

Town of Twin Bridges

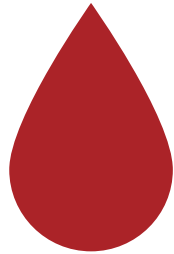
Water System Improvements Preliminary Engineering Report – 2024 Update

April 23, 2024

Daniel M. McCauley, PE



Meeting Purpose



Updated Information for 2022 Water PER

Additional analysis of finished water storage



Discuss Updated Findings

Discuss Environmental Assessment (EA)

Public Comment

Preliminary Engineering Report



Evaluation of Existing Facilities

Problem Definition
Alternative Development



Project Costs

Cost Estimates
Funding Scenarios



Public Participation

Public Hearing



Funding Agency Requirements

Technical Analysis
Environmental Assessment
Grant Applications

Planning Area

» Township/Range/Section

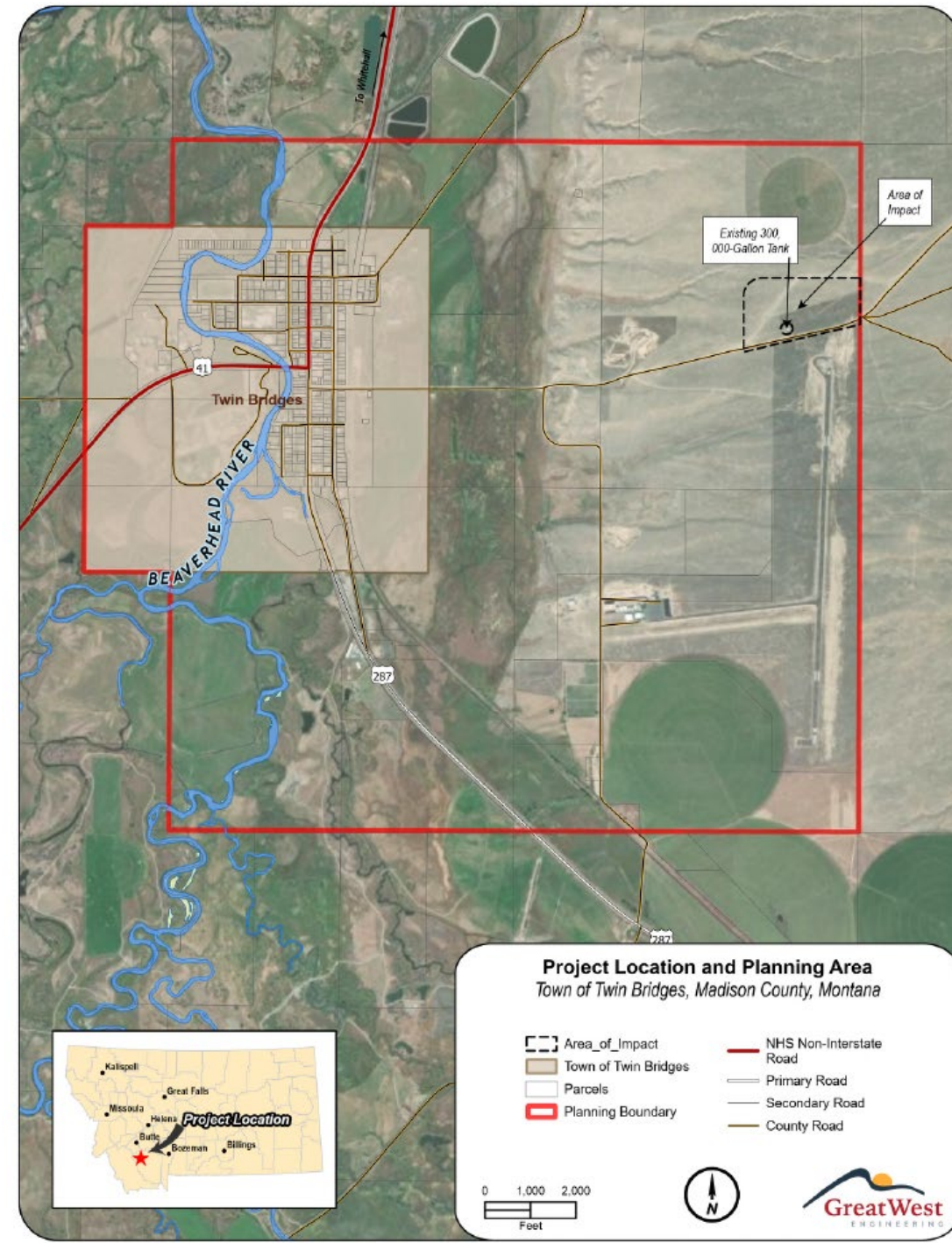
» Township 3S, Range 6W,
Sections: 27, 28, 33, & 34

