CHAPTER 1.
PROJECT OVERVIEW

OBJECTIVE

This preliminary engineering report was prepared to confirm and further develop the improvement recommendations included in the 2008 *SPU Watershed and Transmission Facilities Master Plan* for the Landsburg diversion site. This report presents information to support the business case for executing the plan and serves as a foundation for the design and construction of the facilities.

LANDSBURG SITE DESCRIPTION

Seattle Public Utilities' (SPU's) Landsburg facility is north of the Cedar River and east of Maple Valley. It lies within the Cedar River Watershed, a pristine forested area in the western foothills of the Cascade mountain range. Principal facilities at the site are a diversion dam and initial water treatment facilities, the Cedar River Sockeye Hatchery (under construction in 2010-11), and Landsburg Park, a small pedestrian-only picnic area at the westernmost part of the site along the river. Figure 1-1 shows the existing site. The dam diverts water from the Cedar River, and the diverted water is fluoridated and chlorinated at Landsburg before being piped for further treatment at Lake Youngs. Operations staff are present at the site at all times, monitoring and managing river flow and the treatment processes. SPU's fish program at the site includes a fish ladder, counting and extraction facilities, and offices for fish biologists.

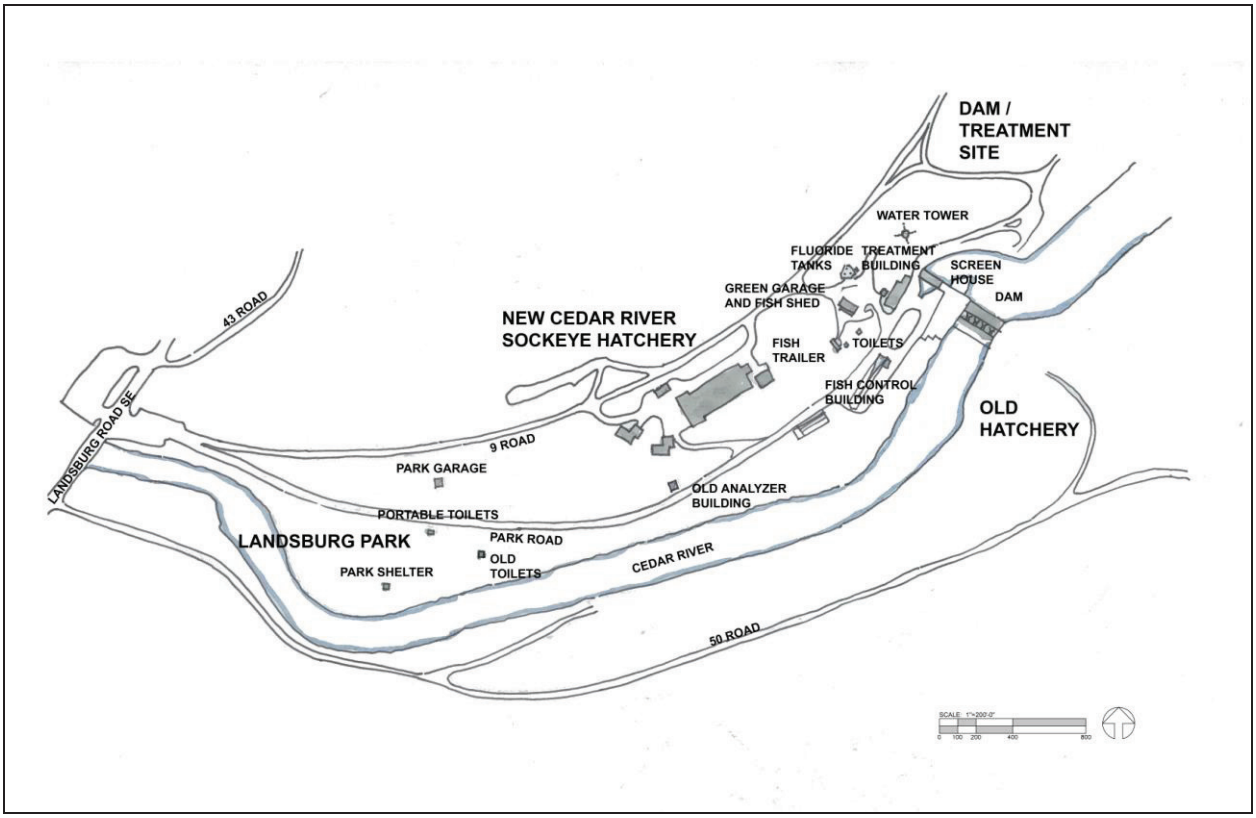

Figure 1-1.SPU Landsburg Site

PROJECT APPROACH

Tetra Tech produced this report in cooperation with SPU Facilities and Real Estate Services ("Facilities") staff, SPU economists and the project's executive steering committee (consisting of executives from SPU's water line of business). The report is structured to meet project goals and deliverables established by SPU, which required investigation and reporting on each of the following subjects:

