



SUPPLIES WATER TO OVER
1.5 MILLION PEOPLE



VITAL TO UTAH'S ECONOMY



ONE OF THE MOST UTILIZED
RECREATIONAL ECOSYSTEMS
IN UTAH



DEER CREEK INTAKE PROJECT FEASIBILITY STUDY



RESERVOIR & DAM FACTS

- Deer Creek Reservoir stores up to 153,000 acre-feet (AF) of water from three river basins.
- One out of every two Utahns use water from the reservoir for municipal, industrial, and agricultural purposes.
- The dam was originally completed by the US Bureau of Reclamation in 1941 as part of the Provo River Project.
- Provo River Water Users Association was organized in 1935 and assumed operation and maintenance responsibilities for Deer Creek Dam and Reservoir in 1958.
- The population served by this water supply is expected to increase 75% by 2060.

STUDY OBJECTIVES

- ✓ Evaluate condition of the guard gates
- ✓ Conduct bathymetric surveying
- ✓ Explore geotechnical or seismic conditions
- ✓ Investigate options for wet construction (to keep reservoir operational)
- ✓ Develop the best cost-effective & feasible solution for improvements



PROVO RIVER
WATER USERS
ASSOCIATION

PROJECT DRIVERS

Need vs. Want

Throughout the Feasibility Study a major emphasis was put on project drivers in order to accurately capture and implement the most successful solution. The drivers were incorporated into design decisions and scored using Kepner-Tregoe Decision Analyses tools. Some of the most discussed drivers included:



AGING
INFRASTRUCTURE



AQUATIC INVASIVE
SPECIES



MINIMIZING
ENVIRONMENTAL
IMPACTS



WATER
QUALITY



OPERATIONS AND
RELIABILITY



RISK
MANAGEMENT

ASSESSMENTS

The foundation of the Feasibility Study relied on the results and data from a number of assessments completed in FY2020. The Feasibility Study included a culmination of the information obtained in these assessments (listed below), in an effort to more accurately predict needs and project costs. Assessments completed included:

- ROV Inspection
- Bathymetric Surveying and Mapping
- Geotechnical Investigation
- Above Water Surface Surveys
- Deterministic Seismic Hazard Analyses
- Opinion of Probable Construction Costs
- Kepner-Tregoe Decision Analyses
- Project Delivery Alternatives

INTAKE PROVIDES:

Isolation
Redundancy
Quagga Mussel Mitigation
Tunnel Inspection

Deer Creek
Reservoir

Intake
Structure

Tunnel

Gate
Chamber

HPU

Guard Gates (x2)

Penstock
Tunnel

GUARD GATE PROVIDES:

Proven Reliability
Increased Safety Measures
Penstock Inspection
Consistent Operations

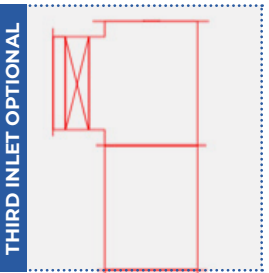
Penstocks (x2)

Power Plant

Turbine
Generators (x2)

Outlet to
Provo River

INTAKE - GUARD GATE SOLUTIONS



INTAKE

18' x 18' Concrete Box Intake with Vertical Extension

Includes two inlets with the option to add a third inlet in the future, or the third inlet could be included in the initial construction. This intake includes the smallest overall structure and requires the smallest foundation of all the alternatives considered.

The new intake delivers all the necessary functionality plus some additional benefits that are not available with the existing intake. The proposed intake would be installed first. This would provide isolation for guard gate improvements, which reduces both cost and risk during construction. The results of Feasibility Study for guard gate improvements concluded that two alternatives would be equally preferred. Therefore further development of both Alternatives was recommended. The CM/GC will provide additional insight and analysis during final design to assist in determining which guard gate alternative to select.

GUARD GATE OPTIONS

Guard Gate: Consists of isolating and rehabilitating one existing guard gate at a time.

Butterfly Valves: Consists of installing new butterfly valves downstream, one valve at a time. The existing guard gates would remain in place and provide an additional layer of redundant isolation until abandoned in place in the future.

Note: Both guard gate options allow for power generation and water deliveries to continue through a single penstock while the other penstock is out of service, as well as allow for better access for operations and maintenance of the valves.

PROJECT BUDGET & SCHEDULE

CATEGORY	ESTIMATED COST (\$)
1. Construction (incl. Intake & Guard Gates)	38,604,168
2. Contingency	4,468,512
SUBTOTAL	43,072,680
3. Design, CM/GC Coordination, Procurement, GG2/ GG4 Design, Slope Stability, Permitting Assistance	4,257,610
4. Feasibility Study & Condition Assessments	2,500,000
5. Planning & Program Management (3%)	1,158,125
6. Construction Phase Services (AE2S/ BOR)	5,500,000
7. Debt Service Reserve	335,000
8. Community Awareness	500,000
SUBTOTAL	14,250,735
9. Financing Costs	328,000
10. WIFIA Application & Credit Processing Fee	399,000
TOTAL	\$58,050,415

* Total does not include third inlet. Addition of the third inlet could add approximately \$2-5M

	2021	2022	2023	2024	2025
Intake Alternative 7					
100% Design					
GMP					
144" TOV Specification					
144" TOV Bidding					
144" TOV Procurement					
Rock Sockets					
Intake Structure					
Pipe Connection					
Cut & Cover					
Final					
Guard Gate Alternative 2					
Guard Gate Procurement					
Guard Gate #1 Rehabilitation					
Guard Gate #2 Rehabilitation					
Guard Gate Alternative 4					
72" TOV Procurement					
72" TOV #1 Install					
72" TOV #2 Install					

■ Design
 ■ Valve / Gate Procurement
 ■ Intake Construction
 ■ Guard Gate Improvements Construction



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