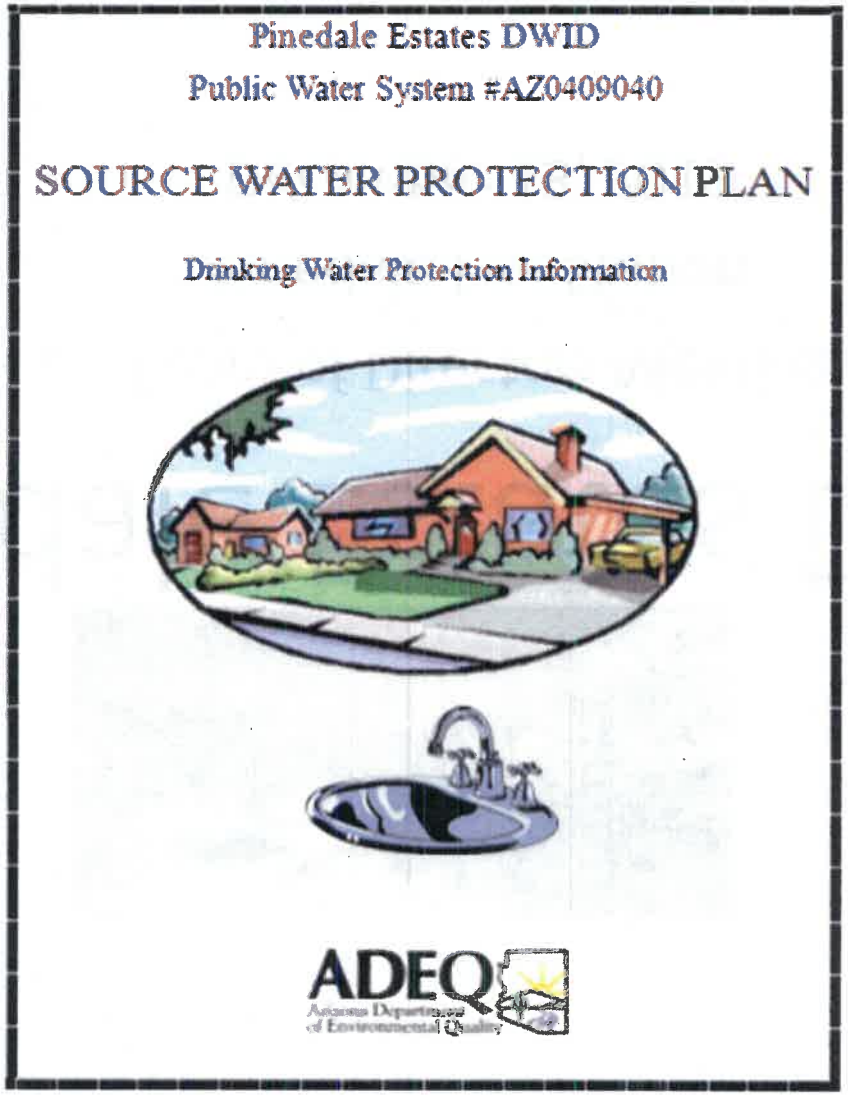
Pinedale Estates DWID

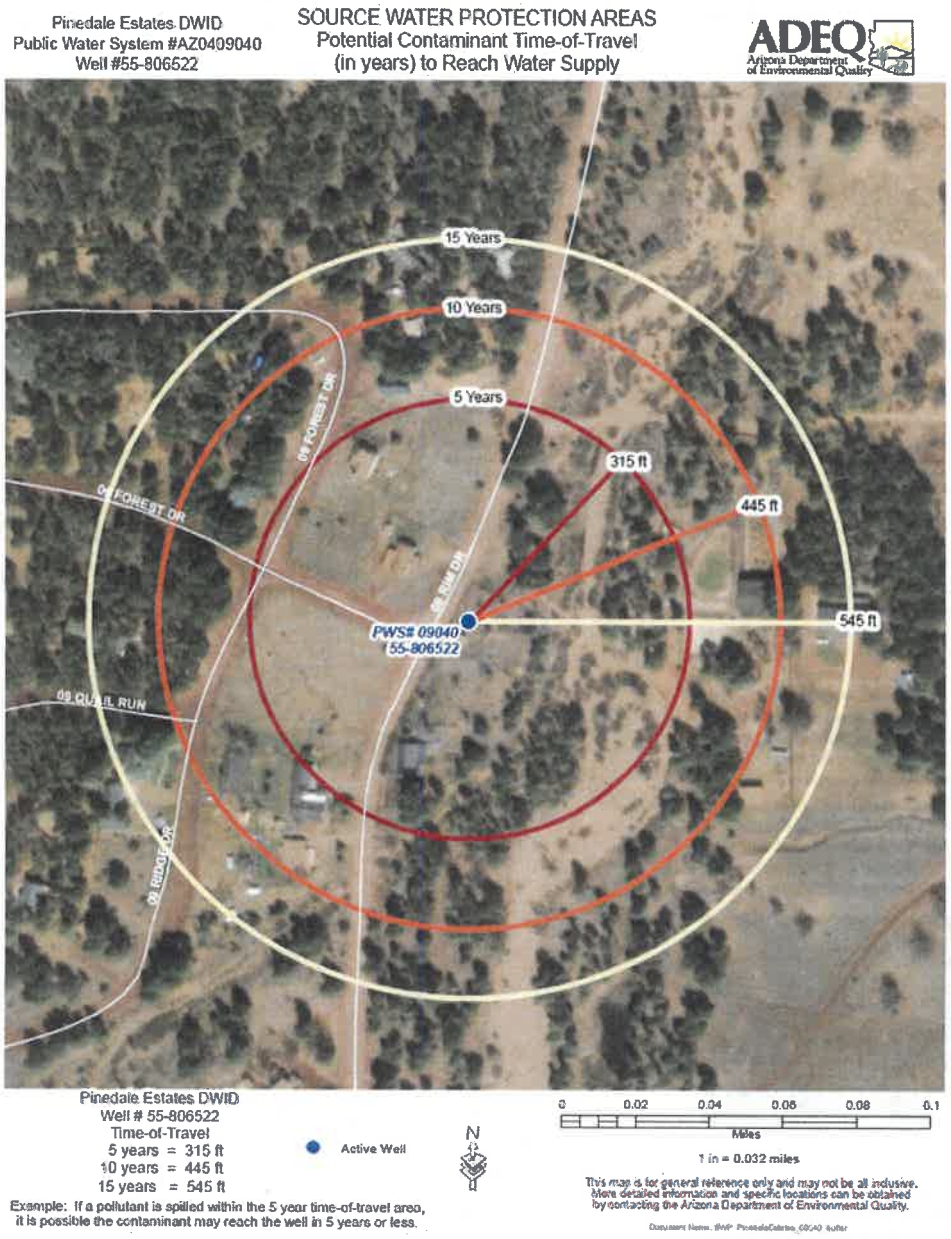
Board of Directors Meeting

Pinedale Fire Station

December 13, 2019

Source Water Protection





- The distance for potential contaminants to reach the well are calculated based on the hydro-geological setting and the well characteristics

- If a pollutant is spilled within the 5 year time-of-travel area, it is possible the contaminant may reach the well in 5 years or less

- The Source Water Protection (SWP) Plan does not address selenium
- ADEQ can update the SWP Plan if a new well is installed

ADEQ Arizona Department of Environmental Quality

Douglas A. Ducey, Governor - Misael Cabrera, Director
azdeq.gov

FACT SHEET

Publication Number: FS-19-33

Pinedale Estates DWID Source Water Protection Plan

Arizona Department of Environmental Quality (ADEQ)'s Source Water Protection (SWP) Program recently completed the SWP Plan for the Pinedale Estates DWID water system. The purpose of the SWP Plan is to protect the community's drinking water from contamination. Any potential source of contamination within one-half mile of your drinking water wells are of the greatest concern since they can most easily become a risk to human health. The following recommendations from the SWP Plan will help ensure that the community's drinking water remains protected for many years to come.

Recommendations for Neighbors

Speak with your neighborhood group to:

Set maintenance schedules for inspecting and pumping septic tanks in the area.

