

WATER SYSTEM IMPROVEMENTS

ABSAROKEE WATER & SEWER DISTRICT
PUBLIC MEETING

January 20, 2016



WHY ARE WE HERE

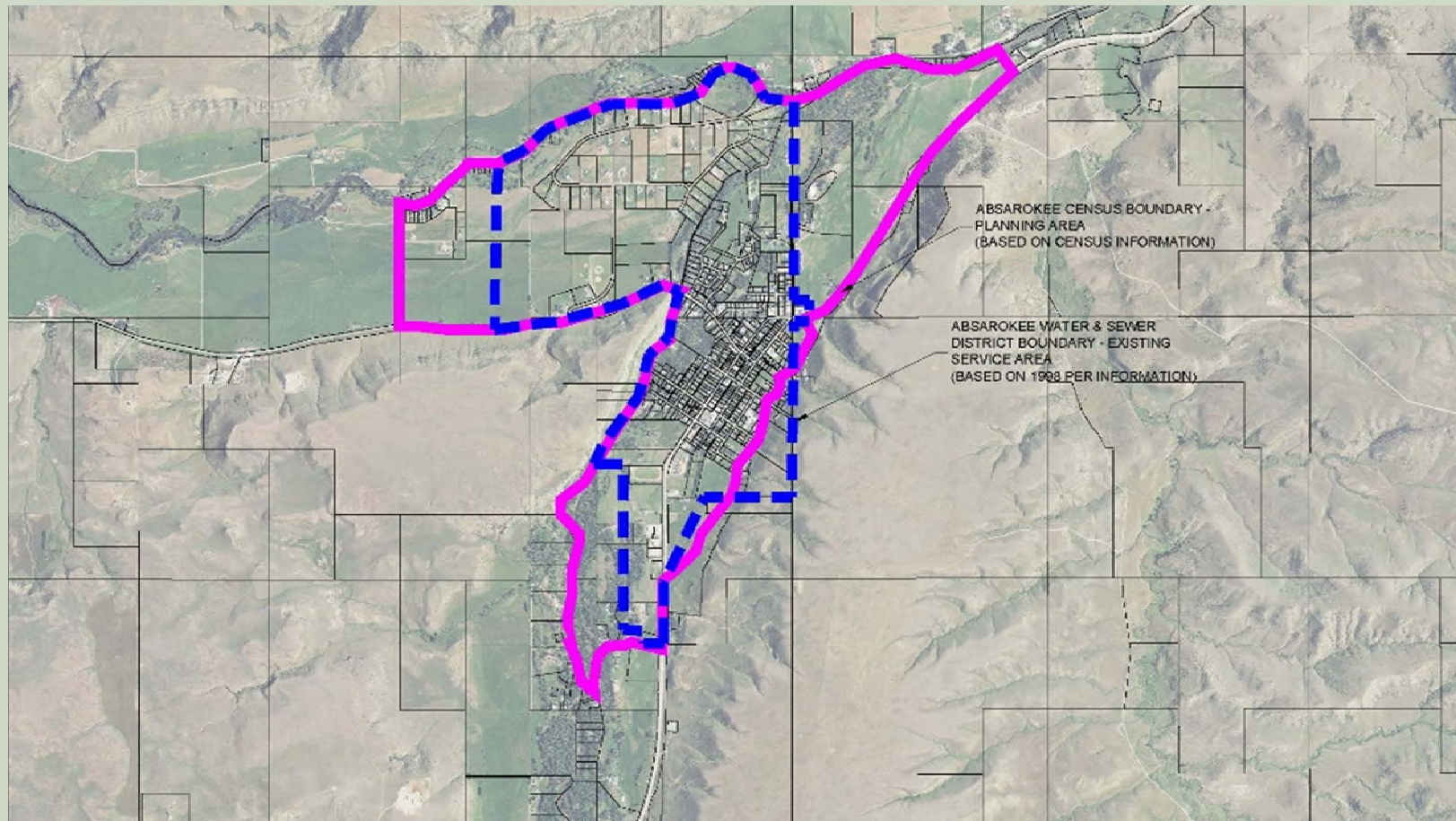
- **The District has identified water system needs**
- **Water System Preliminary Engineering Report (PER)**
- **Environmental Assessment**
- **PUBLIC COMMENT**

PRELIMINARY ENGINEERING REPORT

➤ What is a PER?

