

**HELPING EACH OTHER**  
CREATE BETTER COMMUNITIES



THE  
LANGDON  
GROUP



GATEWAY  
MAPPING  
INC.

J-U-B FAMILY OF COMPANIES

# Surviving Without Storage

You Cannot Conserve Your Way out of  
Infrastructure Improvements

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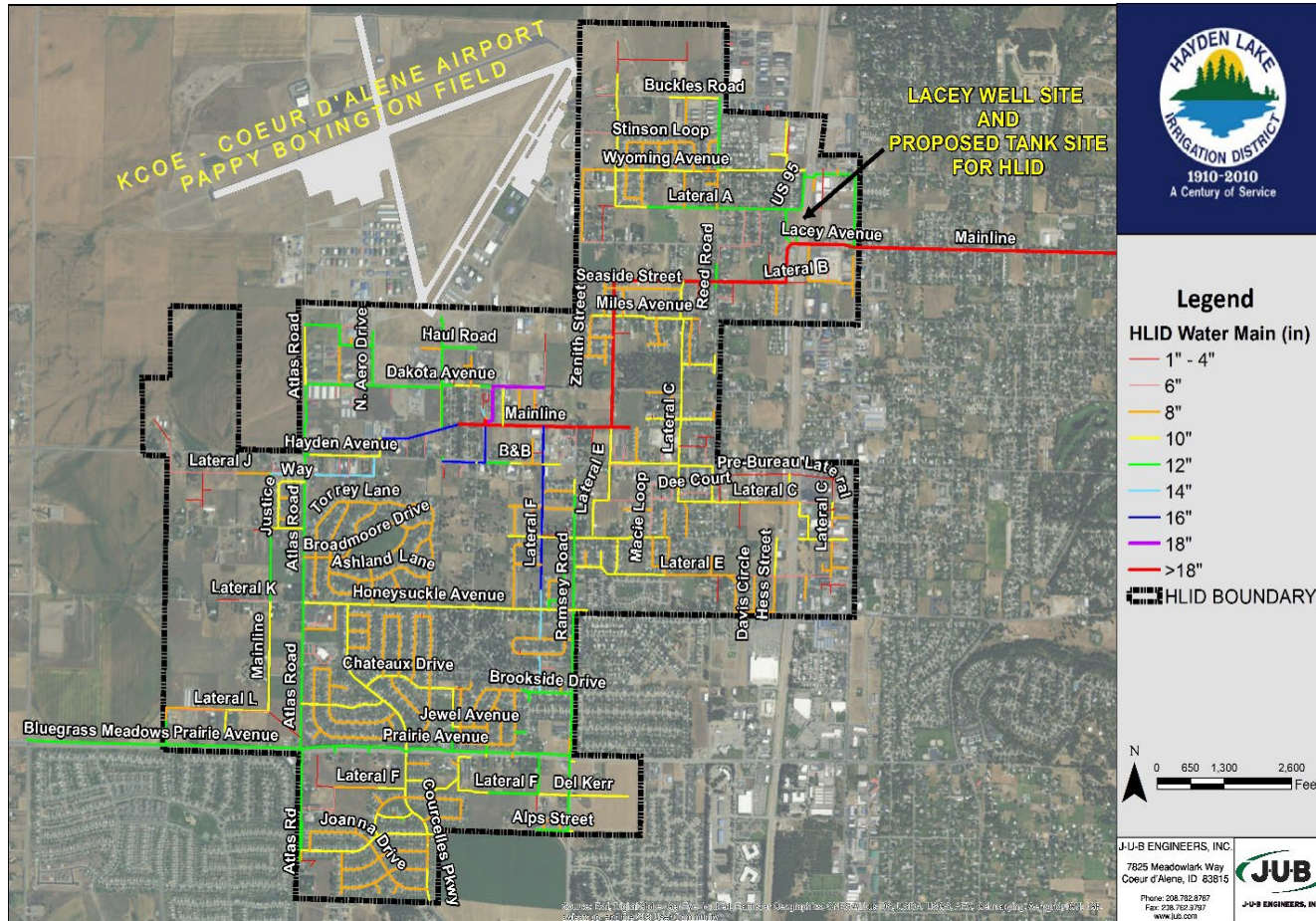
2022 PNWS AWWA Conference

# Outline

- Background
- Management strategies used to date
- Solutions moving forward
- Tank Construction Information



# Background



- Hayden Lake Irrigation District provides service within the incorporated cities of Hayden and Coeur d'Alene, as well as parts of Kootenai County.

