1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

KING COUNTY

Signature Report

FCDEC Motion

Proposed No. FCDECM2020-08.1 **Sponsors**

A MOTION adopting the Black River Pump Station Capital Plan Strategy.

WHEREAS, the Black River Pump Station is a critical component of the Green River flood control system, and functions as a dam to prevent flood flows and tidal inundation from flowing upstream in the channel of the historic Black River and from flooding local cities, and

WHEREAS, the Black River Pump Station protects over 2,800 acres, estimated $4.4 billion in assessed value with an estimated 370 structures in Renton, 210 structures in Kent and 60 structures in Tukwila, and the King County South Treatment Plant, and

WHEREAS, the Black River Pump Station requires significant rehabilitation and upgrades to function reliably and continuously to provide flood risk reduction benefits to the highly developed and largely commercial portions of Renton, Kent and Tukwila, and

WHEREAS, the Black River Pump Station was built in 1972, before the Endangered Species Act listing of Puget Sound chinook and steelhead, and

WHEREAS, the Black River Pump Station fish passage and exclusion systems do not meet current design requirements for upstream or downstream fish passage and may hinder migration and harm fish, and

WHEREAS, acting as the primary service provider to the King County Flood Control District ("the District"), the King County Water and Land Resources Division

("WLRD") has conducted analysis of the capital projects necessary to overhaul the Black River Pump Station to address the flood risk reduction and fish passage deficiencies, and

WHEREAS, WLRD continues to conduct a robust public process including working with affected jurisdictions and tribal stakeholders, and

WHEREAS, the proposed Black River Pump Station Capital Project Strategy is a strategic comprehensive prioritized list of capital projects, and

WHEREAS, the District desires to provide WLRD with policy direction relating to flood risk reduction and fish passage improvement projects at the Black River Pump Station;

NOW, THEREFORE, BE IT MOVED BY THE EXECUTIVE COMMITTEE OF THE BOARD OF SUPERVISORS OF THE KING COUNTY FLOOD CONTROL ZONE DISTRICT:

SECTION 1. The King County Flood Control Zone District Executive

Committee adopts the "Black River Pump Station Capital Project Strategy," which is Attachment A to this motion.

FCDEC Motion was introduced on and passed by the King County Flood Control District Executive Committee on 9/16/2020, by the following vote:

Yes: 3 - Ms. Lambert, Mr. Upthegrove and Mr. von Reichbauer
Excused: 1 - Mr. Dunn

KING COUNTY FLOOD CONTROL ZONE DISTRICT
KING COUNTY, WASHINGTON

DocuSigned by:
Dave Upthegrove
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Dave Upthegrove, Chair

ATTEST:

DocuSigned by:
Melani Pedroza
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Melani Pedroza, Clerk of the Board

