1445 N. Orchard St.
Boise ID 83706 • (208) 373-0550

Brad Little, Governor
Jess Byrne, Director

October 1, 2026

The Honorable Ryan Schnuerle
Mayor, City of Greenleaf
20523 Whittier Drive
Greenleaf, Idaho 83626
mayor@greenleaf-idaho.us

Subject: **City of Greenleaf [*ID3140041*] – Drinking Water Facility Plan Update**
Drinking Water Planning Grant No. DWG-328-2024-12 (*Canyon County*)

Dear Mayor Schnuerle:

The Idaho Department of Environmental Quality (DEQ) has completed its review of the City of Greenleaf (City) Drinking Water Facility Plan (Facility Plan), submitted to DEQ by Civil Dynamics on September 1, 2026. The planning effort is being partially funded by DEQ planning grant DWG-328-2024-12. The Facility Plan appears to be in general conformance with the "Idaho Rules for Public Drinking Water Systems" (IDAPA 58.01.08) and is technically approved for public comment.

When designing any facility upgrades associated with this Facility Plan, a Preliminary Engineering Report (PER) for the improvements must be reviewed and approved by DEQ prior to submitting Plans and Specifications (P&S). Detailed P&S cannot be accepted for review until the corresponding PER has been approved. Furthermore, no construction can begin until the P&S have been reviewed and approved by DEQ.

The City must now complete the State Environmental Review Process (SERP) before final approval of the Facility Plan can be issued. Detailed information regarding these processes can be found within the Customer Handbook, located at https://www.deq.idaho.gov/water-quality/grants-and-loans/. The following steps provide an overview of the process that the City must follow to complete the SERP.

1. The City must schedule an environmental review scoping meeting with DEQ for the purpose of obtaining an environmental determination for the project. Please contact Garrett Deegear at (208) 373-0134 or Garrett.Deegear@deq.idaho.gov to initiate this process.

2. The City must conduct public participation activities as follows:

   a. Issue a public notice for a public comment period for the review of the technically approved Facility Plan, and of a public meeting for presentation of the technically approved Facility Plan. The public notice is typically placed in the newspaper of record, reasonably in advance of the public meeting, though alternative notification methods may be acceptable. The public notice should include the meeting date, time, and location; explain how the public can review the technically approved Facility Plan document, and provide comment; and when the decision will be made to select a preferred alternative, and by whom. The City must provide affidavit of publication to DEQ.

b. The public comment period must be a minimum of 14 calendar days from the public notice publication date to the explicit selection of the preferred alternative, longer if local ordinances require it or the project is expected to be controversial. Any written comments received during the public comment period must be provided to DEQ. Please note that the public comment period may be subject to limited English proficiency (LEP) population guidelines. Contact Garrett Deegear to confirm this.

c. Conduct the public meeting. The public meeting should include presentation and explanation of the alternatives that were described in the technically approved Facility Plan, including environmental screening analysis, and explanation of the funding options available and the potential financial impact on the public. Minutes of the meeting must be recorded, and sign-in sheets must be available. The minutes and sign-in sheets must be provided to DEQ.

d. A resolution must explicitly select a preferred alternative based on input at the public meeting and on any public comments and must be provided to DEQ.

3. The City may be required to prepare an environmental information document (EID) on the selected alternative. For more information on the preparation of the EID, please refer to the Customer Handbook referenced above.

4. Submit the draft EID to DEQ for review and approval.

When all the SERP requirements have been completed, DEQ will issue a Final Environmental Determination. Following the SERP and the issuance of a Final Environmental Determination by DEQ, The City must submit a final facility plan to DEQ for approval. The final facility plan must include all the environmental information, public participation information, and the Final Environmental Determination, appended to the Facility Plan, or as a separate document. DEQ will then issue final approval of the Facility Plan.

If you have any questions regarding the technical portion of the Facility Plan, please contact me at (208) 373-0281, or via email at Dan.M.Smith@deq.idaho.gov.

Sincerely,

Dan Smith, PE
Senior Water Quality Engineer

Attachment(s): One Facility Plan Cover Page Stamped as Technically Approved

c: Lee Belt, City of Greenleaf, clerk@greenleaf-idaho.us
Doug Amick, City of Greenleaf, douglas.amick@greenleaf-idaho.us
Devin Krasowski, PE, Civil Dynamics, devin@civildynamics.net
Mike Martin, PE, Civil Dynamics, mike@civildynamics.net
Valerie Greear, PE, DEQ, Valerie.Greear@deq.idaho.gov
Steve Staufer, DEQ, Steve.Staufer@deq.idaho.gov
Nicolas Hiebert, PE, DEQ, Nicolas.Hiebert@deq.idaho.gov
Garrett Deegear, DEQ, Garrett.Deegear@deq.idaho.gov
BRO-26-0306

THE CITY OF GREENLEAF
2026
WATER FACILITY PLAN

(PLANNING GRANT DWG-328-2024-12)

Prepared for

THE CITY OF GREENLEAF
ID3140041
20523 North Whittier Drive
Greenleaf, ID 83626

Prepared by

Civil Dynamics, PC
5605 South 10th Avenue
Caldwell, ID 83607

September 2026

THE CITY OF GREENLEAF
2026
WATER FACILITY PLAN

(PLANNING GRANT DWG-328-2024-12)

Prepared for

THE CITY OF GREENLEAF
ID3140041
20523 North Whittier Drive
Greenleaf, ID 83626

Technically APPROVED for Public Comment

By: Dan Smith
State of Idaho
Department of Environmental Quality
Date: Oct 01, 2026

Prepared by

Civil Dynamics, PC
5605 South 10th Avenue
Caldwell, ID 83607

September 2026

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Executive Summary

The City of Greenleaf recognized the need for a Facility Plan to be on file with Idaho Department of Environmental Quality (IDEQ) to assess the existing water system and future water system needs. The City subsequently submitted an application for financial assistance to IDEQ's Drinking Water Planning Grant Program and qualified for a 50% matching grant (DWG-328-2024-12) to help develop a Facility Plan.

The water system consists of four groundwater wells, two reservoirs, two booster stations and main distribution lines. The existing water system has no current deficiencies and can meet existing system demands and projected system demands within a 20-year planning horizon.

To better serve existing customers and in anticipation of system growth, several recommendations for improvements that will offer benefits for overall system operations, maintenance, reliability, system pressure, and water quality are discussed.

The City experiences water quality issues, primarily related to manganese levels in the City's source water being above the Environmental Protection Agency's secondary maximum contaminant level. Alternative solutions to mitigate these issues include developing a new groundwater source with improved water quality and several different treatment (manganese removal) options. The recommended alternative solution is to develop a new groundwater source capable of producing approximately 250 gpm and targeting improved groundwater quality. This alternative is a relatively cost-effective way to make progress toward solving the City's current water quality issues. It also positions the City to eventually treat the source water in a more efficient and cost-effective manner.

1. INTRODUCTION

1.1. Background, Purpose, and Report Organization

For the past twelve years the City of Greenleaf has utilized the Water Facility Plan Addendum No. 3 (Addendum No. 3) to guide drinking water system planning. Addendum No. 3 was approved by IDEQ on December 5, 2012 (Appendix A). The City has since made progress toward the improvements contemplated in Addendum No. 3. The 2026 Water Facility Plan incorporates those improvements and seeks IDEQ approval of water system design criteria revisions and future planning efforts.