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# Background

- Water System
  - 3,000 physical connections
  - 6 supply wells
  - 75,000 gallons of storage



The background of the slide is a green-tinted aerial map showing a city grid, streets, and some green spaces. The title 'Background' is in the top left corner.

# Background

- 1.6 MG of additional storage recommended in 2001
- Efforts to construct fell short
- Focus shifted to saving for future storage and adding supply

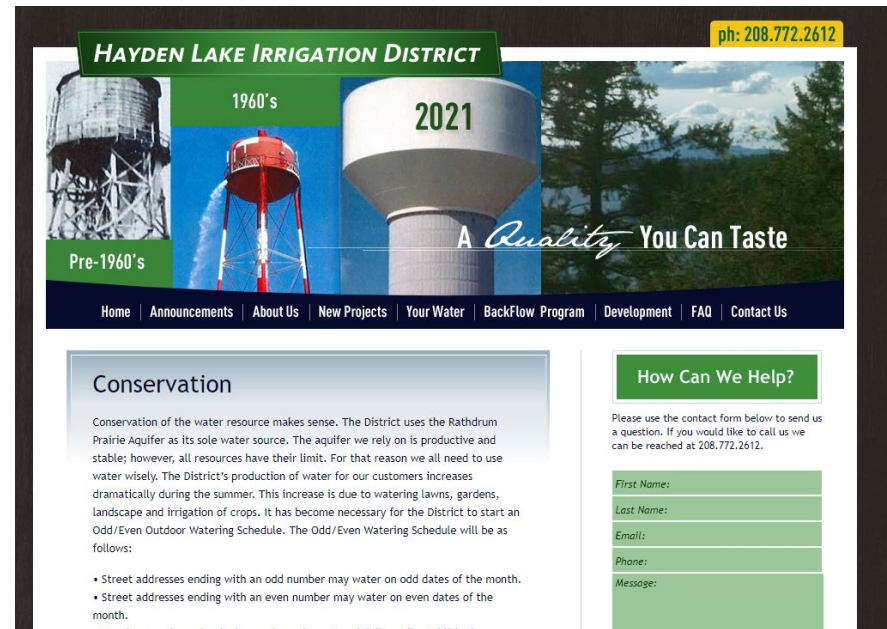
# Strategies Used to Date

- Efforts to manage peak demands include:
  - Conservation
  - Odd-even watering
  - Emergency back-up power generators
  - Variable frequency drives, allowing for longer run times and less starts
  - SCADA programming predicting rate of fall in the tank
  - Bringing wells online proactively to maintain pressure
  - Time-sensitive recipes to change lead pumps
  - Rapid response alarms directly notifying operators
  - Remote access to SCADA



# Strategies Used to Date

- Promote Conservation
  - Education on benefits
  - Landscape recommendations
    - Plants and Maintenance



**HAYDEN LAKE IRRIGATION DISTRICT** ph: 208.772.2612

Pre-1960's 1960's 2021

*A Quality You Can Taste*

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### Conservation

Conservation of the water resource makes sense. The District uses the Rathdrum Prairie Aquifer as its sole water source. The aquifer we rely on is productive and stable; however, all resources have their limit. For that reason we all need to use water wisely. The District's production of water for our customers increases dramatically during the summer. This increase is due to watering lawns, gardens, landscape and irrigation of crops. It has become necessary for the District to start an Odd/Even Outdoor Watering Schedule. The Odd/Even Watering Schedule will be as follows:

- Street addresses ending with an odd number may water on odd dates of the month.
- Street addresses ending with an even number may water on even dates of the month.

### How Can We Help?

Please use the contact form below to send us a question. If you would like to call us we can be reached at 208.772.2612.

