within the Clean Water Plan 40-year planning horizon.

Table 4: Work-in-Progress Strategy B

Objective: Meet current and anticipated regional wastewater system needs over an extended timeline to moderate rate increases. Regional wastewater system and water quality investments would be sequenced and paced over the 40-year planning horizon to avoid cost spikes and short-term revenue pressure. This Strategy emphasizes incremental, predictable rate increases and traditional/conventional gray infrastructure approaches.

Decision Area	Summary of Investments	Performance Features Explored	Timing of Major Investments
Wastewater Treatment	<ul style="list-style-type: none"> King County utility-wide nitrogen reduction with different effluent levels at each County regional treatment plant, sequenced and paced over 40-year planning horizon Treatment capacity expansion to address projected population growth 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with reduced nitrogen discharge to Puget Sound 	<p>2020-2040</p> <ul style="list-style-type: none"> South Plant nitrogen reduction upgrades Sidestream nitrogen treatment at West Point <p>2040-2060</p> <ul style="list-style-type: none"> Brightwater nitrogen reduction upgrades <p>2020-2060</p> <ul style="list-style-type: none"> South Plant, West Point, and Brightwater capacity expansion
Wet Weather Management	<ul style="list-style-type: none"> CSO control through wet weather treatment stations and storage projects sequenced and paced over 40-year planning horizon Existing stormwater management approaches 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with wet weather treatment stations and storage facilities to control CSOs 	<p>2020-2030</p> <ul style="list-style-type: none"> West Duwamish Storage Tank and University Regulator Modifications <p>2030-2040</p> <ul style="list-style-type: none"> CHLKK Wet Weather Treatment Station, Belvoir Pump Station Modifications <p>2040-2060</p> <ul style="list-style-type: none"> University and Montlake CSO Storage Tunnel, Elliott West Wet Weather Treatment Station modifications
Wastewater Conveyance	<ul style="list-style-type: none"> Infiltration and inflow reduction through point-of-sale private side sewer inspection and peak flow limitation programs 5-year wastewater conveyance peak flow design standard (20% chance of overflow each year) Implementation of separated conveyance system projects paced to moderate rate increases 	<ul style="list-style-type: none"> Economic development and water quality impacts associated with implementing demand management through infiltration and inflow control and delayed implementation of wastewater conveyance system investments 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of programs requiring point-of-sale private side sewer inspection and peak flow limitations <p>2020-2060</p> <ul style="list-style-type: none"> Implementation of separated conveyance system capacity projects
Resource Recovery	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing resource recovery approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing resource recovery program approaches
Legacy Pollution	<ul style="list-style-type: none"> Modify sediment management and legacy pollution program to match CSO control timeline 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing legacy pollution (e.g., sediment management) approaches on extended timeline 	<p>2020-2060</p> <ul style="list-style-type: none"> Adjusted implementation to match CSO control timeline
Pollution Source Control and Product Stewardship	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing pollution source control and product stewardship approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing pollution source control program approaches
Asset Management, Resiliency, Redundancy	<ul style="list-style-type: none"> Proactive asset management program that results in replacement and renewal of facilities and a minimal backlog of maintenance needs Resiliency investments, including earthquake retrofits and adaptive management to sea level rise 	<ul style="list-style-type: none"> Outcomes of improved regional wastewater system health on risk of regional wastewater system failures and associated impacts 	<p>2020-2060</p> <ul style="list-style-type: none"> Sustained asset management investment across the entire regional wastewater system

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Table 5: Work-in-Progress Strategy C

Objective: Explore potential to produce greater water quality benefits by drawing on alternative, innovative programs, projects, operational, and regulatory approaches that are proven effective in other settings and/or demonstrate potential to meet regional wastewater system and water quality needs. This Strategy emphasizes combining gray infrastructure with expanded approaches to stormwater management, removal of clean rainwater from the sewer system, historical pollution, and/or source control that are geographically focused on areas most impacted and/or likely to experience improved water quality outcomes.

