INTERLAKEN TOWN, UTAH

WATER SYSTEM CAPITAL FACILITIES PLAN ADOPTION
October 6, 2026

RESOLUTION NO. 2026-10-06

A RESOLUTION ADOPTING AN INTERLAKEN
WATER SYSTEM CAPITAL FACILITIES PLAN

WHEREAS, the Interlaken Town Council finds it in the best interests of the Town and the public to evaluate the current condition of the Interlaken municipal water system; and

WHEREAS, the Interlaken Town Council recognizes the need to plan an investment strategy towards proper maintenance and improvements to the water system to provide ongoing service to residents and customers; and

WHEREAS, the Interlaken Town Council finds it necessary to factor in future investment and maintenance costs while establishing appropriate rates for water usage; and

WHEREAS, the Interlaken Town Council approved the fiscal year 2026 budget expenditure towards preparation of a plan to evaluate and prepare for future capital investment in the water system; and

WHEREAS, Jones and DeMille Engineers have completed an Interlaken Town Capital Facilities Plan as instructed and agreed upon with the Town; and

NOW THEREFORE, it is hereby **RESOLVED** by Interlaken Town, Utah, that the Town Council of Interlaken, Utah adopts the Interlaken Town Culinary Water Capital Facilities Plan, as attached as Exhibit "A".

PASSED AND ADOPTED by the Interlaken Town Council on this 6th day of October, 2026.

INTERLAKEN TOWN

Gregory Harrigan, Mayor

ATTEST:

Bart Smith, Recorder

INTERLAKEN TOWN (SEAL) SEAL UTAH

Exhibit A

TOWN OF INTERLAKEN

CULINARY WATER CAPITAL FACILITIES PLAN

August 3, 2026

Project #: 2502-039

REGISTERED PROFESSIONAL ENGINEER
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STATE OF UTAH
8/3/26

Prepared by:

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1. EXECUTIVE SUMMARY

This Culinary Water Capital Facilities Plan will provide an outline of the existing system components, such as storage, system piping, water rights, and sources. The plan also provides recommendations for the City to supply water for the projected growth. The recommendations in this plan are given to meet the minimum level of service required by the State while providing the best value to the Town of Interlaken.

The Town has a steady growth rate of 1% annual increase of residential connections; however, only about 50% of the connections are full-time residences. Culinary water connections rather than population are used to model growth as shown in Sections 5 and 6.

A single 400,000 gallon water tank significantly exceeds storage requirements as determined by the State of Utah Division of Drinking water rules. Sufficient storage is provided by the existing water tank through build out. See Section 6.1.

The Town of Interlaken has two active wells housed in a single building. Each well can produce 150 gpm of water to a single pipe. The pumps are operated as alternates to each other with one providing supply and the other being a backup. The Division of Drinking Water considers two thirds of the pumping rate as the safe yield of the well. The safe yield is used for planning purposes and determines the number of ERCs a well source can support. Existing pumping capacity is sufficient through build out with the pumps remaining as a main supply and a backup. See Section 6.2.

A hydraulic model was created using Innovyze InfoWater Pro modeling software from data collected from the Construction Record Drawings from the 2003 Water Improvement Project and from GPS data. The model was calibrated to the existing system for accuracy. The model shows that the existing system can provide adequate fire flows in all model conditions. It also shows that several improvements could be made to optimize the pressures within the system. See Section 6.3

A pipeline replacement plan is also recommended largely based on the Corrosion report prepared by Atlas Technical Consultants, LLC. The significant corrosion identified in the report increases the risk of waterline breaks in ductile iron pipe. A yearly partial replacement program should be budgeted for to replace the existing ductile iron pipe with PVC pipe and corrosion protected valves and fittings.

The Town of Interlaken has sufficient water rights through build out.

2. INTRODUCTION

The Town of Interlaken is a small, slow growing, exclusively residential community in Wasatch County, Utah. The entire water system of the Town was installed in 2003. The Town of Interlaken hired Jones and DeMille Engineering to prepare a Culinary Water Capital Facilities Plan (Master Plan). This Master Plan will evaluate the system capacity, limitations, and associated strategic improvements that will allow the Town to plan for sufficient source, storage, and distribution capacity necessary to sustain a safe, reliable system and support future growth.

3. DEFINITIONS

ADD	Average Day Demand	LCC	Life Cycle Cost
MG	Million Gallons	PDD	Peak Day Demand
ac-ft	Acre-feet	PID	Peak Instantaneous Demand
DDW	Division of Drinking Water	PRV	Pressure Reducing Valve
DWR	Division of Water Rights	psi	pounds per square inch
ERC	Equivalent Residential Connections	SRF	State Revolving Fund
gpm	gallons per minute	WR	Water Right
IFC	International Fire Code	LOS	Level of Service

4. DEMOGRAPHICS

4.1. POPULATION & CONNECTIONS PROJECTIONS

Growth projections were developed using historic U.S. Census data and data reported by the Town of Interlaken to the Division of Water Rights (2017-2024). The U.S. Census conducted in 2020 reported 179 residents within 78 households, and 138 housing units. In 2020, Interlaken reported 143 active residential culinary water connections, and, in 2024, the Town reported 149 active residential culinary water connections. With approximately half of the Town maintaining permanent legal residences elsewhere, population data is less reliable than connection and usage data. To calculate the projected connections, the future value formula was used, see Equation 1.

$$FC = CC * (1 + r)^t \quad (1)$$

Where:
FC = Future Connections
CC = Current Connections
r = Annual Growth Rate (%)
t = Number of Years Between Current and Future Connections

Between 2017 and 2024, the Town of Interlaken experienced an average of 1% annual growth. The Town of Interlaken is bordered on the south and west by the city of Midway, and on the north and east by Wasatch State Park, so the Town of Interlaken's boundaries cannot expand. Additionally, all land within Interlaken is subdivided as much as it can be, so no additional building lots are able to be subdivided. Because of those two points, residential water connections cannot exceed the existing number of buildable lots, which is 184 lots. With a continued 1% annual growth rate, full buildout will be

reached in the year 2045. The historic and projected connections can be seen in Figure 4-1 - Connections Projections.

One factor that could significantly alter the Town's water usage is that currently approximately 50% of connections are not year-round residents of Interlaken. Each section of this report analyzes the water system based on existing demographics but also mentions how an increase to 100% of connections including year-round residents affects the system.

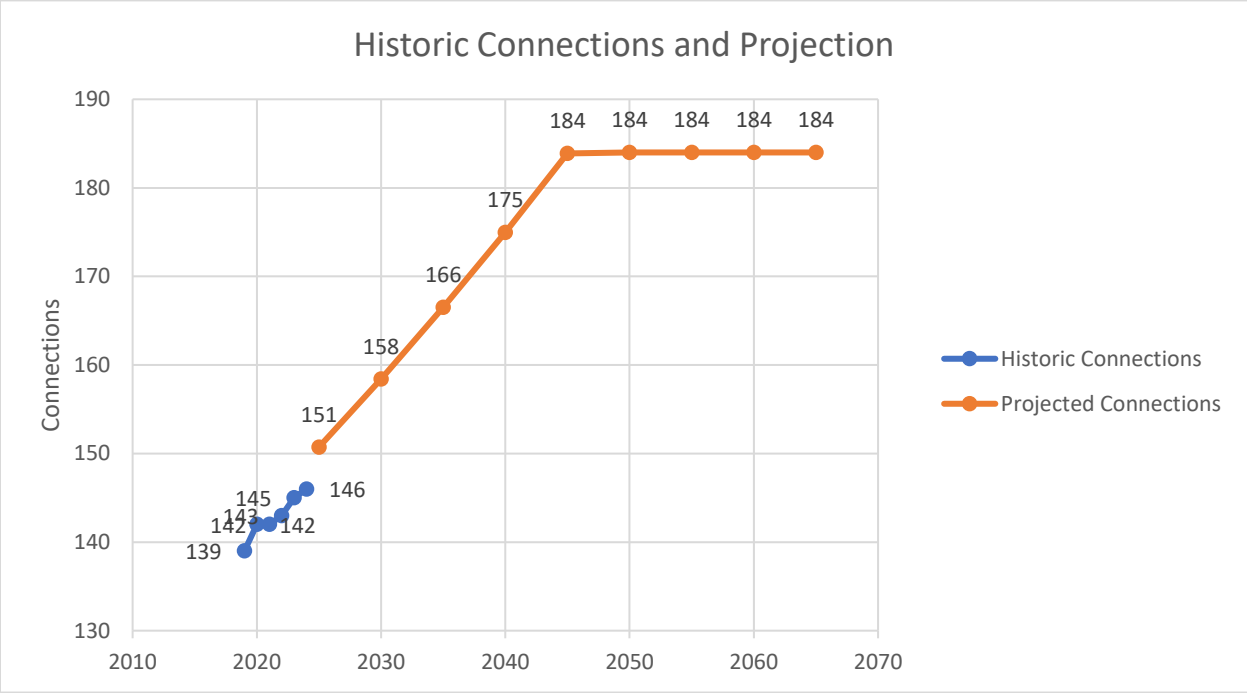


Figure 4-1 - Connections Projections

The Town of Interlaken is an exclusively residential community with no commercial, industrial, or institutional properties or connections. The water system provides water for both indoor and outdoor usage. Water usage for the connections was based on system wide water usage data reported by Interlaken to the Division of Water Rights (2021-2024). Water usage was averaged as equivalent residential connections (ERC).

5. LEVEL OF SERVICE

The State of Utah Division of Drinking Water (DDW) Rules and the Wasatch County Fire Code outline the minimum Level of Service (LOS) that municipal water systems are required to provide. The LOS for Water Rights is determined by the peak flow (based on peak day demand) and the annual diversion limit (based on the average day demand over a year). The LOS for the Town of Interlaken water system is as follows:

Storage

- Equalization storage of 178 gallons per ERC for indoor and outdoor water use
- Fire storage 1,000 gpm for 2 hours (120,000 gallons)
- Emergency storage based upon an assessment of risk and the desired degree of system dependability

Source

- Peak Day Demand of 0.25 gpm per ERC for indoor and outdoor use

Distribution Minimum Water Pressure Requirements

- Peak Day Demand is defined as 0.25 gpm per ERC with 40 psi residual system pressure during peak day demands.
- Peak Instantaneous Demand is defined as 12.50 gpm/ERC with 30 psi during peak instantaneous demands.
    - Peak Instantaneous Demand was calculated using the hydraulic model. The demand per ERC was increased until a node was at 30 psi. The controlling node was at the top of Eiger Point Road.
- Peak Day Demand with Fire Flow Demand is defined as 0.25 gpm per ERC with 20 psi during a fire event (1,000 gpm).

Water Rights

- Given that each ERC is based on the Average Day Demand, each ERC requires 0.119 acre-feet.

6. SYSTEM CAPACITY ANALYSIS

As previously discussed, the Town is somewhat unique in that it has limited buildable area and a large number of connections that are not year-round residents. This has a significant impact on the water demands in the system and should be considered in this evaluation. The current methodology for evaluating the capacities of the system relies on actual usage data. In the event that residents begin residing in their homes year round, the demand on the system would increase. To cover this situation, an additional scenario has been considered. In the past the State has specified usage value for these evaluations. These values have been used as a very conservative estimate of the potential increase in demand. The likelihood of those demands ever being fully reached is very slim, but it does provide a reasonable upper limit when considering this situation. For this reason, this scenario has been checked but will not be used to evaluate the system. It will only be included for reference.

A map of the current system layout can be found in Appendix A Existing System Overview.

6.1. STORAGE CAPACITY ANALYSIS

There is one water storage tank that serves the Town of Interlaken providing 400,000 gallons of storage. The existing ERC capacity was evaluated by first calculating the required fire storage based on the Wasatch County Fire Code. Interlaken fire flow requirements are 1,000 gpm for 2 hours, a total of 120,000 gallons, which is required for fire flow storage.

After the fire storage is accounted for, the tanks need additional storage for emergencies. Currently, the DDW does not specify the amount of storage volume required for emergencies but states,

> "Emergency storage shall be considered during the design process. The amount of emergency storage shall be based upon an assessment of risk and the desired degree of system dependability. The Director may require emergency storage when it is warranted to protect public health and welfare" (Utah Admin Code R309-510-8.4).

The existing storage tank was not designed with "emergency" storage in addition to fire flow storage, so the current emergency storage LOS is 0%. However, there is a significant amount of excess storage capacity as will be explained next in the report. This essentially acts as emergency storage.

The required equalization storage for the Town was determined using the ERC's calculated in Section 4 and the equalization storage requirements outlined in Section 5 Level of Service. Current total storage requirements are calculated in Equation 2. Total storage required at full build out is calculated Equation 3.

$$146\ ERCs * \ 178 \frac{gallons}{ERC} + 1200{,}000\ gallons = 145{,}988\ gallons \quad (2)$$

$$184\ ERCs * 178 \frac{gallons}{ERC} + 120{,}000\ gallons = 152{,}752\ gallons \quad (3)$$

Table 510-4 from Utah Administrative Code R309-510 recommends 400 gallons of equalization storage per ERC. The storage required per ERC would be closer to that number if the Town demographic changed to 100% year-round residents. The Total storage required at full build out with 100% year-round residents is calculated in Equation 4.

$$184\ ERCs * 400 \frac{gallons}{ERC} + 120{,}000\ gallons = 193{,}600\ gallons \quad (4)$$

Based on this calculation, the town has sufficient storage capacity for the anticipated demands and no storage capacity improvements are needed. Table 6-1 – Summary of Storage Requirements and Capacity gives a complete breakdown of storage requirements and capacity.