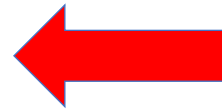
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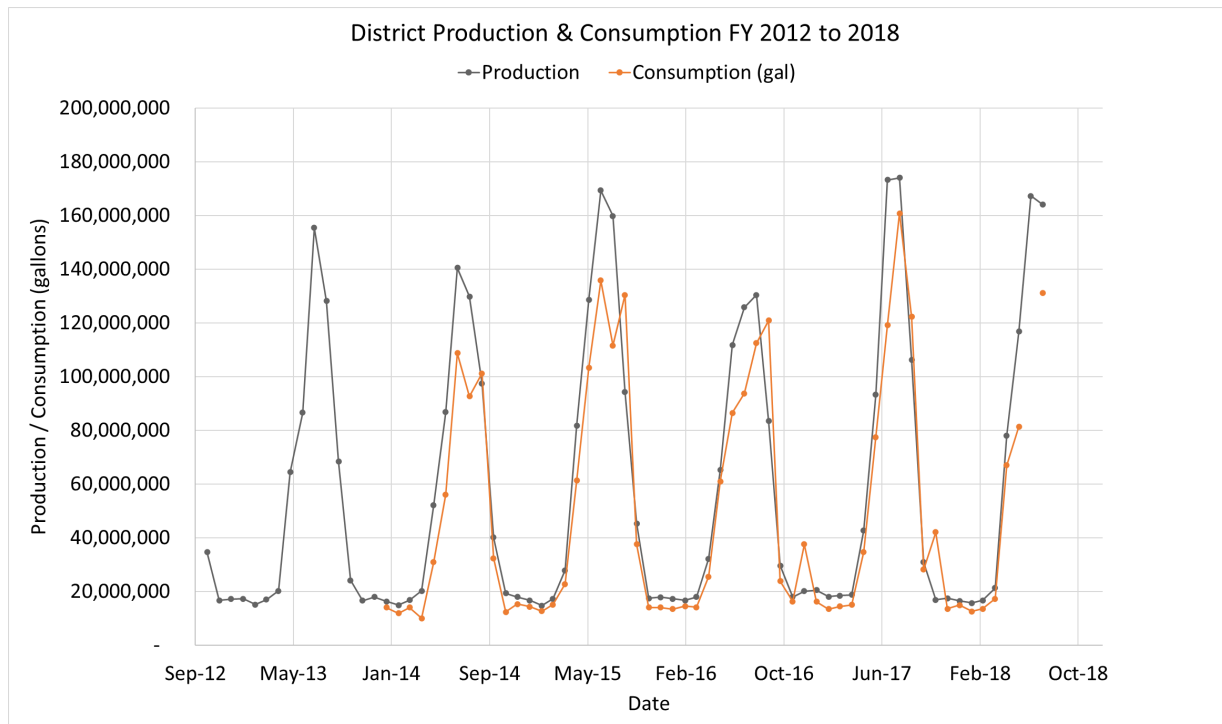


Educating  
Customers  
on Broken  
Sprinklers

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# Strategies Used to Date

- Odd-Even Watering
  - Allow for new installations
  - Consumption increases, while production peak remains the same