Attachments: A. Black River Pump Station Capital Plan Strategy

BLACK RIVER PUMP STATION IMPROVEMENTS CAPITAL PROJECT STRATEGY

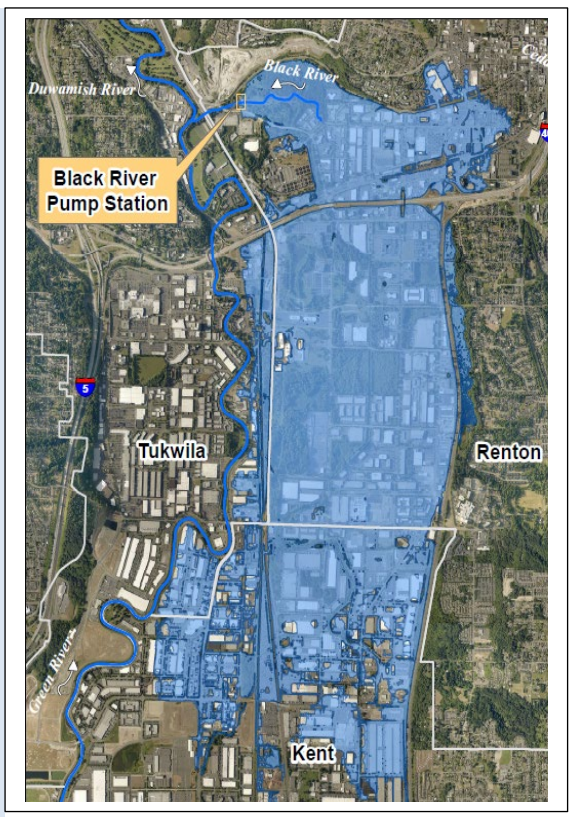
August 6, 2020 DRAFT

The Black River Pump Station (BRPS) is a critical component of the Green River flood control system and has operated continuously since 1972. BRPS is a dam that prevents Green River flood flows and tidal inundation from flowing upstream in the channel of the historic Black River and also pumps flow from Springbrook Creek downstream over the dam.

Scope: The Capital Project Strategy (CPS) is a sequenced action plan for implementing improvements at the Black River Pump Station to (1) reduce flood risk, (2) minimize environmental impacts of flood hazard management, and (3) reduce long-term costs.

Summary of Risk: The BRPS must function reliably and continuously to provide flood risk reduction benefits to the highly developed and largely commercial portions of Renton, Kent and Tukwila.

- The area at risk during a severe flood event includes over 2,800 acres and 640 buildings with an assessed value of $4.4 billion (land and improvements) in Renton, Kent and Tukwila. The station is also designed and positioned to assist in the event of an upstream loss of Green River flood containment by pumping overflows back into the Green River channel.
- The BRPS operation is susceptible to seismic and structural vulnerabilites. During and following an earthquake, soil liquefaction under and adjacent to the facility could take the station off-line and cause structural damage to the facility and equipment.
- Existing Fish passage systems harm fish and hinder upstream/downstream migration of multiple species including endangered Puget Sound Chinook salmon.



Proposed Risk Reduction Projects: Capital projects include modifications to strengthen and improve the pump station operation by increasing reliability, safety, and seismic resilience (geotechnical and structural) and address identified issues with the current fish passage systems. The table below includes the sequenced action plan based on construction contract number (CC) for implementing the CPS. The CPS groups upland seismic soil improvements with structural retrofits and anchoring by conducting work isolated from the open water, limiting need for in-water work permits. An accelerated approach was developed with the goal of initiating actions/projects in the near-term that were originally planned for medium- to long-term timeframes.

The current 2020-2025 adopted King County Flood Control District CIP budget includes:

- $5.5M for High Use Engine Replacement (HUE)
- $23M for Replacement of the Control Building (CB)
- $2M for Mechanical System Replacement (MS)
- $12.5M for Fish Passage Improvements (FP)
- $0 for Seismic and Structural Retrofits (SS)
- $0 for Large Engine Replacement (LE)

PROJECT	PROBLEM	IMPROVEMENTS/APPROACH (CIP CATEGORY)	COST ESTIMATES[1]
Efforts Underway in 2020			
A. High-Use Engines Replacement Design	Three flood pumps need overhaul and the engines need replacement after decades of heavy use.	Design of High-Use Engines Replacement. Studies to assess seismic vulnerability and fish passage concerns (HUE).	$ 1,400,000
B. Capital Project Planning	Limited understanding of seismic stability, structural sufficiency and fish passage concerns necessitated planning to optimize timing and sequence of improvements.	Conduct assessment of seismic vulnerabilities and fish passage systems. Develop Capital Project Strategy to guide implementation of improvements.	$ 2,600,000
Proposed Near-Term Actions (2020-2025)			
C. Fish Passage Improvements Outreach and Early Actions	Fish passage systems predate current fish passage design guidance and Endangered Species Act listing of Puget Sound Chinook. Systems may harm fish and impede migration. There are also known functionality issues with current systems. Stakeholder and tribal interest in fish passage and salmon recovery.	Early action fish passage improvements and facility assessment. Share information on the assessment of fish passage facilities and seek input on concepts for improvements (FP). **Estimated completion 2022.**	$ 1,200,000
D. High-Use Engines Replacement Construction	Three flood pumps need overhaul and the engines need replacement after decades of heavy use.	Replace High-use engines and equipment (HUE). **Estimated completion Q4 2021.**	$ 4,600,000