- Required by funding agencies to qualify for grant and loan funding
- Analysis of existing system
- Problem definition
- Evaluates alternatives and identifies the preferred alternative
- Establishes costs and develops funding scenarios
- Implementation schedule
- PUBLIC COMMENT

PLANNING AREA



PLANNING AREA

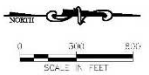
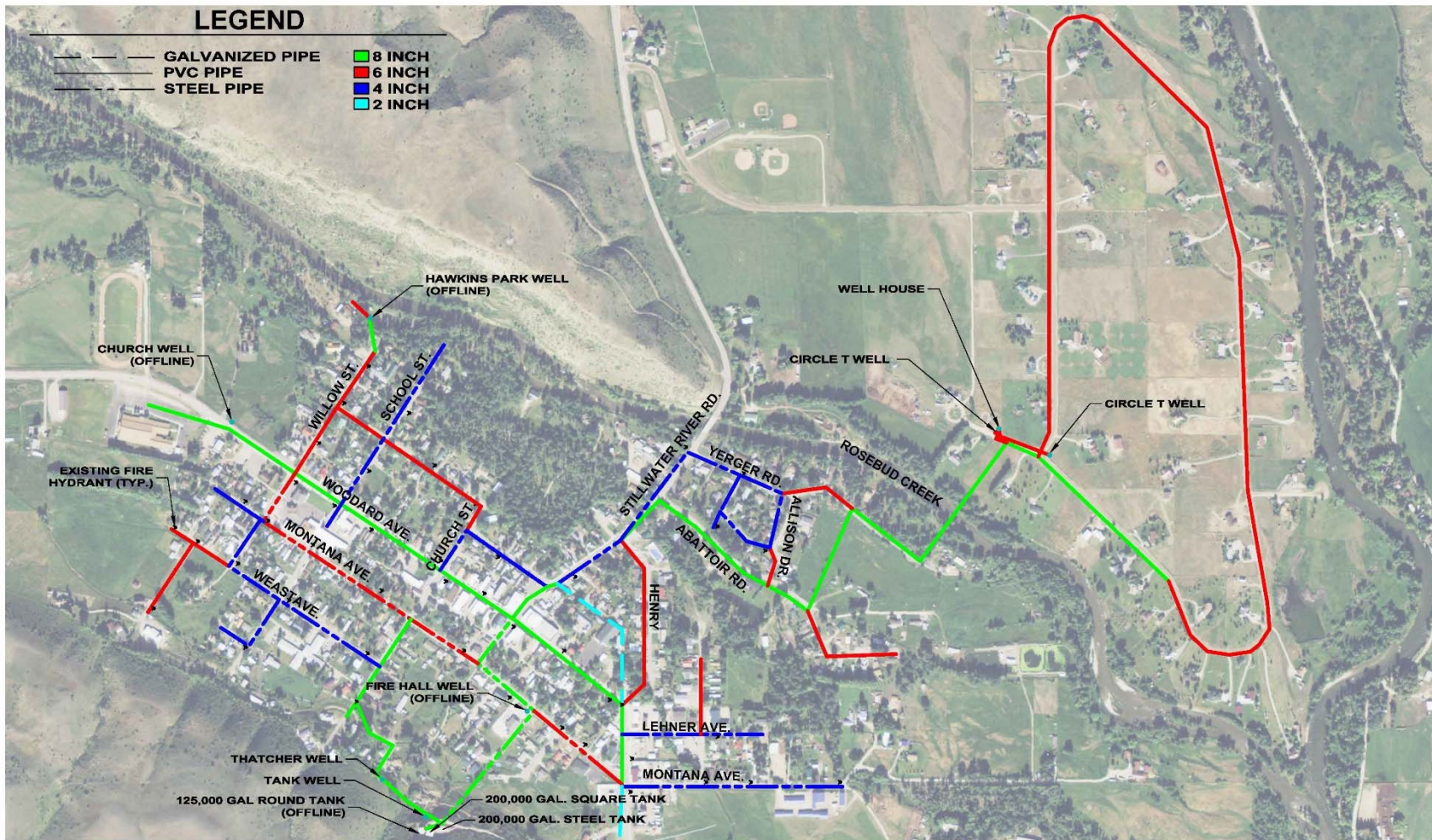
➤ Current Population

- Absarokee CDP: 1,207 (American Community Survey)
- Absarokee Water District: 1,088 (Water Users)

➤ Design Population

- Census data shows a 5% growth in the Absarokee CDP since 2010
- A 1% annual growth rate over the next 20 years within the District is assumed
- 2035 Projected Population: 1,328