Decision Area	Summary of Investments	Performance Features Explored	Timing of Major Investments
Wastewater Treatment	<ul style="list-style-type: none"> Nitrogen water quality trading program for Puget Sound considering point and non-point source improvements, focused on areas with potential for greatest water quality benefits King County utility-wide nitrogen reduction with different effluent levels at each County regional treatment plant combined with established nitrogen water quality trading program Treatment capacity expansion to address projected population growth 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with reduced nitrogen discharge to Puget Sound paired with focused investments where the potential for water quality benefits is the greatest 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of point and non-point source nitrogen water quality trading program South Plant, West Point, and Brightwater capacity expansion <p>2020-2040</p> <ul style="list-style-type: none"> Sidestream nitrogen treatment at South Plant, West Point, and Brightwater <p>2040-2060</p> <ul style="list-style-type: none"> South Plant and Brightwater nitrogen reduction upgrades
Wet Weather Management	<ul style="list-style-type: none"> Integrated package of stormwater, legacy pollution, and CSO control investments, including regional stormwater facilities, green stormwater infrastructure (GSI) program with priority retrofit projects, and nonpoint (e.g., pipe cleaning, creosote structure removal) programs geographically relevant to CSO receiving waters Extended CSO Control Program timeline and/or alternative water quality investments 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with diversified investments in wet weather management 	<p>2020-2060</p> <ul style="list-style-type: none"> Regional stormwater facilities and green stormwater infrastructure (GSI) programs <p>2040-2060</p> <ul style="list-style-type: none"> Adaptive implementation of CSO control program
Wastewater Conveyance	<ul style="list-style-type: none"> Infiltration and inflow reduction through point-of-sale private side sewer inspection 5-year wastewater conveyance peak flow design standard (20% chance of overflow each year) 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes from reduced conveyance system level of service and implementing demand management through infiltration and inflow control 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation program requiring point-of-sale private side sewer inspection Implement separated sewer system capacity improvement projects
Resource Recovery	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing resource recovery approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing resource recovery program approaches
Legacy Pollution	<ul style="list-style-type: none"> Increased legacy pollution cleanup to include more activities (e.g., pipe cleaning, creosote structure removal) 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated programmatic removal of persistent pollution sources 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of expanded legacy pollution programs
Pollution Source Control and Product Stewardship	<ul style="list-style-type: none"> Increased pollution source control and product stewardship activities as part of integrated package of stormwater, legacy pollution, and CSO control investments 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with increased pollution source control program 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of expanded pollution source control and product stewardship approaches
Asset Management, Resiliency, Redundancy	<ul style="list-style-type: none"> Proactive asset management program that results in replacement and renewal of facilities and a minimal backlog of maintenance needs Resiliency investments include earthquake retrofits and adaptive management to sea level rise 	<ul style="list-style-type: none"> Outcomes of improved regional wastewater system health on risk of regional wastewater system failures and associated impacts 	<p>2020-2060</p> <ul style="list-style-type: none"> Sustained asset management investment across the entire regional wastewater system

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Table 6: Work-in-Progress Strategy D

Objective: Explore potential to meet wastewater system and water quality needs through expanded focus on multi-benefit, resource recovery, and enhanced regional collaboration and partnership approaches. Wastewater system investments would include decentralized treatment and draw on approaches that expand the recovery of resources (recycled water, energy, nutrients) from wastewater. This Strategy emphasizes combining gray infrastructure with multi-benefit approaches that consider enhanced community benefits, decentralized and green stormwater management options, climate mitigation and adaptation, removal of clean rainwater from the sewer system, and addressing historical pollution.

Decision Area	Summary of Investments	Performance Features Explored	Timing of Major Investments
Wastewater Treatment	<ul style="list-style-type: none"> Reduced effluent discharge to Puget Sound through advanced treatment at South Plant, resulting in a potable recycled water quality effluent Treatment capacity improvements to address population growth while maintaining existing secondary treatment level at West Point and Brightwater Construct decentralized wastewater treatment facilities in developing and redeveloping areas to offset regional wastewater system needs and make recycle water available for use 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with a measurable reduction of discharge of treated water to Puget Sound and use of potable quality recycled water, including environmental enhancement and indirect potable reuse 	<p>2030-2060</p> <ul style="list-style-type: none"> Implementation of on-site building scale and satellite treatment facilities to enhance recycled water use <p>2040-2060</p> <ul style="list-style-type: none"> Brightwater increase irrigation quality recycled water availability <p>2040-2060</p> <ul style="list-style-type: none"> South Treatment Plant advanced treatment upgrades to a level that produces potable quality water <p>2020-2060</p> <ul style="list-style-type: none"> South Plant, West Point, and Brightwater capacity expansion
Wet Weather Management	<ul style="list-style-type: none"> Regional stormwater facilities, retrofits, GSI, and CSO control investments at a watershed scale as an integrated package to achieve multi-benefit opportunities (e.g., water quality improvements, open space, passive recreation) for communities geographically relevant to CSO receiving waters Extended CSO Control Program timeline and/or alternative water quality investments 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with diversified investments in wet weather management 	<p>2020-2060</p> <ul style="list-style-type: none"> Regional stormwater facilities, green stormwater infrastructure (GSI) programs <p>2040-2060</p> <ul style="list-style-type: none"> Adaptive implementation of CSO control program
Wastewater Conveyance	<ul style="list-style-type: none"> Infiltration and inflow reduction through point-of-sale private side sewer inspection and peak flow limitation programs 5-year wastewater conveyance peak flow design standard (20% chance of overflow each year) 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes from reduced conveyance system level of service and implementing demand management through infiltration and inflow control 	<p>2020-2060</p> <ul style="list-style-type: none"> Develop and implement programs requiring point-of-sale private side sewer inspection and peak flow limitations Implement separated conveyance system capacity projects
Resource Recovery	<ul style="list-style-type: none"> Expanded program with Class A biosolids and investment in energy efficiency improvements 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with expanded resource recovery program 	<p>2020-2030</p> <ul style="list-style-type: none"> Biosolids program converted to Class A <p>2030-2050</p> <ul style="list-style-type: none"> Increased digester gas production and renewable energy generation <p>2020-2060</p> <ul style="list-style-type: none"> Energy efficiency improvements and vehicle electrification
Legacy Pollution	<ul style="list-style-type: none"> Increased legacy pollution cleanup to include more activities aligned with multi-benefit objectives 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated programmatic removal of persistent pollution sources 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of expanded legacy pollution programs
Pollution Source Control and Product Stewardship	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing pollution source control and product stewardship approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing pollution source control program approaches
Asset Management, Resiliency, Redundancy	<ul style="list-style-type: none"> Proactive asset management program that results in replacement and renewal of facilities and a minimal backlog of maintenance needs Resiliency investments, including earthquake retrofits and adaptive management to sea level rise 	<ul style="list-style-type: none"> Outcomes of improved regional wastewater system health on risk of regional wastewater system failures and associated impacts 	<p>2020-2060</p> <ul style="list-style-type: none"> Sustained asset management investment across the entire regional wastewater system