» Latitude/Longitude

» 45.5427778 °N, 112.3341667 °W

» Elevation

» 4,626 ft.



Population Estimates

Current Population

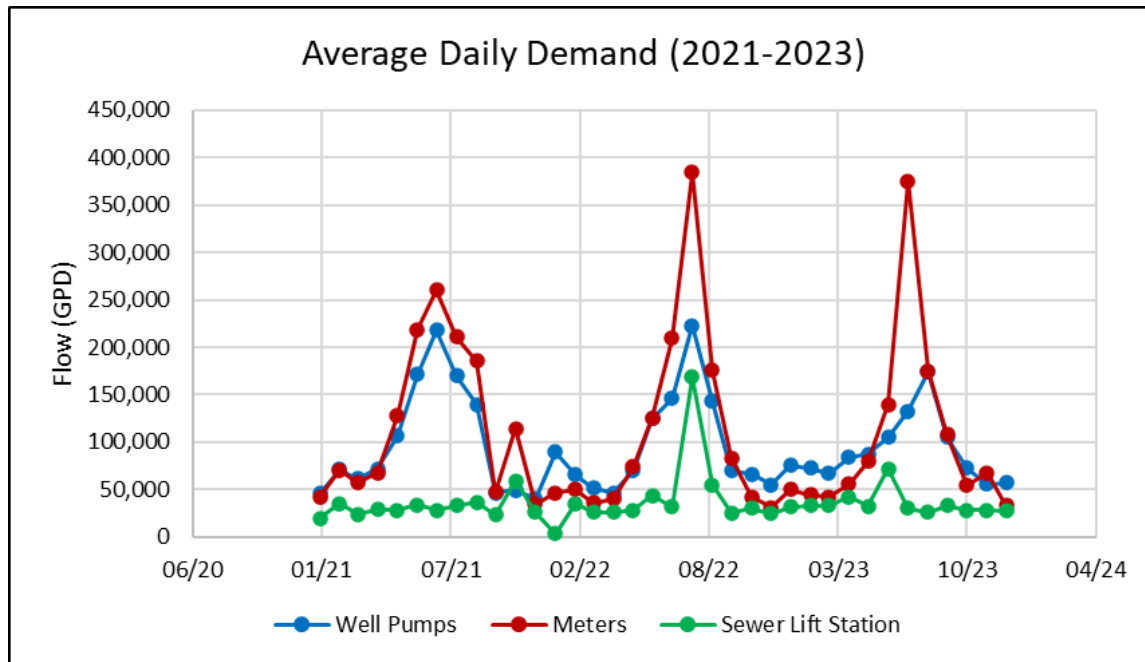
- 434 from 2020 Census

2044 Design Population Projection

- 2% annual growth (Town) + 1.69% growth (West Side)
- 645 persons at only 2% (Town)
- 895 persons at 3.69% (Town + West Side)

Water Demand

- Data from 2021 to 2023
- Daily demand based on Metered Usage
- Current per capita demand is 254 gpcd



