



#5

EXECUTIVE SUMMARY

Introduction & System Summary

The City of Pocatello is one of the largest communities in Idaho and is proud to be the 'Gateway to the Northwest.' The City maintains a significant residential, commercial, and industrial presence in the southeast portion of the State and has constructed and maintained a Water Pollution Control Facility (WPCF) to treat municipal, commercial, and industrial generated wastewater. The WPCF is situated on the banks of the Portneuf River to the north of the Pocatello City limits and accepts and treats wastewater from the nearby community of Chubbuck as well as multiple industries and area septage haulers.

Treatment is currently achieved using an activated sludge process that is operated in a manner to encourage enhanced biological removal of phosphorus (EBPR). Wastewater entering the treatment facility first passes through the headworks screens and grit chamber to remove large objects before entering the influent splitter boxes which routes flow through one of three primary clarifiers. The clarified wastewater is then sent through the primary effluent pump station and pumped to the secondary process while solids removed within the primary clarifiers are diverted through the primary solids pumping station to the anaerobic digesters.

The wastewater enters the mixing box from the primary effluent pump station and proceeds through the anoxic and swing basins before entering one of two aeration basins. From the aeration basins, a portion of the flow is sent back to the anoxic basins while most of the flow is sent to the secondary clarifiers. From the secondary clarifiers, return activated sludge (RAS) is pumped to either the anaerobic selector or secondary process mixing box while waste activated sludge (WAS) is sent to the dissolved air flotation tank (DAF) and then to the anaerobic digesters. Clarified effluent from the secondary clarifiers then passes through multimedia filters for phosphorus removal and then through the UV disinfection system before being discharged into the Portneuf River.

Scope

The Scope of this study includes the following:

- Water Pollution Control Facility Condition Assessment
 - Keller Associates and Stantec Consulting documented the general condition of the existing treatment facilities.
- Planning Criteria
 - 20-year population projections were based on census data, Bannock Transportation Planning Organization data, and information provided by the City.
 - Historical flow and loadings at the treatment facility were evaluated and used to develop projections for flow, five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), ammonia, and total phosphorus for the 20-year planning horizon.
- Regulatory Evaluation
 - A high-level evaluation of the current, pending, and anticipated future regulatory requirements and planning criteria were provided.
 - The anticipated performance of the existing WPCF to meet current and anticipated discharge limits was considered.
 - The existing TMDL was reviewed to identify future impacts to permit limits.
- WPCF Liquids Stream Capacity Evaluation

- A biological model was developed using BioWin software by EnviroSim to simulate the performance of the WPCF. A Sampling and Analysis plan was provided to the City to establish data for model development to simulate the expected performance of the biological treatment systems for future flows and loadings.
- A hydraulic model was developed to evaluate the hydraulic capacity of the WPCF with the objective to establish unit process hydraulic capacities and identify potential future hydraulic bottlenecks.
- The results of the biological and hydraulic modeling were summarized in the capacity assessment.
- Biosolids Handling and Disposal Evaluation
 - Biosolids projections were computed using data provided by the biological model.
 - Biosolids regulatory requirements were reviewed and summarized.
 - Biosolids treatment improvements were reviewed and evaluated for the 20-year planning period. This primarily focused on digester retrofits, location, and expansions.
 - Biosolids dewatering and disposal improvements and alternatives to manage the anticipated future solids production were reviewed and evaluated.
- Alternatives Identification and Selection
 - Alternatives were considered for EBPR optimization, biosolids handling, biosolids dewatering/disposal, beneficial reuse, and other facilities improvements.
 - Developed alternatives were evaluated using a life cycle cost analysis.
 - A staffing analysis considered the need for additional staff based on the alternatives considered.
 - Final alternative improvement and project packages, as decided by the City, were documented.
 - An Excel spreadsheet tool was developed to identify when the various unit processes should be upgraded based on the results of the capacity evaluations.
- Facility Plan and Capital Improvements Plan (CIP) Development
 - Cost estimates were created for the identified project packages.
 - A CIP was developed which identifies and prioritizes the projects to be completed. Scheduling was based on short-term (0-5 years), mid-range (5-10 years), and long-term (10-20 years) recommended improvements.

Report Organization

This report is intended to provide a methodical description of the City of Pocatello's WPCF. The report is organized to address system components with regard to current and future conditions. The table of contents provides a complete directory of sections included in this report and additional lists of tables and figures are included immediately following the table of contents. Chapters in the report are summarized below.

- Chapter 1 - Project Planning
- Chapter 2 - Existing Conditions & Future Projections
- Chapter 3 - Development & Evaluation of Alternatives
- Chapter 4 - Funding Analysis & CIP Implementation

System Deficiencies and Need for Action

The Pocatello WPCF faces numerous system deficiencies that are beginning to significantly impact overall operating conditions. Of particular concern are the solids handling facilities which appear to be reaching a critical capacity threshold, and the blower capacity which serves the secondary treatment process. Both of these critical systems appear to be at or nearing their

anticipated capacity and alternatives for their improvement are considered herein. Additional deficiencies were noted throughout the treatment facility, as discussed within Chapter 2; however, many of these are relatively minor and can be addressed as maintenance items. Significant needs are addressed as part of the development of the CIP discussed in Chapter 4.

Alternatives Considered

Numerous project alternatives are considered and evaluated throughout Chapter 3. Of greatest importance are those discussed regarding the critical need of expanded solids handling ability. Alternatives for the expansion ranged from making no changes (deemed unfeasible since facilities are at capacity) to expanding the current practice of digestion and solids storage followed by liquid land application and installing mechanical dewatering equipment to minimize the reliance on the solid's storage lagoon.

Digester capacity and additional study of the secondary blowers were also considered as the existing facilities were anticipated to exceed the recommended capacity soon. Longer-term needs are also identified within Chapter 3.

Preferred Alternative

Preferred alternatives and recommendations are discussed and organized into a capital improvement plan (CIP) within Chapter 4. The preferred alternative for the solids handling capacity is installing mechanical dewatering and a potential pilot composting facility. A fourth digester will also be installed; however, the need for this could be delayed if a complete composting facility is implemented. For the aeration basin blowers, an additional study, completed as a pre-design document, is also recommended for the secondary process blowers, following which the City would upgrade the blower capacity based on the conclusions of the detailed pre-design. Other high priority ancillary items are also included in the CIP. Longer term preferred alternatives (2025 and beyond) are provided in Chapter 4.

Financial Analysis

An extensive financial analysis was completed as part of the study. Ultimately it was determined that based on the anticipated growth and the historic user rate increases of 3% annually, the WPCF should be able to generate sufficient revenue to meet operational and maintenance needs while also maintaining a minimum reserve to cover potentially unforeseen issues which may arise. The financial analysis is provided within Chapter 4.

Implementation Schedule

An implementation schedule for the Priority 1 (2021-2025) needs is provided within Chapter 4 and begins with the design and construction of a mechanical dewatering facility and then proceeds to the digester and blower improvements before proceeding to lower priority improvements.