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Table 7: Work-in-Progress Strategy E

Objective: Enhance the reliability and resiliency of the regional wastewater system by focusing investments on wastewater system health while generally maintaining or extending the timing of the existing approach for other regional wastewater system and water quality investments. This Strategy emphasizes asset management, earthquake retrofits, power systems reliability, climate impacts, and removal of rainwater from the sewer system.

Decision Area	Summary of Investments	Performance Features Explored	Timing of Major Investments
Wastewater Treatment	<ul style="list-style-type: none"> Treatment capacity improvements to address population growth while maintaining existing secondary treatment level at South Plant, West Point, and Brightwater 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continued secondary treatment at regional wastewater treatment plants and continued discharge to Puget Sound 	<p>2020-2060</p> <ul style="list-style-type: none"> South Plant, West Point, and Brightwater capacity expansion for population growth
Wet Weather Management	<ul style="list-style-type: none"> CSO control through wet weather treatment stations and storage projects delayed and sequenced over 40-year planning horizon Existing stormwater management approaches 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with delayed implementation of wet weather investments 	<p>2040-2060</p> <ul style="list-style-type: none"> CHLKK Wet Weather Treatment Station, University and Montlake CSO Storage Tunnel, and other projects
Wastewater Conveyance	<ul style="list-style-type: none"> Infiltration and inflow reduction through point-of-sale private side sewer inspection program Maintain existing 20-year peak flow design standard (5% chance of overflow each year) 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continued implementation of 20-year peak flow design standard and implementing new infiltration and inflow control demand management program 	<p>2020-2060</p> <ul style="list-style-type: none"> Development and implementation of program requiring point-of-sale private side sewer inspection Implementation of separated sewer system capacity improvement projects
Resource Recovery	<ul style="list-style-type: none"> Expanded energy program with focus on investments that provide energy reliability 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with expanded energy reliability in the regional wastewater system 	<p>2030-2050</p> <ul style="list-style-type: none"> Increased digester gas production and renewable energy generation 2020-2060: Energy efficiency improvements and vehicle electrification
Legacy Pollution	<ul style="list-style-type: none"> Modify sediment management and legacy pollution program to match CSO control timeline 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing legacy pollution (e.g., sediment management) approaches on extended timeline 	<p>2020-2060</p> <ul style="list-style-type: none"> Adjusted implementation to match CSO control timeline
Pollution Source Control and Product Stewardship	<ul style="list-style-type: none"> Maintain existing program 	<ul style="list-style-type: none"> Water quality, cost, and other outcomes associated with continuation of existing pollution source control and product stewardship approaches 	<p>2020-2060</p> <ul style="list-style-type: none"> Implementation of existing pollution source control program approaches
Asset Management, Resiliency, Redundancy	<ul style="list-style-type: none"> Proactive asset management program that results in replacement and renewal of facilities and a minimal backlog of maintenance needs Additional reliability and redundancy investments to increase resiliency and redundancy (e.g., earthquake retrofits, adaptive management to sea level rise) and further reduce risk of failures 	<ul style="list-style-type: none"> Outcomes of improved regional wastewater system health on risk of regional wastewater system failures and associated impacts Ability to achieve lowest practical risk of failures and overflows in the regional wastewater system 	<p>2020-2060</p> <ul style="list-style-type: none"> Sustained asset management investment across the entire regional wastewater system

Notes:

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Teal = focus of investment(s) primarily occurs later than 2020's or ends earlier than 2060 within the Clean Water Plan 40-year planning horizon.