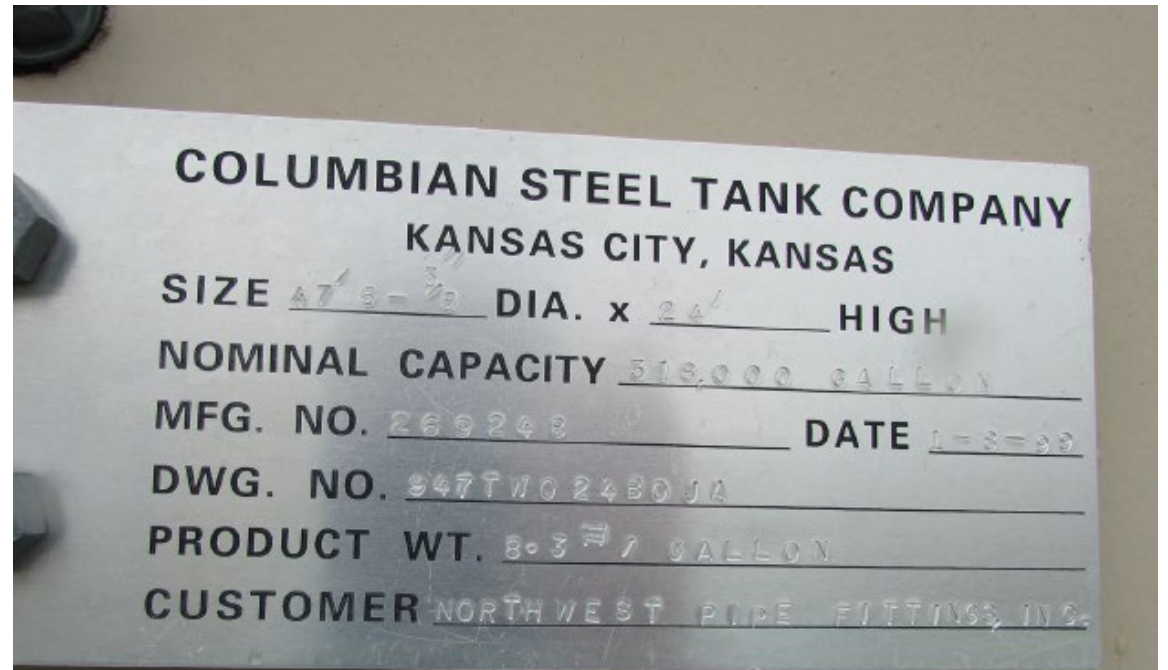
Projected Demand		
Scenario	Population	Daily Demand (GPD)
2020 Town	434	110,090
2044 Town	645	177,057
2044 Town + West Side	895	262,542

Existing Storage

- » Constructed in 1999
- » 300,000 Gallon Capacity
- » Epoxy Lined Steel Bolted



Storage Analysis		
Storage Need	Year 2024 Demand (Gallons)	Year 2044 Demand (Gallons)
Operational (average daily demand)	110,000	263,000
Emergency	0	0
Fire Suppression (2,500 GPM for 2 hours)	300,000	300,000
Total Required	410,000	563,000
Existing Storage	300,000	300,000
Storage Surplus (+) or Deficit (-)	-110,000	-263,000



Storage Deficiencies

**Existing tank
needs exterior
and interior
recoating**

**Inadequate
storage for
projected
demands**

Alternatives Considered

- **Supply Alternatives**

- Alt. R-1: No Action
- Alt. R-2: New 260K Gallon Glass-Lined Steel Tank
- Alt. R-3: New 560K Gallon Concrete Tank
- Alt. R-4: New 560K Gallon Glass-Lined Steel Tank



Alt. R-1: No Action

- » No action will be taken.
- » Periodic maintenance will continue to keep tank functional.
- » No capital cost or addition to O&M costs.



Alt. R-2: New 260K Gallon Glass-Lined Tank

- » A new 260,000-gallon glass-lined steel tank will be constructed within the existing easement.
- » Project includes site piping and site valving.
- » Capital Cost: \$1.42 million.
- » O&M: \$10,100 per year.