Encourage residents to scoop, bag and place pet waste in the trash for proper disposal. If left on the ground, contaminants in pet waste could potentially leach into the groundwater. And, few residential septic systems are designed to handle pet waste.

Collect automotive fluids for proper storage and disposal. Automotive fluids should be stored in containers designed for each specific type of fluid. Most automotive fluids can be disposed of at local auto parts stores and household hazardous disposal facilities or events.

Encourage use of low-flow plumbing fixtures.

Recommendations for local Businesses

Speak with your local businesses to determine best management practices, which can significantly reduce the risk of contamination source|water. This may include:

- Proper chemical storage and waste disposal

Recommendations for the Water Systems wells

The well is in a flood zone. Either install a new well outside the flood zone or upgrade the well to ensure it meets minimum ADEQ requirements for wells in the flood zone.

Install security lighting at the well site and conduct regular yard maintenance to control vegetation.

Work with local authorities to post signs:

- "This is a Drinking Water Protection Area" at the well site
- "Do Not Dump" signs next to Dobson Creek

Keep your SWP Plan up to date.

Update your plan every two to three years to account for land use changes. Review the SWP areas annually for changes in land use and potential sources of contamination.

Additional information and best management practices can be found in the Pinedale Estates DWID Source Water Protection Plan that ADEQ provided to the community.

Source Water Protection Contact Information

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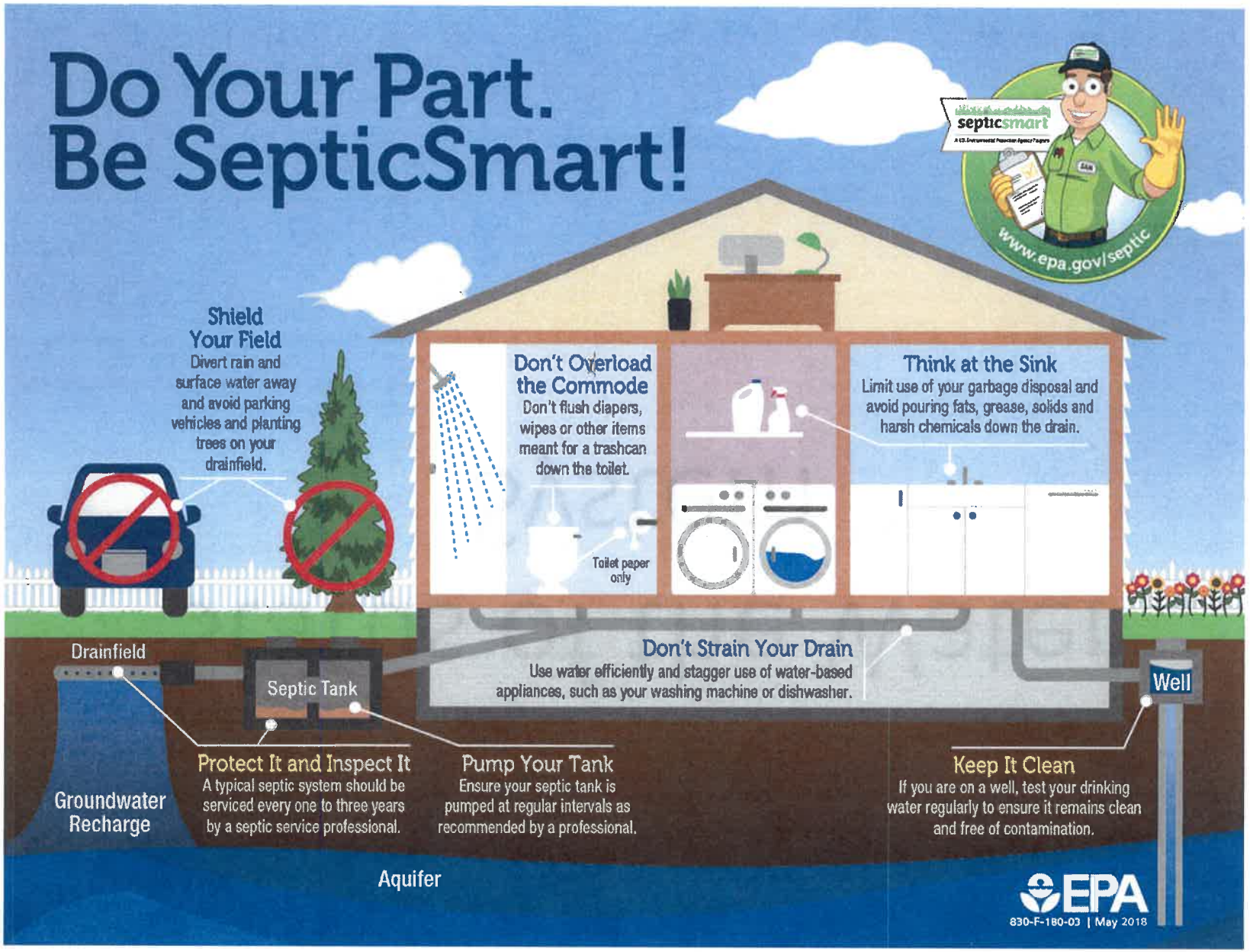
For translations or other communications aids, please email the Title VI Coordinator at Bingham.Ian@azdeq.gov.