Next Steps in Strategies Development, Evaluation, and Engagement Process

The Clean Water Plan team will continue to develop and refine the work-in-progress Strategies. As refinement occurs specific details within each of the overview tables in this briefing packet are likely to change as the Strategies evolve during formulation. After developing the Strategies, the County will evaluate the Strategies using similar areas of analysis as those used to characterize the Actions. However, building on Actions characterization, the Strategies evaluation will also consider impacts from a system-wide perspective, incorporating timing, sequencing, and the interrelationship of multiple Actions together. For reference an overview of draft Strategy evaluation areas to inform regional discussion is included as Attachment B.

Attachment A: Regional priorities for the Clean Water Plan and engagement highlights

The following are priorities identified by members of the public during regional engagement activities in 2019. For more information, see the [2019 Clean Water Plan Outreach Summary](#).



Avoid sewer system failures



Prepare and fight climate change



Equity



Increase collaboration



Prioritize best water quality outcomes



Maintain effective wastewater workforce



Keep rates affordable



Healthy habitats for fish and wildlife



Protect and restore rivers, lakes, and Puget Sound



Protect public health

Publicly Available Informational Materials:

- We're hearing that the [Understanding the Clean Water Plan video](#) has been helpful in explaining the exploratory planning process and that it is easy to share. Based on suggestions from our partner CBOs, the video is now available in Chinese, Somali, Spanish, and Vietnamese – and more languages are coming soon.
- The [Actions in the Clean Water Plan](#) and the [Clean Water Plan Process](#) fact sheets are now available in 15 languages. Learn more by reading these brief materials available in our [translation library](#).

Actions Technical Workshops and Document: In April and May, King County held three, four-hour technical workshops and shared a technical document to inform community members about all the Actions under review for the Clean Water Plan. Presentation slides and workshop recordings for these workshops and the technical document are available on the [King County Clean Water Plan website](#).

- **Wastewater Treatment Workshop:** This workshop described key concepts and Actions related to increasing treatment at regional systems, decentralized treatment, and control of pollutants prior to treatment. It was on April 20, included 166 participants, and answered about 70 audience questions.
- **Wastewater System Operations and Health Workshop:** This workshop described key concepts and Actions related to asset management, resiliency, and redundancy; the conveyance system and on-site septic conversion; and resource recovery. It occurred on May 13, included 80 participants, and answered over 30 audience questions.
- **Wet Weather Management Workshop:** This workshop described key concepts and Actions related to stormwater management, combined sewer overflow (CSO) control and optimization, and removal

of legacy pollutants. It was on May 25, included 100 participants, and answered over 24 audience questions.

- **Actions: Characterizing Water Quality Investment Options:** This document presents the conceptual technical details and characterization of the 33 Actions developed during the planning process. The [Actions: Characterizing Water Quality Investment Options](#) document is available on the King County Clean Water Plan website.

Clean Water Plan Questionnaire: In fall 2020, the Clean Water Plan Team launched a public questionnaire to help get a “pulse” on public knowledge of planning efforts, COVID-19 impacts on participation, and the best ways to stay connected to community members during the next phase of work. The questionnaire was available online and in print form in 15 languages. We captured the results of the 230 completed questionnaires in a [summary](#). While all Clean Water Plan priorities were important to respondents, the three most popular priorities were: protecting and restoring rivers, lakes, and Puget Sound; protecting public health; and ensuring healthy habitats for fish and wildlife.

Community Conversations: Starting in late 2020, the Clean Water Plan team conducted a second round of community conversations with 15 organizations to assess their level of interest in the Clean Water Plan, provide information on where we are in the planning process, and gather input on how people wish to engage. The results of those conversations are captured in a [summary](#). Through our community conversations, we formally welcomed Mother Africa to our CBO Partnership program and look forward to working with them throughout 2021.

Attachment B: Overview of draft Strategy evaluation areas

After developing the Strategies, the County will conduct a range of evaluations to determine the impacts of each Strategy from a system-wide perspective, which incorporates the timing, sequencing, and interrelationships of multiple investments together. This analysis will provide the Strategy performance and outcomes to reveal the different choices and opportunities of the potential approaches for the regional wastewater system and water quality. An overview of the evaluation areas with some of the attributes of each area are provided below. Note that the equity and community evaluation area will be looked at both individually and within the other evaluation areas. In the coming months, as the Clean Water Plan team prepares for Strategy evaluation, certain evaluation factors may adjust slightly as the specific factors are refined.

Overview of draft Strategy evaluation areas to inform regional discussion

