
SKYE AREA PLAN

DRINKING WATER SECTION

(HAL Project No.: 432.07.300)



July 2023

INTRODUCTION

The drinking water element of the Skye Area development includes all the infrastructure needed to provide a reliable supply of drinking water to a total of 2,736 equivalent residential units (ERU). This includes four pressure zones located adjacent to the Texas Instruments (formerly Micron) facility in Lehi, Utah. 2,274 ERUs are located in the lower three pressure zones and 462 ERUs are in the higher pressure zone.

The system includes a well, two storage tanks, two pump stations, pipelines, and pressure reducing stations (see Figures 1 and 2.1). The drinking water system will provide fire protection water service to commercial and institutional buildings that will be constructed with sprinkler fire protection systems. Additionally, any home exceeding 5,000 square feet will require an automatic fire sprinkler system, per municipal code 10-3-1.

Water Source

The Skye development has a drinking water source demand requirement of 866 gallons per minute (gpm). Of this capacity, 720 gpm is in the three lower pressure zones and 146 gpm is in the upper pressure zone. Lehi City is requiring the developer to construct a new well within Family Park at approximately 2200 North and 600 East (see Figure 2.1). The well will be constructed according to drinking water standards.

Pump Stations

A new 866 gpm pump station will be constructed near the existing Lower Hills Tanks to provide drinking water to the development and provide redundancy to other areas of the City (see Figure 1).

A new 146 gpm pump station will be constructed near the proposed Maple Hollow Tank to provide drinking water to the upper pressure zone (see Figure 1).

Storage Tanks

A new 1.1-million-gallon (MG) water storage tank will be constructed to serve the three lower pressure zones. The elevation of the floor and overflow will match the floor and overflow elevation of the existing Seasons Tank, which is located west of the Skye area.

A new 222,000-gallon water storage tank will be constructed to serve the upper pressure zone.