Para traducciones u otras ayudas de comunicación, envíe un correo electrónico al Coordinador del Título VI al Bingham.Ian@azdeq.gov.

A septic tank should be pumped at a minimum every 3 to 5 years



Status of the Water System

PINEDALE ESTATES
DOMESTIC WATER IMPROVEMENT DISTRICT
NAVAJO COUNTY, ARIZONA
PWS ID #09-040

SYSTEM EVALUATION & ASSET MANAGEMENT PLAN

June 2019

Prepared for Arizona Department of Environmental Quality

By:

KUV CONSULTANTS, LLC
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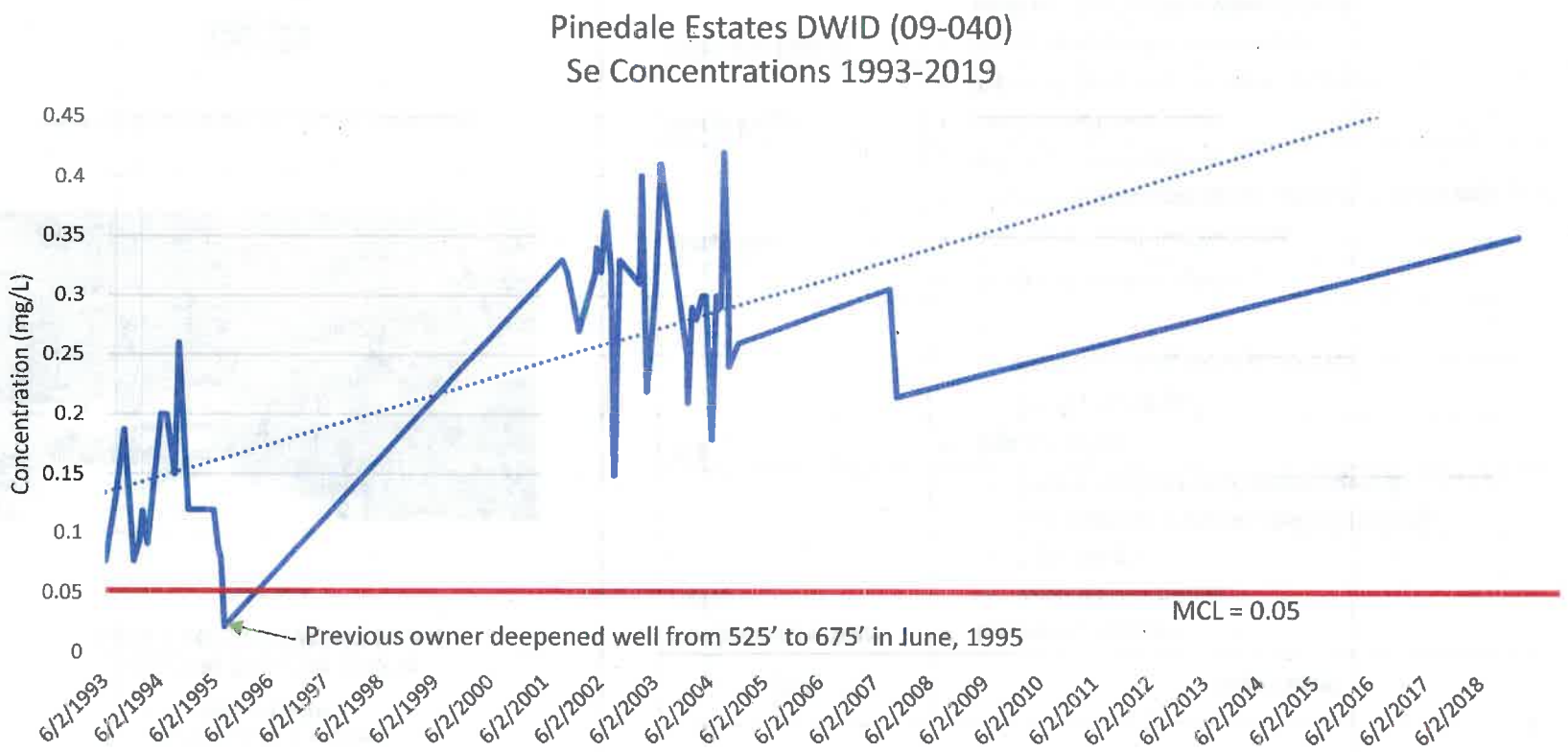
Glendale, AZ 85318-0790

