

**EXH. RPB-8
DOCKETS UE-22 ___/UG-22 ___
2022 PSE GENERAL RATE CASE
WITNESS: RYAN P. BLOOD**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

**Docket UE-22 ___
Docket UG-22 ___**

**SEVENTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

RYAN P. BLOOD

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

Lower Baker Grouting Project

Baker River Project



September 27, 2021

Objective

- Request that the Asset Management Committee recommend for approval by the PSE Board to enter into the construction contract for the Lower Baker Dam Grouting Project.



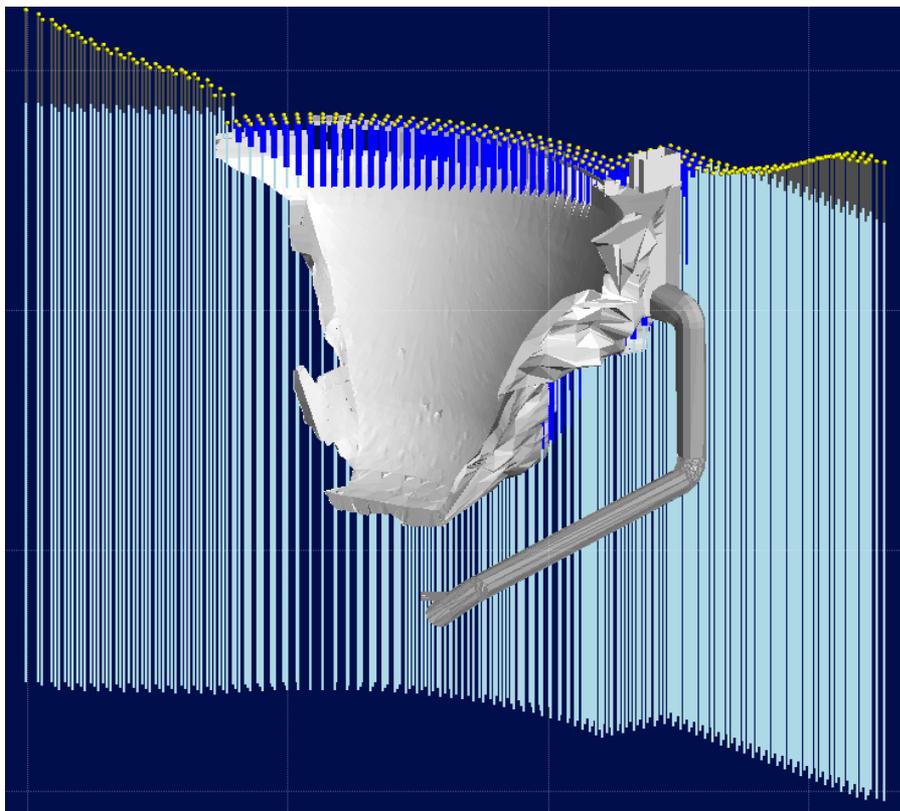
Background

- Semi-gravity concrete arch dam with a height of 285' and a crest length of 550'. The dam is located on the Baker River approximately one mile above the confluence of the Skagit River.
- Leakage through the dam/foundation contact as well as through geologic features within the bedrock has occurred since original construction.
- Grouting programs of limited scope have occurred in 1934, 1959, and 1982.



Mitigation Measures

- Multiple mitigation measures considered for addressing leakage. Stand alone options considered included dam removal, construction of a new dam, blanket over reservoir bottom, secant pile or slurry cutoff wall, and a grout curtain.
- A grout curtain was ultimately the preferred alternative based on cost, constructability, and timeliness.



Project Costs - Overview

Activity	Cost (\$M)*
Construction (Lower Baker Constructors)	\$247.0
Construction management contract (HDR)	\$14.3
Engineer of record contract (S&W)	\$16.4
PSE labor	\$2.0
PSE overhead (12% of above)	\$33.6
Contingency (10% of above)	\$28.0
Total	\$341.2

* Final pricing received from Lower Baker Constructors on September 15, 2021.