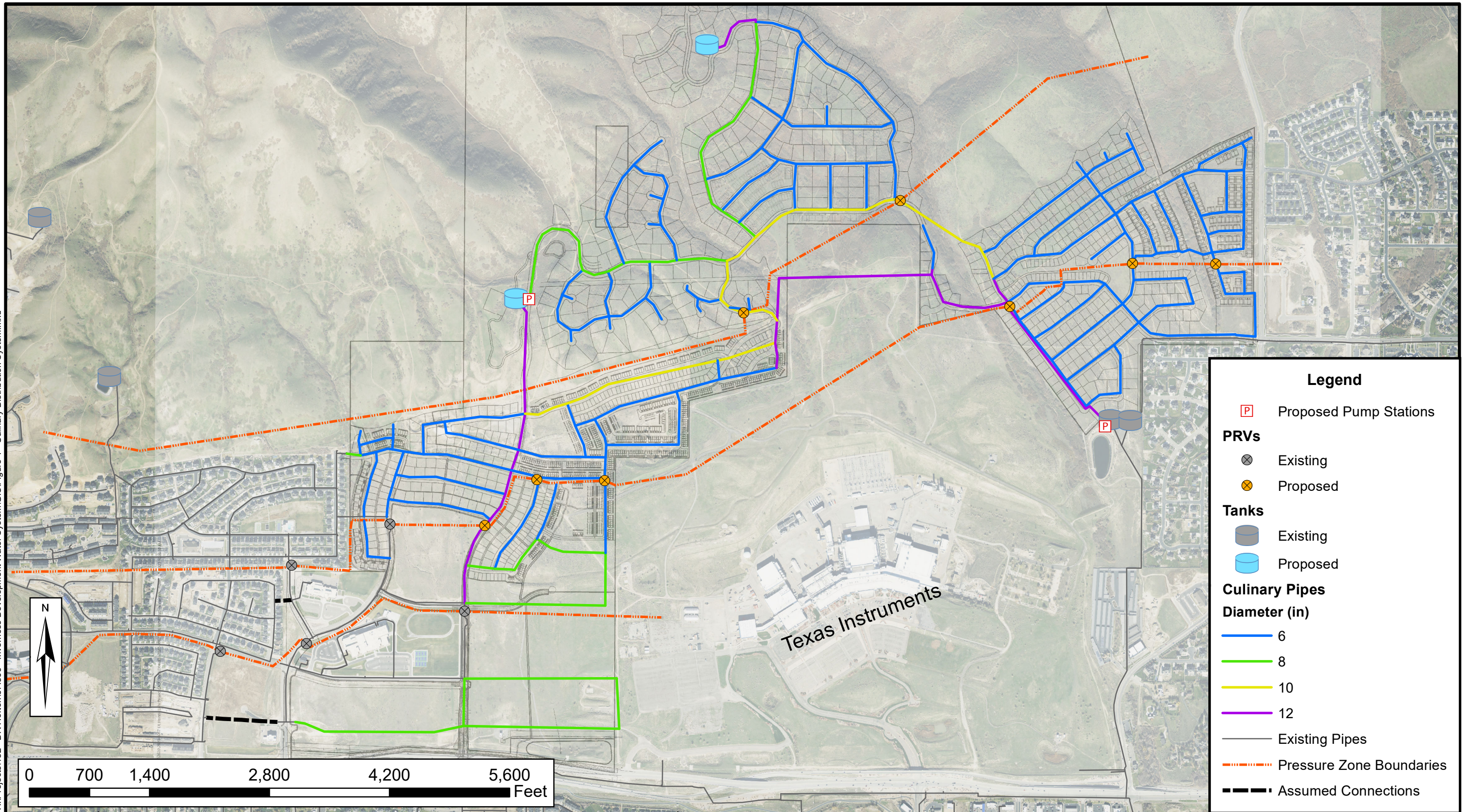
Pressure Reducing Stations

For the three lower pressure zones the plan includes six new pressure reducing stations (PRVs) and 3 existing PRVs that will provide redundancy to the pressure zones. For long term redundancy and efficiency, it is recommended that all pressure zones be connected to existing pressure zones and the PRVs be set to only open in an emergency.

For the upper pressure zone, the plan includes two new PRVs that can be used for redundancy and allow water to flow from the upper to the lower pressure zones if needed in an emergency.

The pressure reducing stations will use a 20-foot by 18-foot buried concrete vault that will contain valves for both the culinary water system and the pressurized irrigation system. The vaults will be constructed outside the street right-of-way in a public utility easement according

Date: 6/28/2023
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Legend

- P Proposed Pump Stations
- PRVs**
 - ⊗ Existing
 - ⊗ Proposed
- Tanks**
 - Existing
 - Proposed
- Culinary Pipes**
Diameter (in)
 - 6
 - 8
 - 10
 - 12
- Existing Pipes
- Pressure Zone Boundaries
- Assumed Connections