The report is organized into several sections: description of environmental conditions, summary of the existing water facilities and infrastructure, evaluation of the existing water system, evaluation of potential future growth, and identification of required or desired improvement projects.

2. ENVIRONMENTAL INFORMATION

2.1. Section Overview

This section provides a general overview of the environmental conditions in the study area, the City limits, as required by IDEQ's Drinking Water Planning Grant Program. It is intended as a broad-brush summary of the environmental conditions. Site specific environmental investigations are required when an improvement project is selected.

2.2. Location and History

The City is located in southwestern Idaho along State Highway 19, approximately 5 miles west of Caldwell. Figure 1 is a vicinity map of the Greenleaf area.

The City of Greenleaf incorporated in 1973 in response to the potential need for a community sewer system. In 2000 the City took ownership of already existing water and wastewater systems that were previously privately owned and operated. At that point the water system served the majority of the community. Major system improvements were completed between 2006 and 2011 which included the addition of the Butler Facilities (Figure 3) and fire flow capabilities, main line replacements, and main line upsizing. System water quality generally meets national primary drinking water standards. The City has been interested in mitigating elevated manganese concentrations in the source water. A phosphate compound and sodium hypochlorite are added to the system to help with the manganese issues and maintain a chlorine residual.

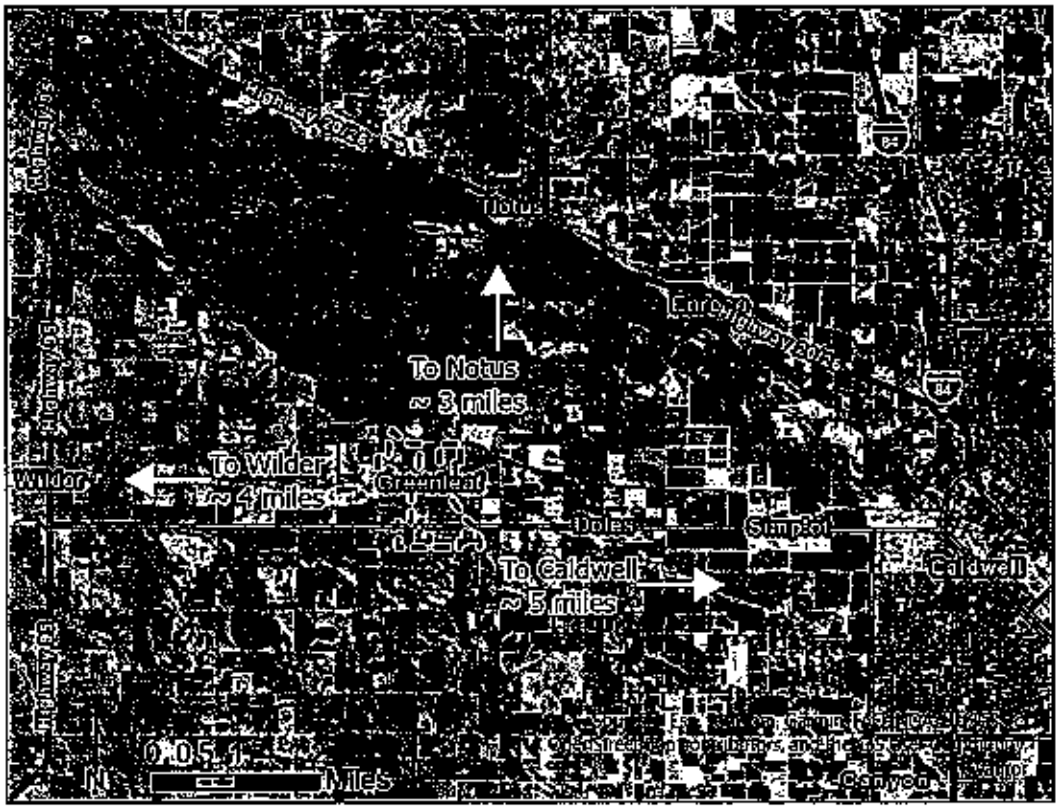

Figure 1 - Vicinity map.

2.3. Cultural Resources

Greenleaf was originally settled by dry land farmers in the early 1900s. A significant number of settlers were Quakers which led to the establishment of the Greenleaf Friends Church and Greenleaf Friends Academy in 1906 and 1908 respectively. In the 1920's the City became more conveniently connected to the rest of the Treasure Valley via a public rail system which encouraged the development of a commercial center. The City has strong ties to surrounding agricultural operations which includes farms growing a variety of crops and nearby cattle and dairy operations. The City incorporated in 1973 as the need for community owned utilities became evident (City of Greenleaf, 2016).

2.4. Land Use and Planning Area

Land use in the City of Greenleaf is predominantly single-family residential use. The Neighborhood Commercial and Central Business District zones adjacent to Highway 19 encourage service and retail establishments. North and South of Highway 19 includes primarily varying densities of residential land use. In 2024 the City annexed 48 acres of single-family residential zoning south of Highway 19. The City totals approximately 0.84 square miles. Appendix B includes the current zoning map.

2.5. Socioeconomic Profile

Appendix C includes the Community Profile for Greenleaf provided by Gem State Prospector via the Idaho Department of Commerce, additional demographics from the 2020 U.S. Census, and historical population from the U.S. Census.

2.6. Important Farmlands Protection

According to the National Resource Conservation Service (NRCS) and as defined in 7 CFR Part 657, the farmland adjacent to the City and southwest of the West End Drain is generally classified as Prime Farmland or Farmland of Statewide Importance, if irrigated (Appendix D).

2.7. Topography, Geology, and Soils

The City is at an average elevation of 2,402 feet above sea level. The majority of the City is relatively level ranging in elevation from 2,400 feet to 2,420 feet above sea level. Much of the land and population lies on top of a northeast facing ridge. Topography of the City is shown in Figure 2.