# Strategies Used to Date

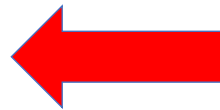
- Emergency back-up power generators



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# Strategies Used to Date

- Variable frequency drives



Temporary  
Motor



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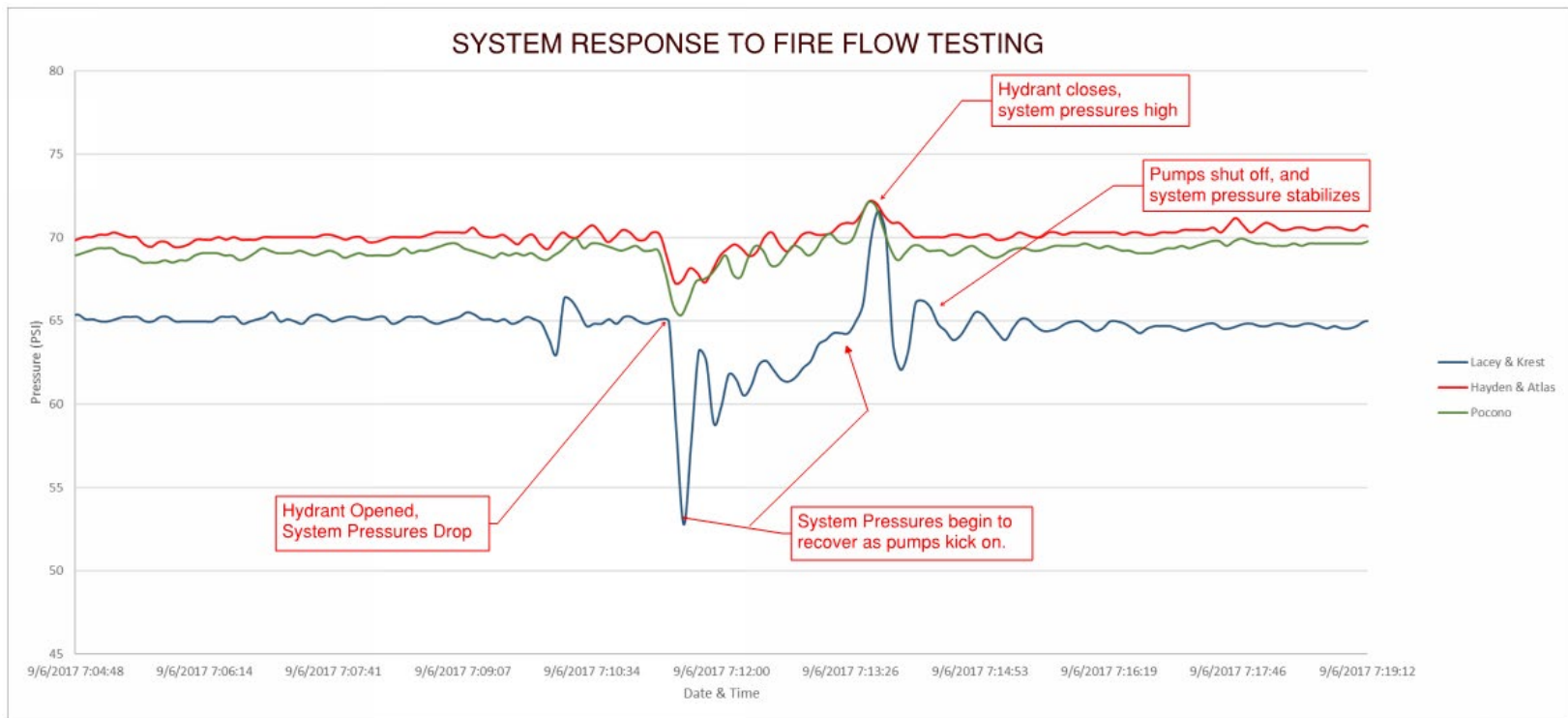
# Strategies Used to Date