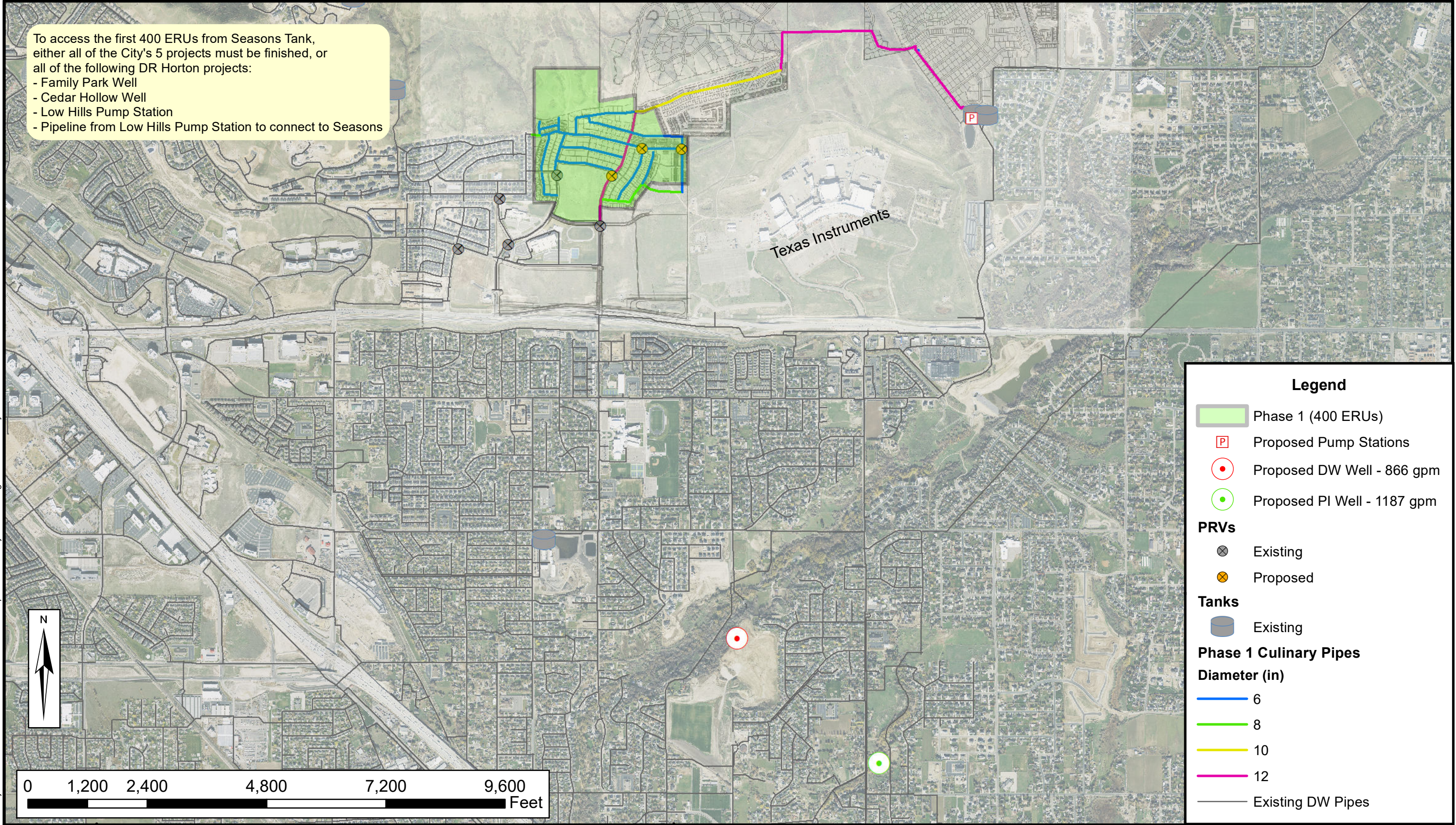
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SKYE AREA PLAN**

**CULINARY WATER
DISTRIBUTION SYSTEM**

**FIGURE
1**

To access the first 400 ERUs from Seasons Tank, either all of the City's 5 projects must be finished, or all of the following DR Horton projects:

- Family Park Well
- Cedar Hollow Well
- Low Hills Pump Station
- Pipeline from Low Hills Pump Station to connect to Seasons



Legend

- Phase 1 (400 ERUs)
- Proposed Pump Stations
- Proposed DW Well - 866 gpm
- Proposed PI Well - 1187 gpm

PRVs

- Existing
- Proposed

Tanks

- Existing

Phase 1 Culinary Pipes

Diameter (in)

- 6
- 8
- 10
- 12
- Existing DW Pipes

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**CULINARY WATER
DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 1 (400 ERUs)**

**FIGURE
2.1**

to Lehi City standards.

Distribution Pipelines

Distribution pipelines ranging from 6-inches to 12-inches in diameter will provide for distribution of water throughout the Skye development in accordance with Lehi City pressure requirements (see Figure 1). Distribution pipelines will use PVC C-900 pipe materials for all pipelines within Lehi City street rights-of-way. Pipelines constructed within easements on privately-owned land will use Class 350 Ductile Iron Pipe.

Recommended System Enhancements

Even though not required, there are recommended connections made with the Skye development to the west with the existing drinking water system (see Figure 1). Making pressure zones compatible and combining them with these connections would allow for more redundancy, reduced pumping and reduced energy demand, and provide easier operation across the pressure zones.