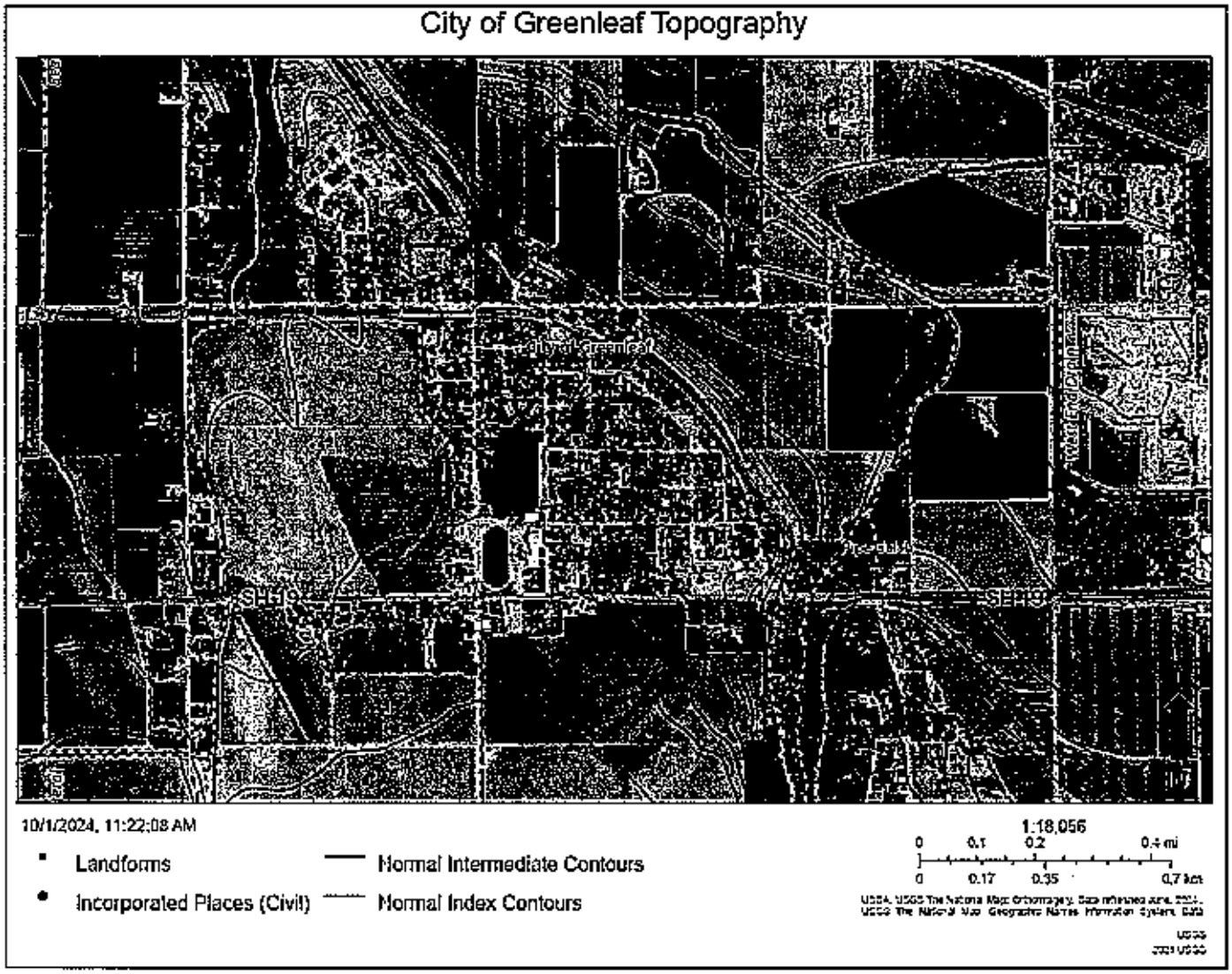

Figure 2 - Topographic map.

The portions of Greenleaf southwest of the ridge lie on top of Sandy Silt of Bonneville Flood Slack Water which includes thin bedded sands to 20 feet of depth deposited by the Bonneville Flood, generally deposited over thin loess and duripan and another 10 to 25 feet of sandy pebble gravel (Othberg and Stanford, 1992). The portions of Greenleaf northeast of the ridge (below the ridge) lie on Sandy Silt of Bonneville Flood Slack Water deposited over Gravel of Whitney Terrace which includes sandy pebbles and cobble gravels to 80 feet of depth (Othberg and Stanford, 1992).

According to the USGS Web Soil Survey, soils in and around Greenleaf are generally silt loam.

2.8. Precipitation, Temperature, and Prevailing Winds

Nearby historical weather data records indicate the City has an annual average precipitation of approximately 10 inches with the summer months being particularly dry. The City receives approximately 12 inches of average annual snowfall with the average first and last day of freezing temperatures occurring in early October and early May, respectively. This provides for a relatively long growing season.

Recorded temperatures near Greenleaf have reached nearly 110° F and have been as low as -27° F. July is typically the hottest month with average temperatures around 73.5° F and January is typically the coldest month with average temperatures around 29° F.

Similar to most of the western Treasure Valley, prevailing winds are from the northwest with moderate velocities of approximately 6 miles per hour. Tornadoes and funnel clouds are rare, as are other destructive force winds.

2.9. Surface and Groundwater Hydrology

The City is mostly located on a ridge above the Boise River floodplain. Various man-made and man-modified canals and drains convey irrigation water and natural runoff through and around the City.

The Treasure Valley is underlain by several thousand feet of layered sediments and clays resting on Miocene era basalt. The transmissive sediments make up the Treasure Valley aquifer system (Petrich and Urban, 2004).

Several small domestic wells in the area access water bearing layers occurring at depths shallower than 100 feet below ground surface (bgs). The City's existing municipal wells target water bearing layers generally between 200 and 300 feet bgs and between 460 and 500 feet bgs. Groundwater flow direction in the area is generally to the northwest but varies between aquifers at different depths (Petrich and Urban, 2004).

2.10. Wild and Scenic Rivers

The Wild and Scenic Rivers Act, as passed by Congress on October 2, 1968 states that "...certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values, shall be protected for the benefit and enjoyment of present and future generations." State legislation for protection roughly parallels that of federal legislation. There are no rivers with such classification within or near Greenleaf (National Park Service, 2024).

2.11. Flood Plains and Wetlands

The Renshaw Canal (i.e. West End Drain) on the eastern side of the City is the only flooding source mapped by the Federal Emergency Management Agency. Special Flood Hazard Areas associated with the Renshaw Canal, along with base flood elevations for the 1-percent annual chance flood, can be seen in Appendix E.

The National Wetlands Inventory, provided by the U.S. Fish and Wildlife Service (FWS) shows wetlands present in the northwest section of the City (Appendix F).

2.12. Fauna, Flora, and Natural Communities

Various species of fish and wildlife are present throughout the Greenleaf area. The nearby Boise River provides habitat for deer, migratory birds, and several fish species. Information about wildlife encountered in the Greenleaf area can be found on the Idaho Fish and Game's Canyon County Observation List.

Most vegetated areas in Greenleaf and the surrounding Canyon County are agricultural. Native landscapes include sagebrush uplands, riparian forests, and grasslands. (Canyon County, Idaho, 2022).

2.13. Utilities

Utilities are provided in the City as follows:

- Power – Idaho Power
- Water/Sewer – City of Greenleaf
- Telephone – Century Link
- Fiber communication – Syringa Networks
- Natural gas – Intermountain Gas

2.14. Air Quality

IDEQ monitors air quality within the state and identifies different types of air quality priority areas based on the level of concern and whether or not air quality in the area meets the National Ambient Air Quality Standards (NAAQS). The entire Treasure Valley, which includes Greenleaf, is within a priority area designated as an Area of Concern. Areas of Concern are areas where the current air quality is approaching NAAQS and the area is experiencing or expecting to see growth. IDEQ is actively coordinating efforts to address seasonal air quality issues in the Treasure Valley (IDEQ, 2024).

2.15. Noise

The U.S. Department of Housing and Urban Development (HUD) has developed criteria to assess noise levels and their degree of undesirability. The three components of noise are frequency, intensity, and duration. For analysis purposes, HUD uses the day-night average sound level system which is denoted as "Ldn". The Ldn is an average noise level of a 24-hour period after the addition of 10 decibels for noises occurring between 10:00 pm and 7:00 am. Any area with noise levels below 65 Ldn are considered acceptable. Within the City there are likely two areas that could be subject to a noise level assessment: Highway 19 and the railroad. Neither of these areas are considered to have Ldn levels above 65.

2.16. Energy Production and Consumption

Local energy production and consumption data is not readily available. Energy production in Greenleaf is limited to residential solar projects. Energy consumption profile in the City is likely similar to statewide residential consumption which consists primarily of electric power, natural gas, and motor gasoline.