Table 6-1 – Summary of Storage Requirements and Capacity

	Current Usage	Build out Usage	State Recommendations for Year-Round Residential Use
Total Storage	400,000		
Fire Storage	120,000		
Equalization Storage	25,988	32,752	73,600
Emergency/Remaining Storage	254,012	247,248	206,400

6.2. SOURCE CAPACITY ANALYSIS

The Town of Interlaken has two wells capable of producing 150 gpm which share a single well house and a single feed line into the system. The safe yield of a well is assumed to be two thirds of the production capacity based on R309-515-6(10)(c), so each well is assumed to have a 100 gpm safe yield. Although both pumps could run at the same time if needed, we have assumed only one well operating at a time for this study. Based on current water usage, the existing wells can support 405 ERCs. This is significantly higher than the maximum build out capacity of 184 ERCs.

Table 510-1 in Utah Administrative Code R309-510 recommends a peak day demand of 800 gallons per day per ERC and using that demand a single well pumping 100 gpm has a capacity of 180 ERCs. This is four (4) ERC short of full build out if all connections are year-round residential connections

The two wells provide mechanical redundancy; however, because they share the same waterline and well house, their redundancy is slightly limited. A single waterline break or power outage could leave the system temporarily without a source.

No source capacity improvements are required, but additional redundancy projects could be considered such as a secondary feed line or an emergency connection to Midway City Municipal Water.

6.3. DISTRIBUTION SYSTEM CAPACITY ANALYSIS

6.3.1. HYDRAULIC MODELING

To accurately evaluate the hydraulics of the water line network, a hydraulic model was set up. The base model was created from location data gathered by a GPS unit and water lines drawn to match the as-built plans. A Digital Elevation Model (DEM) was used to apply current elevations to the features in the hydraulic model. The base model was created in ArcGIS Pro by combining the gathered data, the drawn lines matching the as-builts, and the elevations. After creating the base model, the network was modeled using the Innovyze InfoWater Pro Version 2023.

Usage demands are calculated and added to nodes with the model. Historically, the State of Utah has recommended an annual usage rate of 146,000 gallons per connection for year-round residential connections. Recent changes to how usage is calculated now utilize actual usage data reported by the water system. This allows the usage to more accurately reflect the actual demands in the system. As was mentioned previously in the report, the Town of Interlaken estimates that approximately 50% of the current connections are second homes and are not occupied year-round. For this report, the usage was calculated both by the current method and the historic method for comparison. The results of both methods are shown in Table 6-2 – Comparison of Usage and State Recommendations below.

Table 6-2 – Comparison of Usage and State Recommendations

	Current Usage	State Recommendations for Year-Round Residential Use
Annual Usage per Connection (gallons)	64,880	146,000
Total Annual Requirement (gallons)	11,937,920	26,864,000
Total Annual Requirement (acre-feet)	36.63	82.44

The current method yielded a significantly lower usage demand than the historic method did. We speculate that a major reason for this is that approximately half of the residences are only occupied part-time.

6.3.2. EXISTING DISTRIBUTION SYSTEM CAPACITY

The existing system underwent evaluation for ADD, PDD, PID, and PDD + Fire scenarios. Due to the significant changes in elevation across the system, the system has a wide range of system pressures. For the ADD, PDD, and PID scenarios, the system meets flow and pressure requirements.

6.3.2.1. SYSTEM PRESSURES

For the fire flow scenario, the IBC requires fire hydrants to have a minimum specified flow combined with no less than 20 psi through the system during PDD. The minimum flow varies based on building size, type, and use. The Wasatch County Fire District requires 1,000 gpm for 2 hours for resident protection fire hydrants at 20 psi through the system. Facilities constructed prior to this rule requirement may not meet these conditions; however, when improvements are made to older facilities or newer facilities are constructed, they should provide the necessary system improvements to meet their required fire flow conditions.

In Section R309-550-5 of the Utah Administrative Code, the maximum allowable static pressure in distribution pipelines containing service connections is 150 psi. As a general practice, however, it is recommended that the pressures be kept below 130 psi. Furthermore, as the system has been found to be bedded in highly corrosive soils and has experienced failures due to corrosion in the past, there is

additional regard for further reducing system pressures to help decrease the severity of a failure where the likelihood is higher.

In an ADD scenario, the model indicates that the static pressure for more than 50% of the nodes in the system exceed 130 psi and nearly 30% exceed 150 psi. In the existing upper pressure zone, pressures range from 200 psi to 52 psi and in the existing lower pressure zone, pressures range from 148 psi to 61 psi. As currently operated, both pressure zones experience high pressures exceeding the recommended maximum of 130 psi. In the upper zone, a significant number of nodes exceed the maximum allowable pressure of 150 psi but also gets as low as 52 psi in one area.

To accommodate for the high pressures, each connection has been equipped with a pressure reducing valve.

6.3.3. DISTRIBUTION SYSTEM CAPACITY IMPROVEMENTS

As indicated in the previous section, the system experiences high pressures. The Town has also experienced several pipe failures that appear to be related to the corrosive soils. The Interlaken Pipe Corrosion report prepared by Atlas Technical Consultants, LLC identifies significantly corrosive soils throughout the entire system. The combination of a water system with high pressure in ductile iron pipes and relatively highly corrosive soils leads to an elevated risk of pipe breaks like was experienced by the Town on St. Moritz Road. To resolve this issue, three alternatives were identified and evaluated. They are summarized below.

Alternative 1 – Pressure Reducing Valves with a Booster Pump Station

In order to regulate the high pressure issues in both the upper and lower pressure zones in the system, the creation of additional pressure zones is recommended. The additional zones will allow the range of pressures to be significantly reduced by isolating the areas of higher pressures and adding a PRV.

In the existing lower zone, the pressures are set by the existing PRV on St. Moritz Road. The PRV is located in the middle of the zone with regards to elevation. The high point in the zone is located at the west end of Interlaken Drive, and the low point is at the southeast corner of the Town on Interlake Drive. In order to maintain the minimum pressures at the high point, it is recommended that a new zone be created for the southeast corner of the Town as shown in Appendix C Proposed Improvements Overview. This new zone would be labeled Zone 5, and the remainder of the existing lower zone would be labeled Zone 4.

In the existing upper zone, there is an area in the northwest corner of the Town that is currently at the minimum allowable pressures. It is also at the furthest point in the zone from the storage tank, which means that the pressures cannot be reduced in any other area without dropping this area out of compliance. A booster pump station will be required to maintain the minimum pressures while still allowing for areas in the rest of the zone to be reduced and creating what should be called Zone 3.

To reduce the pressures in the existing upper zone it is recommended that another new zone, in the northeast corner of the Town, which will include the storage tank and storage tank transmission line. With the installation of a PRV on Big Matterhorn Circle, the pressures in the remaining area of the upper zone can be reduced to an acceptable range. The new zone would be labeled Zone 1, and the remaining area of the upper zone would be labeled Zone 2. The boundaries of these and all the new zones in shown in Appendix C Proposed Improvements Overview. The recommend pressures for each of the PRVs in the system is shown below in Table 6-3 Table 6-3 – Recommended PRV Settings*.

Table 6-3 – Recommended PRV Settings*

	Existing Setting	Recommended Setting
Big Matterhorn PRV	-	50
St Moritz PRV	100	100
Interlaken PRV	-	60

*For average day demands. If the PRV has a low flow bypass, the main valve should be set 5 psi lower.

Alternative 2 – Pressure Reducing Valves with a Dedicated Waterline

Alternative 2 utilizes the same zone delineation and PRV installation as Alternative 1, but with a dedicated waterline installed in place of the booster pump station to provide pressures and fire flows to Zone 3.

Alternative 3 – Replace Existing Ductile Iron Pipes

According to the Interlaken Mutual Water Company 2003 Water Improvement Project Record Drawings produced by Sowby & Berg Consultants, the pipe material used for the construction of the distribution system was ductile iron pipe. Ductile Iron Pipe is highly susceptible to the corrosive soils. In order to prevent further pipe failures, all segments of ductile iron pipe should be replace with PVC pipe and corrosion protected valves and fittings. Priority should be given to the pipes connecting the wells and the tank to the system.

6.4. WATER RIGHTS ANALYSIS

Currently, the Town of Interlaken has approximately 83.85 acre-feet per year of water rights, see Table 6-4 – Water Rights. Given that each ERC is based on the Average Day Demand, each ERC requires 0.119 acre-feet. The number of ERCs that Interlaken has sufficient water rights for is 421 ERCs. If per ERC usage increased to the levels anticipated in R309-510 (146,000 gallons/connection), Interlaken would have sufficient water rights for 187 ERCs.

Table 6-4 – Water Rights

WR No. & Change App.	Owner	Volume (AF)	Source	Use	Status	Application Status
55-6976 a53081	Interlaken Mutual Water Company	77.85	Interlaken Underground Water Wells (2)	Municipal		Approved
55-13624 a51351	Interlaken Town	6	Interlaken Underground Water Wells (2)	Municipal		Approved

6.5. IMPROVEMENT COSTS

A summary of anticipated improvement costs for each of the three alternatives are given in Table 6-5 – Improvement Costs Summary in 2025 dollars. Each alternative is intended to make line breaks less likely, either by reducing pressures or making the pipe less susceptible to corrosion. Alternatives 1 and 2 focus on reducing system pressures while Alternative 3 is a pipe replacement plan to reduce the risk of corrosion.

Table 6-5 – Improvement Costs Summary

Alternative	Description	Cost	Year Needed
1	New pressure reducing valve located on Big Matterhorn Circle between lots 255 and 259 reducing existing pressure from 102 psi to 50 psi to provide lower proper pressures to Jungfrau Hill Road and Bern Drive. Along with a new booster pump station located on Jungfrau Hill Road between lots 104 and 109 to provide proper pressures to the northwest corner of town.	$1,099,475.00	As desired
2	New pressure reducing valve located on Big Matterhorn Circle between lots 255 and 259 reducing existing pressure from 102 psi to 50 psi to provide lower proper pressures to Jungfrau Hill Road and Bern Drive. Along with a pipeline connecting the higher pressure zone to the high elevation northwest corner of town.	$931,200.00	As desired
3	Replacement of sections of ductile iron pipe with PVC pipe and corrosion protected valves and fittings. Replacements should prioritize highest risk pipe sections.	$422/LF $8,105,983.00	As possible each year
Interlaken Dr PRV	New pressure reducing valve located on Interlaken Drive between lots 247 and 251 reducing existing pressures from 119 psi to 60 psi to provide lower proper pressures to the southeast corner of town.	$96,000.00	As desired

The pipeline replacements should be prioritized based on corrosion potential and high pressure. The prioritization can be seen in Appendix C.

APPENDIX A. EXISTING SYSTEM OVERVIEW



Fire Hydrant
Valve
PRV
Well
Tank
Well House

Pipeline - Main
2"
4"
6"
8"
12"
1 1/2" (Service)

Existing Pressure Zone Line
Town Boundary

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Existing System Overview

Map Name: H:\JD\Proj\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - Interlaken - Culinary Water CFP - Existing System Overview 11x17L

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Wasatch County, Utah

Scale: 1" = 300'

1

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Pine Canyon Rd
Golf Course Dr
Eiger Point Rd
Jungfrau Hill Rd
Interlaken Dr
Bern Way
Luzern Rd
Cambridge Ct
Cambridge Dr
Canyon View Rd
Jerry Gertsch Ln
Wilson Ct
Hampton Dr
Provence Way
Chancey Ln
Luzern Rd
Altamont Dr
St Moritz Rd
Big Matterhorn Cir
1690 N
300 E
450 E
Dutch Mountain Dr
Pine Canyon Rd
1
2
3
4 - Not included in Resistivity testing
5
6
7
N
0
500
1,000
Feet

Resisivity Score by Area				
Score			Areas	Score
Very Severe	5		1	5
Severe	4		2	3
Moderate	3		3	4
Mild	2		5	4
Negligible	1		6	3
			7	4

Sample Sites
Corrosion Potential Zones

Resisivity Score
5 - Very Severe
4 - Severe
3 - Moderate
2 - Mild
1 - Negligible

Existing System
Fire Hydrant
Valve
PRV
Well
Tank
Well House
Pipeline

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Corrosion Potential Zones Overview

Map Name: H:\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - 5. Interlaken - Culinary Water CFP - Corrosion Potential Zones Overview 11x17L
Project Number: 2502-039 | Drawn by: JEM 01-26 | Last Edit: 01/13/2026

