

## City of White Sulphur Springs

The Public Hearing of the City Council was held on March 21, 2023 at 5:30 pm followed afterwards with the Regular Session. Mayor Rick Nelson called the meeting to order with the following members present:

Ron Coleman  
Pattie Berg  
Rick Ellison

**March 21, 2023 @ 5:30 pm**

### **PUBLIC HEARING**

#### **A. City's Water Preliminary Engineering Report (PER) Update.**

Discussion:

White Sulphur Springs and Great West Engineering representatives will explain the project's purpose, the project area, the scope of work, the budget, possible funding sources, and any costs that may result for local citizens because of the project. Great West Engineering will also present its assessment of the project's environmental impact. Also funding options, including the Montana Department of Commerce, Montana Department of Natural Resources and Conservation, USDA Rural Development, or the Department of Environmental Quality's Drinking Water State Revolving Fund Program.

Public Comment.

Jessica Salo discussed the City's Water System Improvements Preliminary Engineering Report (PER). A PER is a required component of funding applications when a community applies for state funding to assist with infrastructure improvement projects. The PER includes an evaluation of existing conditions, identifies problems or deficiencies, develops potential alternatives to address the issues, estimates costs, and ultimately provides a preferred project and associated funding scenario. Public involvement is also conducted as part of the process. The PER provides the technical analysis and justification for the proposed project. Environmental implications are also evaluated.

The 2020 Census population is 955.

The 2045 Design Population Estimate:

1% annual growth projection

1,225 estimated design year population

#### **Evaluation of Existing System**

surface water diversion structure

surface water intake pond and dam

raw/surface water transmission main

surface water slow sand filter treatment plant

1 water storage tank

treated water transmission main

2 groundwater wells

distribution system

Water Use can be evaluated two ways, based on source date and metered data. The source data was 242,537 gallons per day and the meter data was 120,487 gallons per day. The unaccounted water was 122,000 gallons per day or 50% of the water pumped into the system is lost (anything over 15% is considered excessive). 30% of the City's Water System is old cast iron, steel, or ductile iron.

**Water Supply:**

surface water source is the South Fork of Willow Creek diversion structure and dam provide water to a 6-inch pvc transmission main that flows by gravity to the slow sand filter building after treatment water flows to the storage tank where it is chlorinated before entering the distribution system groundwater supply source are two groundwater wells located close together at the City shop facility wells are pumps directly in the distribution system, feeding the user demands and filling the storage tank no treatment other than disinfection with chlorine

**Water Supply – Diversion Structure:**

diversion structure on the South Fork of Willow Creek diverts flow to the water system  
1940s construction  
two concrete channels, one for the diverted flow and one for the mainstream flow  
a bar screen and slide gate on the diversion channel.  
the slide gate is used to isolate the City's water system from Willow Creek.

**Water Supply – Intake Pond and Dam:**

intake pond and dam on willow Creek Reservoir  
concrete dam with spillway, flushing valve, and wooden catwalk.  
flushing valve is used to drain the pond and flush sediment  
staff must walk on catwalk to operate valve  
dam structure is 1940s era  
engineered sand filter with perforated pipes was added in the 1990s underneath the pond  
pipes collect water, manifold together, and supply water to the transmission main

**Water Supply – Groundwater Wells: Well #1 (1986) and Well #2 (1999)**

City uses groundwater when Willow Creek source is not in use or as a supplement source to Willow Creek well house at City Shop Yard

**Water Supply Assessment:**

the diversion structure is in good condition  
concrete dam is in good condition but the catwalk is deteriorated  
flushing valve is not functional  
pond is filled with silt, aquatic plants and deadfall  
buildup of sediment is affecting quality of water  
Willow Creek source has not been used reliably for the past two to three years  
transmission main from intake to the treatment plant was last upgraded in the 1980s and there are no known issues.  
access to diversion/intake is difficult  
coordination with Forest Service is important to manage deadfall  
groundwater well meters not in the correct place to meter both wells  
City needs both water sources in order to meet demands  
water quantity could become an issue within the planning period if no improvements are made or if leakage is not reduced.  
finished water quality is good and the City routinely meets drinking water standards.

**Water Treatment:**

a slow sand filtration facility treats the water diverted from Willow Creek  
constructed in 2004  
includes four filter compartments  
current practice includes raking the sand after spring runoff  
plant can treat around 120 to 140 gpm when the turbidity is 0.6 NTU or lower  
finished water is collected at the bottom of the filters via an underdrain system before going to the storage tank  
system is 100% gravity  
groundwater wells are disinfected with gaseous chlorine

### **Treatment Assessment:**

facility is relatively new and in excellent condition  
the City's slow sand filters are not performing at the level that slow sand filters are typically designed to operate  
should be able to treat water with a turbidity of 10-20 NTU  
causes may be due to clays and algae in the water, wrong size of filter sand, ineffective cleaning procedures, or a combination of these factors.  
another issue is there is no way to measure raw turbidity when the plant is not in use, making it difficult to know when the plant can be put into service  
no issues with groundwater disinfection system.

### **Storage:**

a 560,000 gallon storage tank was constructed in 2012 and is located approximately 2 miles SE of the City.  
partially buried prestressed concrete storage tank  
80-foot diameter, 15 feet high  
good condition

### **Storage Assessment**

storage capacity is adequate for existing demands but starts to fall short when looking at projected demands  
if leakage can be reduced, storage volume will be adequate  
tank was recently constructed in 2012  
in excellent condition  
buried concrete tanks can have high design life on the order of 100 years  
no improvements to storage needed at this time

### **Transmission Main**

line was originally constructed in the 1940s as steel  
a portion was replaced in 1986 with PVC and another portion in 2010 with PVC  
there is a remaining portion of the main that is still 1946 steel and is believed to be the biggest source of leakage in the system

### **Distribution System Assessment**

undersized 4-inch mains (should be at least 6-inch water mains to provide adequate fire flow protection and serving fire hydrants)  
pipe that have exceeded their useful life  
cast iron lines are prone to breaks  
some looping needed  
use of a phased approach is necessary  
transmission main leakage and in need of replacement

### **Alternative Analysis**

#### **Supply Alternatives**

Alt. S-1: No Action  
Alt. S-2: Investigate Pond Intake  
Alt. S-3: Pond Improvements  
Alt. S-4: Pond Turbidity Meter  
Alt. S-5: Well House Plumbing Modifications  
Alt. S-6: Well Rehabilitation Project  
Alt. S-7: Purchase Backup Pump/Motor

#### **Treatment Alternatives**

Alt. T-1: No Action  
Alt. T-2: Reduce Algae and Turbidity Loads on WTP (see alternative S3)  
Alt. T-3: Replace Filter Media  
Alt. T-4a: Implement Scaping Technique  
Alt. T-4b: Implement Harrowing Technique  
Alt. T-5: Install Combined Filter Effluent Turbidimeter  
Alt. T-6: Install Two New Slow Sand Filters