3. Existing Water System Summary

3.1. Section Overview

This section provides a summary of the City's existing water system. Detailed analysis is in section 4.

The water system consists of four wells, two booster stations, two storage reservoirs, and distribution mains ranging in diameter from 2-inch to 12-inch. Figure 3 depicts the water system facilities and distribution system. The Harmony and Butler wells pump into their respective storage reservoirs. From the storage reservoirs, booster stations provide pressure and flow to the water system. The system currently requires a single pressure zone. System expansion to the east or northeast (below the ridge) would likely require the development of a second pressure zone. Appendix G includes a larger size map depicting the entire water system.

The Harmony and Bulter sites swap lead/lag roles each day. These facilities are equipped with standby power meeting the requirements of the Drinking Wate Rules. The Friends well pumps directly into the water system, is controlled by a pressure switch, and only provides water to the system in unique or emergency situations.

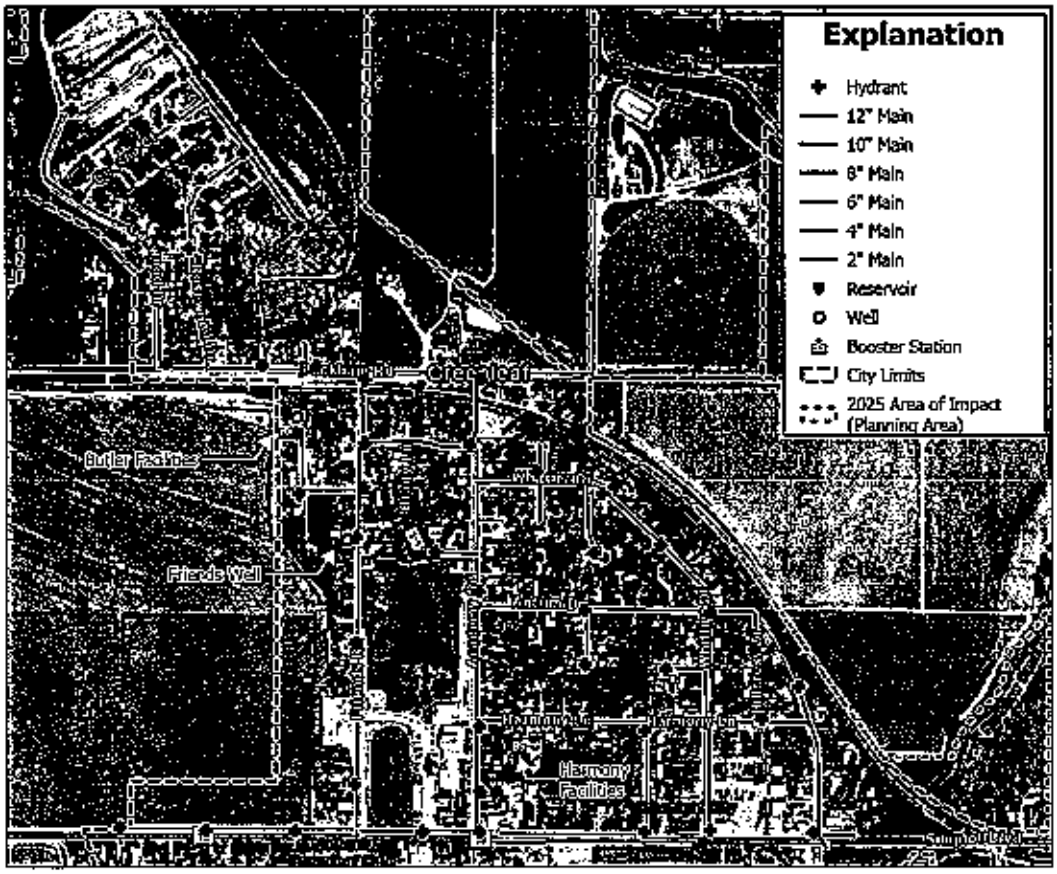

Figure 3 - Greenleaf Water System.

3.2. Facilities Overview

The Harmony and Butler facilities each have a storage reservoir, standby power generation, and a well/pump house which includes:

1) Well discharge piping, valves, and flow meters
2) Chlorine and sequestering agent injection piping, chemical injection pumps, and chemical storage
3) Tank outlet manifolds for the booster stations
4) Booster station piping, valves, pumps, flow meters, and pressure sensors
5) System controls
6) Building air control systems and ventilation

The Friends facility includes the well discharge appurtenances and flow meter.

3.3. Water Rights

The City has three water rights allowing a total diversion rate of 588 gpm. At this time, the water rights are sufficient for the City's demands. Table 1 summarizes the water rights. Appendix H includes the individual water right information.

Water Right Number	Priority	Use	Diversion Rate (cfs, gpm)
63-4117	1/1/1916	Municipal	0.1, 44.9
63-7094	4/22/1968		0.21, 94.3
63-31787	8/15/2003		1.0, 448.8
Total			1.31, 588

Table 1 - Water Rights Summary.

3.4. Sources of Supply

The City has four wells with a total capacity of 946 gpm. The Friends well pumps directly into the distribution system and is controlled by a mechanical pressure switch. It provides a level of redundancy for system water supply that is not incumbered by integration with the SCADA system. However, the pump-on pressure setting is set slightly lower than the other well pressure settings with the intent of Friends well only providing water to the system during unique or emergency situations (e.g. typical monthly volumes from the Friends well are ≈200 gallons per month). The Friends well is not intended to be an officially designated emergency source based on current IDEQ criteria for such designation. The two Harmony Wells pump into the Harmony reservoir. The Butler well pumps either into the Butler reservoir or directly into the distribution system. Table 2 summarizes the source of supply for the City. Appendix I includes well capacity information from the Proof of Beneficial Use Field Report.

Source of Supply	Capacity
Butler Well[A]	650
Harmony Inside Well[B]	35
Harmony Outside Well[B]	200
Friends Well[A]	61
Total	946

Note:
[A]From 63-31787 Beneficial use Field Report

[B]Based on correspondence with Public Works

Table 2 - Source of Supply Summary.

3.5. Water Quality and Treatment

The City's drinking water quality generally meets national primary drinking water standards. Historically, the City's wells have infrequently and intermittently tested positive for total coliform. To mitigate that concern the City adds sodium hypochlorite to the well water upstream of the storage reservoirs at the Butler and Harmony sites. This also provides a disinfectant residual in the distribution system. The City's primary supply wells also have hardness ranging from 49 mg/L to 170 mg/L (measured as calcium carbonate) and manganese ranging from 0.10 mg/L to 0.26 mg/L, both of which are primarily aesthetic concerns. The City currently adds a blended phosphate compound upstream of chlorine injection at the Butler and Harmony wells to sequester manganese and provide corrosion control.

As part of this Facility Plan effort, comprehensive water quality sampling was conducted during March of 2026. Water quality parameters related to common aesthetic issues experienced in the City were tested at several locations including the Butler and Harmony sites and throughout the distribution system (Figure 4). Distribution system samples were taken from five fire hydrants throughout the system before and during hydrant flushing. Results of the sampling are given in Appendix X.