- **Program Verification**—Review the program and objectives developed in the 2008 Master Plan and engage staff and management in its confirmation or alteration where necessary. Conduct interviews and workshops. This effort resulted in the development of an updated and more detailed facilities program for the Landsburg site.
- **Site Investigation**—Review existing site conditions related to geotechnical conditions, surface water, topography, transportation and the environment.
- **Site Utilities**—Review existing utilities, including the domestic water system, treatment operations water service, fire suppression water service, sockeye hatchery domestic water, fire suppression water service, dam/treatment site sanitary sewer system, sockeye hatchery sanitary sewer system, site storm drain system, site power systems, site telecom and information technology (IT) systems. Review building deconstruction systems and hazmat.
- **Functional Requirements**—Review existing site functions related to water treatment, including fluoride, chlorine, SCADA (supervisory control and data acquisition) and communications systems.
- **Hatchery Integration**—Review the following Cedar River Sockeye Hatchery systems for integration opportunities and conflicts with the Landsburg development project: domestic water service, fire suppression water service, power, sanitary sewer, telecommunications and SCADA.
- **Security Analysis**—Review existing site security and meet with the SPU security team to confirm conditions and objectives. This effort resulted in recommendations for security improvements during hatchery construction and for the developed Landsburg site.
- **Legal and Regulatory Requirements**—Review applicable building, health, land use and other codes, ordinances and the like as they relate to potential development of the Landsburg site. Perform a title search.
- **Site Development Alternatives**—Develop a series of possible site development schemes for review by the steering committee. Two plans were selected for more detailed development, pricing and evaluation; the project team (consisting of SPU staff along with Tetra Tech and its subconsultants) elected to consider two variations on these alternatives as well, so four alternatives were evaluated.
- **Site Development Alternative Performance and Cost Evaluations**—Estimate hard and soft costs for the alternatives over a 40-year life span. Evaluation criteria were proposed and weighted by the project's steering committee. A system was devised to evaluate the alternatives and to determine their abilities to meet identified criteria. These results were compared to the existing facility (base case). The steering committee and user groups participated in the evaluation of the alternatives. SPU economists used this information and provided financial information to recommend a preferred alternative for implementation.

CHANGES IN PROJECT SCOPE AND APPROACH

The following changes were made to the initial scope of work in order to conserve budget and avoid work that would not contribute significantly to the selection of a recommended site development alternative:

- **No geotechnical borings or report**—The project team decided that new geotechnical borings would likely produce results similar to those performed for the new hatchery project, which is nearby. Therefore, the hatchery geotechnical information was used, and no new geotechnical investigation and reporting were performed. A geotechnical investigation and report are recommended for the next phase of the design effort.
- **Limited field survey**—In lieu of a complete new field survey, a limited survey was made and project base drawings were compiled from older survey information. A complete field survey of the site is recommended for the next phase of the design effort.
- **No field-testing for septic drain field**—The project team decided that new field-testing for a septic drain field would likely produce results similar to those for the new hatchery project, which is nearby. Therefore, the hatchery percolation information was used, and no new percolation tests and reporting were performed. These are recommended for the next phase of the design effort.
- **No review of fish passage function**—SPU directed Tetra Tech not to proceed with this review.
- **No review of existing hatchery facilities**—Work associated with the hatchery site on the south side of the river was eliminated from the scope. Demolition and restoration of this area will be addressed in a separate project.
- **No review of hazardous materials report**—No hazardous materials report was provided to Tetra Tech by SPU.
- **Provide additional cost analysis for an alternative to the Status Quo Base Case**—This alternative, called Base Case 2, included only limited resolution of key facility deficiencies.

The only work requested by SPU beyond the initial scope was the pricing and review of the additional base case alternative.