EVALUATION OF EXISTING SYSTEM



**FIGURE 3-1
EXISTING ABSAROKEE WATER
SYSTEM**

ABSAROKEE WATER AND SEWER DISTRICT
WATER SYSTEM PER



EVALUATION OF EXISTING SYSTEM - SUPPLY

➤ Source Capacity

| Supply Capacity | | Maximum Day Demand (2015) | Maximum Day Demand (2035) |
|--|---------|---------------------------|---------------------------|
| Tank Well | 65 gpm | | |
| Thatcher Well | 42 gpm | | |
| Circle T Well (008) | 130 gpm | | |
| Circle T Well (009) | 125 gpm | | |
| | | | |
| Total Capacity | 362 gpm | 221 gpm | 347 gpm |
| Total Capacity Less Thatcher Well | 320 gpm | 221 gpm | 347 gpm |
| | | | |
| Total Capacity Less Largest Well | 232 gpm | 221 gpm | 347 gpm |
| Total Capacity Less Largest Well & Thatcher Well | 190 gpm | 221 gpm | 347 gpm |

➤ Source Quality

- Consumer Confidence Reports for past 3 years indicate water quality is good

EVALUATION OF EXISTING SYSTEM - STORAGE

➤ **Storage Capacity**

- 400,000 gallons available

➤ **Total Required Storage: 635,000 gallons**

- Projected Average Day Demand (2035): 335,000 gallons
- Fire Suppression – 2,500 gpm for 2 hours: 300,000 gallons

EVALUATION OF EXISTING SYSTEM - STORAGE

➤ Storage Condition

- 200,000 gallon concrete tank inspected in 1998
 - Minor cracking and spalling at the corners and along walls
 - Debonding patchwork
 - Shrinkage cracks on roof slab
 - Tension cracks around column caps
 - Ponding on roof
 - Visible leak in spalled concrete



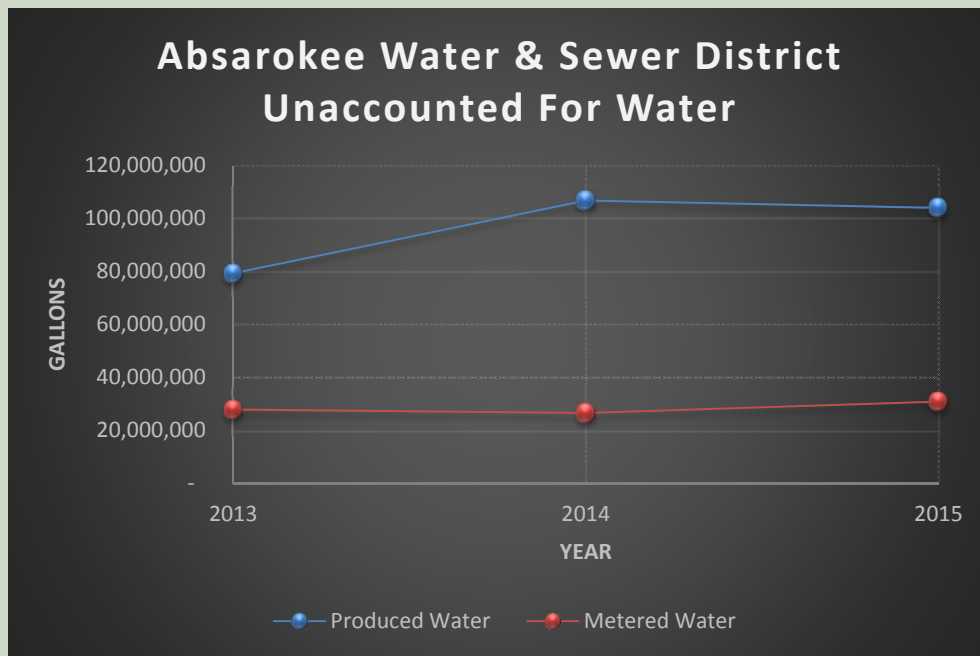
EVALUATION OF EXISTING SYSTEM - DISTRIBUTION

| Absarokee Water and Sewer District Distribution System Summary | |
|---|---------------|
| PVC Main | Length (lf) |
| 8" Diameter | 10,640 |
| 6" Diameter | 15,050 |
| 2" Diameter | 310 |
| Subtotal | 26,000 |
| Steel Main (37%) | |
| 8" Diameter | 1,960 |
| 6" Diameter | 2,700 |
| 4" Diameter (26%) | 11,260 |
| Subtotal | 15,920 |
| Galvanized Main | |
| 2" Diameter | 1,280 |
| Subtotal | 1,280 |
| Total | 43,200 |

- **Typical Life Expectancy**
 - PVC: 50 years
 - Steel: 40 years
- **Shortened Life**
 - Corrosive Soils
 - Improper Bedding

EVALUATION OF EXISTING SYSTEM - DISTRIBUTION

- **Unaccounted for water largely attributed to leaking distribution system**
 - Increased chemical costs, energy use, maintenance
- **Average of 70% unaccounted for water over last three years**