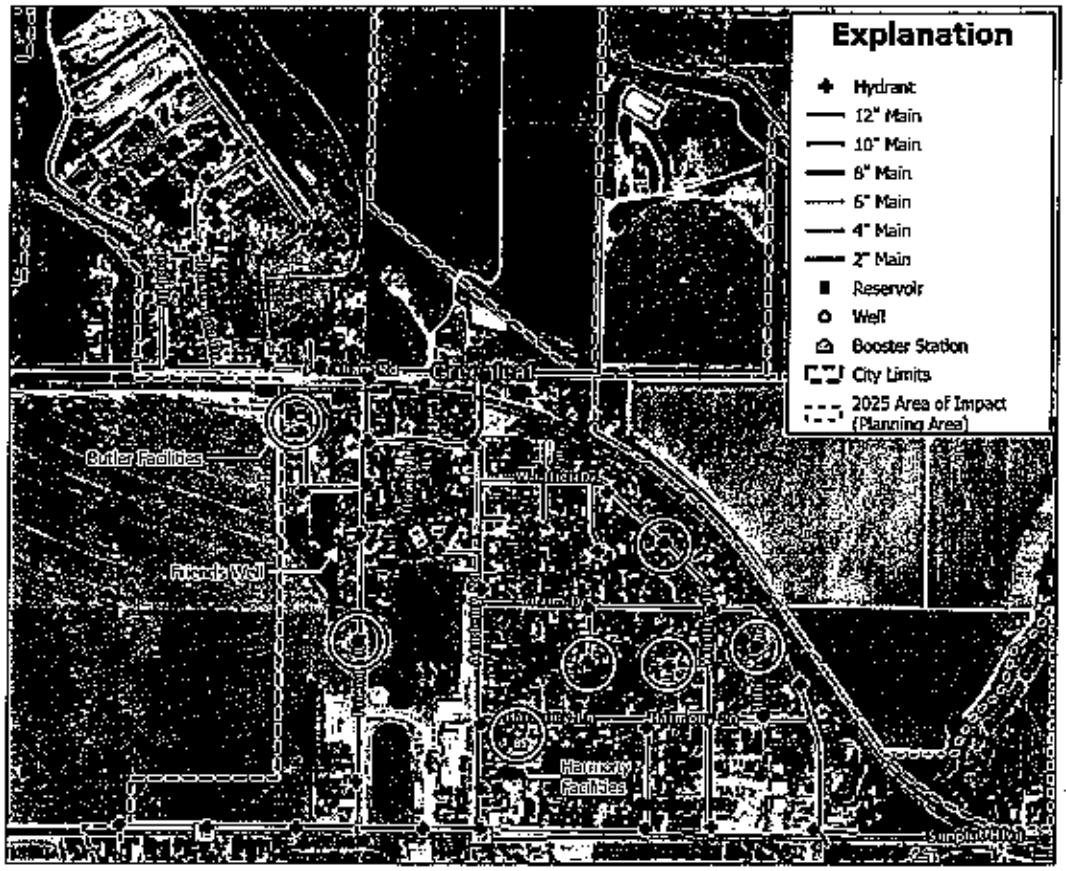

Figure 4 – Water Quality Sampling Locations (Highlighted).

The Harmony Outside well has also exhibited arsenic concentrations at or above the federally published maximum contaminant level (MCL) of 0.010 mg/L. December of 2013 was the last instance of an MCL exceedance for arsenic with a sample concentration of 0.012 mg/L. Since then, samples have had concentrations of less than or equal to 0.007 mg/L.

The 2024 Consumer Confidence Report is included in Appendix J.

3.6. Storage

The City has two storage reservoirs: Butler and Harmony. The Butler reservoir is approximately 222,000 gallons of effective storage. The Harmony reservoir is approximately 107,000 gallons of effective storage. Table 3 summarizes the storage components.

Storage Components	Butler Reservoir (gallons)	Harmony Reservoir (gallons)	Total (gallons)
Dead	4,700	2,644	7,344
Operational	83,662	30,668	114,331
Equalization	0	0	0
Fire Suppression	122,280	43,800	166,080
Standby	0	0	0
Surplus	11,204	30,227	41,431
Total	221,846	107,339	329,186

Table 3 - Storage Reservoir Summary.

3.7. Booster Stations and Delivery System

The City has two booster stations: Butler and Harmony. Both booster stations are equipped with variable frequency drives to meet the varied demands of the water system. Table 4 summarizes the capacity of the booster pumps. Appendix K includes booster pump curves for each booster station.

Booster Pumps	Capacity (gpm)[A]
Butler Large Demand	2,140
Butler Medium Demand	350
Harmony 1	300
Harmony 2	300
Total	3,090

Note:
[A]Based on pump curves maximum operating flow.

Table 4 - Booster Pumps Summary.

The capacity of the delivery system includes the Friends well, and Harmony and Butler Booster Stations. Friends well is included in the delivery system capacity because the well pumps directly into the system. Table 5 summarizes the delivery system capacity.

Booster Pumps and Well	Capacity (gpm)
Friends Well	61
Butler Large Demand	2,140
Butler Medium Demand	350
Harmony 1	300
Harmony 2	300
Total	3,151

Table 5 - Delivery System Summary.

3.8. Distribution System

The City obtained ownership of the water system from the Greenleaf Water and Sewer Association in 2002. Records of distribution system pipe size, material, and condition until that time are not readily available. Two primary upgrades to the distribution system have occurred since that time which included:

1) 2006 City of Greenleaf Water System Reconstruction Project - Along with the Bulter well and reservoir this project included replacement of a good portion of the older undersized main lines, installing hydrants, and system looping.

2) 2011 Water Main Line Improvement Project – This project included replacement and addition of main lines and hydrants.

The system map (Appendix G) and Water Rate Model (Appendix V) summarize current distribution system information including pipe size, length, and material. Taking inventory and evaluating the condition of the few remaining sections of pipe that have not been replaced in the last 20 years is recommended to help prioritize distribution system maintenance and replacement.

3.9. System Demands

The City currently serves approximately 812 residents with 301 connections. Current and future system demands are best estimated by using an equivalent dwelling unit (EDU) system which assigns one EDU to residential connections while other use classifications are assigned EDUs based on how their typical water use compares to residential connections (i.e. greater than one EDU for connections with higher water

demand like schools, restaurants, businesses, etc.). EDU assignments are based on the Equivalent Unit Table in the City's consolidated fee schedule. Appendix AA includes the Equivalent Unit Table and a table showing each water user account and the EDU assignment. The City currently serves approximately 330 EDUs.

Based on recent production data from the SCADA system, the City's demand for average day, maximum day, and peak hour can be estimated. Table 6 summarizes the water system demands. Demands are lower than typical values due to the City's separate gravity irrigation system. Appendix L is a spreadsheet that includes the SCADA data and analysis.

Demand Type	Volume (gallons)[A]	Flow (gpm)[A]	Flow (gpm/EDU)[B]
Average Day	55,153	39	0.12
Maximum Day	114,698	80	0.24
Peak Hour	251,729	175	0.53

Note:
[A]Based on 9/2020 through 8/2025 Butler Booster Station hourly flows recorded by SCADA.
[B]Based on 330 EDUs. System EDUs increased from 323 to 330 during the data analysis period. The analyses and conclusions in this report are not sensitive to that slight variation.

Table 6 - Water System Demand Summary.

The water system also provides fire flow demands. Residential fire flow demand is typically 1,500 gpm for two hours. Higher fire flows are associated with commercial and larger non-residential buildings. The largest fire flow demand in the water system is 2,250 gpm for two hours. Table 7 identifies several non-residential buildings and their respective fire flow requirements.

