Chapter 1 - Executive Summary

The Ashland Canal Piping Project (The Project) consists of piping 10,700 feet of the Ashland Canal within the City's jurisdiction between Starlite Place and Terrace Street in Ashland, Oregon. The majority of the canal within the City is located in residential areas and is often paralleled by recreational trails making it susceptible to contamination requiring treatment for potable water use and adversely affecting downstream drainages. The City's 2012 Comprehensive Water Master Plan identified the project as an opportunity to reduce losses from evaporation and infiltration, prevent contamination from a variety of sources along the canal, and reduce overflows to Ashland Creek.

The existing open ditch portion of the canal has a gunite lining that is in fair condition with isolated sections of cracking mostly caused by tree roots or failing subgrade. Their are several piped segments totaling approximately 3350 linear feet of canal. The majority of the piped sections are corrugated metal, but there are also sections of HDPE pipe and concrete pipe. There are 5 existing monitoring stations that the city uses along the canal; the main monitoring station located north of Starlite Place is a concrete broad-crested weir. There are seventeen turnouts throughout the project used for irrigation. The project terminates at the Terrace Street Pump Station where it can be pumped to the City's treatment plant, diverted to a TID canal/piping, or discharged to Ashland Creek.

Because the project primarily lies in a dense residential area, there are numerous constraints to address in the design of this project. There are 86 properties that the canal crosses or is adjacent to within the project. Some of the constraints on these properties include trees, fences, bridges, driveways, and vaults. Trees are by in large the most common constraint for this project with approximately 300 potentially conflicting trees on the project.

There are seven street crossings throughout this project all of which are paved with concrete curb and gutter on both sides. The crossings are located at Morton Street, S. Mountain Avenue, Emma Street, Elkader Street, Leonard Street, Woodland Avenue, and Starlite Place. Morton Street is the only crossing that has a sidewalk along it. All of the street crossings are piped; Morton Street is a single 36" x 24" arched corrugated metal pipe (CMP), and the other six crossings are dual pipes of various sizes.

There are four major drainages that intersect with the canal within the project area they are in order of occurrence downstream to upstream: Weller Crossing, North Basin, Beach Creek, and Roca Creek. North Basin is the only intersection that flows into the canal, the other three drainages are piped under the canal. North Basin during a 50-year storm has a peak flow of 1.21 cfs into the canal. There are 15 other drain pipes that flow into the canal most of which are footing or roof drains with minimal impact on flow with the exception of two 12 inch culverts that flow into the canal from Pinecrest Street.

The primary design criteria for the project design are flow capacity and maximum upstream water surface elevation. TID specified a limit of 6 cfs as the baseline for design flow for the project which is supported by the historical flow data as well as the hydraulic analysis completed by Adkins. Since the upstream canal has limited capacity, there is no need to over design the pipeline since there would be no added benefit. A factor of safety was added to account for field adjustments during construction; therefore, the recommended design flow is 7.2 cfs for the pipeline.

Since the upstream flows are restricted to a maximum of 6 cfs there is no capacity to develop pressure head for the pipeline. Open channel flow analysis of the canal section approaching the Starlite Monitoring Station indicates that the maximum flow produces a flow depth of approximately 1 ft upstream approaching Starlite Place. Based on this and the topographic survey completed by Adkins, the maximum upstream water surface elevation is 2327.05 ft.

Four alternatives were evaluated for the design and presented to the City as viable alternatives for the Project. Each of the alternatives met the design criteria of 7.2 cfs of flow and a maximum upstream surface water elevation of 2327.05 ft.

- **Alternative 1:** All 24-inch corrugated HDPE pipeline
- **Alternative 2:** 30-inch corrugated HDPE pipeline with 24-inch corrugated HDPE crossings
- **Alternative 3:** 30-inch corrugated HDPE pipeline with 24-inch corrugated HDPE crossings, retain and rehabilitate the existing pipe from Elkader Street ending near Beach Street.
- **Alternative 4:** 30-inch corrugated HDPE pipeline with 24-inch corrugated HDPE crossings, retain and rehabilitate the existing pipe from Elkader Street to S. Mountain Avenue.

Of the four alternatives, The City chose Alternative 1, a 24-inch corrugated HDPE pipeline, as the preferred alternative for the project. The inlet structure will be located south of the Starlite Place crossing and include a traveling bar screen to collect and remove debris traveling down the TID canal. A non-contact flow meter such as an ultrasonic flow meter will be installed to monitor flows. The inlet structure will also have an overflow bypass weir to protect the upstream canal from overtopping in the unlikely event of a blockage of the traveling bar screen. At the Terrace Street Pump Station, the current trash rack will be removed, and the 24-inch pipeline will be connected into the existing wet well structure.

The 24-inch corrugated HDPE pipeline is estimated to have a total project cost of $2,937,000 (2018 dollars). This cost estimate includes project soft costs such as final design, construction administration, public outreach, contingency, as well as all construction costs. The estimated construction cost is $2,097,000 (2018 dollars).

Construction of the Ashland Canal Piping project is expected to begin at the end of the 2019 water year and will primarily occur during the non-irrigation season (October 1st to April 15th). Construction is expected to last 18 calendar months and cover two irrigation seasons.