1997 water loss
estimated at 45%

PROBLEM DEFINITION

- Primary Concern: Distribution System



PROBLEM DEFINITION

➤ **Primary Concern: Distribution System**

- Average 70% unaccounted for water
- Corrosive soils can cause holes in steel pipe creating entry points for contaminants
- 4" diameter mains do not comply with DEQ
- Undersized and leaking lines limit flows that could be critical in emergency fire situations
- Main breaks result in loss of pressure and increases risk of backflow contamination
- Single crossing of Rosebud Creek

PROBLEM DEFINITION

➤ Supply

- Should be reevaluated after distribution system improvements

➤ Storage

- Deteriorating concrete tank may allow access for contaminants to enter the drinking water system
- Capacity is below recommendations
- Should be reevaluated after distribution system improvements

➤ Telemetry

- Outdated system with no alarm capability

ALTERNATIVES ANALYSIS

➤ Distribution

- No Action
- Distribution System Improvements
 - Phasing Plan

➤ Storage

- No Action
- Repair 200,000 gal. concrete tank, demolish 125,000 gal. concrete tank, construct new 235,000 gal. tank (concrete or steel) in its place
- Demolish existing concrete tanks and construct new 435,000 gal. tank (concrete or steel) in their place
- Abandon existing concrete tanks and construct new 435,000 gal. tank in a new location on west side of Rosebud Creek (concrete, steel, elevated)

ALTERNATIVES ANALYSIS

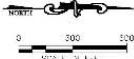
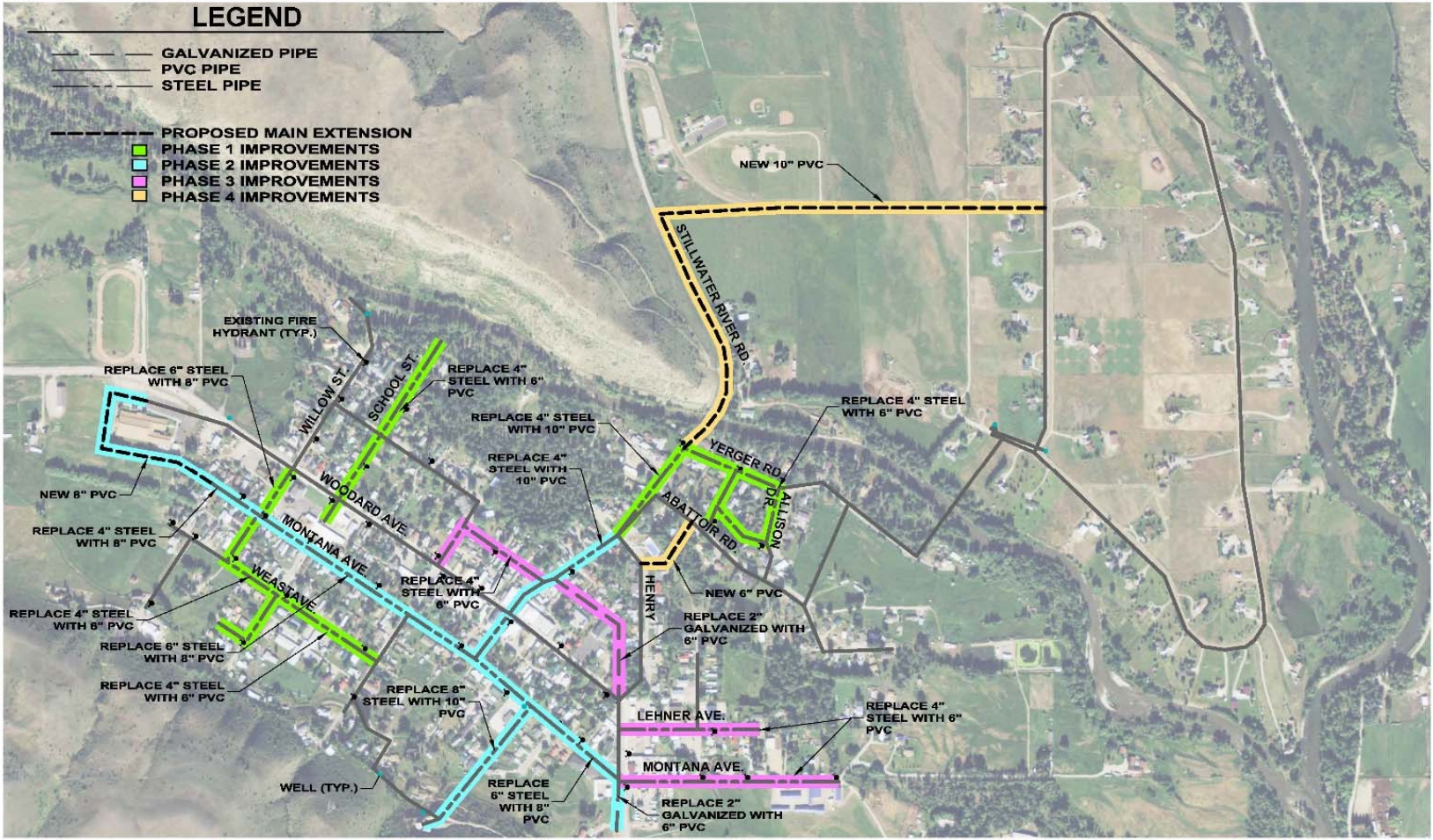


