

Logan City Bluff Water Storage System



Lotus Engineering
Utah State University

Introduction

Logan City has seen a large increase in population growth. With the growth in population comes an increased drinking water demand.

To meet the needs of the citizens of Logan City and some of the surrounding towns a new water storage has been proposed to be built on a piece of land already owned by the city just above the *Island*.

The new tank has the requirements of being able to store 8-10 million gallons, be able to supply a water zone above the tank and then a zone lower and to the west of the tank and connect to the Dewitt springs main waterline to fill the tank.

Alternatives

There are several different options on how to meet the needs of Logan City.

1. **Tank material** steel vs. concrete

Figure 1 – Example of a booster station



Epic Engineering, 8000 W Booster Station, Magna Water District

2. **Tank Location** build the tank at the proposed location or build it next to the other existing water tanks Logan has already built
3. **Cliffside zone supply** using either a direct booster station or another smaller storage tank filled by a booster station

Calculations

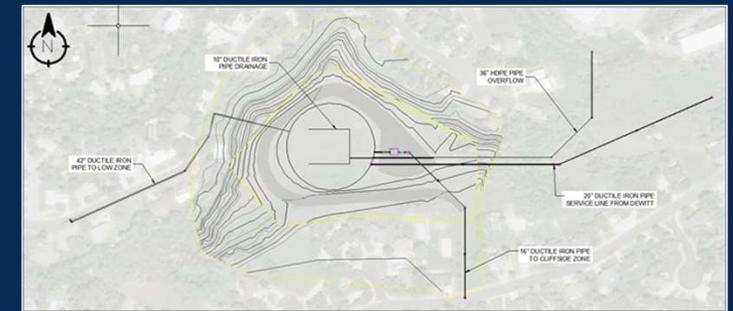
The water demand that this system will supply will be 49,500 gpm. Based off of this demand we calculated that a 48" pipe to feed the lower zone and a 12" pipe to feed the cliffside zone after the booster station.

Figure 2 – Example of a buried water main



Tracey Concrete N.D.

Figure 3 – Plan view of the site



The tank and connecting pipelines and booster station

Design

Lotus Engineering has designed the pipe network system to the proposed bluff water storage tank. Design includes service line from Dewitt Springs pipeline to the tank, an overflow pipe discharging to the Logan river, a service line to the low zone, and a service line to the cliffside zone after the booster station.

Factors that affected the design are as follows:

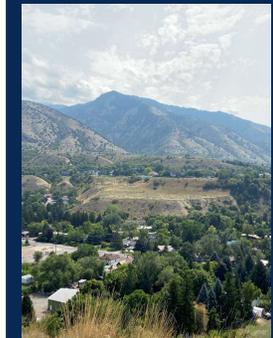
1. Pipe material
2. Depth of buried pipe
3. Valve selection and location
4. Existing pressures
5. Flow velocity

Acknowledgements

Lotus Engineering would like to thank the following individuals:

- Michael Hartvigsen of Epic Engineering
- Dr. Blake Tullis
- Prof. Austin Ball

Figure 4 – Bluff



Alanna Nieves, 2021