- SCADA programming
  - Complex, used to predict rate of fall in the tank
- Predictive Well Operation
- Special Lead Pump Operation

HLID Summer Operation Scheme	Lacey		Dakota 1		Dakota 2		Dakota 3		Larix		Start Time	
	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Hour	Min.
Recipe 1	10	19	1	2	9	18	12	19.5	9	17	3	0
Recipe 2	9	19	10	20	8	17	44	18	6.5	17	9	0
Recipe 3	9	18.5	13	19	14	20	10	18	6.5	17	2	30
Recipe 4	9	18.5	10	19	12	20	11	18	6.5	17	18	0
Recipe 5	12.5	20	5	6	14.5	20.5	0	0	13.5	19.3	2	30

# Strategies Used to Date

- SCADA programming
  - Remote access
- Rapid Response Alarms





# Strategies Used to Date

- System management employed to date often resulted in long hours for operators, especially during lightning storms, peak weeks and system tie-ins!



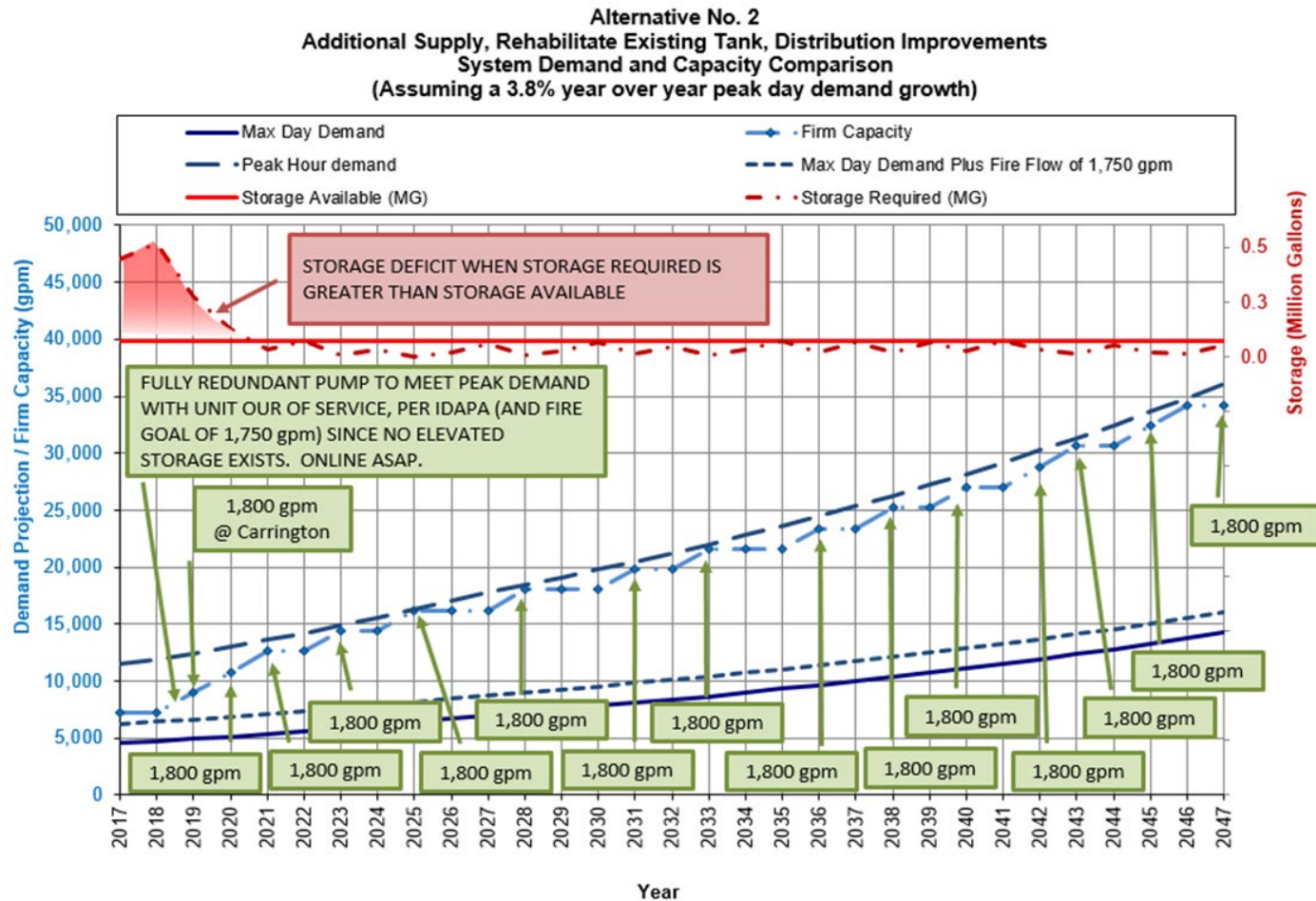
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# Developing Solutions

- District began a planning effort in 2017
  - Seeing pressure on District Infrastructure
  - Anticipating continued growth in the District