CHAPTER 2.
PROGRAM VERIFICATION

Tetra Tech's approach to verifying the original Master Plan's program for Landsburg involved the following steps:

- Review the 2008 Master Plan document.
- Tour the site facilities.
- Conduct interviews and workshops with staff and management.

The findings of each of these efforts, along with the updated program developed as a result, are described in the following sections.

2008 MASTER PLAN REVIEW

Tetra Tech reviewed the summary program documents from the 2008 Master Plan. The plan identified the following high-priority and medium-priority program issues:

- High-Priority Issues:
  - Clarify the future of the chlorine treatment process. Expand or modify the existing treatment building accordingly. Allow flexibility for future chlorine or other chemical system reconfigurations.
  - Fill operations and fisheries program facilities gaps for administration and storage space.
  - Address safety risk from storage of emergency response gear in the old analyzer building.
  - Address SCADA/IT needs at a new facility, and through an addition at the tunnel facility.
  - Provide a new drain field and potable water to the site.
- Medium-Priority Issues:
  - Address site watershed security issues by consolidating storage within the secure perimeter. Decommission the Park Garage in Landsburg Park.
  - Provide additional fish operations storage capacity at the existing green garage.
  - Remove non-functional assets.
  - Increase parking capacity on site to 15 spaces minimum.
  - Decommission the existing toilets at the park. A new drain field and permanent toilet facility are recommended.
  - Provide cover over existing fluoride tanks while allowing access for tank replacement.

SITE TOUR

Project team members toured the Landsburg site to become familiar with the existing facilities and operations, including changes since completion of the 2008 Master Plan. Photos 2-1 through 2-15 show the dam and treatment facilities. Photo 2-16 shows the new Cedar River Sockeye Hatchery facilities. Photos 2-17 through 2-23 show the park and site entrance.

Photo 2-1. Cedar River Diversion Dam

Photo 2-2. Screen House at the Dam

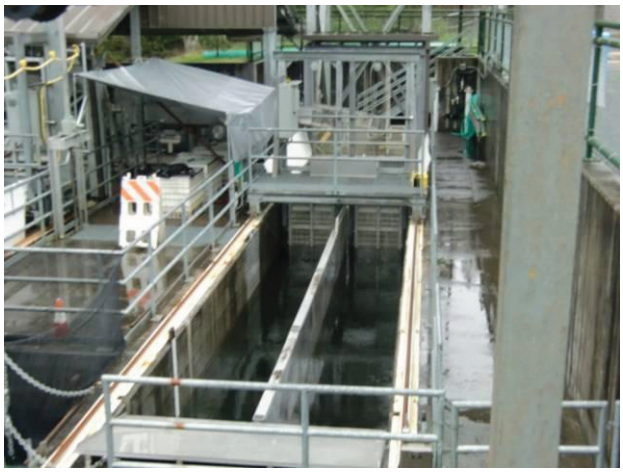

Photo 2-3. Fish Facilities on the River

Photo 2-4. Fish Control Building and V-Screen

Photo 2-5. Fluoride Tanks and Compressor Building

Photo 2-6. Generator and Generator Building

Photo 2-7. Treatment Building

Photo 2-8. Green Garage and Office

Photo 2-9. Yard Tool Shed

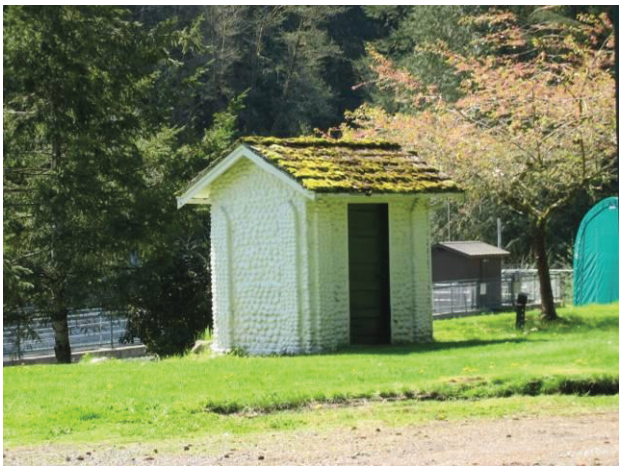

Photo 2-10. Old Restroom Building (1 of 2)

Photo 2-11. Temporary Fish Truck Garage

Photo 2-12. Fish Storage Shed at Green Garage