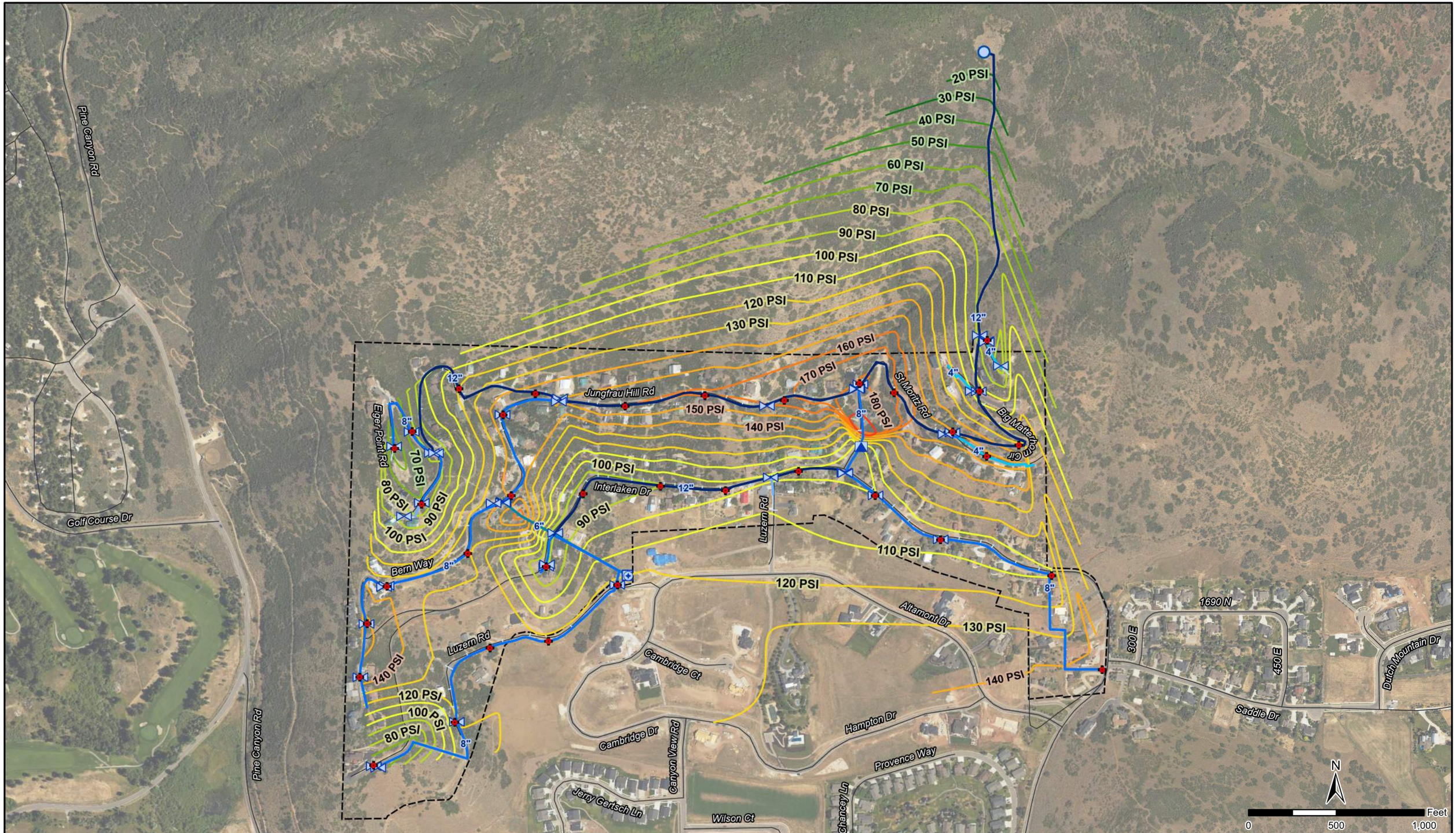
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2

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APPENDIX B. PEAK DAY DEMAND OVERVIEW



Peak Daily Demand (PDD) Pressure

- 20 - 40 PSI
- 40 - 60 PSI
- 60 - 80 PSI
- 80 - 100 PSI
- 100 - 120 PSI
- 120 - 140 PSI
- 140 - 160 PSI
- 160 - 180 PSI
- >180 PSI

Existing System

- Fire Hydrant
- Valve
- PRV
- Well
- Tank
- Well House

Pipeline

- 2"
- 4"
- 6"
- 8"
- 12"
- 1 1/2" (Service)

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Peak Daily Demand (PDD) Overview

Map Name: H:\JD\Proj\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - Interlaken - Culinary Water CFP - Peak Daily Demand Overview 11x17L

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3

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APPENDIX C. PROPOSED IMPROVEMENTS OVERVIEW

8" Waterline - Alternative 2

Alternative 1

To Tank

Tank Inset

Zone 1

Zone 2

Zone 3

Zone 4

Zone 5

Alternative 1 & 2

Separate from either alternative

Jungfrau Hill Rd

Eiger Point Rd

St Moritz Rd

Big Matterhorn Cir

Interlaken Dr

Luzern Rd

Bern Way

Altamont Dr

Cambridge Ct

Cambridge Dr

Canyon View Rd

Hampton Dr

Provence Way

Jerry Gertsch Ln

Chancey Ln

300 E

Saddle Dr

12"

8"

6"

4"

2"

N

0 300 600 Feet

Alternative 1 - Big Matterhorn Circle PRV and Booster Pump Station
Alternative 2 - Big Matterhorn Circle PRV and Pipeline Connection
Interlaken Dr PRV - Separate from Alternatives

Proposed Improvements
- Proposed Pump Station
- Proposed PRV
- Proposed Pipeline

Proposed Pressure Zones
- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5

Existing System
- Fire Hydrant
- Valve
- PRV
- Well
- Tank
- Well House

Pipeline
- 2"
- 4"
- 6"
- 8"
- 12"
- 1 1/2" (Service)

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Proposed Improvements Overview

Map Name: H:\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - Interlaken - Culinary Water CFP - Proposed Improvements Overview 11x17L

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4

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Project	Location	Project	Location
1	6" Pump Line (outside of roadway)	16	West Luzern Road
2	Existing PRV to Jungfrau Hill Road	17	Full Length Big Matterhorn Way
3	275 Jungfrau Hill Road thru 272 Jungfrau Hill Road	18	West Luzen Road to Interlaken Dr
4	307 Jungfrau Hill Road thru 299 Jungfrau Hill Road	19	8" Parallel to 6" Pump line
5	Entire Frontage of 270 Jungfrau Hill Road	20	265 Interlaken Dr thru 247 Interlaken Dr
6	321 Jungfrau Hill Road thru 311 Jungfrau Hill Road	21	259 Big Matterhorn Way to Valve to tank
7	295 Jungfrau Hill Road thru 279 Jungfrau Hill Road	22	324 Interlaken Dr thru 307
8	268 Jungfrau Hill Road thru 260 Jungfrau Hill Road	23	Eiger Point Road
9	330 Jungfrau Hill Road thru 324 Jungfrau Hill Road	24	West Jungfrau Hill Road thru 340 Jungfrau Hill Road
10	Bern Way	25	Transmission Line to Tank (outside of roadway)
11	Full Length of St Moritz Road	26	337 Interlaken Dr thru 328 Interlaken
12	Back lot lines Waterline East Interlaken Dr	27	East Big Matterhorn Way
13	250 Big Matterhorn Way (South Side)	28	303 Interlaken Dr thru 267 Interlaken Dr
14	337 Jungfrau Hill Road thru 332 Jungfrau Hill Road	29	Existing PRV to Interlaken Dr
15	250 Big Matterhorn Way thru 255 Big Matterhorn Way		

Town Boundary

Pipe Replacement Prioritization - Project

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Pipe Replacement Prioritization Overview

Map Name: H:\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - 4. Interlaken - Culinary Water CFP - Pipe Replacement Prioritization Overview 11x17L

Project Number: 2502-039 | Drawn by: JEM 01-26 | Last Edit: 01/13/2026

Wasatch County, Utah

Scale: 1" = 300'

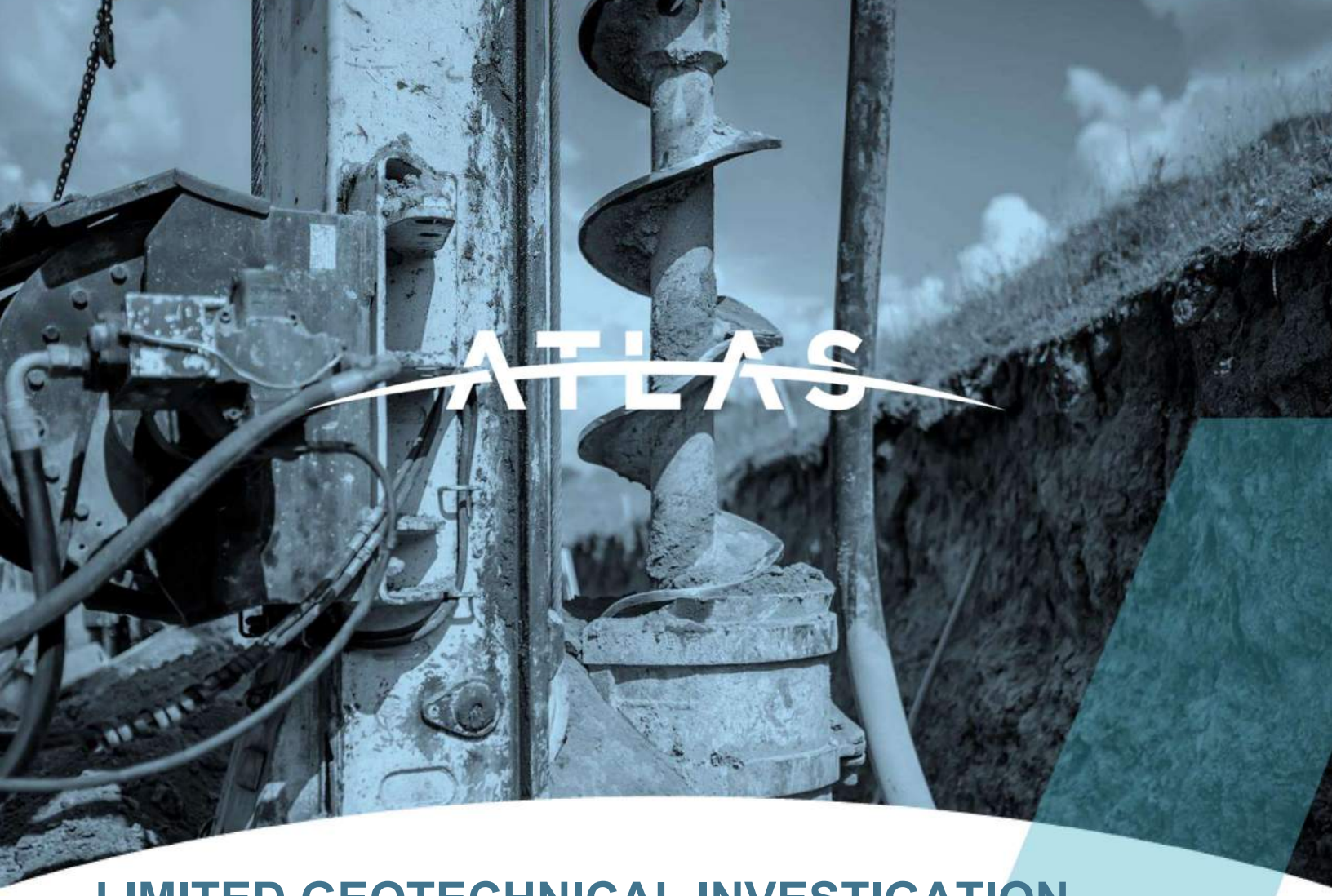
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Table C-6 – Pipe Replacement Prioritization

Project	Location	Length	Size	Resistivity	Pressure	Score	Estimated Cost
1	6" Pump Line (outside of roadway)	841	6	4.75	11	52.25	$ 219,501.00
2	Existing PRV to Jungfrau Hill Road	334	8	4	11	44	$ 140,948.00
3	275 Jungfrau Hill Road thru 272 Jungfrau Hill Road	591	12	4	10	40	$ 249,402.00
4	307 Jungfrau Hill Road thru 299 Jungfrau Hill Road	392	12	5	8	40	$ 165,424.00
5	Entire Frontage of 270 Jungfrau Hill Road	211	12	4	9	36	$ 89,042.00
6	321 Jungfrau Hill Road thru 311 Jungfrau Hill Road	451	12	5	7	35	$ 190,322.00
7	295 Jungfrau Hill Road thru 279 Jungfrau Hill Road	533	12	4	8	32	$ 224,926.00
8	268 Jungfrau Hill Road thru 260 Jungfrau Hill Road	484	12	4	8	32	$ 204,248.00
9	330 Jungfrau Hill Road thru 324 Jungfrau Hill Road	644	12	5	6	30	$ 271,768.00
10	Full Length of Bern Way	2705	8	5	6	30	$ 1,141,510.00
11	Full Length of St Moritz Road	572	4 & 8	4	7	28	$ 241,384.00
12	Back lot lines Waterline East Interlaken Dr	840	8	4	6	24	$ 354,480.00
13	250 Big Matterhorn Way (South Side)	339	12	4	6	24	$ 143,058.00
14	337 Jungfrau Hill Road thru 332 Jungfrau Hill Road	773	12	5	4	20	$ 326,206.00
15	250 Big Matterhorn Way thru 255 Big Matterhorn Way	469	12	4	5	20	$ 197,918.00
16	West Luzern Road	1646	8	4	4	16	$ 694,612.00
17	Full Length Big Matterhorn Way	246	4	4	4	16	$ 103,812.00
18	West Luzen Road to Interlaken Dr	596	8	4	3	12	$ 251,512.00
19	8" Parallel to 6" Pump line	502	8	4	3	12	$ 211,844.00
20	265 Interlaken Dr thru 247 Interlaken Dr	1130	8	4	2	8	$ 476,860.00
21	259 Big Matterhorn Way to Valve to tank	327	12	4	2	8	$ 137,994.00
22	324 Interlaken Dr thru 307	497	12	5	1	5	$ 209,734.00
23	Eiger Point Road	664	8	5	1	5	$ 280,208.00
24	West Jungfrau Hill Road thru 340 Jungfrau Hill Road	434	8	5	1	5	$ 183,148.00
25	Transmission Line to Tank (outside of roadway)	1750	12	4	1	4	$ 456,750.00
26	337 Interlaken Dr thru 328 Interlaken	530	8 & 12	4	1	4	$ 223,660.00
27	East Big Matterhorn Way	232	4 & 8	4	1	4	$ 97,904.00
28	303 Interlaken Dr thru 267 Interlaken Dr	1296	12	3	1	3	$ 546,912.00
29	Existing PRV to Interlaken Dr	168	8	3	1	3	$ 70,896.00
Total Cost to Replace All Pipes							**$ 8,105,983.00**