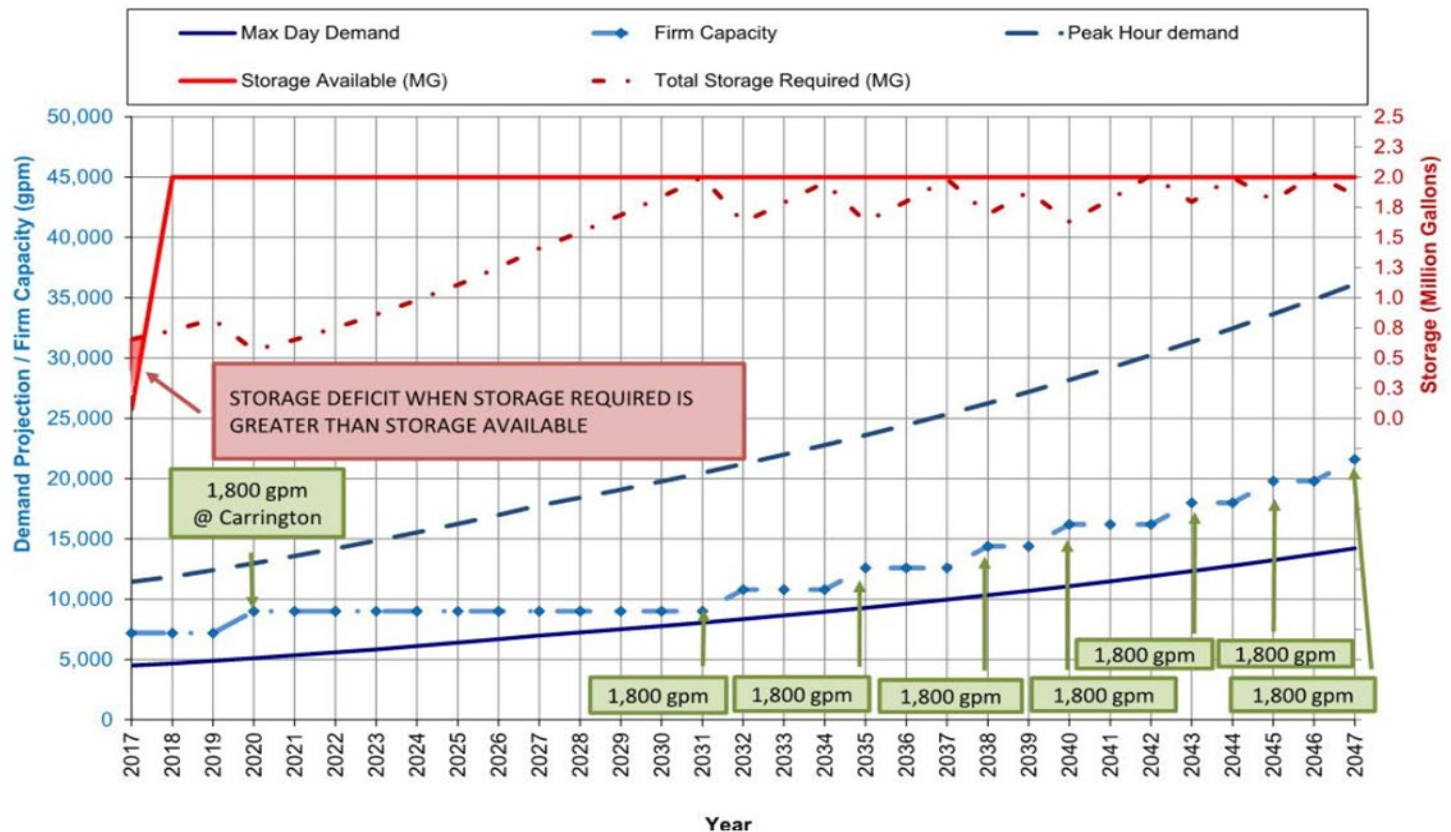
# Future Without Storage



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# Future With Storage

Alternative No. 3  
New Elevated Storage (2MG), Rehabilitate existing Tank, Additional Supply, Distribution Improvements  
System Demand and Capacity Comparison  
Assuming a 3.8% year over year peak day demand growth)

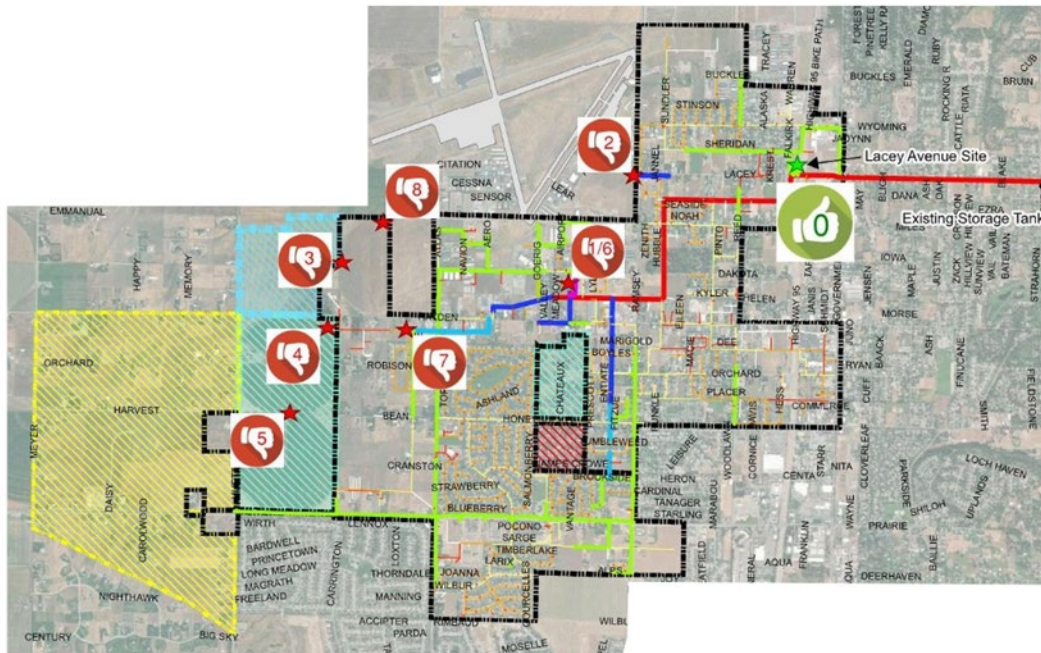


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# Tank Site

## Evaluated Sites



## Preliminary Coordination with FAA

- Driving factor
- Requires multiple aviation & elevation studies
- Public involvement
- Permitting
- 9 sites were evaluated