Project Phasing

The long-term plan for the Skye development includes four potential phases as shown in Figures 2.1, 2.2, and 2.3.

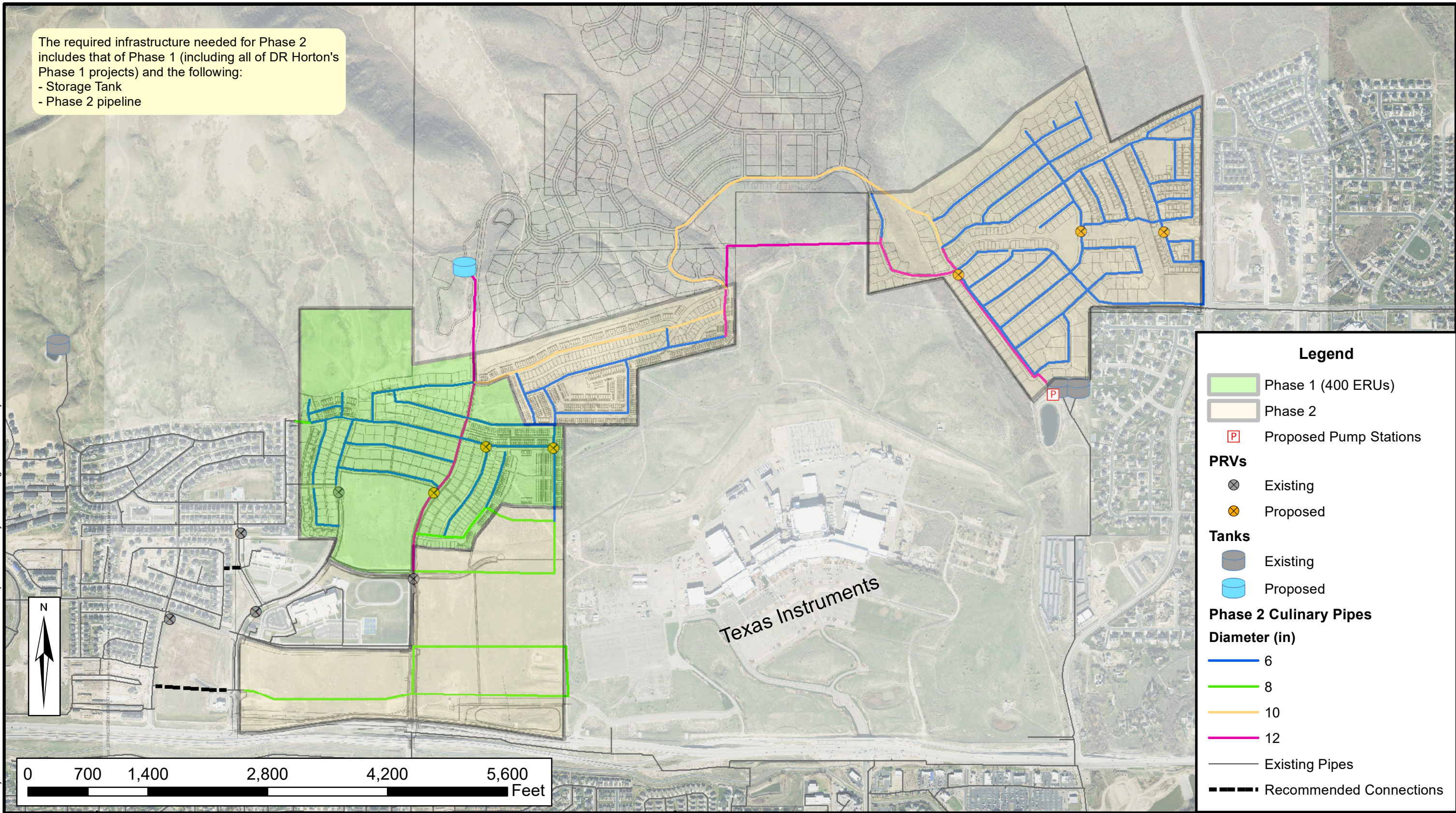
Phase 1 represents the area to be constructed first (see Figure 2.1). This phase includes 400 ERUs and relies on borrowing storage capacity in Seasons Tank for 400 ERUs. To access this storage capacity, the City’s five projects must be completed **or** all of DR Horton’s projects listed in Table 1 must be finished.