FIGURE 5-4
ALTERNATIVE D-2: DISTRIBUTION
SYSTEM IMPROVEMENTS
 ABSAROOKE WATER AND SEWER DISTRICT
 WATER SYSTEM PER

ALTERNATIVES ANALYSIS

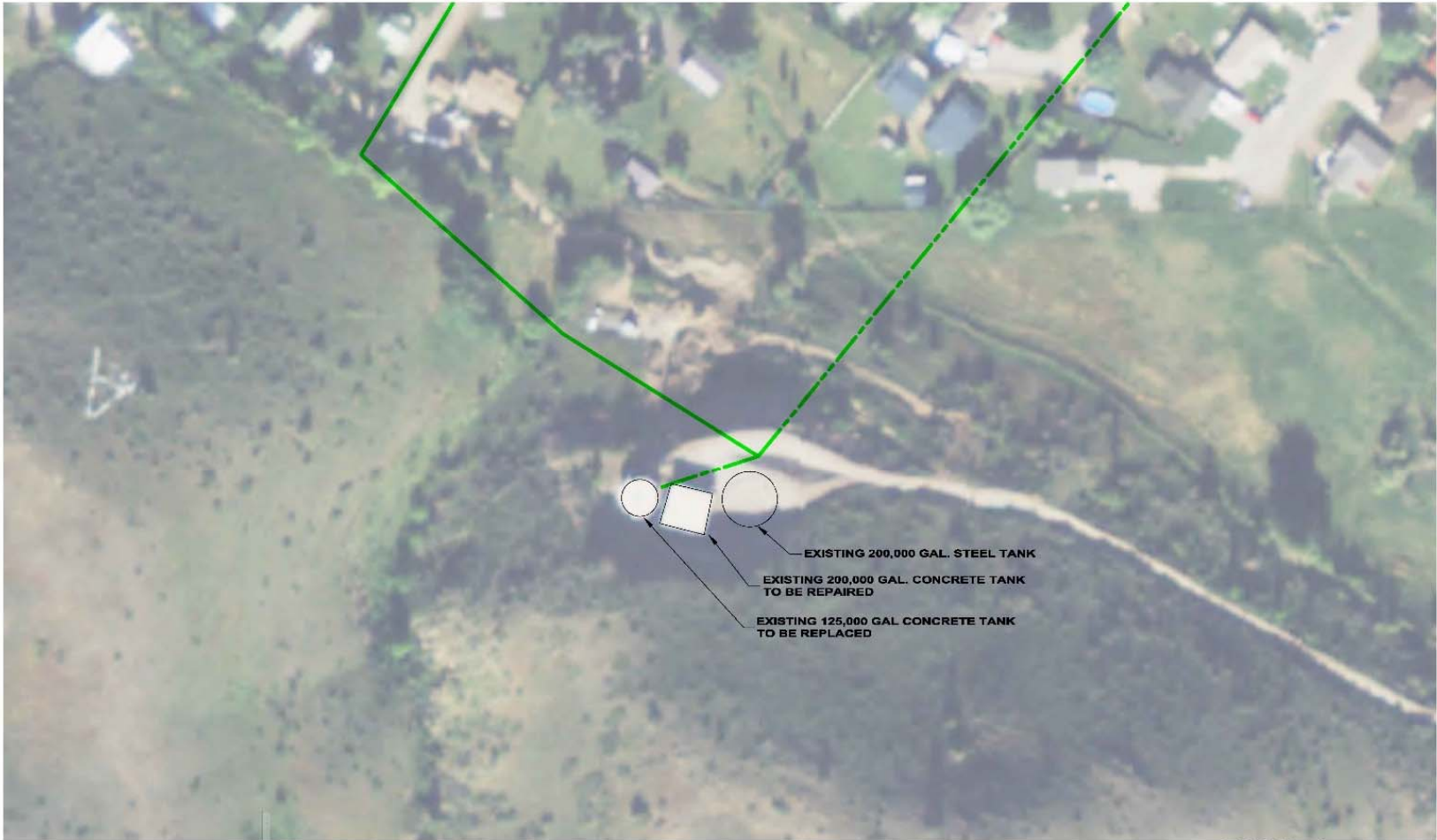


FIGURE 5-1
ALTERNATIVE R-2: REPAIR 200,000
GAL. CONCRETE TANK, CONSTRUCT
NEW 235,000 GAL. TANK
ABSAROKEE WATER AND SEWER DISTRICT
WATER SYSTEM PER