Owner	Location	Fire Flow (gpm)[A]	Duration (hours)[A]
GFA High School	20565 N. Academy Rd.	2,250	2
Greenleaf Friends Church	20535 N. Academy Rd.	2,250	2
Mikes Metal Fabrication	21048 Highway 19	1,500	2
Greenleaf Custom Meats	21342 Highway 19	1,500	2
ITM	20675 N. Friends Rd.	1,250	2
I.P. Callisons	Highway 19 and Antrim	1,000	2
Greenleaf Café	21513 Highway 19	1,000	2
Maximum Fire Flow		**2,250**	**2**

Note:
[A]From Greenleaf Water Study Addenda 2 (May 2008), which obtained data from the Idaho Survey and Rating Bureau. There have not been any structures added to the service area that would impact required fire flow.

Table 7 - Non-Residential Fire Flow Requirements.

3.10. Cross-connection Control Program

Cross-connections of any kind are prohibited unless the requirements of the City of Greenleaf City Code are met. Title 7 Chapter 4A (Appendix AC) establishes the City's cross-connection control program. The ordinance allows inspection of existing buildings and requires plan review/inspection of new buildings so the City can determine if backflow prevention is required. The chapter then defines degrees of hazard and minimum levels of protection. Annual testing of installed backflow devices is required, and the testing results must be provided to Public Services. The City is to provide notification of required testing.

3.11. Regulatory Compliance and Customer Satisfaction

A copy of the most recent Sanitary Survey is provided in Appendix M. All listed Significant Deficiencies have been addressed. The listed Deficiencies have been addressed or will be addressed as required and/or upon material modification of the system.

The primary persistent customer complaints are related to manganese and water quality. This issue is analyzed and addressed in sections 4 and 8.

3.12. Wastewater

A City-wide wastewater collection system was installed around 2010 and the City finished construction of a mechanical wastewater treatment plant (WWTP) in 2012.

Treatment consists of influent screening, equalization and pumping, oxidation ditch activated sludge biological treatment, secondary clarification, tertiary filtration, chlorination, dechlorination, surface water discharge, and reuse during the irrigation season. Inflows typically average between 50,000 gallons per day (gpd) and 70,000 gpd. These flows are below the design average flow of 197,000 gpd. Water and wastewater facilities meet separation distance requirements. More information on the wastewater treatment facility can be found in the wastewater facility plan.

The capabilities of the City's wastewater collection and treatment infrastructure are pertinent to drinking water system planning because these facilities tend to collect and treat water supplied from the drinking water system and residual streams created by drinking water treatment processes. For example, phosphate based sequestering agents currently added to the drinking water to improve water quality have implications at the WWTP because the WWTP effluent phosphorous loading must be within permitted limits. And, if drinking water treatment processes that generate residual/backwash/waste streams, as contemplated in section 8, are employed by the City in the future, consideration must be given to the quantity and strength of that wastewater and the impacts at the WWTP.

4. Existing System Analysis

4.1. Section Overview

The section provides the calculations and assumptions that support the summary of the water system in section 3. This section also includes an analysis of the water quality of the system, provides discussion on the condition of existing system facilities, and describes supply compared to demand of the various components of the system and of the system as a whole. Between groundwater supply, storage, and the delivery system, and considering all redundancy requirements, the system can meet current demands and serve an additional 650 EDUs.

4.2. Water Quality Analysis and Treatment

The City chlorinates its primary groundwater sources to mitigate the intermittent and infrequent presence of total coliform. The water system currently meets all requirements of the Drinking Water Rules related to water quality.

The City's primary groundwater sources (The Butler and Harmony Outside wells) produce water with concentrations of manganese that commonly cause aesthetic

issues[1] of taste, odor, and staining and result in related customer complaints. Manganese concentrations from March 2026 water quality sampling (Appendix X) are shown in Table 8. The wells have also produced low levels of iron.

Location	Concentration (mg/l)			
	SMCL[A]	Total	Dissolved	Particulate
Butler Raw	0.05	0.10	0.10	0.00
Butler Finished		0.09	0.03	0.06
Harmony Outside Raw		0.25	0.25	0.00
Harmony Outside Finished		0.25	0.23	0.02
Average Distribution System (pre-flush)[B]		0.27	0.14	0.13
Average Distribution System (during-flush)		0.79	0.15	0.64

Note:
[A]EPA's secondary maximum contaminant level for manganese.
[B]This average is skewed by a total manganese concentration at one location of 0.71 mg/l at a particularly low part of the distribution system. Without that result, the average total, dissolved, and particulate manganese concentrations are 0.17 mg/l, 0.14 mg/l, and 0.03 mg/l respectively.

Table 8 - Manganese Concentration Summary.

Total manganese concentration is the sum of dissolved and particulate manganese. Manganese present in the City's raw source water is dissolved. Dissolved manganese is soluble, will pass through most filters, and only tends to cause aesthetic issues once it is exposed to an oxidant (like chlorine or air).

At these concentrations of dissolved manganese, proper dosing of a sequestration agent is a viable method of mitigating aesthetic concerns. With proper dosing and proper contact time the sequestering agent will form complexes with the dissolved manganese that can no longer be oxidized which effectively reduces the potential for aesthetic issues in the distribution system. This is the intent of the City's current sequestering agent dosing program. However, it is evident from the conversion of manganese from the dissolved state to the particulate state between the raw well water and the finished/distribution system water that the sequestering agent being injected

[1] The U.S. Environmental Protection Agency (EPA) has listed an unenforceable secondary drinking water standard concentration of 0.05 mg/l for manganese to limit aesthetic/cosmetic effects of the contaminant. The EPA has also established a health advisory limit of 0.30 mg/l for infants and 1.0 mg/l for the general population (EPA, 2004). However, more recent studies suggest lower drinking water concentration limits may be required to avoid adverse health effects, specifically for infants and children. For this reason the EPA has listed manganese in its Fifth Contaminant Candidate List (EPA, 2022), a list of contaminants that are currently unregulated but are known to exist in public water systems and may require future regulation under the Safe Drinking Water Act, and Health Canada has established a maximum acceptable concentration of 0.12 mg/l (Health Canada, 2019).

may not be able to form stable complexes with the dissolved manganese before the manganese is oxidized. Once manganese is oxidized it becomes insoluble and cannot be sequestered.

Also of note, the concentrations of total and particulate manganese (and iron) present in the samples collected in the distribution system while flushing the hydrants are much higher than produced by the wells. This, along with an increase in turbidity in these samples (Appendix X) indicates a buildup of particulate matter in the distribution system.

Based on these results, the following recommendations can be made to further mitigate water quality concerns in the system:

1) Sequestering Agent Dosing and Contact Time

   The sequestering agent should be dosed at a rate necessary to form complexes with all the dissolved manganese present in the raw well water. It should also be giving enough time to interact with the manganese before oxidizing agents are introduced. To determine the proper does rate, the manufacturer of the sequestering agent can offer a starting point. Then, bench top jar tests can be used to refine dosing rate and contact time necessary for the sequestering agent to form stable complexes with the manganese before chlorine is introduced. This information can be used to modify dosing rate and location for the sequestering agent. Modifications of dosing should be coordinated with the manufacturer and an engineer, given the chemical used as a sequestering agent is a blended phosphate compound that contains both a sequestering agent and corrosion inhibitor.