Alt. R-3: New 560K Gallon Concrete Tank

- » A new 560,000-gallon concrete tank will be constructed 1,000 feet north of existing tank.
- » Project includes site piping, site valving.
- » Capital Cost: \$2.82 million.
- » O&M: \$6,300 per year.



Alt. R-4: New 560K Gallon Glass-Lined Steel Tank

- » A new 560,000-gallon glass-lined steel tank will be constructed 1,000 feet north of existing tank.
- » Project includes transmission main, site piping, site valving, electrical and telemetry.
- » Capital Cost: \$2.1 million.
- » O&M: \$11,100 per year.



Alternative Analysis Criteria



Life Cycle Costs



**Operation and
Maintenance**



**Permitting
Issues**



Social Impacts



**Environmental
Impacts**

Decision Matrix

Decision Matrix											
Alternative	Life Cycle Costs		Operation and Maintenance		Permitting		Social Impacts		Environmental Impacts		TOTAL
	Weight:	10	Weight:	7	Weight:	4	Weight:	10	Weight:	5	
	Score	Wtd.	Score	Wtd.	Score	Wtd.	Score	Wtd.	Score	Wtd.	
Storage Alternatives											
R-1	10.0	100	3.0	21	5.0	20	3.0	30	5.0	25	196
R-2	7.1	71	4.0	28	5.0	20	6.0	60	5.0	25	204
R-3	2.9	29	7.0	49	5.0	20	7.0	70	5.0	25	193
R-4	4.4	44	8.0	56	5.0	20	8.0	80	5.0	25	225

It is important to note that the above scoring and weighting are subjective. Alternatives that score overall within 10 pts of each other may essentially hold the same degree of preference.

Preferred Alternative

» Alternative R-4

- » New 560,000-Gallon Glass-Lined Steel Tank.
- » Located approximately 1000 feet north of existing 300,000-gallon tank.
- » Project Cost estimated at \$2.1 million.

Environmental Assessment

» Resources Evaluated

- » Land Cover
- » Land Use
- » Land Ownership
- » Biological Resources
- » Water Resources
- » Floodplains
- » Wetlands
- » Cultural and Historical Resources
- » Socioeconomic and Environmental Justice Impacts

- » Public document listing resources and potential impacts
- » Local, State, Federal, and Tribal Agencies were contacted for comments
- » Public comment accepted