# Now What?

- ✓ Planning Complete
- ✓ Siting Challenges
- ✓ Design
- ✓ Funding
- ☐ Construction



# Construction

## Foundation

- Spread footing
  - Averages soil bearing loads
- Reinforced concrete
- Iron and steel are subject to AIS requirements

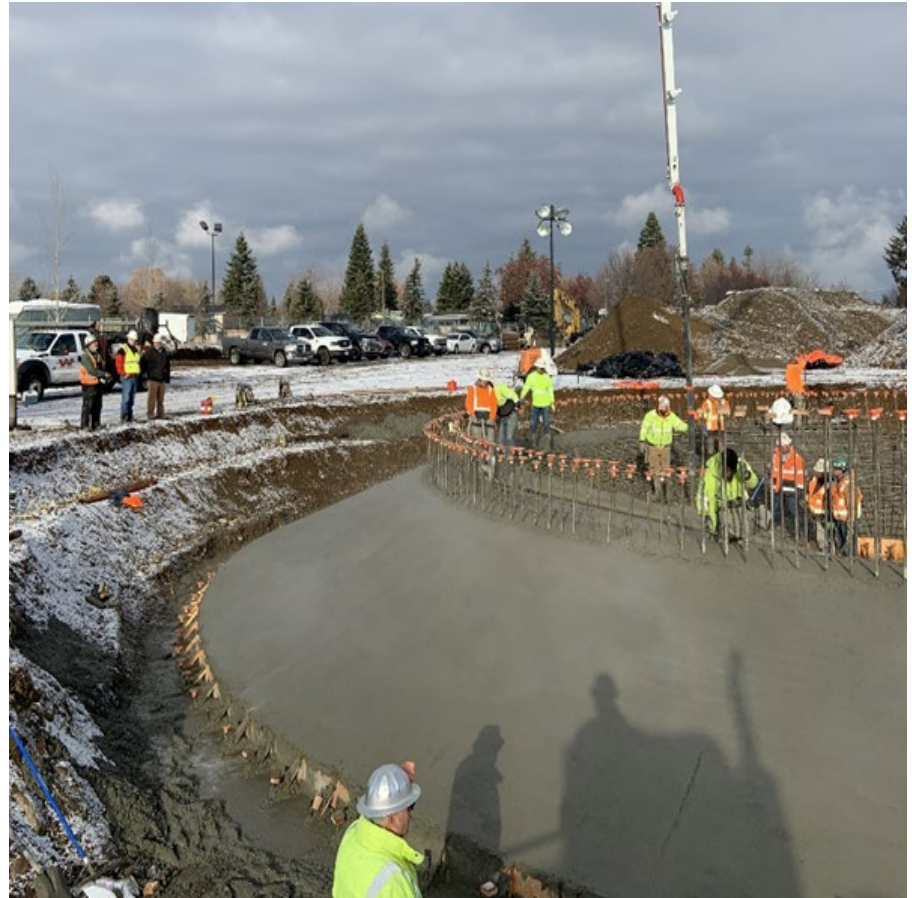




# Construction

## Foundation Concrete

- 745 cubic yards of concrete placed
- Sloped sides
- Pedestal supported with rebar rings





# Construction

## Concrete Pedestal Ring

- 12-foot segments
- Segment cured to 1,000 psi
- Then next segment is placed
- Total of 9 segments
- 5,000 psi concrete