**Table 1
Projects Required to be Completed Before Accessing 400 ERUs from Seasons Tank**

Entity	Required Infrastructure
Lehi City	Violetto PI Reservoir
	Violetto PI Pump Station
	Flight Park Reservoir (PI)
	Point of the Mountain Well (PI)
	Sand Pit Well (DW)
OR	
DR Horton	Family Park Well (2200 N 600 E) (DW)
	Cedar Hollow Well (1500 N 1200 E) (PI)
	Low Hills Pump Station (DW & PI)
	Pipelines from Low Hills Pump Station to connect to Seasons Tank

The required infrastructure needed for Phase 2 includes that of Phase 1 (including all of DR Horton's Phase 1 projects) and the following:

- Storage Tank
- Phase 2 pipeline



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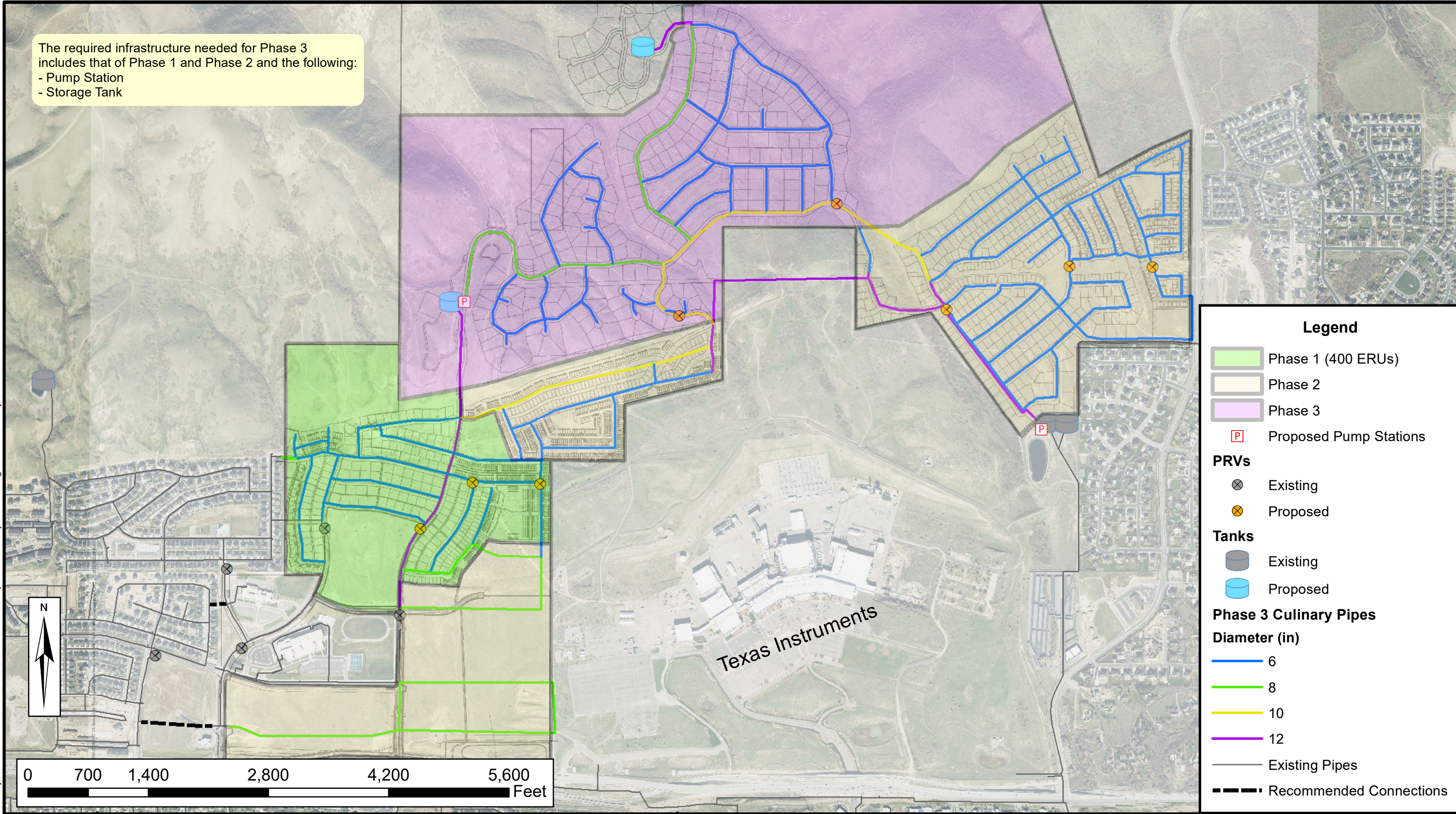
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**CULINARY WATER
 DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 2**