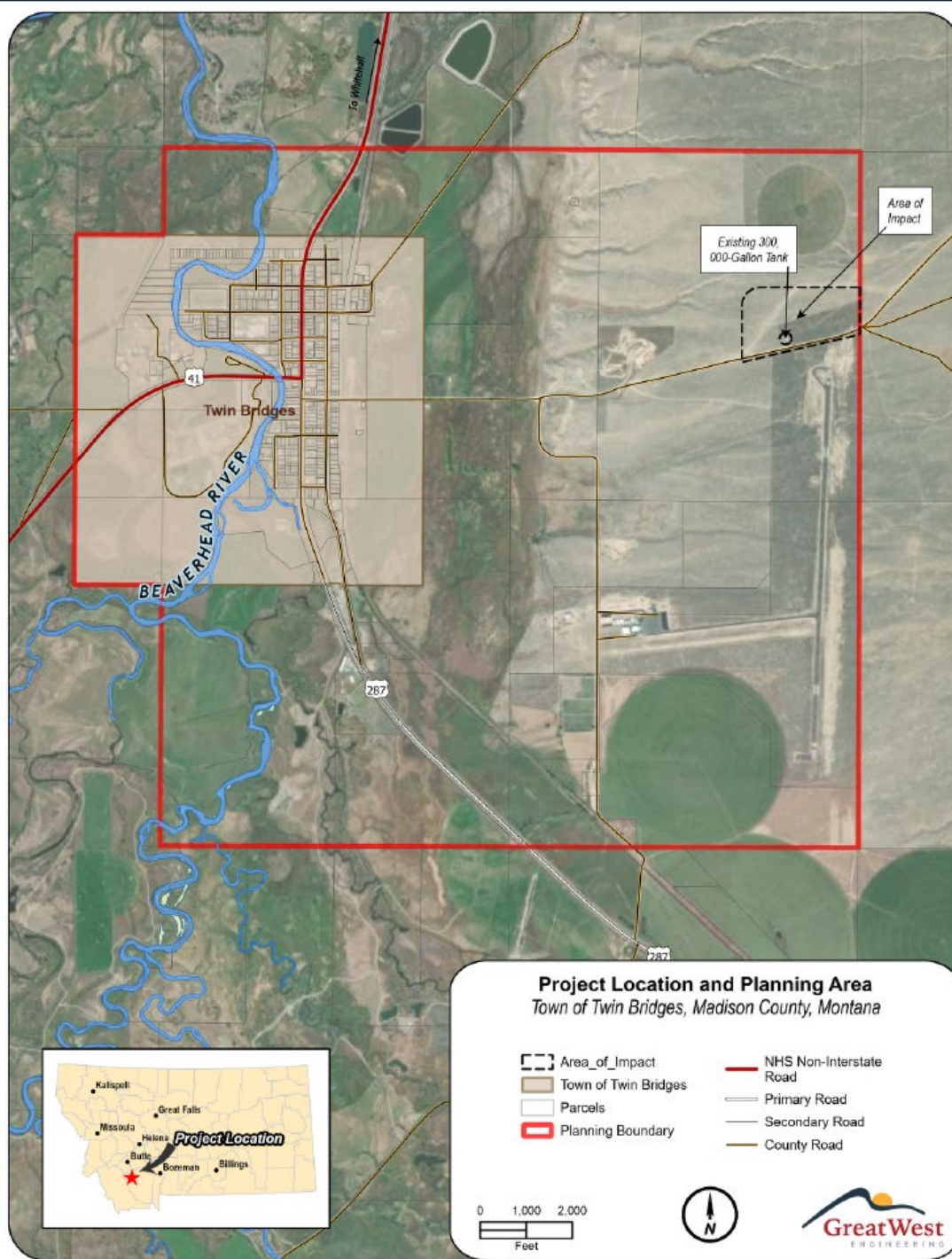
Environmental Assessment cont'd

Comments received from:

- FAA
- SHPO
- DNRC
- COE
- Madison County Floodplain Administrator

Conclusion:

- No significant impacts have been identified.
- A new easement with DNRC would be required.
- The FAA is concerned about the existing water tank and an existing easement between Madison County and the DNRC.