# Construction

## Concrete Pedestal

- Access for
  - Storage
  - Maintenance

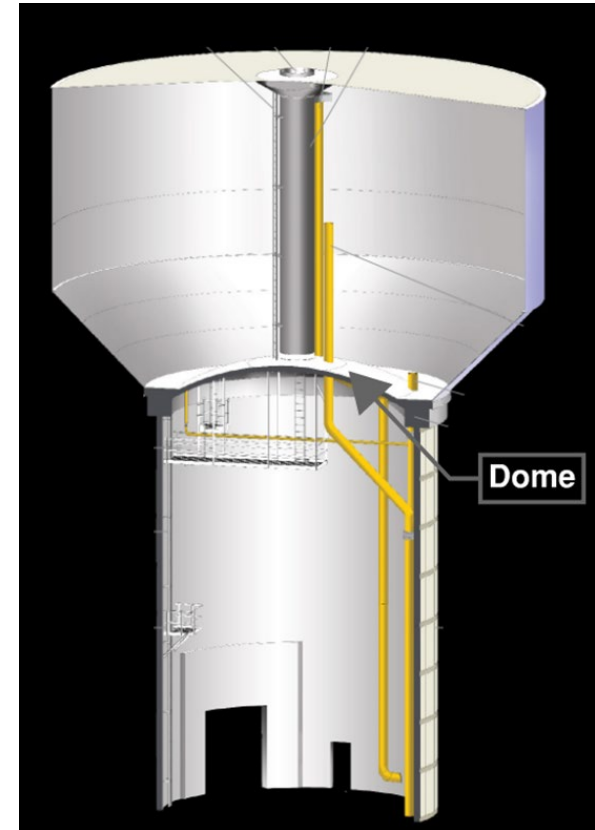




# Construction

## Tank Dome Panels

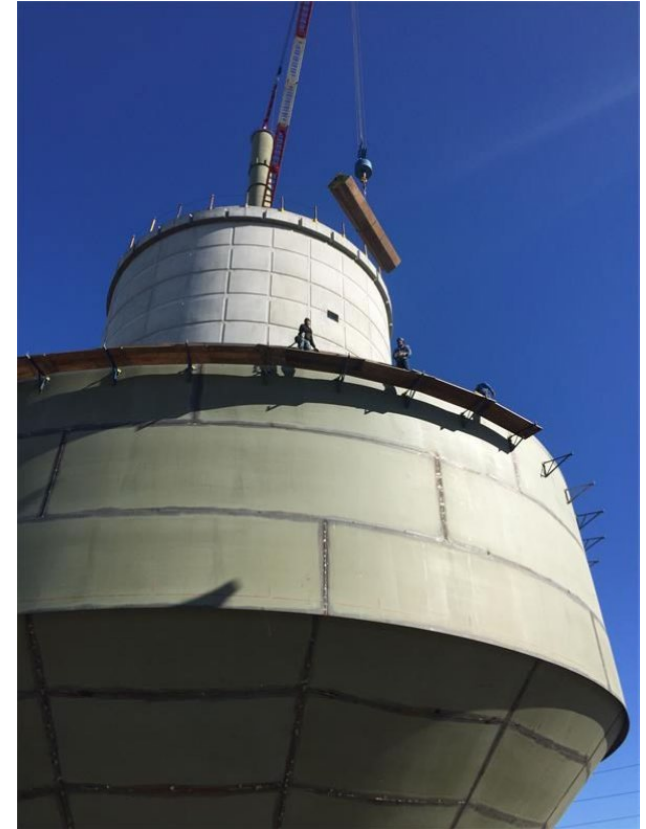
- Concrete compression support
- Steel liner cured in formwork



# Construction

## Tank Shell

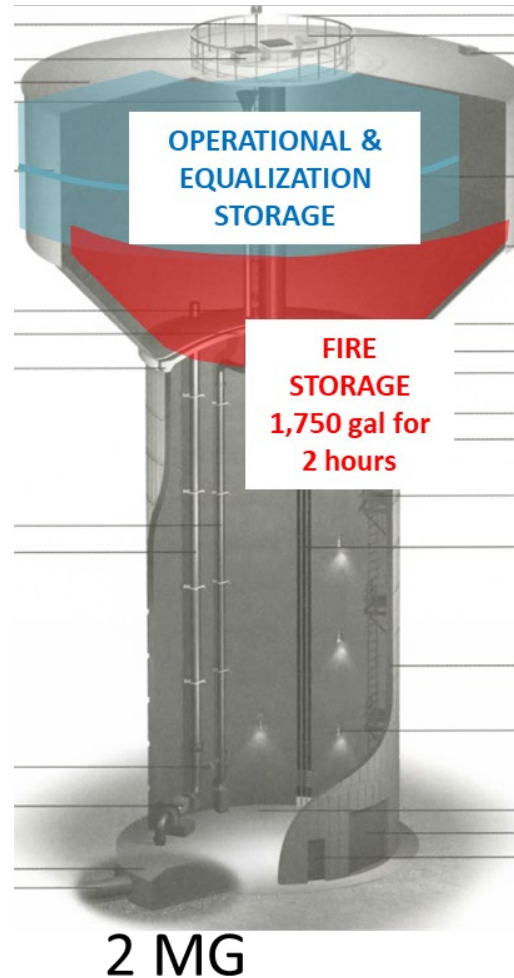
- Welded at grade
- Hoisted into place when complete





# Project Highlights

- Able to provide continuous water service.
- Improve the long-term storage needs for the system.



# Questions and Open Discussion

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