APPENDIX D. PIPE CORROSION REPORT



LIMITED GEOTECHNICAL INVESTIGATION

INTERLAKEN PIPE CORROSION

Interlaken Drive
Midway, UT

PREPARED FOR:

Michael Hartvigsen
Jones & DeMille Engineering Inc.
1535 South 100 West
Richfield, UT 84701

PREPARED BY:

Atlas Technical Consultants, LLC
2791 South Victory View Way
Boise, ID 83709

August 7, 2025
B250976g

2791 South Victory View Way
Boise, ID 83709
(208) 376-4748 | oneatlas.com

August 7, 2025

Atlas No. B250976g

Michael Hartvigsen
Jones & DeMille Engineering Inc.
1535 South 100 West
Richfield, UT 84701

Subject: Limited Geotechnical Investigation
Interlaken Pipe Corrosion
Interlaken Drive
Midway, UT

Dear Michael Hartvigsen:

In compliance with your instructions, Atlas has conducted a limited soils exploration for the above referenced development. Fieldwork for this investigation was conducted on July 10, 2025. Data have been analyzed to evaluate pertinent geotechnical conditions. Results of this investigation, together with our recommendations, are to be found in the following report. We have provided a PDF copy for your review and distribution.

Often, questions arise concerning soil conditions because of design and construction details that occur on a project. Atlas would be pleased to continue our role as geotechnical engineers during project implementation.

If you have any questions, please call us at (208) 376-4748.

Respectfully submitted,

Keaton Ward
Staff Geologist

PROFESSIONAL ENGINEER
No. 14221399
ETHAN
SALOVE
08/11/2025
STATE OF UTAH

Ethan Salove, PE
Senior Geotechnical Engineer

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   2.1 Regional Geology 1
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Appendix II Vicinity Map
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Appendix IV Geotechnical Investigation Boring Log
Appendix V Geotechnical General Notes
Appendix VI Soil Chemical Testing Results
Appendix VII Important Information About This Geotechnical Engineering Report

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1. INTRODUCTION

1.1 Project Description

The investigation was performed in the City of Midway, Wasatch County, UT, and occupies a portion of Section 22 and 23, Township 3 South, Range 4 East, Salt Lake Meridian. The subsurface investigation was conducted to provide information needed in diagnosis of the failure of an existing pipeline structure. Site maps included in the **Appendix** show the project location.

1.2 Scope of Investigation

Our scope of work was completed in general accordance with our proposal dated May 23, 2025 and authorized on June 26, 2025. Said authorization is subject to terms, conditions, and limitations described in the Professional Services Contract entered into between Jones & DeMille Engineering Inc. and Atlas.

Atlas' scope of services included the following:

- Subsurface exploration via borings.
- Field and laboratory testing of materials encountered and collected.
- Preparation of this report, which includes project description, site conditions, and our engineering analysis and evaluation for the project.
- Our scope of work for the project is limited to providing summaries of the explorations as well as laboratory testing.

2. SITE DESCRIPTION

2.1 Regional Geology

The subject site is located in Heber Valley along the eastern margin of the Wasatch range in north-central Utah. Sediments deposited here were derived from Pennsylvanian to Jurassic age bedrock from the surrounding Wasatch Range. Surficial sediments were deposited as mixed alluvium and glacial sediments during the Tertiary Period (1.6 to 66 million years ago). These sediments generally consist of sand, silt, clay, and pebble to boulder sized gravels. (UGS, 2022).

2.2 General Site Characteristics

The following details regarding site conditions are based on visual observations and review of available geologic and topographic maps and imagery:

- **Current Site Conditions:** The site currently exists as a residential subdivision with associated streets. Borings were conducted outside of the paved roadway at various locations along East Altamont Drive, Luzern Road, Interlaken Drive, Bern Way, Big Matterhorn Circle and West St Moritz Road.
- **Vegetation:** Vegetation throughout the area consists primarily of landscape trees, shrubs, and grasses adjacent to the individual residences within the subdivision. Native weeds and grasses were also noted adjacent to the roadways.

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- **Topography:** The subdivision is located on the south slope of Phosphate Hill and Donkey Ridge and generally slopes downwards from the northeast and northwest to the south. Extreme grades are present at various locations throughout the subdivision, particularly along West St Moritz Road and Big Matterhorn Circle to the northeast of the subdivision.
- **Drainage:** Stormwater drainage for the site is achieved by both sheet runoff and percolation through surficial soils. Runoff predominates for the steeper slopes and paved areas while percolation prevails across the gently sloping, near level areas and unpaved areas.

3. SOILS EXPLORATION

3.1 Exploration and Sampling Procedures

Field exploration conducted to determine engineering characteristics of subsurface materials included a reconnaissance of the project site and investigation by soil boring. A site map with boring locations was provided to Atlas by Michael Hartvigsen of Jones and DeMille Engineering. Borings were advanced by means of a track-mounted drilling rig equipped with continuous flight hollow-stem augers. At specified depths, samples were obtained using a standard split-spoon sampler, and Standard Penetration Test (SPT) blow counts were recorded. Uncorrected SPT blow counts are provided on logs, which can be found in the **Appendix**. At completion of exploration, borings were backfilled with loose excavated materials.

Samples have been visually classified in the field, identified according to boring number and depth, placed in sealed containers, and transported to our laboratory for additional testing. Subsurface materials have been described in detail on logs provided in the **Appendix**. Results of field and laboratory tests are also presented in the **Appendix**. Atlas recommends that these logs not be used to estimate fill material quantities.

3.2 Laboratory Testing Program

Along with our field investigation, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of subsurface materials. Laboratory tests were conducted in accordance with current specifications. The laboratory testing program for this report included:

- Atterberg Limits Testing – ASTM D4318
- Grain Size Analysis – ASTM C117/C136
- Soil Resistivity – SSSA 10-3.3
- Soil and Waste pH – EPA 9045D
- Water Soluble Sulfate Ion Content in Soil – EPA 300.0
- Water Soluble Chloride Content in Soil – EPA 300.0
- Oxidation-Reduction Potential of Soil – ASTM G200

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3.3 Soil and Sediment Profile

The profile below represents a generalized interpretation for the project site. Note that on site soils strata, encountered between boring locations, may vary from the individual soil profiles presented in the logs.

Surficial soils consisted of very stiff fine-grained clays and silts with varying sand content. These soils were underlain by medium dense to dense silty and clayey sand mixtures with varying amounts of gravel. During excavation, boring sidewalls were generally stable. However, moisture contents will affect wall competency with saturated soils having a tendency to readily slough when under load and unsupported.

4. CHEMICAL TEST RESULTS

Limited chemical testing consisting of pH, resistivity, water-soluble sulfates, and water-soluble chlorides was conducted on select soil samples. The results of the chemical testing are included in the **Appendix** and shown below in **Table 1**. The following sections of this report discuss several variables of corrosion potential. The results of the analysis are localized and only applicable to the area and depth at which the sample was obtained.

A complete assessment of the corrosion potential of the site soils should be performed by a corrosion engineer and is outside of our scope of work and practice. For specific long-term corrosion control design recommendations, we recommend a professional corrosion engineer evaluate the corrosion potential of the soil environment on buried concrete structures, steel pipe coated with cement-mortar, and ferrous metals.

Table 1 – Chemical Test Results

Location	pH	Resistivity (ohm cm)	Soluble Sulfates (ppm)	Soluble Chlorides (ppm)
B-1: 2.5 feet bgs	8.0	440	26	298
B-2: 5.0 feet bgs	8.1	3,970	ND*	17
B-3: 5.0 feet bgs	8.2	1,520	17	122
B-5: 5.0 feet bgs	7.8	1,300	ND*	ND*
B-6: 5.0 feet bgs	7.2	5,620	ND*	ND*
B-7: 5.0 feet bgs	8.6	1,920	13	29

***Not detected at the corresponding Minimum Reporting Limit (MRL).**

4.1 Potential of Hydrogen (pH)

The pH of the soil was found to be between 7.2 to 8.6 for select samples. The pH of soils can be used as an indicator of corrosion loss potential for buried metals. Extremely acidic soils (below pH 4.5) and very strongly alkaline soils (above pH 9.1) have significantly higher corrosion loss potential when compared to more neutral soils.

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4.2 Resistivity

Resistivity was found to be 440 to 5,620 Ω-cm for select samples representing moderate to severe exposure. Metals buried in low resistivity soils will generally be anodic, and thus highly susceptible to oxidation. Metals buried in high resistivity soils will generally be cathodic, and thus more resistant to oxidation. Metals buried in soils with low resistivity require cathodic protection or passive protection such as zinc or epoxy coating. **Table 2** presents typical corrosivity ratings of soils based on their resistivity.

Table 2 – Resistivity Corrosion Potential

Resistivity (Ω-cm)	Corrosivity Rating
Ω-cm < 2,000	Severe
2,000 ≤ Ω-cm ≤ 10,000	Moderate
10,000 ≤ Ω-cm ≤ 30,000	Mild
Ω-cm > 30,000	Negligible

4.3 Water Soluble Sulfates

Sulfate content was found to range from Not Detectable (ND) to 26 ppm for select samples representing negligible exposure. Water-soluble sulfates and sulfides produced by anaerobic bacteria can be highly corrosive to buried metal and concrete structures. Contact with moist soils containing significant amounts of water-soluble sulfates can initiate intensive corrosion, such as uniform oxidation or localized pitting. The crystallization of salts in soils can contribute to heaving flatwork such as pavements and sidewalks. **Table 3** presents a summary of typical sulfate exposure severity classes and ACI recommended construction modifications.

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Table 3 – Water-Soluble Sulfate Exposure

Water-Soluble Sulfate (SO_4) in Soil (ppm)	Exposure Severity
SO4 < 150	Negligible
150 ≤ SO_4 < 1500	Low
1,500 ≤ SO_4 < 10,000	Moderate
10,000 ≤ SO_4	Severe
10,000 ≤ SO_4	Severe

4.4 Water Soluble Chlorides

Chloride content was found to range from Not Detectable (ND) to 298 ppm for select samples classifying as low to moderate. Water-soluble chlorides in soil can lead to an oversaturation of the chloride ion in concrete exposed to the chloride-bearing soil and moisture. Diffusion of chloride ions from external sources can lead to an oversaturation of chlorides in concrete and induce corrosion of reinforcing steel and concrete. **Table 4** presents chloride corrosion potential.

Table 4 – Chloride Corrosion Potential

Chloride Content (ppm)	Corrosivity Rating
ppm > 1,500	Very Severe
700 ≤ ppm ≤ 1,500	Severe
200 ≤ ppm ≤ 700	Moderate
ppm < 200	Low

4.5 Oxidation-Reduction Potential (ORP)

A grab sample of sandy silt was collected from boring B-4 at a depth of 5.0 to 6.5 feet below ground surface (bgs) during our field exploration. The soil's Oxidation-Reduction Potential (ORP) was measured at 476 millivolts (mV). ORP is commonly evaluated alongside soil pH and resistivity to assess the potential for corrosion of buried metallic structures.

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5. SITE HYDROLOGY

Existing surface drainage conditions are defined in the **General Site Characteristics** section. Information provided in this section is limited to observations made at the time of the investigation. Either regional or local ordinances may require information beyond the scope of this report.

5.1 Groundwater

During this field investigation, groundwater was not encountered in borings advanced to a maximum depth of 6.5 feet bgs. According to Utah Division of Water Rights monitoring well data within approximately ½-mile of the project site, groundwater was measured at depths ranging between 84 and 127 feet bgs.

Based on evidence of this investigation and background knowledge of the area, Atlas has determined that the typical seasonal high groundwater should remain greater than approximately 20.0 feet bgs.

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6. REFERENCES

American Society for Testing and Materials (ASTM) (2017). Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing: ASTM C117. West Conshohocken, PA: ASTM.

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APPENDIX I WARRANTY AND LIMITING CONDITIONS

Atlas warrants that findings and conclusions contained herein have been formulated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology only for the site and project described in this report. These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the site within the scope cited above and are necessarily limited to conditions observed at the time of the site visit and research. Field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above.