Project Costs – By Year and Phase

Construction Activity	2021	2022	2023	2024	2025
Phase 1 A (submittals, procurement, insurance)	\$21.5				
Phase 1 B (site prep, surveying)	\$7.6	\$13.9			
Phase 2 A (reservoir access, platform, guide pipes)		\$109.2	\$34.8		
Phase 2 B (drilling and grouting)			\$57.0	\$75.5	
Phase 2 C (platform and access removal)				\$8.4	\$11.3
Phase 3 (site restoration)					\$2.0
Total	\$29.1	\$123.1	\$91.8	\$83.9	\$13.3

- Costs are in millions of dollars and include PSE OH (12%), and with the exception of 2022, a 10% contingency spread
- Project schedule and cash flow being evaluated against current 5 year plan. 5 year plan totals \$304.8M, bid price \$341.2M, largest delta in 2022

Schedule

Activity	2021				2022				2023				2024				2025			
	Q1	Q2	Q3	Q4																
Early contractor involvement	█	█	█	█																
Contract award																				
Phase 1 A (submittals, procurement)			█	█																
Phase 1 B (site prep, surveying)																				
Phase 2 A (reservoir access, platform)					█	█	█	█	█	█	█	█								
Phase 2 B (drilling and grouting)													█	█	█	█	█	█	█	█
Phase 2 C (platform removal)																	█	█	█	█
Phase 3 (site restoration)																				
Final inspection																				█

Cost and Schedule Risk Analysis

- A cost and schedule risk analysis (CSRA) was conducted on August 3-4, 2021 and was facilitated by HDR. The CSRA was founded on a qualitative risk register developed by PSE in June, 2021.
- The CSRA used the following model inputs:
 - \$260 million construction contract
 - \$17 million construction management contract
 - \$18 million engineering services during construction
 - \$2 million for PSE oversight
 - PSE corporate overhead (12%) and PSE contingency (10%) were left out of the model
- Results indicate a 70 percent probability of total cost increase less than 7% of estimate used in the model (\$317M vs. \$297M).
- Principle potential cost drivers are drilling through obstructions, grouting the forebay debris, and drilling production rates.

Refined Cost and Schedule Risk Analysis

- Lower Baker Constructors, LLC provided their final pricing, schedule of values, and project schedule on September 15, 2021.
- PSE has contracted with HDR to conduct a more refined CSRA based on this data.
- The refined CSRA is schedule to start in mid-October and will be completed by the end of the month.

Non-Construction Risks

- PSE continues to work with the federal, state, and local agencies to ensure project authorization and permits are in place prior to construction.
 - The final design, excluding the platform and platform stability analysis, has been reviewed by both the regional (Portland) and national FERC Dam Safety teams with only minor comments.
 - The platform design and platform stability analysis will be submitted to FERC-Portland before the end of September.
 - The Washington Department of Ecology has approved the water quality protection plan (WQPP).
 - The Corps 404 permit has been out for public comment and PSE has responded to those comments.
 - NMFS and USF&WS are currently reviewing the biological assessment and drafting their opinions. The USF&WS review is currently behind schedule.

Project Responsibilities and Oversight

- Lower Baker Constructors, LLC
 - Traylor Bros., Inc. (JV partner) – site preparation, heavy civil construction, and JV management
 - ACT (JV partner) – execution of the drilling and grouting, tunnel plug drilling
 - Ballard Marine Construction (JV partner) – marine construction and support
 - Schnabel Engineering (sub) – platform stability analysis
 - Golder Associates (sub) – grouting interpretation and control
- Shannon & Wilson – engineering during construction to include real time oversight of grouting and geologic logging of drill core
- HDR – construction management to include project controls and field inspectors
- PSE – project management and coordination with the Lower Baker operations