ALTERNATIVES ANALYSIS

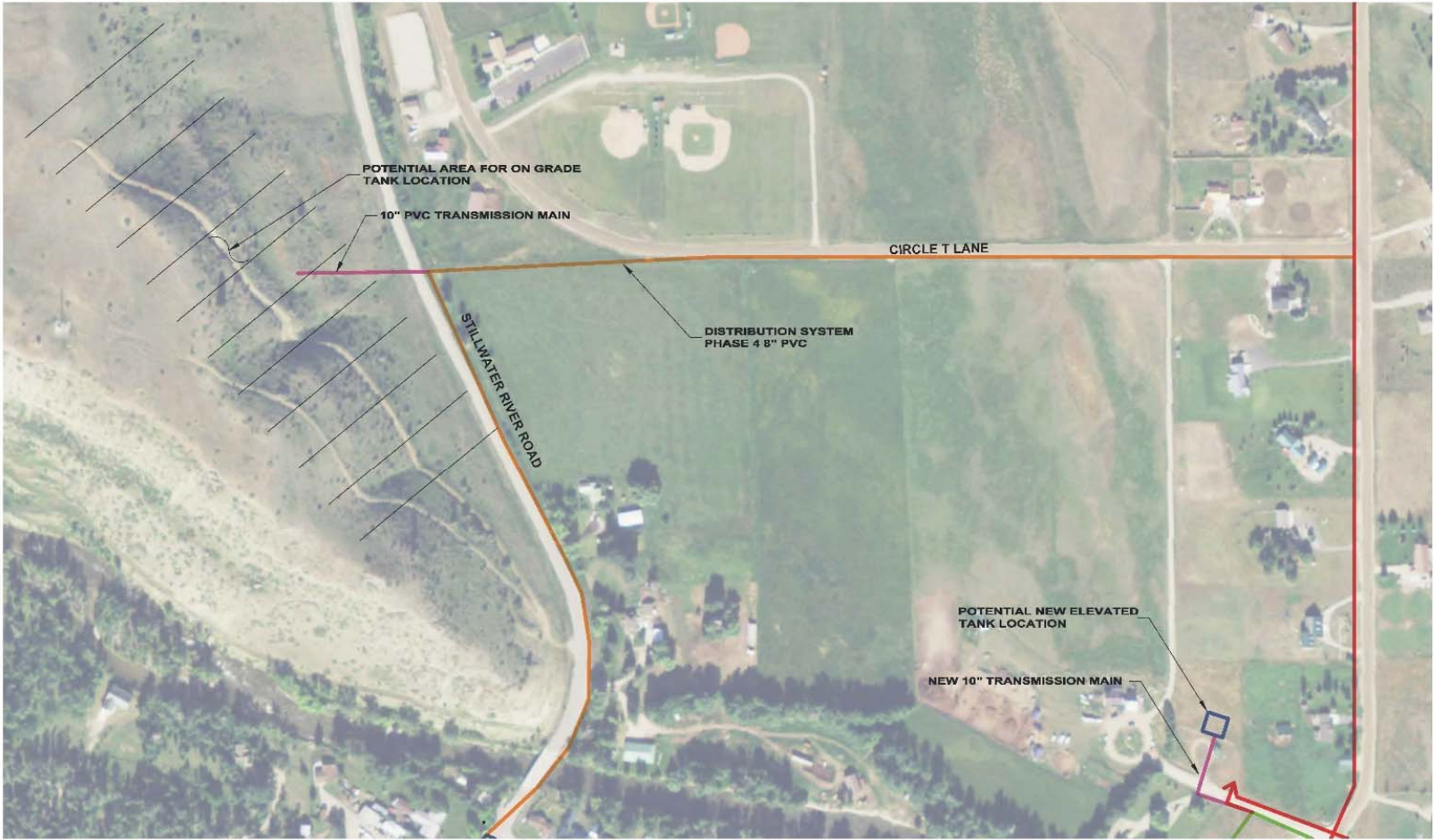


FIGURE 5-3

ALTERNATIVE R-4 AND R-5: REPLACE EXISTING CONCRETE TANKS WITH NEW TANK AT NEW LOCATION

ABSAROOKE WATER AND SEWER DISTRICT
WATER SYSTEM PER



ALTERNATIVES ANALYSIS

➤ Storage Tank – Steel vs Concrete

■ Concrete

- Low maintenance
- Life cycle 50-100 years
- Seismic resistance
- High capital cost