Exclusive Use

This report was prepared for exclusive use of the property owner(s), at the time of the report, and their retained design consultants ("Client"). Conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in this report together with the Contract for Professional Services between the Client and Materials Testing and Inspection ("Consultant"). Use or misuse of this report, or reliance upon findings hereof, by parties other than the Client is at their own risk. Neither Client nor Consultant make representation of warranty to such other parties as to accuracy or completeness of this report or suitability of its use by such other parties for purposes whatsoever, known or unknown, to Client or Consultant. Neither Client nor Consultant shall have liability to indemnify or hold harmless third parties for losses incurred by actual or purported use or misuse of this report. No other warranties are implied or expressed.

Report Recommendations are Limited and Subject to Misinterpretation

There is a distinct possibility that conditions may exist that could not be identified within the scope of the investigation or that were not apparent during our site investigation. Findings of this report are limited to data collected from noted explorations advanced and do not account for unidentified fill zones, unsuitable soil types or conditions, and variability in soil moisture and groundwater conditions. To avoid possible misinterpretations of findings, conclusions, and implications of this report, Atlas should be retained to explain the report contents to other design professionals as well as construction professionals.

Since actual subsurface conditions on the site can only be verified by earthwork, note that construction recommendations are based on general assumptions from selective observations and selective field exploratory sampling. Upon commencement of construction, such conditions may be identified that require corrective actions, and these required corrective actions may impact the project budget. Therefore, construction recommendations in this report should be considered preliminary, and Atlas should be retained to observe actual subsurface conditions during earthwork construction activities to provide additional construction recommendations as needed.

Since geotechnical reports are subject to misinterpretation, **do not** separate the soil logs from the report. Rather, provide a copy of, or authorize for their use, the complete report to other design

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professionals or contractors. Locations of exploratory sites referenced within this report should be considered approximate locations only. For more accurate locations, services of a professional land surveyor are recommended.

This report is also limited to information available at the time it was prepared. In the event additional information is provided to Atlas following publication of our report, it will be forwarded to the client for evaluation in the form received.

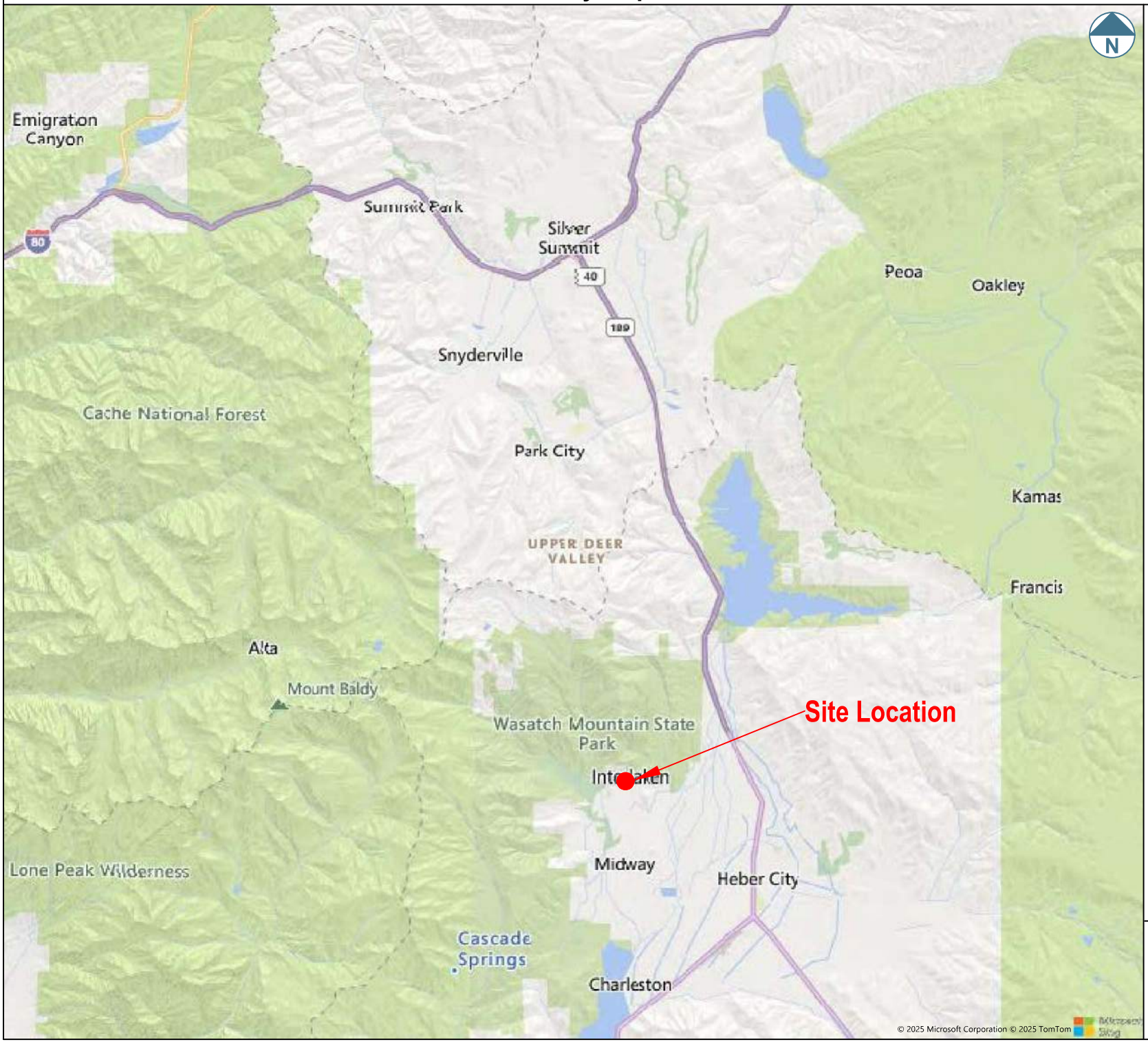
Environmental Concerns

Comments in this report concerning either onsite conditions or observations, including soil appearances and odors, are provided as general information. These comments are not intended to describe, quantify, or evaluate environmental concerns or situations. Since personnel, skills, procedures, standards, and equipment differ, a geotechnical investigation report is not intended to substitute for a geoenvironmental investigation or a Phase II/III Environmental Site Assessment. If environmental services are needed, Atlas can provide, via a separate contract, those personnel who are trained to investigate and delineate soil and water contamination.

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Vicinity Map

Figure 1



MAP NOTES:

- Not to Scale

LEGEND

Approximate Site Location

Interlaken Corrosion Investigation
Interlaken Drive
Midway, UT

Drawn by: KEW
August 6, 2025
Drawing: B250976g

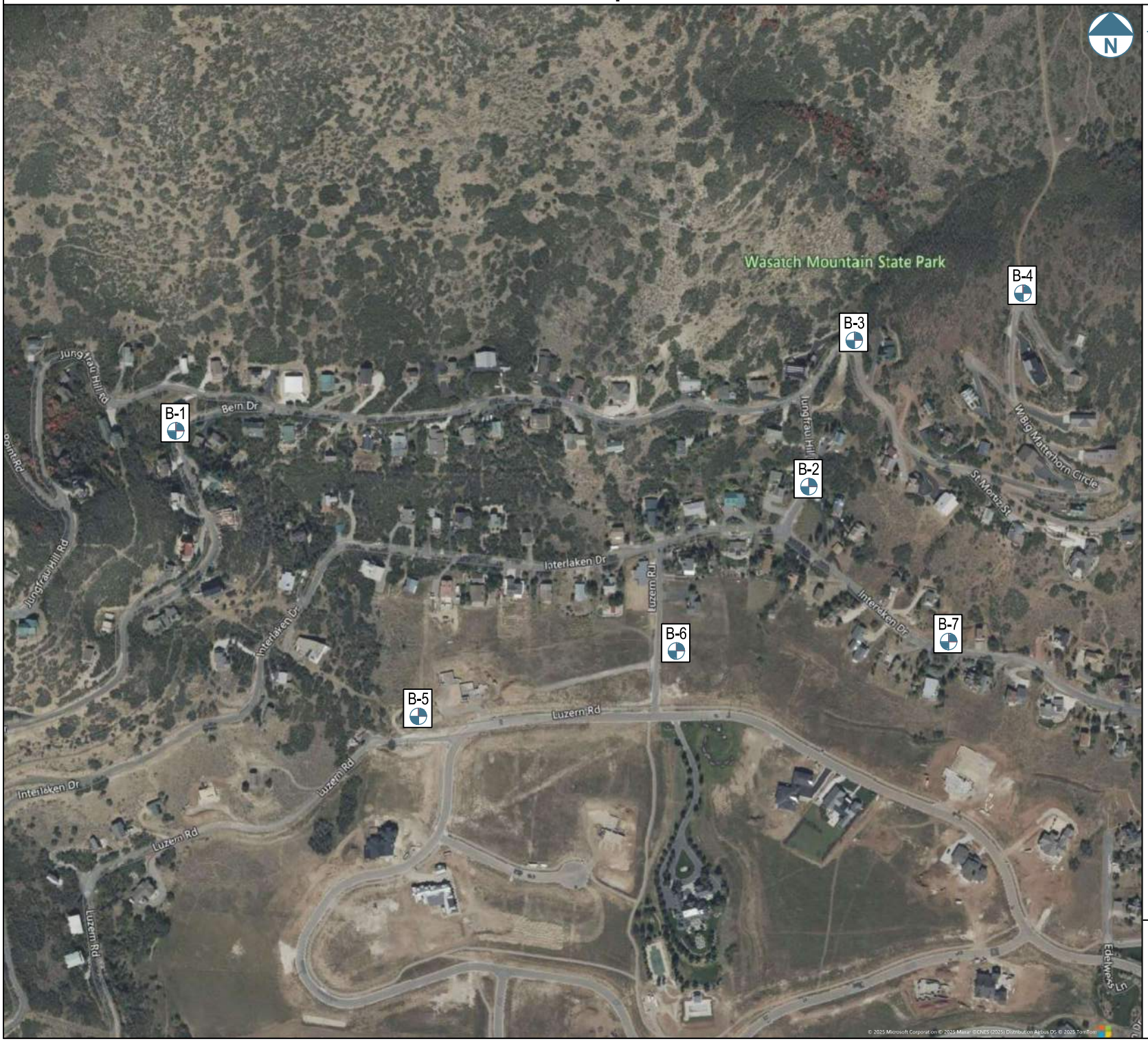
ATLAS

2791 S. Victory View Way
Boise, ID 83709

Phone: (208) 376-4748
Fax: (208) 322-6515
Web: oneatlas.com

Site Map

Figure 2



NOTES:

- Not to Scale

LEGEND

Approximate Atlas Boring Location

Interlaken Corrosion Investigation

Interlaken Drive
Midway, UT

Drawn by: KEW
August 6, 2025
Drawing: B250976g

ATLAS

2791 S. Victory View Way
Boise, ID 83709

Phone: (208) 376-4748
Fax: (208) 322-6515
Web: oneatlas.com

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-1

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54268
LONGITUDE: -111.47864
SURFACE ELEVATION: Not Surveyed
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		SILTY SAND WITH GRAVEL (SM): Gray, dry, dense, with fine to coarse - grained sand.								
		SANDY SILT WITH GRAVEL (ML): Brown, dry, stiff, with fine to coarse - grained sand and fine gravel.							5, 4, 6 (N = 10)	
		SILTY GRAVEL WITH SAND (GM): Red - brown, dry, loose to dense, with fine to coarse - grained sand and fine to coarse gravel.								
5			5.9	NP	NP	64	42.0		10, 23, 20 (N = 43)	
		B - 1 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-2

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54222
LONGITUDE: -111.47117
SURFACE ELEVATION: 5946.29(Ft)
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		SANDY LEAN CLAY WITH GRAVEL (CL): Brown to red - brown, dry, stiff, with fine to coarse - grained sand and fine gravel.								
			6.1	30	12	85	53.7		4, 4, 5 (N = 9)	
5									5, 5, 6 (N = 11)	
		B - 2 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-3

CLIENT:	Jones and DeMille Engineering	LATITUDE: 40.54347	SHEET: 1 OF 1
PROJECT:	Interlaken Pipe Corrosion	LONGITUDE: -111.47070	DRILLING COMPANY: Direct Push Services
PROJECT NO:	B250976g	SURFACE ELEVATION: 5998.79(Ft)	EQUIPMENT: Geoprobe 7822DT
LOCATION:	1707 N Cambridge Drive, Midway, UT 84049, USA	HOLE DEPTH: 6.5Ft	LOGGED: Keaton Ward DATE: 07/10/2025
OFFICE:	2791 S. Victory View Way Boise, ID 83709	GROUNDWATER LEVEL: Not Encountered	CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		LEAN CLAY (CL): Red brown, dry, medium stiff to very stiff, with trace fine to coarse - grained sand.								
			10.3	32	11	99	88.2		4, 3, 4 (N = 7)	
5									6, 8, 14 (N = 22)	
		B - 3 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-4

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54382
LONGITUDE: -111.46870
SURFACE ELEVATION: 6208.56(Ft)
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		SANDY SILT (ML): Red - brown, dry, hard, with fine to coarse - grained sand. - Moderate to strong calcium carbonate cementation encountered below 2.0 feet bgs.								
			7.8	30	7	90	62.6		14, 24, 18 (N = 42)	
5									10, 31, 48 (N = N > 50)	
		B - 4 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-5