**FIGURE
 2.2**

The required infrastructure needed for Phase 3 includes that of Phase 1 and Phase 2 and the following:

- Pump Station
- Storage Tank



Legend

- Phase 1 (400 ERUs)
- Phase 2
- Phase 3
- Proposed Pump Stations

PRVs

- Existing
- Proposed

Tanks

- Existing
- Proposed

Phase 3 Culinary Pipes

Diameter (in)

- 6
- 8
- 10
- 12

- Existing Pipes
- Recommended Connections

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**CULINARY WATER
DR HORTON INFRASTRUCTURE REQUIRED FOR PHASE 3**

**FIGURE
2.3**

Phase 2 represents the rest of the lower three pressure zones of the Skye development and includes an additional 1,874 ERUs to the 400 Phase 1 ERUs for a total of 2,274. The infrastructure required for Phase 2 includes all of DR Horton's projects shown in Table 1, plus the 1.1 MG storage tank and redundant pipelines (see Figure 2.2). This pipeline would go up through the upper Skye area to provide redundancy for the east side of Phase 2. This pipeline would initially have lower pressure and no homes constructed on it until Phase 3 when it would then have higher pressure but continue to provide redundancy through PRVs.

Phase 3 represents the upper Skye area that is located north of Phases 1 and 2 and includes 462 ERUs. The infrastructure required for Phase 3 includes all the infrastructure required for Phase 2 plus a storage tank and pump station to serve the upper pressure zone (see Figure 2.3). Capacity for these phases has been included in determining source, transmission, pump stations, and storage capacities as listed in Table 2.

**Table 2 - Skye Area Culinary Water System
Design Criteria and System Requirements**

	Lehi City Design Criteria	Results	Phase
ERUs:		400 ERU	1
		1,874 ERU	2
		462 ERU	3
		- ERU	4
		2,736 ERU	Total
Source (Peak Daily Flow):	456 gpd/ERU	127 gpm	1
		593 gpm	2
		146 gpm	3
		- gpm	4
		866 gpm	Total
Peak Hourly Flow:	0.80 gpm / ERU	320 gpm	1
		1,499 gpm	2
		370 gpm	3
		- gpm	4
		2,189 gpm	Total
Peak Instantaneous:	1.00 gpm/ERU	400 gpm	1
		1,874 gpm	2
		462 gpm	3
		- gpm	4
		2,736 gpm	Total
Equalization Storage:	400 gallons/ERU	160,000 gal.	1
		749,600 gal.	2
		184,800 gal.	3
		- gal.	4
		909,600 gal.	Total of 1 and 2
		184,800 gal.	Total of 3 and 4
Emergency Storage:	20% EQ Storage	32,000 gal.	1
		149,920 gal.	2
		36,960 gal.	3
		- gal.	4
		181,920 gal.	Total of 1 and 2
		36,960 gal.	Total of 3 and 4
Total Culinary Storage:		1,091,520 gal.	Total of 1 and 2
Total Culinary Storage:		221,760 gal.	Total of 3 and 4
Fire Flow¹:	550 gpm	550 gpm	

1. Interior sprinkler flows are not intended to provide for tall stacks or high sprinkler rates.