2) Comprehensive Flushing Program

   Given the apparent particulate matter build up in the distribution system, a scheduled, unidirectional flushing program could offer substantial benefits to system water quality. Unidirectional flushing is where system valves are manipulated to ensure water travels from the source to the extremities of the system at scour velocity (>3 feet per second). It can be used on a scheduled basis to mitigate potential water quality issues or as a response to water quality complaints to target specific problem areas.

3) Residual Chlorine Monitoring

   Maintaining a chlorine residual in the distribution system is imperative to mitigating potential bacterial growth. With the addition of a phosphate sequestering agent, which can promote bacterial growth, maintaining a chlorine residual becomes even more important. The City should continue to operate the system to maintain an adequate chlorine residual and to ensure field testing for chlorine residual is done with methods that eliminate potential testing interferences.

4.3. Ground Water Source Capacity

The ground water source capacity redundancy rule requires the system to be able to meet the peak hour demand or maximum day demand with equalization storage with any source out of service.

The wells can meet the current demands with any source out of service. The water system has available capacity, 121 gpm, above peak hour demand. There is an available capacity of 216 gpm above the maximum day demand. Table 9 summarizes the capacity of the water system based on source water supply. Appendix N includes the ground water source capacity analysis.

Demand Type	Demand (gpm)	Available Source Capacity (gpm)[A]	Surplus/(Deficit) (gpm)
Average Day	39	296	257
Maximum Day	80		216
Peak Hour	175		121

Note:
[A]Capacity with largest well out of service.

Table 9 - Well Supply Versus Demand Summary.

The ground water sources have sufficient capacity to meet the existing demands of the system per the Drinking Water Rules.

4.4. Storage Capacity

The storage reservoirs can be broken into several components according to the finished storage reservoir components within the Drinking Water Rules. Appendix O includes IDEQ's components of finished water storage that includes a description of each component. There are five storage components for the reservoirs: dead, fire suppression, standby, operational, and equalization. Table 10 summarizes the storage reservoirs.

Storage Components	Butler Reservoir (gallons)	Harmony Reservoir (gallons)	Total (gallons)
Dead[A]	4,700	2,644	7,344
Operational[C]	83,662	30,668	114,331
Equalization[D]	0	0	0
Fire Suppression[B]	122,280	43,800	166,080
Standby[E]	0	0	0
Surplus[F]	11,204	30,227	41,431
Total	221,846	107,339	329,186

Note:
[A]Dead storage is the volume not available for use.

[B]Fire suppression storage is the difference between fire demand and well pumping capacities, divided between the two reservoirs based on booster pumping capacities.

[C]Operational storage based on existing pumping scheme.

[D]Equalization storage is 0 because wells and delivery system can meet peak hour demand. Equalization storage is calculated using the 2013 IDEQ Guidance for Determining Equalization Water Storage for Public Water Systems (Appendix O).

[E]Standby storage is 0 because the Butler and Harmony facilities are equipped with standby power meeting the requirements of the Drinking Wate Rules.

[F]Surplus storage is unallocated water in the IDEQ components of storage.

Table 10 – Storage Reservoir Components.

The storage reservoirs have sufficient storage to meet the existing demands of the system per the Drinking Water Rules.

4.5. Delivery System Capacity

The booster pump capacity redundancy rule also requires the water system to meet peak hour demand or maximum day demand with equalization storage with any pump out of service. The Butler and Harmony reservoirs are the only reservoirs in the system. So, the water system needs to meet peak hour demand with any booster pump out of service. The Friends well is included in this analysis because it pumps directly into the distribution system. Table 11 summarizes the delivery system supply versus demand.

Demand Type	Demand (gpm)	Available Pump Capacity (gpm)^	Surplus/(Deficit) (gpm)
Average Day	39	661	622
Maximum Day	80		581
Peak Hour	175		486

Note:
^Capacity, not including Butler Large Demand Pump because it cannot be operated at low enough speed to provide peak hour flow, and with the next largest pump out of service.

Table 11 - Delivery System Supply Versus Demand Summary.

The delivery system, booster pumps and Friends well, can meet the current demands with any pump out of service. The water system has available capacity, 486 gpm, above peak hour demand. Appendix P includes the delivery system capacity redundancy analysis.

4.6. Fire Flow Analysis

The Drinking Water Rules require the water system to provide fire flow demands and max day demand with any pump out of service. The fire flow demand is 2,250 gpm for two hours (Table 7). The maximum day demand is 80 gpm (Table 6). Total demand is 2,330 gpm for two hours or a volume of 279,600 gallons. The water system can meet the maximum day and fire flow demands based on excess pumping capacity above maximum day demand and available storage (Appendix Q). The water system cannot currently meet fire flow demands with the Butler Large Demand booster pump out of service. However, Appendix Q includes a letter from Caldwell Fire confirming the water system is able to meet fire demands and waiving the redundant pumping requirement.

The water system can meet fire flow requirements per the Drinking Water Rules.

4.7. Operating Pressures

The booster stations operate by maintaining a constant discharge pressure of 64 pounds per square inch (psi). The distribution system operates as one pressure zone. Normal operating pressures range throughout the water system and meet the 40 psi to 80 psi range requirement in the Drinking Water Rules, except for one location at the service connection for the City's wastewater treatment plant. This service has a dedicated pressure reducing station. Future mainline extensions from this location will require the installation of a pressure reducing station.

The system is compliant with the operating flow and pressure requirements in the Drinking Water Rules under current conditions and future conditions within the planning period (discussed in section 6) as follows:

1) The computerized hydraulic modeling provided and elaborated on in section 4.9.2 and Appendix S to demonstrate the serviceable area of the system demonstrates the ability of the system to provide fire flow and maximum day demand along potential system expansion routes while maintaining 25 psi and identifies one potential route requiring additional facilities. By demonstrating the required flow and pressure are available at these potential future system extremities, it has been demonstrated that greater than 25 psi is available at all other points in the system under these conditions since no other points would be experiencing the head loss experienced at the analyzed point and there are no locations in the existing system with sufficient elevation to cause meaningful pressure reduction.

2) During March and April 2012, the City performed hydrant tests to verify operating pressures under fire flow conditions meet the Drinking Water Rules – a minimum operating pressure of 20 psi. Field results confirmed that operating pressure throughout the system was above the minimum with a hydrant flowing. There have been no changes to the system since this testing that would negatively impact the testing results.

3) Hydraulic calculations are provided in Appendix S demonstrating the system can provide peak hour demand at 40 psi. The calculations show that compared to the area of the system (and anticipated future conditions), large lengths of unrealistically small diameter (6-inch) pipe would have to be installed to cause system pressures below 40 psi, even if peak hour demand were delivered to a single point in the system along the hypothetical pipe.

4) A software based hydraulic model of the distribution system was included in the 2008 Greenleaf Water Study Addenda 2 (on file at IDEQ). That modeling demonstrated compliance with relevant Drinking Water Rules, which have not changed. Since then, distribution system main lines have been upgraded (section 3.8) and the system has experienced negligible changes in demand.

4.8. Condition of Facilities and Operations Concerns

Appendix R includes a list of the most prominent issues and concerns related to the condition of existing facilities, operations, and maintenance of the water system from the City Director of Public Services. Each of these concerns are addressed throughout this Facility Plan.