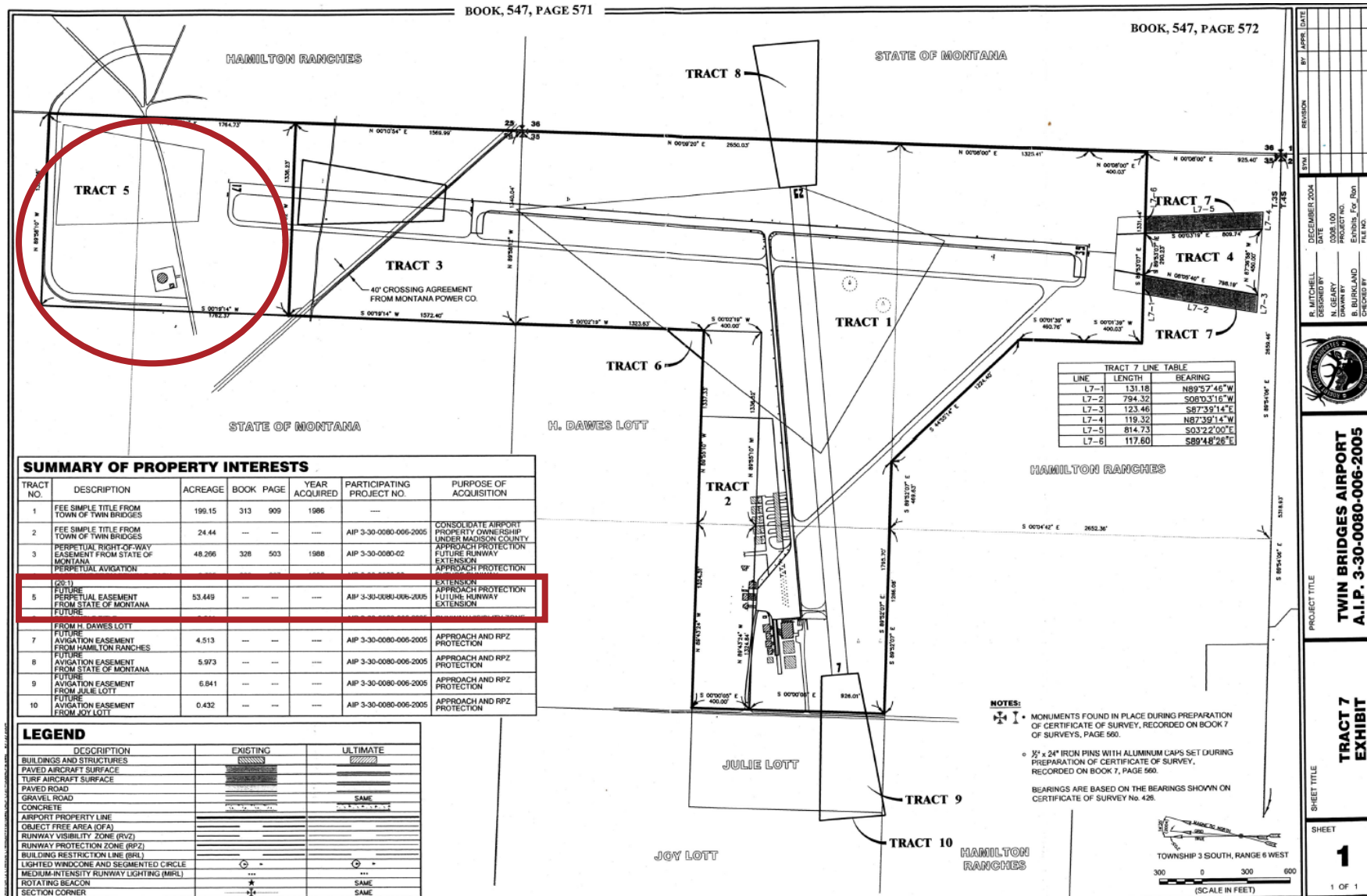
DNRC Easement

A representative from DNRC has been contacted.

The representative has indicated that DNRC is willing to provide a new easement.

DNRC would like to have site visits prior to any new easements.

FAA Concerns



- 1998 – Easement between Town and DNRC signed.
- 1999 – Existing water tank constructed
- 2005 – Madison County and DNRC enter an easement using federal funding.
- 2024 – FAA is concerned about existing tank as an encumbrance for County/State easement



FAA Concerns cont'd

- » FAA is concerned that the existing tank was not adequately disclosed when the County acquired their easement.
- » New construction would require additional permitting with the FAA and County if built in Tract 5.
- » Proposed new tank location is outside of the County's right-of-way to avoid conflicting agreements.
- » Existing tank predates County's easement, so no action is required by the Town.

Implementation Schedule



Town adopts PER

April 2024



Grant Application and Awards May 2024 –December 2025



Design

Spring/Summer 2026



Bidding

Fall 2026



Construction

Spring/Summer 2027

Thank you – Questions?

**Water/Wastewater ▪ Transportation ▪ Grant Services ▪ Solid Waste ▪
Structural ▪ Bridges ▪ Natural Resources ▪ Planning**

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Helena, MT 59604
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