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54011
LONGITUDE: -111.47579
SURFACE ELEVATION: 5873.43(Ft)
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		SANDY LEAN CLAY (CL): Brown, dry, very stiff, with fine to coarse - sand.								
		GRAVELLY LEAN CLAY WITH SAND (CL): Brown to tan, dry, hard, with fine to coarse - grained sand and fine gravel.	10.3	32	17	76	52.9		7, 18, 23 (N = 41)	
5		SANDY SILT WITH GRAVEL (ML): Reddish - tan, dry, hard, with fine to coarse - grained sand, and fine gravel.							6, 15, 19 (N = 34)	
		B - 5 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-6

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54069
LONGITUDE: -111.47303
SURFACE ELEVATION: 5875.16(Ft)
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		SILTY SAND WITH GRAVEL (SM): Brown, dry, medium dense, With fine to coarse - grained sand and fine gravel.								
		LEAN CLAY WITH SAND (CL): Brown, dry, very stiff, With fine to coarse - grained sand.	7.9	27	12	99	84.1		4, 8, 11 (N = 19)	
5									9, 12, 12 (N = 24)	
		B - 6 Terminated at 6.5 Ft								

ATLAS TECHNICAL CONSULTANTS

REPORT OF BORING: B-7

CLIENT: Jones and DeMille Engineering
PROJECT: Interlaken Pipe Corrosion
PROJECT NO: B250976g
LOCATION: 1707 N Cambridge Drive, Midway, UT 84049, USA
OFFICE: 2791 S. Victory View Way Boise, ID 83709

LATITUDE: 40.54083
LONGITUDE: -111.46986
SURFACE ELEVATION: 5907.32(Ft)
HOLE DEPTH: 6.5Ft
GROUNDWATER LEVEL: Not Encountered

SHEET: 1 OF 1
DRILLING COMPANY: Direct Push Services
EQUIPMENT: Geoprobe 7822DT
LOGGED: Keaton Ward DATE: 07/10/2025
CHECKED: DATE: 08/06/2025

DEPTH (ft)	SOIL TYPE	DESCRIPTION	MOISTURE	LL	PI	% < #4	% < #200	SAMPLES	BLOWS	SPT>N-Value (0 20 40 60)
		CLAYEY SAND WITH GRAVEL (SC): Red - brown, dry, very loose to dense, with fine to coarse - grained sand.								
				30	11	63	24.1		1, 1, 1 (N = 2)	
5									5, 17, 28 (N = 45)	
		B - 7 Terminated at 6.5 Ft								

APPENDIX V GEOTECHNICAL GENERAL NOTES

Unified Soil Classification System			
Major Divisions		**Symbol**	**Soil Descriptions**
Coarse-Grained Soils < 50% passes No.200 sieve	Gravel & Gravelly Soils < 50% coarse	GW	Well-graded gravels; gravel/sand mixtures with little or no fines
		GP	Poorly-graded gravels; gravel/sand mixtures with little or no fines
		GM	Silty gravels; poorly-graded gravel/sand/silt mixtures
		GC	Clayey gravels; poorly-graded gravel/sand/clay mixtures
	Sand & Sandy Soils > 50% coarse fraction	SW	Well-graded sands; gravelly sands with little or no fines
		SP	Poorly-graded sands; gravelly sands with little or no fines
		SM	Silty sands; poorly-graded sand/gravel/silt mixtures
		SC	Clayey sands; poorly-graded sand/gravel/clay mixtures
Fine-Grained Soils > 50% passes No.200 sieve	Silts & Clays LL < 50	ML	Inorganic silts; sandy, gravelly or clayey silts
		CL	Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays
		OL	Organic, low-plasticity clays and silts
	Silts & Clays LL > 50	MH	Inorganic, elastic silts; sandy, gravelly or clayey elastic silts
		CH	Fat clays; high-plasticity, inorganic clays
		OH	Organic, medium to high-plasticity clays and silts
Highly Organic Soils		PT	Peat, humus, hydric soils with high organic content

Relative Density and Consistency Classification	
Coarse-Grained Soils	**SPT Blow Counts (N)**
Very Loose:	< 4
Loose:	4-10
Medium Dense:	10-30
Dense:	30-50
Very Dense:	> 50
Fine-Grained Soils	**SPT Blow Counts (N)**
Very Soft:	< 2
Soft:	2-4
Medium Stiff:	4-8
Stiff:	8-15
Very Stiff:	15-30
Hard:	> 30

Moisture Content and Cementation Classification	
Description	**Field Test**
Dry	Absence of moisture, dry to touch
Slightly Moist	Damp, but no visible moisture
Moist	Visible moisture
Wet	Visible free water
Saturated	Soil is usually below water table
Description	**Field Test**
Weak	Crumbles or breaks with handling or slight finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

Particle Size	
Boulders:	> 12 in.
Cobbles:	12 to 3 in.
Gravel:	3 in. to 5 mm
Coarse-Grained Sand:	5 to 0.6 mm
Medium-Grained Sand:	0.6 to 0.2 mm
Fine-Grained Sand:	0.2 to 0.075 mm
Silts:	0.075 to 0.005 mm
Clays:	< 0.005 mm

Acronym List	
GS	grab sample
LL	Liquid Limit
M	moisture content
NP	non-plastic
PI	Plasticity Index
Q_p	penetrometer value, unconfined compressive strength, tsf
V	vane value, ultimate shearing strength, tsf

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CHEMTECH-FORD
LABORATORIES

7/29/2025

Work Order: 25G1320
Project: Interlaken Geo

Consolidated Engineering Labs
Attn: Kris Megeath
2130 South 3140 West Suite C
Salt Lake City, UT 84115

Client Service Contact: 801.262.7299

The analyses presented on this report were performed in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted in the comments, flags, or case narrative. If the report is to be used for regulatory compliance, it should be presented in its entirety, and not be altered.

NELAP ACCREDITED TNI LABORATORY

Approved By:



Reed Hendricks, Lab Director

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Certificate of Analysis

Consolidated Engineering Labs
Kris Megeath
2130 South 3140 West Suite C
Salt Lake City, UT 84115

PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 1 @ 2.5**

Matrix: **Solid**
Lab ID: **25G1320-01**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	298	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
pH	8.0	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:01	
Resistivity	4.4	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	26	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
Total Solids	89.3	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 2 @ 5.0**

Matrix: **Solid**
Lab ID: **25G1320-02**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	17	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
pH	8.1	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:03	
Resistivity	39.7	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	ND	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
Total Solids	92.5	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 3 @ 5.0**

Matrix: **Solid**
Lab ID: **25G1320-03**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	122	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
pH	8.2	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:05	
Resistivity	15.2	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	17	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
Total Solids	89.7	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 5 @ 5.0**

Matrix: **Solid**
Lab ID: **25G1320-04**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	ND	mg/kg dry	10	EPA 300.0	7/16/25	7/16/25	
pH	7.8	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:07	
Resistivity	130	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	ND	mg/kg dry	10	EPA 300.0	7/16/25	7/16/25	
Total Solids	97.1	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 6 @ 5.0**

Matrix: **Solid**
Lab ID: **25G1320-05**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	ND	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
pH	7.2	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:09	
Resistivity	56.2	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	ND	mg/kg dry	11	EPA 300.0	7/16/25	7/16/25	
Total Solids	90.4	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Sample ID: **B - 7 @ 5.0**

Matrix: **Solid**
Lab ID: **25G1320-06**
Date Sampled: **7/14/25 0:00**
Sampled By: **Client**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Inorganic							
Chloride, Soluble (IC)	29	mg/kg dry	11	EPA 300.0	7/22/25	7/22/25	
pH	8.6	pH Units	0.1	EPA 9045D	7/16/25 14:53	7/16/25 16:13	
Resistivity	19.2	ohm m	1.0	SSSA 10-3.3	7/18/25	7/18/25	
Sulfate, Soluble (IC)	13	mg/kg dry	11	EPA 300.0	7/22/25	7/22/25	
Total Solids	92.0	%	0.1	CTF8000	7/16/25	7/16/25	

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PO#: **20-63832-L063**
Receipt: **7/15/25 15:40 @ 28.6** °C
Date Reported: 7/29/2025
Project Name: **Interlaken Geo**

Report Footnotes

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit (MRL).
1 mg/L = one milligram per liter or 1 mg/kg = one milligram per kilogram = 1 part per million.
1 ug/L = one microgram per liter or 1 ug/kg = one microgram per kilogram = 1 part per billion.
1 ng/L = one nanogram per liter or 1 ng/kg = one nanogram per kilogram = 1 part per trillion.
On calculated parameters, there may be a slight difference between summing the rounded values shown on the report vs the unrounded values used in the calculation.

Corrosivity Tests Summary

CTL # 1108-175 **Date:** 7/16/2025 **Tested By:** PJ **Checked:** PJ
Client: Atlas Technical Consultants - Boise **Project:** Interlaken Pipe Corrosion **Proj. No:** B250976g
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
B-4	BAG	5.0-6.5	-	-	-	-	-	-	-	476	22	-	-	Strong Brown Silty SAND

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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APPENDIX E. ASSET MANAGEMENT PLAN

TOWN OF INTERLAKEN

ASSET MANAGEMENT PLAN

August 3, 2026

Project #: 2502-039

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1. INTRODUCTION

The Town of Interlaken has a public water system that provides safe and reliable drinking water to water users within it's boundaries. This Asset Management Plan (AMP) has been developed to assist the Town of Interlaken in the effective management of the water system infrastructure through structured planning, risk evaluation, and long-term financial strategies.

This APM is a strategic document that outlines how the system will address five core components of asset management: current state of assets, level of service, identification of critical assets, provision of minimum infrastructure life cycle costs, and establishment of a long-term budgeting strategy. The development of this plan followed Utah Administrative Code R309-800.

1.1. DEFINING ASSET MANAGEMENT

Asset Management (AM) is an integrated business approach within an organization that minimizes the lifecycle costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering expected levels of service for present and future customers. AM includes the planning, design, construction, operation, and maintenance of infrastructure used to provide services. Infrastructure needs can be prioritized over time by utilizing AM processes, while also ensuring timely investments to minimize repair and rehabilitation costs.

Key questions utility owners must ask themselves today as they develop their AMPs and programs are the following:

1. What is the asset worth?
2. What is the asset's condition and expected remaining service life?
3. What is the level of service expectation, and what needs to be done?
4. When is preventative maintenance, rehabilitation, or replacement needed?
5. How much will the remedial works cost and what is the acceptable level of risk(s)?
6. What are the overall life cycle needs/costs?
7. What are the long-term sustainable financing needs?

1.2. SYSTEM DESCRIPTION

The Town of Interlaken is located in Wasatch County, Utah and buts up against the North end of the Town of Midway. Interlaken receives 100% of its source water through two active wells housed together in a pumphouse located just west of the intersection of Luzern Road and Cambridge Drive.

The water system, as it is currently built, consists of two wells , a 400,000 gallon buried concrete storage tank, 35 fire hydrants, pipeline sections composed of 12-inch, 8-inch, 6-inch, 4-inch, and 2-inch pipes, 1.5-inch service connections, and one pressure-reducing valve (PRV) station. In 2024, Interlaken reported 149 residential culinary water connections.

Interlaken is expected to grow at a 1% annual growth rate until full buildout is reached in 2045. Interlaken is limited to the number of building lots available within the town; that number being 184 lots. Residential water connections cannot exceed the number of available lots, which means there is a maximum possible number of 184 residential water connections that could be made to the water system. A map of the water system can be found in Appendix B.

2. CURRENT STATE OF ASSETS

2.1. ASSET INVENTORY

Table 2-1 lists the system components and their respective quantities. This includes general distribution infrastructure and the well house, which doubles as an office space. Additionally, related items for residential water connections (e.g., mainline connection, laterals, meters) and fire hydrant assemblies (e.g., valves, hydrant assemblies) have been grouped into single categories.

Table 2-1 Asset Inventory

Asset Component	Quantity
1.5-inch service connection	149
2-inch Ductile Iron	100 Linear Feet
4-inch Ductile Iron	970 Linear Feet
6-inch Ductile Iron	841 Linear Feet
8-inch Ductile Iron	9,015 Linear Feet
8-inch PVC C900	334 Linear Feet
12-inch Ductile Iron	9,037 Linear Feet
2-inch Gate Valve	1
4-inch Gate Valve	2
6-inch Gate Valve	6
8-inch Gate Vale	10
12-inch Gate Valve	4
PRV Station	1
Fire Hydrant	35
1-inch Air/Vacuum Valve	7
400,000-gallon Storage Tank	1
Wellhouse	1

2.2. ASSET VALUATION METHODOLOGY

2.2.1. CONDITION

The majority of the Interlaken water system consists of ductile iron pipes. The system operates under high pressures, and corrosive local soils have led to multiple pipe failures. Failed segments have been replaced with PVC C900 pipe which performs significantly better in corrosive environments, but the bulk of the system remains ductile iron. As part of the capital facilities plan completed in 2025, the corrosivity

of the soil found within the town was identified and the danger it poses to the water system was addressed. Due to the failures that have occurred and the condition of the iron pipe, it has been recommended to Interlaken that the ductile iron pipe be replaced with a less corrosive PVC pipe with corrosion protected valves and fittings. Overall, the condition of the system can be described as operational, but far below ideal conditions.

2.2.2. REMAINING LIFE

The remaining useful life of an asset is defined as the estimated number of years that an asset is anticipated to continue functioning at a level that provides positive utility services. As a system ages, individual components deteriorate until they reach an unacceptable level of service or until maintenance costs surpass replacement costs. There are multiple unknown environmental conditions that can preserve or deteriorate infrastructure at a faster rate than expected, as shown by the corrosive soil found in Interlaken.