[1] Cost estimates include best available projections including design, construction, permitting, construction management, program costs, contingency and right-of-way acquisition, and are dependent on state of project development consistent with WLRD Project Management Guidelines.
Contingency range 30-50%, Planning, Permitting, Design range 20-30%, County staff cost approximately 10% of construction estimate
Construction cost estimates from Jacobs 2019 according to AACE Class 5 guidelines (planning level design) with accuracy range of -50% to +100%
Estimate of Probable Construction Cost: $79.8M. Range $27.6 (-50%) - $110.2 (+100%)

BLACK RIVER PUMP STATION IMPROVEMENTS
CAPITAL PROJECT STRATEGY

August 6, 2020 DRAFT

PROJECT	PROBLEM	IMPROVEMENTS/APPROACH (CIP CATEGORY)	COST ESTIMATES[1]
Proposed Near-Term Actions (Construction in 2020-2026)			
E. Seismic and Structural Improvements Design and Construction	Structure is susceptible to earthquake damage that could disrupt operation and cause persistent flooding.	Design and construction for soil improvements and seismic structural retrofits (SS). **Estimated completion 2024**	$ 25,300,000
F. Control Building Replacement Mechanical and Structural upgrades Design and Construction,	Control systems are obsolete. Mechanical systems are obsolete. Non-structural seismic improvements are needed (generally to secure heavy equipment).	Design and construction of new control building, mechanical upgrades and non-structural seismic retrofits (CB, SS, MS). **Estimated completion 2027.**	$ 15,500,000
G. Fish Passage Improvements Design and Construction	Fish passage systems predate current fish passage design guidance and Endangered Species Act listing of Puget Sound Chinook. Systems may harm fish and impede migration.	Complete design and permitting, initiate construction of fish passage improvements (FP). **Estimated completion 2026.**	$ 19,500,000
H. Seismic, Structural & Mechanical Improvements to increase BPRS reliability	Seismic and structural improvements substantially complete*; those remaining include those dependent on or related to fish passage systems*. Also addresses obsolete mechanical systems and large engine replacement.	Design and construction initiation for final upgrades (SS5). Initiate construction on mechanical systems constrained by in-water work or dependent on Fish Passage Improvement decisions (SS, MS). **Estimated construction completion 2026.**	$ 1,900,000
Proposed Medium-Term Actions (Construction in 2026-2030)			
I. Large Engine Replacement Design and Construction	Large diesel engines that drive the large flood pumps are no longer manufactured so replacement parts are not available. Fish passage system may harm fish and impede migration.	Design and construction initiation to replace large diesel engines (LE). **Estimated construction completion 2028.**	$ 8,000,000
J. Operations and Maintenance: Sediment management study and removal, ongoing maintenance	Systems require upkeep, maintenance to keep station functioning as designed.	(SM)	
			Total **$80,000,000**

[1] Cost estimates include best available projections including design, construction, permitting, construction management, program costs, contingency and right-of-way acquisition, and are dependent on state of project development consistent with WLRD Project Management Guidelines.

Contingency range 30-50%, Planning, Permitting, Design range 20-30%, County staff cost approximately 10% of construction estimate

Construction cost estimates from Jacobs 2019 according to AACE Class 5 guidelines (planning level design) with accuracy range of -50% to +100%

Estimate of Probable Construction Cost: $79.8M. Range $27.6 (-50%) - $110.2 (+100%)