Summary of Recommended System Improvements

Item	Improvement
Site Conditions at Water Facility	• Improve site conditions: o Install adequate signage. o Repair fencing. o Clear vegetation inside and outside of the facility. o ~~Remove abandoned metal water storage tank.~~ done
Well	• Improve well site: o Install concrete pad. o Raise well casing above grade-level. • Address selenium level • Increase production capacity.
Storage Tank	• Immediately. install overflow piping. • Long-term, add additional storage tank(s) or replace the existing poly tanks with a 30,000-gallon tank.
Booster Pumps	• Install second booster pump. • Replace all piping inside the booster pump shed.
Electrical & Controls	• Replace existing motor control systems. • Install auto-dialer to alert operator of alarms.
Distribution System	• Update and digitize piping network map. • Install additional blow-off valves. • Replace transite pipes as required.

Prioritization and budgetary costs for these improvements are presented in Section 8, under **Asset Management Plan**.

Selenium Concentrations 1993-present



Selenium (Se)

Naturally occurring in soil & water
MCL = 0.05 mg/L

Chronic contaminant
Excess selenium can lead to

Selenosis
capillary damage, degenerative changes in liver, kidney & heart

Gastrointestinal Distress
diarrhea, nausea, bad breath

Skin Issues
discoloration, skin eruptions, edema

Neurological Issues
fatigue, weakness, irritability, headache, memory loss

Nail Issues
discoloration & brittleness, fingernail loss

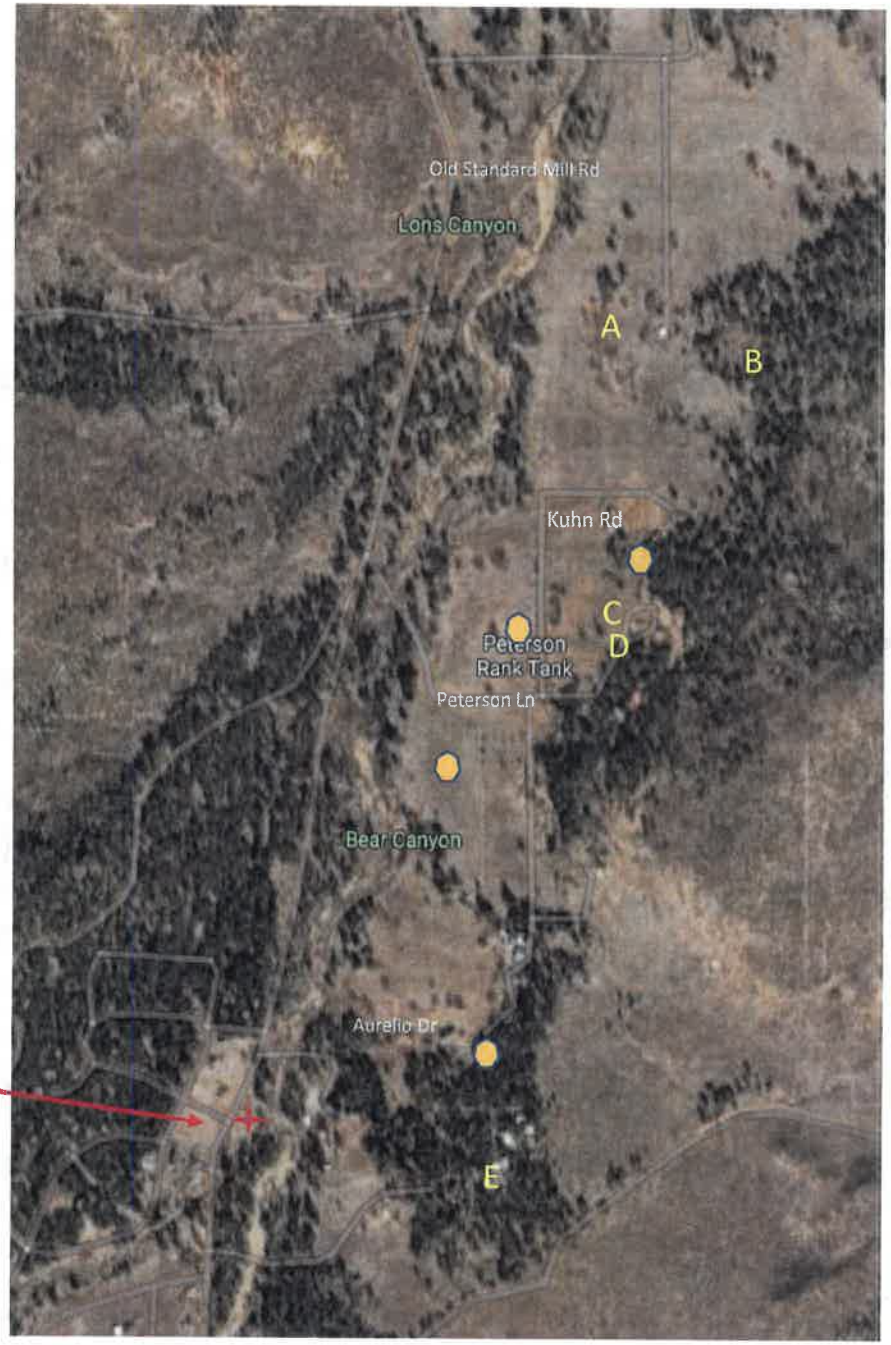
Hair Issues
loss, thinning

Location, Location, Location . . .
Continued use of this site would require raising wellhead above the 100-year floodplain and protected from inundation .

Private Well Sampling

East side of Wash

sampled today



Pinedale Estates wellsite

8/9/19 sampling

	Se (mg/L)	gross alpha (pCi/L)	Mn (mg/L)
MCL	0.05	0.015	
SMCL			0.05
A	<0.002	0.007	<0.02
B	<0.002	0.009	<0.02
C	<0.002	0.012	0.092
D	0.015	0.012	<0.02
E	<0.002	0.010	0.062
PE Well	0.38	0.014	0.08

9/25/19 sampling after purging water from the well

	Se (mg/L)	Fe (mg/L)	Mn (mg/L)
MCL	0.05		
SMCL		0.3	0.05
C	<0.002	3.7	0.059
E	0.042	2.2	0.026
PE Well	0.42	1.3	0.08

Options

Changes Required to Treat at Current Wellsite

- Raise wellhead minimum 3 feet above base flood elevation and install a well seal (6 x 6 foot concrete slab) 2 feet above the flood elevation
- Install 30'x40' treatment building minimum 1 foot above base flood elevation
- Brine disposal – either
  - evaporation pond (offsite) or
  - brine tank and haul (hazardous?)
- Upgrade power from single phase → 3 phase
- Higher grade of operator – currently D1; will need at least T1 or T2
- Cost of treatment