■ Steel

- Low capital cost
- Glass coating extends tank life – 40 years
- Cathodic protection

■ Elevated

- High maintenance
 - Recoating every 10 years
- High capital cost
- High maintenance cost



SELECTION OF PREFERRED ALTERNATIVE

➤ Ranking Criteria

- Life cycle cost analysis
- Operation and maintenance considerations
- Permitting issues
- Social impacts
- Environmental impacts
- Public health and safety
- Land acquisition

SELECTION OF PREFERRED ALTERNATIVE

| Distribution Alternatives | | | | | | | |
|--|--------------|------------------------|-------------------------------|-----------------------|--------------------------|-------------------|----------------|
| Alternative | Capital Cost | Annual Increase to O&M | Present Worth of O&M Increase | 20 year Salvage Value | Present Worth of Salvage | Net Present Value | Criteria Score |
| D-2: Distribution System Improvements | \$ 4,749,000 | \$ - | \$ - | \$ 919,000 | \$ 286,500 | \$ 4,462,500 | 5.0 |
| Storage Alternatives | | | | | | | |
| R-2a: Concrete Tank Repair and New 235,000 Gallon Glass-Lined Steel Tank | \$ 860,000 | \$ 8,100 | \$ 120,600 | \$ 127,000 | \$ 92,500 | \$ 888,100 | 8.2 |
| R-2b: Concrete Tank Repair and New 235,000 Gallon Concrete Tank | \$ 1,160,000 | \$ 7,900 | \$ 117,600 | \$ 357,000 | \$ 259,900 | \$ 1,017,700 | 7.3 |
| R-3a: New 435,000 Gallon Glass-Lined Steel Tank Same Location | \$ 1,104,000 | \$ 6,200 | \$ 92,300 | \$ 235,000 | \$ 171,100 | \$ 1,025,200 | 7.2 |
| R-3b: New 435,000 Gallon Concrete Tank Same Location | \$ 1,521,000 | \$ 6,000 | \$ 89,300 | \$ 569,000 | \$ 414,300 | \$ 1,196,000 | 6.3 |
| R-4a: New 435,000 Gallon Glass-Lined Steel Tank New Location | \$ 1,169,000 | \$ 6,500 | \$ 96,800 | \$ 250,000 | \$ 182,000 | \$ 1,083,800 | 6.9 |
| R-4b: New 435,000 Gallon Concrete Tank New Location | \$ 1,825,000 | \$ 6,400 | \$ 95,300 | \$ 702,000 | \$ 511,100 | \$ 1,409,200 | 5.3 |
| R-5: New 435,000 Gallon Elevated Steel Tank New Location | \$ 2,738,000 | \$ 17,200 | \$ 255,900 | \$ 775,000 | \$ 564,200 | \$ 2,429,700 | 1.8 |

DRAFT PREFERRED ALTERNATIVE

➤ Complete Distribution System Improvements

- Total Project vs Phased approach
- Estimated Capital Cost
 - Total Project: \$4,749,000
 - Phase 1: \$1,170,000
 - Weast Ave, Willow St, School St, Grove St, Yerger Rd
 - Phase 2: \$1,482,500
 - Grove St, Montana Ave, School loop
 - Phase 3: \$934,000
 - Montana Ave, Lehner Ave, Church St, Davidson Ave
 - Phase 4: \$805,000
 - Stillwater River Rd (Rosebud Creek crossing), Henry St-Abbattoir Rd loop
- No Increase in O&M Cost

PROJECT FUNDING STRATEGY

➤ Funding Sources

- TSEP – Treasure State Endowment Program
- DNRC – Department of Natural Resources and Conservation
- CDBG – Community Development Block Grant
- SRF – State Revolving Fund
- RD – U.S. Department of Agriculture Rural Development

PROJECT FUNDING STRATEGY

➤ Target Rate Analysis for Grant Eligibility

| | |
|---|---|
| Medium Household Income (MHI) Based on 2010 American Community Survey | = \$44,375 |
| Department of Commerce Target Rate Threshold | |
| Water Systems | = 1.4% of MHI |
| Sewer Systems | = 0.9% of MHI |
| Combined Rate | = 2.3% of MHI |
| Absarokee CDP Water Only Target Rate | = (\$44,375) * (1.4%) = \$621.25/year = \$51.77/month |
| Low & Moderate Income (LMI) Based on 2010 American Community Survey | = 48% |