Table 2-2 lists the remaining useful life for each asset based on average installation baselines. The system was originally installed in 2003, with a standard design life of 50 years, which assumes proper installation and routine maintenance (e.g., regularly exercising vales and hydrants). However, due to the corrosive nature of the soil and the issues it presents to the ductile iron pipe, fittings, and valves, the standard design life of 50 years had been reduced to 30 years. For the portions of the system that have been replaced due to failure, the remaining useful life is based on the standard 50-year design life.

Table 2-2 Asset Remaining Useful Life

Asset Component	Design Life [Years]	Remaining Useful Life [Years]
1.5-inch service (Lateral, Meters, etc.)	10	Varies
2-inch Ductile Iron	30	7
4-inch Ductile Iron	30	7
6-inch Ductile Iron	30	7
8-inch Ductile Iron	30	7
8-inch PVC C900	50	48
12-inch Ductile Iron	30	7
2-inch Gate Valve	30	7
4-inch Gate Valve	30	7
6-inch Gate Valve	30	7
8-inch Gate Vale	30	7
12-inch Gate Valve	30	7
PRV	15	0
Fire Hydrant	30	7
1-inch Air/Vacuum Valve	15	0

2.2.3. CURRENT VALUE AND REPLACEMENT COST

The current value or total value of the system is the entire value accounting for degradation and life of the assets. This is calculated starting with the replacement value of each asset and finding a linear annual depreciation. Generally, annual depreciation is the initial value divided by the estimated life. The current value is the replacement value minus the annual depreciation multiplied by current age of the asset. The total current value of the system is the sum of all the current values of all assets.

Because the system has been recommended to be replaced in its entirety due to system failures and the overall condition of the system, the value of the replacement cost would become the system's current value. The installation cost for the water system, excluding additional items involved with construction such as design, mobilization, survey, etc., is $8,105,983.00.

2.3. SYSTEM MAP

A map of the water system from the capital facilities plan can be found in Appendix B.

3. UTILITY'S REQUIRED LEVEL OF SERVICE

The Town of Interlaken is a community of 149 water connections, which are serviced by the Town of Interlaken. According to data from 2024, there are a maximum of 35 properties that are not connected to the system that could be added if the properties are developed. This means there are 184 maximum possible connections that could be made to the system.

The Town of Interlaken has two wells capable of producing 150 gallons per minute (gpm) which share a single well house and a single feed line into the system. Connected to the system is a storage tank that provides 400,000 gallons of storage. The safe yield of a well is assumed to be two thirds of the production capacity based on R309-515-6(10)(c), so each well is assumed to have a 100-gpm safe yield. Based on current water usage, the existing wells can support 405 residential water connections. This is significantly higher than the maximum build-out capacity of 184 residential water connections.

A hydraulic model analyzed the system's distribution capacities and verified that the system is able to meet the required fire-flow of 1,000-gpm for 2 hours and that all services are above the state minimum pressure defined in rule R309-105-9 with a minimum pressure of 55 pounds per square inch (psi) during peak day demand.

To maintain the required level of service, the components of the distribution system need to be in good working order. All other factors are outside the Town of Interlaken's control.

4. CRITICAL ASSET ANALYSIS

4.1. FAILURE ANALYSIS

Failure analysis evaluates how critical assets may fail and the potential consequences of those failures. This includes assessing the probability of failure, associated risks, system priorities, and appropriate response plans. Probability of failure is assessed by examining common failure modes for each type of asset based on typical water system performance. Each type of asset present in the water system is analyzed in the following subsections: mainline, air valves, pressure reducing valves, meters, fire hydrants and isolation valves.

4.1.1. MAINLINE

The water system is currently built with ductile iron piping, with a small section of PVC pipe. Currently, the ductile iron piping is not in good condition as system failures have already occurred. When inspecting the piping around the failures, it was observed that corrosion has eaten away the piping leaving thin spots in the metal. These thin walls can burst due to the system's high pressure. The soil surrounding the mainline pipes has also cemented to the pipes causing further damage to the mainline. As recommended, if the water system is replaced, it should be rebuilt primarily with PVC mainline piping. While buried pipelines may crack or break, PVC lines are less susceptible to corrosion effects when compared to ductile iron. PVC pipe also negates most of the current issues seen in the distribution system.

Another common failure of mainline is leakage. Leaks should be monitored and addressed to resolve problems before major breaks can occur. To evaluate the presence of potential leaks in the system, the meter data at the sources should be compared to the sum of individual user meter usage. If the meter usage does not match, a leak could be present in the system.

4.1.2. AIR VALVES

Air valves release trapped air from pipelines to prevent blockages or water hammer. Common failures include valve sticking and internal debris blockage. Both of these failures are common with low severity to the system. When failures occur, air valves are replaceable, and the system can often run with failing or failed valves, however it is best practice to have them operational to protect the system. Regular inspection, cleaning, and valve cycling can prevent or fix most failures.

4.1.3. PRESSURE REDUCING VALVES

Pressure reducing valves (PRV) reduce the water pressure in a pipeline from pressure buildup due to gravity. PRV valves cut the pressure from high pressure that could present potential danger to the system, to a more reasonable operating pressure that will not strain the connections made to the

mainline. Common failures include valve sticking, clogged valve seat or damaged diaphragm due to debris, wear of internal components, corrosion, and lack of routine maintenance.

PRV failure is a high-severity issue for a water system. PRV failure requires immediate attention to avoid other costly damage to the system. Regular valve inspection, cleaning, and general maintenance can prevent or fix most failures.

4.1.4. METERS

Meters measure the amount of water that each water connection uses, over a given period of time. These meters are subject to obstruction or corrosion, which are the most common source of failure. As a meter degrades, it loses accuracy. Failure or degradation of meters are not severe sources of risk, as the system will still function. Meters that are not functioning properly can be replaced without affecting the rest of the system. Most issues can be resolved with routine inspections each year.

4.1.5. FIRE HYDRANTS AND ISOLATION VALVES

Fire hydrants and isolation valves exist as part of the distribution system. Common failures in hydrants and valves include valve seizures, leaks, and impact damage. Valve seizures can be avoided with maintenance, as they are usually caused by lack of use, mineral buildup, or corrosion. Leaks and impact damages can be mitigated with routine inspections of the system and opening and closing valves. The severity of these failures is generally low, as the system can still function without a hydrant or a stuck-open valve. Regular maintenance and quick replacements, when necessary, should be performed to ensure damages to the community are minimal in the event of an emergency.

4.2. RISK ANALYSIS AND SYSTEM PRIORITIES

Based on the potential failures outlined, each asset was evaluated by considering both the likelihood of failure and its consequence to the overall system. Overall, fire hydrants, isolation valves, air valves, and meters have low impact on and pose minimal risk to the overall system operation, meaning the system can still function if these assets are not in good working condition. Pressure reducing valves, on the other hand, pose a higher risk to the system if a failure occurs. The likelihood that a PRV valve fails is low, but proper care and maintenance must be performed to ensure that the valves are in good working condition. It is important to note that all assets in the system are important to the overall upkeep, and as such, all assets should be inspected and maintained frequently.

As mentioned previously, the soil conditions in Interlaken are currently causing issues to the distribution system. The corrosiveness of the soil is causing the ductile iron pipe and valves to deteriorate faster than expected and has already caused failure. This is the biggest area of concern when considering potential risks/hazards that affect the system.

The Wasatch County Hazard Map does not identify any fault lines or other geological hazards in the system area, which would pose additional risks the water system. However, Interlaken sits in an area of

Wasatch County that has reason to be concerned with wildfires. In the rare event of a wildfire, portions of the water system are at risk of being damaged.

4.3. RESPONSE PLANS FOR ASSET FAILURES

Following the failure analysis of critical system components, general response procedures are identified for potential asset failures. These plans do not rely on formal standard operating procedures but instead provide a practical framework to guide staff actions during system disruptions. In the event of a failure, operators are expected to isolate or shut down the affected component. Maintenance personnel are then mobilized to assess the issue and implement repairs using on-hand replacement parts or by coordinating with emergency service contractors. The response process also includes clear communication protocols to notify utility personnel, regulatory agencies, and, when applicable, affected customers. In the unlikely event that more than one repair is needed at any time, the repair that benefits more customers will be prioritized.

The Town personnel responsible for the system will respond to asset failures with the following steps:

- Compare cost of rehabilitation, replacement, and repair on a present value basis with consideration for risk of future failures and design life of asset.
- Maintain an inventory of parts available for high prioritized items if possible.
- Establish a dependable supplier contact for appropriate assets.
- Anticipate time required to order new parts or new assets.
- Draw from System Capital Asset fund or seek state- and federally supported loan dollars to finance the execution of the recommended alternative.

5. MINIMUM INFRASTRUCTURE LIFE-CYCLE COSTS

5.1. MAINTENANCE SCHEDULE

Many common issues affecting the distribution system assets can be prevented or addressed early through routine inspection and upkeep. Town distribution system operators should be trained as needed to understand the maintenance required to keep the system in good condition. It is important to note that the equipment must be inspected regularly and exercised properly according to manufacturer's recommendations in order to keep the system in good working order.

The following subsections outline general maintenance tasks applicable to the system. Some assets include manufacturer-provided maintenance instructions, which should still be followed even if not referenced here.

5.1.1.1. MONTHLY TASKS

- Collect meter readings.

- Conduct bacteriological testing and record results (more frequent testing may be required by the Division of Drinking Water).

5.1.1.2. QUARTERLY TASKS

- Inspect water meters.

5.1.1.3. ANNUAL/BIANNUAL TASKS

- Inspect and exercise all valves.
- Inspect and exercise all hydrants.
- Inspect all meters for damage and function.
- Inspect and clean air release valves.
- Inspect and clean pressure reducing valves.
- Conduct cross connection control surveys.
- Perform comprehensive system audit.
- Review and update emergency response plans.
- Train staff in new procedures and technologies.

5.2. LIFE-CYCLE COSTS FOR ALL ASSETS

Life-cycle costing is a component of asset management that evaluates the total cost associated with owning, operating, maintaining, and eventually replacing each asset. This approach supports informed decision-making and long-term financial planning. Annual maintenance costs were estimated to be $111,651 throughout the design life of the system. See the cost analysis table attached in Appendix A for additional information.

5.3. CAPITAL IMPROVEMENT PLAN

As documented in the Capital Facilities Plan, the water system requires no future capacity expansion. Because Interlaken has a fixed number of potential residential connections, the system possesses adequate capacity to accommodate full build-out of all remaining vacant lots. Consequently, the Capital Improvement Plan focuses strictly on managing asset maintenance and scheduling the timely replacement of aging or failed infrastructure to ensure optimal system reliability.

5.4. OPERATION AND MAINTENANCE STRATEGY

On an annual basis, Interlaken will update the budget for operation and maintenance (O&M) and capital expenditures. At this time, Interlaken will compare the lifecycle costs of different options, such as replacing or rehabilitating an asset to determine the most cost-effective approach.

1. **Asset Condition and Performance Monitoring.** As part of the maintenance schedule, Interlaken will inspect individual components and system wide conditions. This monitoring enables

proactive maintenance by detecting early warning signs of asset deterioration or failure, allowing timely interventions, and reducing unplanned downtime.

2. **Replacement or Rehabilitation Decision-Making.** When an asset reaches a critical point in its lifecycle, evaluate the cost-effectiveness of replacement versus rehabilitation. Consider factors such as asset condition, performance, maintenance costs, technological advancements, regulatory compliance, and the potential for improved efficiency or reduced operational risks.

3. **Update the Long-Term Plan.** Incorporate asset replacement and rehabilitation into long-term financial planning and budgeting processes. Based on the analysis and decision-making steps above, develop a timeline for asset replacement or rehabilitation projects and allocate the necessary funds to support these initiatives.

5.5. COST OF REHABILITATION VERSUS REPLACEMENT

Routine maintenance is the most cost-effective way to manage system assets. It helps extend the life of equipment and prevents major problems before they occur. When maintenance is no longer enough, rehabilitation through part replacement or repairs can restore function without the full cost of a new asset. Full replacement is usually the most expensive option and is only needed when an asset can no longer perform as needed. If maintenance and repairs are delayed for too long, complete failure can occur. This leads to emergency work, service disruptions, and much higher costs.

6. LONG TERM BUDGETING STRATEGY

6.1. SYSTEM BUDGET

In conjunction with the annual update of the O&M budget, Interlaken will review the long-term capital facility budget and update it to ensure the capital facilities account is adequately funded and the rate structure is at a level to ensure financial stability. At this time, the prioritization of resources will be updated based on asset conditions and risk. The Town of Interlaken will use excess water rate funds to establish and fund a capital facilities account to fund O&M activities and plan for system replacements.