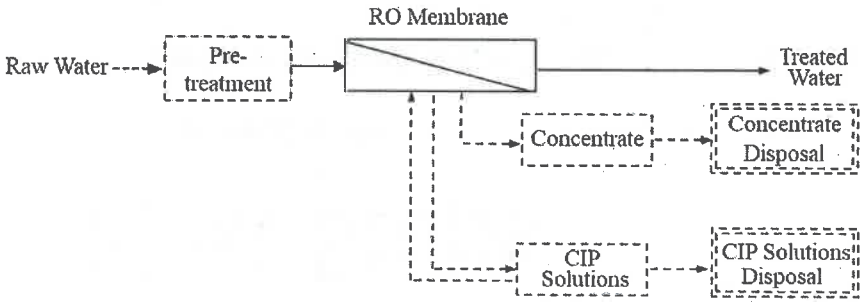
Drill New Well & Relocate East of Wash

- Determine general location for new well
- Purchase / lease land for well & water system
- Install improvements: fencing, power, signage
- Drill, case & equip well (~$25-40k)
- Move existing storage tanks & booster pumps to new site
- Extend transmission line from new site to current distribution system – may require easements
- Determine if additional equipment (e.g., pumps) are needed to provide water to all customers

Summary of Treatment Options

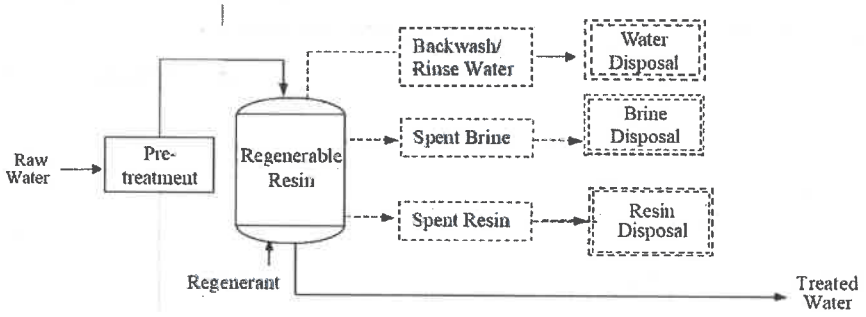
Reverse Osmosis Treatment

Treatment System - iron/manganese pretreatment, anti-scalant, regeneration system, membrane filter, controls	$140,000
Installation Costs	$90,000
Electrical & Instrumentation Costs	$60,000
30' X 40' Building to house treatment & controls	$50,000
Evaporation Pond 0.6 ac x 4' depth – outside of floodplain	$150,000
Design, legal, administrative, contingency	$200,000
Capital Cost Estimate for RO Treatment	**$690,000**
Annual O&M Costs (power, consumables, chemicals, labor)	**$28,000**



Ion Exchange Treatment System

Treatment System - (2) 24"x72" vessels, iron/manganese pretreatment, brine pumps, brine makes/tank, controls	$150,000
Installation Costs	$100,000
Electrical & Instrumentation Costs	$63,000
30' X 40' Building to house treatment & controls	$50,000
Design, legal, administrative, contingency	$200,000
Capital Cost Estimate for IX Treatment	**$575,000**
Annual O&M Costs (power, consumables, labor)	**$42,000**



Next Steps

- Consent order
- Decide on best path forward – best option for community
- Pursue funding for design and construction for chosen option
- Funding Options
  - WIFA -- has a design grant up to $50,000 that is wrapped into construction loan
    -- "forgivable principal" amount based on median household income
    -- fairly streamlined process – estimate 3-6 months
  - USDA -- has a SEARCH grant up to $35,000 (25% local match) to develop Preliminary Engineering Report & Environmental Assessment
    -- would still need funding for actual design & construction
    -- "grant" amount is based on median household income
    -- significant paperwork, local office in Show Low – estimate 6-12 months for SEARCH grant
  - ADEQ – technical assistance program could assign a contractor to develop design documents & approval to construct application (design docs, plans, application)
    -- would still need funding for construction
  - Combination of the above funding options

Questions??

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