PROJECT FUNDING STRATEGY

All Distribution Phases = \$4.7 Million Dollar Project

| | SRF Loan Program 2.5%, 20 yrs | | | | RD Loan Program W/ Qualifying Income Survey MHI <= \$38,296 2.5%, 40 yrs | | | |
|-------------------------|----------------------------------|--|------------------------|--|---|---|---|--|
| Funding Package | TSEP, DNRC, Loan | TSEP, DNRC, \$500,000 Loan Forgiveness, Loan | TSEP, DNRC, CDBG, Loan | TSEP, DNRC, CDBG, \$500,000 Loan Forgiveness, Loan | TSEP, DNRC, Loan | TSEP, DNRC, 25% RD Grant, Loan* (\$5,900,000 project) | TSEP, DNRC, CDBG, Loan* (\$5,050,000 project) | TSEP, DNRC, CDBG, 25% Grant, Loan* (\$6,400,000 project) |
| Interest Paid | \$1,173,000 | \$1,026,000 | \$1,041,000 | \$931,000 | \$2,467,000 | \$2,367,000 | \$2,378,000 | \$2,389,000 |
| Estimated Rate Increase | \$33 | \$27 | \$28 | \$23 | \$15 | \$14 | \$14 | \$14 |
| Final User Rate/Month | \$71 | \$65 | \$66 | \$61 | \$53 | \$52 | \$52 | \$52 |
| | | | | | *User rate after project is less than 100% of Target Rate, therefore do not qualify for TSEP without increasing scope of project. | | | |

PROJECT FUNDING STRATEGY

| Phase 1, 2, 3 = \$2.6-3.6 Million Dollar Project | | | |
|--|----------------------------------|----------------------------------|--|
| | SRF Loan Program 2.5%, 20 yrs | | |
| Funding Package | DNRC, Loan ¹ | TSEP, DNRC, Loan ² | TSEP, DNRC, CDBG, Loan ³ |
| Interest Paid | \$742,000 | \$697,000 | \$741,000 |
| Estimated Rate Increase | \$16 | \$14 | \$16 |
| Final User Rate/Month | \$54 | \$52 | \$54 |
| 1. Phase 1 & 2 = \$2.6M Project 2. Phase 1, 2, Part of 3 = \$3M Project 3. Phase, 1, 2, 3 = \$3.6M Project w/ qualifying income survey | | | |

PROJECT FUNDING STRATEGY

| Phase 1 = \$1.17 Million Dollar Project | | |
|--|--|------------|
| | SRF Loan Program 2.5%, 20 yrs | |
| Funding Package | Loan | DNRC, Loan |
| Interest Paid | \$344,000 | \$307,000 |
| Estimated Rate Increase | \$0 | \$0 |
| Final User Rate/Month | \$38 | \$38 |

PROJECT FUNDING STRATEGY

➤ Summary

- Option 1: One project, all improvements
 - \$14-\$33/month/user rate increase
 - One project
 - Avoid inflation, mobilization fees, administrative fees
 - Shorter timeframe
 - Good option with large grant (30-40%) with qualifying income survey
- Option 2: Phases 1, 2, and part or all of 3, reach target rate
 - \$14-\$16/month/user rate increase
 - Without qualifying income survey, allows maximization of grant funding by applying in multiple cycles (20-30%)
- Option 3: Phase 1, no rate increase
 - No rate increase
 - Not eligible for larger grants
 - Longest timeframe

ENVIRONMENTAL ASSESSMENT

- **What is an Environmental Assessment (EA)?**
 - Public document analyzing the complexity and seriousness of environmental issues

- **EA has been completed**
 - All recommended state and federal agencies have been contacted and some responses have been received
 - Public comments have been accepted

ENVIRONMENTAL ASSESSMENT

➤ **Received Comments From:**

- Army Corps of Engineers
- Dept. of Environmental Quality
- Dept. of Commerce Census & Economics Information Center
- MT Fish, Wildlife & Parks
- MT Dept. of Transportation
- Federal Hwy Administration
- MT Historical Society
- MT Dept. of Labor & Industry
- DNRC Conservation District

➤ **To Date, No Comments Have Been of Significant Impact**

➤ **Decision:**

- Environmental Assessment is acceptable;
- Environmental Impact Statement (EIS) is not necessary

WHERE WE GO FROM HERE

- **Public Comment**
- **DNRC Grant Application – May 2016**
- **TSEP Grant Application – May 2016**
- **SRF or RD Application – June 2016**
- **CDBG Application – March 2017**
- **Design – Summer/Fall 2017**
- **Advertise and Bid Project – February 2018**
- **Construction – May 2018**

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