Water Rate Summary Data:

	Current Rates			*Proposed Rates**		
	Lower Limit (gallons)	***Upper Limit (gallons)***	***Cost Per 1,000 gallons***	***Lower Limit (gallons)***	***Upper Limit (gallons)***	***Cost Per 1,000 Gallons***
Annual Base Rate:	-	120,000	$1,380.00	-	120,000	$1,656.00
Tier 1:	120,000	125,000	$7.50	120,000	125,000	$7.50
Tier 2:	125,000	130,000	$10.00	125,000	130,000	$10.00
Tier 3:	130,000	140,000	$12.50	130,000	135,000	$12.50
Tier 4:	140,000	9,999,999	$25.00	135,000	9,999,999	$25.00

**Town of Interlaken water rate analysis completed by the Rural Water Association of Utah which gives the administration the tools and ability to closely monitor revenues and adjust rates for depreciation, capital outlay, and proposed project funding needs.*

As shown in the summary data, the proposed rate structure changes two elements of the current structure. First, the annual base rate increases from $1,380 ($115 monthly equivalent) to $1,656 ($138 monthly equivalent). The Rural Water Association of Utah recommends that 20% to 25% minimum operating income should be contributed to the reserve. This adjustment would allow the City to contribute more to its reserves, which would greatly surpass the baseline set by the Rural Water Association of Utah. Second, the consumption thresholds for higher tiers are tightened: Tier 3 upper limits drop from 140,000 gallons to 135,000 gallons, which serves as the new lower limit for Tier 4. This change would further increase the City's ability to capture revenue to fund operational demand and future capital projects.

6.2. GOALS

The Town of Interlaken is currently working with engineers to determine the short-term and long-term needs of the system. As mentioned previously, it has been recommended to Interlaken that they replace the entire distribution system with distribution lines, fittings, and valves that are not affected by the

corrosive soils. A plan is currently being developed to determine the best way to implement this recommendation given the funding and needs of the town.

Interlaken also reached out to the Rural Water Association of Utah for assistance with budgeting strategies, water rates, and water rate structures. The 2026 Water Rate Study completed by the Rural Water Association of Utah summarizes the assistance given to Interlaken to fund the system's needs.

Interlaken will continue these proactive efforts while adding more efficient methods of continual monitoring of the system by tracking inventory, inventory repairs, and replacements and the associated costs of each. Assets, budgets, priorities, and criticality will be reviewed and updated annually to ensure the success of Interlaken's drinking water system and meet the purpose of this Asset Management Plan.

APPENDIX A. COST ANALYSIS TABLE

Power ($/KWHr) =	0.25
Discount Rate =	3.0%
Escalation Rate =	4.0%
Power Escalation =	0.0%
Average Day Q =	NA
Pipe to E Res =	NA
C =	NA
Pump Effeciency =	NA

Year - 2026

Initial Capital Cost (2024):

		O&M Rate (% per year)
Water Distribution Syst	$ 9,565,060	1.00%
	$ -	0%
	$ -	0%
	$ -	0%
Misc. Costs	$ 320,000	5%
Total:	$ 9,885,060	
Annual O&M:	$ 111,651	

Lifecycle Cost for Water Distribution System

		Power Usage						Capital Cost			O & M Cost			Power Cost			
Year	Flow Rate	Average Flow Rate (MGD)	Average Flow Rate (GPM)	Pumping Hf + Static Hf	Equivalent Power Usage (HP)	Equivalent Power Usage (KW)	Equivalent Power Usage (KW)	Capital Cost	Escalated Capital Cost	Present Worth Capital Cost	Escalated Annual O&M $/Year	Present Worth Annual O&M $/Year	Cumulative Present Worth Annual O&M	Power Cost $ ($/KWHr)	Annual Power Usage $/Year	Annual Present Worth Power Usage $/Year	Cumulative Present Worth Power Usage
				-													
1	1.12	0.1	100	0.0 ft	24	18	18	$ 9,885,000	$ 9,885,000	$ 9,885,000	$ 111,651	$ 111,651	$ 111,651	$ 0.2500	$ 39,210	$ 39,209.76	$ 39,210
2	1.12	0.1	101	0.0 ft	24	18	18		$ -	$ -	$ 120,761	$ 117,243.97	$ 228,895	$ 0.2500	$ 39,210	$ 38,067.73	$ 38,068
3	1.12	0.1	102	0.0 ft	24	18	18		$ -	$ -	$ 125,592	$ 118,382.26	$ 347,277	$ 0.2500	$ 39,210	$ 36,958.96	$ 36,959
4	1.12	0.1	103	0.0 ft	24	18	18		$ -	$ -	$ 130,615	$ 119,531.60	$ 466,808	$ 0.2500	$ 39,210	$ 35,882.48	$ 35,882
5	1.12	0.1	104	0.0 ft	24	18	18		$ -	$ -	$ 135,840	$ 120,692.10	$ 587,501	$ 0.2500	$ 39,210	$ 34,837.36	$ 34,837
6	1.12	0.2	105	0.0 ft	24	18	18		$ -	$ -	$ 141,274	$ 121,863.87	$ 709,364	$ 0.2500	$ 39,210	$ 33,822.68	$ 33,823
7	1.12	0.2	106	0.0 ft	24	18	18		$ -	$ -	$ 146,925	$ 123,047.02	$ 832,411	$ 0.2500	$ 39,210	$ 32,837.56	$ 32,838
8	1.12	0.2	107	0.0 ft	24	18	18		$ -	$ -	$ 152,802	$ 124,241.65	$ 956,653	$ 0.2500	$ 39,210	$ 31,881.12	$ 31,881
9	1.12	0.2	108	0.0 ft	24	18	18		$ -	$ -	$ 158,914	$ 125,447.88	$ 1,082,101	$ 0.2500	$ 39,210	$ 30,952.55	$ 30,953
10	1.12	0.2	109	0.0 ft	24	18	18		$ -	$ -	$ 165,270	$ 126,665.82	$ 1,208,767	$ 0.2500	$ 39,210	$ 30,051.02	$ 30,051
11	1.12	0.2	110	0.0 ft	24	18	18		$ -	$ -	$ 171,881	$ 127,895.58	$ 1,336,662	$ 0.2500	$ 39,210	$ 29,175.74	$ 29,176
12	1.12	0.2	112	0.0 ft	24	18	18		$ -	$ -	$ 178,756	$ 129,137.29	$ 1,465,800	$ 0.2500	$ 39,210	$ 28,325.96	$ 28,326
13	1.12	0.2	113	0.0 ft	24	18	18		$ -	$ -	$ 185,906	$ 130,391.05	$ 1,596,191	$ 0.2500	$ 39,210	$ 27,500.94	$ 27,501
14	1.12	0.2	114	0.0 ft	24	18	18		$ -	$ -	$ 193,343	$ 131,656.98	$ 1,727,848	$ 0.2500	$ 39,210	$ 26,699.94	$ 26,700
15	1.12	0.2	115	0.0 ft	24	18	18		$ -	$ -	$ 201,076	$ 132,935.20	$ 1,860,783	$ 0.2500	$ 39,210	$ 25,922.27	$ 25,922
16	1.12	0.2	116	0.0 ft	24	18	18		$ -	$ -	$ 209,119	$ 134,225.84	$ 1,995,009	$ 0.2500	$ 39,210	$ 25,167.25	$ 25,167
17	1.12	0.2	117	0.0 ft	24	18	18		$ -	$ -	$ 217,484	$ 135,529.00	$ 2,130,538	$ 0.2500	$ 39,210	$ 24,434.23	$ 24,434
18	1.12	0.2	118	0.0 ft	24	18	18		$ -	$ -	$ 226,184	$ 136,844.81	$ 2,267,383	$ 0.2500	$ 39,210	$ 23,722.55	$ 23,723
19	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 235,231	$ 138,173.41	$ 2,405,556	$ 0.2500	$ 39,210	$ 23,031.60	$ 23,032
20	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 244,640	$ 139,514.89	$ 2,545,071	$ 0.2500	$ 39,210	$ 22,360.78	$ 22,361
21	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 254,426	$ 140,869.41	$ 2,685,940	$ 0.2500	$ 39,210	$ 21,709.49	$ 21,709
22	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 264,603	$ 142,237.07	$ 2,828,177	$ 0.2500	$ 39,210	$ 21,077.18	$ 21,077
23	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 275,187	$ 143,618.01	$ 2,971,795	$ 0.2500	$ 39,210	$ 20,463.28	$ 20,463
24	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 286,194	$ 145,012.36	$ 3,116,808	$ 0.2500	$ 39,210	$ 19,867.26	$ 19,867
25	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 297,642	$ 146,420.25	$ 3,263,228	$ 0.2500	$ 39,210	$ 19,288.60	$ 19,289
26	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 309,548	$ 147,841.81	$ 3,411,070	$ 0.2500	$ 39,210	$ 18,726.80	$ 18,727
27	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 321,930	$ 149,277.16	$ 3,560,347	$ 0.2500	$ 39,210	$ 18,181.36	$ 18,181
28	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 334,807	$ 150,726.46	$ 3,711,073	$ 0.2500	$ 39,210	$ 17,651.80	$ 17,652
29	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 348,199	$ 152,189.82	$ 3,863,263	$ 0.2500	$ 39,210	$ 17,137.67	$ 17,138
30	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 362,127	$ 153,667.39	$ 4,016,931	$ 0.2500	$ 39,210	$ 16,638.52	$ 16,639
31	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 376,612	$ 155,159.31	$ 4,172,090	$ 0.2500	$ 39,210	$ 16,153.90	$ 16,154
32	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 391,677	$ 156,665.71	$ 4,328,756	$ 0.2500	$ 39,210	$ 15,683.40	$ 15,683
33	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 407,344	$ 158,186.74	$ 4,486,942	$ 0.2500	$ 39,210	$ 15,226.60	$ 15,227
34	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 423,638	$ 159,722.53	$ 4,646,665	$ 0.2500	$ 39,210	$ 14,783.11	$ 14,783
35	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 440,583	$ 161,273.23	$ 4,807,938	$ 0.2500	$ 39,210	$ 14,352.53	$ 14,353
36	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 458,207	$ 162,838.99	$ 4,970,777	$ 0.2500	$ 39,210	$ 13,934.50	$ 13,934
37	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 476,535	$ 164,419.95	$ 5,135,197	$ 0.2500	$ 39,210	$ 13,528.64	$ 13,529
38	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 495,596	$ 166,016.26	$ 5,301,213	$ 0.2500	$ 39,210	$ 13,134.60	$ 13,135
39	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 515,420	$ 167,628.07	$ 5,468,841	$ 0.2500	$ 39,210	$ 12,752.04	$ 12,752
40	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 536,037	$ 169,255.53	$ 5,638,097	$ 0.2500	$ 39,210	$ 12,380.62	$ 12,381
41	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 557,478	$ 170,898.79	$ 5,808,996	$ 0.2500	$ 39,210	$ 12,020.02	$ 12,020
42	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 579,777	$ 172,558.00	$ 5,981,554	$ 0.2500	$ 39,210	$ 11,669.92	$ 11,670
43	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 602,969	$ 174,233.32	$ 6,155,787	$ 0.2500	$ 39,210	$ 11,330.02	$ 11,330
44	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 627,087	$ 175,924.91	$ 6,331,712	$ 0.2500	$ 39,210	$ 11,000.02	$ 11,000
45	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 652,171	$ 177,632.91	$ 6,509,345	$ 0.2500	$ 39,210	$ 10,679.63	$ 10,680
46	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 678,258	$ 179,357.51	$ 6,688,702	$ 0.2500	$ 39,210	$ 10,368.57	$ 10,369
47	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 705,388	$ 181,098.84	$ 6,869,801	$ 0.2500	$ 39,210	$ 10,066.58	$ 10,067
48	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 733,603	$ 182,857.08	$ 7,052,658	$ 0.2500	$ 39,210	$ 9,773.38	$ 9,773
49	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 762,948	$ 184,632.39	$ 7,237,291	$ 0.2500	$ 39,210	$ 9,488.71	$ 9,489
50	1.12	0.2	120	0.0 ft	24	18	18		$ -	$ -	$ 793,465	$ 186,424.94	$ 7,423,716	$ 0.2500	$ 39,210	$ 9,212.34	$ 9,212

50 Year Present Worth of Facility/O&M/Power Costs: **$ 18,347,839**

Assumptions:

1.) Project Capital Cost are based on Total Estimated Cost including Contingency.

Life of Facility:	**25 Years**	**50 Years**
Pipelines:		XX
Pump Station(s) - Mech/Elec	XX	XX
Pump Station(s) - Pipe/Struct		XX
Special Crossings		XX
Power Transmission		XX
Misc. Costs		XX

	Base Cost	Contingency	Admin, Eng	Total
Water Distribution S	$ 8,105,983	$ -	$ 1,459,077	$ 9,565,000
PRVs' and Valves	$ -	$ -	$ -	$ -
Special Crossings	$ -	$ -	$ -	$ -
Power Transmission	$ -	$ -	$ -	$ -
Misc. Costs	$ 320,000	$ -	$ -	$ 320,000
		$ -	$ 1,459,077	
	$ 8,425,983		**Total:**	**$ 9,885,000**

APPENDIX B. SYSTEM MAP



Fire Hydrant
Valve
PRV
Well
Tank
Well House

Pipeline - Main
2"
4"
6"
8"
12"
1 1/2" (Service)

Existing Pressure Zone Line
Town Boundary

Jones & DeMille Engineering

Interlaken Town

Culinary Water - Capital Facilities Plan
Existing System Overview

Map Name: H:\JD\Proj\2502-039\GIS\Projects\2502-039_Design\2502-039_Design.aprx - Interlaken - Culinary Water CFP - Existing System Overview 11x17L

Project Number: 2502-039 | Drawn by: JEM 12-25 | Last Edit: 12/03/2025

Wasatch County, Utah

Scale: 1" = 300'

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