There are no current issues with the system facilities which are listed in section 3.2. No related significant deficiencies remain from the most resent Sanitary Survey (Appendix M), and there is no anticipated non-routine maintenance or replacement of these facilities within the Planning Period of this Facility Plan. One remaining deficiency identified in the Sanitary Survey requires slight modifications to the Friends well pump-to-waste which will need to be addressed upon material modification of that facility.

The Butler reservoir was inspected when the roof was replaced in 2022. No inspection report is available. The tank is believed to be in good overall condition.

The Harmony reservoir was inspected in 2025. The inspection report is included in Appendix AB. The report states the tank is in good overall condition.

Even though no current issues exist and only routine maintenance is planned, it is recommended that the Butler well/pump house, Harmony well/pump house, and Friends well house be inspected to determine if any issues exist that are not evident.

4.9. Available EDU Capacity and Serviceable Area

4.9.1. Available EDU Capacity

As detailed below, the current water system can serve 650 additional EDUs, for a total of 980 EDUs, before requiring upgrades. This assumes future EDUs have similar unit demands as the existing system and fire flow requirements remain constant.

Because the system has surplus storage (Table 10), system EDU capacity can be determined by dividing the limiting surplus pumping capacity from Table 9 and Table 11 by the demand per EDU in Table 6. Table 12 and Table 13 demonstrate that groundwater source capacity is the limiting capacity.

Demand Type	Demand (gpm)	Available Source Capacity (gpm)[A]	Available - Surplus/(Deficit) (gpm)	Available - Surplus/(Deficit) (EDU)[B]	Total Capacity (EDU)
Average Day	39	296	257	2,174	2,504
Maximum Day	80		216	891	1,221
Peak Hour	175		121	228	558

Note:
[A]Capacity with largest well out of service.
[B]This is the available capacity of the system - EDUs that can be served in addition to the existing 330 EDUs.

Table 12 – System EDU Capacity Based On Redundant Groundwater Pumping Capacity.

Demand Type	Demand (gpm)	Available Pump Capacity (gpm)[A]	Available - Surplus/(Deficit) (gpm)	Available - Surplus/(Deficit) (EDU)[B]	Total Capacity (EDU)
Average Day	39	661	622	5,263	5,593
Maximum Day	80		581	2,396	2,726
Peak Hour	175		486	916	1,246

Note:
[A]Capacity, not including Butler Large Demand Pump because it cannot be operated at low enough speed to provide peak hour flow, and with the next largest pump out of service.
[B]This is the available capacity of the system - EDUs that can be served in addition to the existing 330 EDUs.

Table 13 - System EDU Capacity Based On Redundant Delivery System Capacity.

As seen in Table 12, the system currently has capacity for 228 additional EDUs at peak hour demand and 891 EDUs at maximum day demand (without equalization storage being required).

After the development of 228 additional EDUs, peak hour demand would surpass the available source capacity and equalization storage would be required to ensure the system could still meet demands. Surplus storage volume shown in Table 10 would be converted to the required to equalization storage to meet these demands. Slight operational changes (raising the pump-on elevations at Butler) would allow the reservoir system to meet all Components of Storage requirements in the Drinking Water Rules through 650 additional EDUs for a total of 980 EDUs (Analysis in Appendix Z). All pumping redundancy requirements mentioned above would still be met at this EDU Count. After 980 total EDUs, system storage would likely need to be upgraded.

4.9.2. Serviceable Area

An analysis of the serviceable area of the existing water system was conducted to determine if the system can provide required fire flows (2,250 gpm) and maximum day demand at a minimum of 25 psi and at a distance of ½ mile along four prospective system expansion routes (Appendix S):

1) West on Peckham Road - The existing system is capable of serving growth within these constraints along this route without any further analysis. Development beyond these limits would require further analysis.

2) West on State Highway 19 - The existing system is capable of serving growth within these constraints along this route without any further analysis. Development beyond these limits would require further analysis.

3) South on Friends Road - There is significant elevation increase along this route. As such, development proposals south of Lower Pleasant Ridge Road would likely require booster station facilities.

4) East on Peckham Road - As noted in Appendix S, development along this route will require the installation of a pressure regulating station due to significant elevation decrease to the east. This improvement is contemplated in section 10.

Furthermore, if a City water main were extended in any direction approaching or outside of the ½ mile area to serve a satellite or extraterritorial development, a new well located in the development is advised for providing reliable water supply and at least peak hour demand to the development. This improvement is contemplated in section 10.

5. Optional Improvements – Operations and Maintenance Recommended Projects

5.1. Section Overview

The water system does not have any current deficiencies and no improvements are required to meet the Drinking Water Rules. This section includes recommendations for optional improvements that will offer benefits for overall system operations, maintenance, reliability, system pressure, and water quality.

5.2. Redundant Fire Flow Capacity

While the water system can provide the required fire flows, the system lacks redundancy as described in section 4.6. Installing a redundant fire flow pump at the Butler Booster Station would make the fire protection capabilities of the water system more robust. The upgrade would include the addition of a redundant pump with variable frequency drive, associated mechanical piping and electrical/controls work, and likely an addition to the booster station building.

5.3. Manganese Treatment

Water quality issues, mainly related to the effects of elevated levels of manganese in the system's source water, are a primary concern for the City and its customers. As such, alternative solutions for this issue are further defined in section 8.

5.4. Butler Booster Station Medium Demand Redundancy

The Butler Booster Station currently has one medium demand pump and one large demand pump. The system would benefit from adding a second medium demand pump with similar pumping capacity as the existing medium demand pump. This upgrade would provide maintenance flexibility by adding a second pump capable of efficiently operating when demands are low and provide a capacity increase.

5.5. Peckham Road to Butler Connection

This project involves directly connecting the Butler facilities to the water main in Peckham Road. This would provide a redundant connection between the Butler facilities and the rest of the water system and between the areas of the City separated by Peckham Road. It would also provide pressure and water quality benefits typically associated with water main looping. The City has already installed a mainline stub in Peckham Road in anticipation of this project and the Union Pacific Railroad (who owns the property between the Butler facilities and Peckham Road) has issued a crossing agreement for the City to execute when ready to construct the project.

5.6. Academy Road 2-inch Line Upgrade

This project involves upgrading an existing 2-inch water line that currently connects Binford Drive to Pechkam Road with an 8-inch water line. This would enhance water system connectivity between the two areas of town separated by Peckham Road, which are currently only connected by one adequately sized water main.

5.7. Water Right Clean Up

Appendix H demonstrates all of the City's sources of supply have water rights associated with them. However, it would be beneficial to confirm that all Points of Diversion listed in the City's water rights are still owned by the City and all water rights are associated with the appropriate Points of Diversion. As discussed in section 9.1, water right acquisition and/or addition of Points of Diversion may need to be considered when new sources of supply are developed.

6. Future Water System Demand

6.1. Section Overview

This section estimates the City's growth over a 20-year planning period (ending in 2045) via two methods: using a typical population projection (arithmetic growth) and using an estimate of how large residential projects may develop (growth-by-

subdivision). Water system supply versus demand is then discussed for the growth-by-subdivision scenario.

6.2. Growth Projections

6.2.1. Arithmetic Growth

The United States Census Bureau has population data for the City over the past 40+ years (Appendix C). With this data, future population can be estimated over a 20-year planning period utilizing an arithmetic growth model – applying the average growth rate over the past 40 years to the planning period. Population was estimated on a 10-year basis. Estimated population at the end of the planning period using this method is 905 people. Figure 5 depicts the historical and projected population for the City based on the arithmetic growth method.

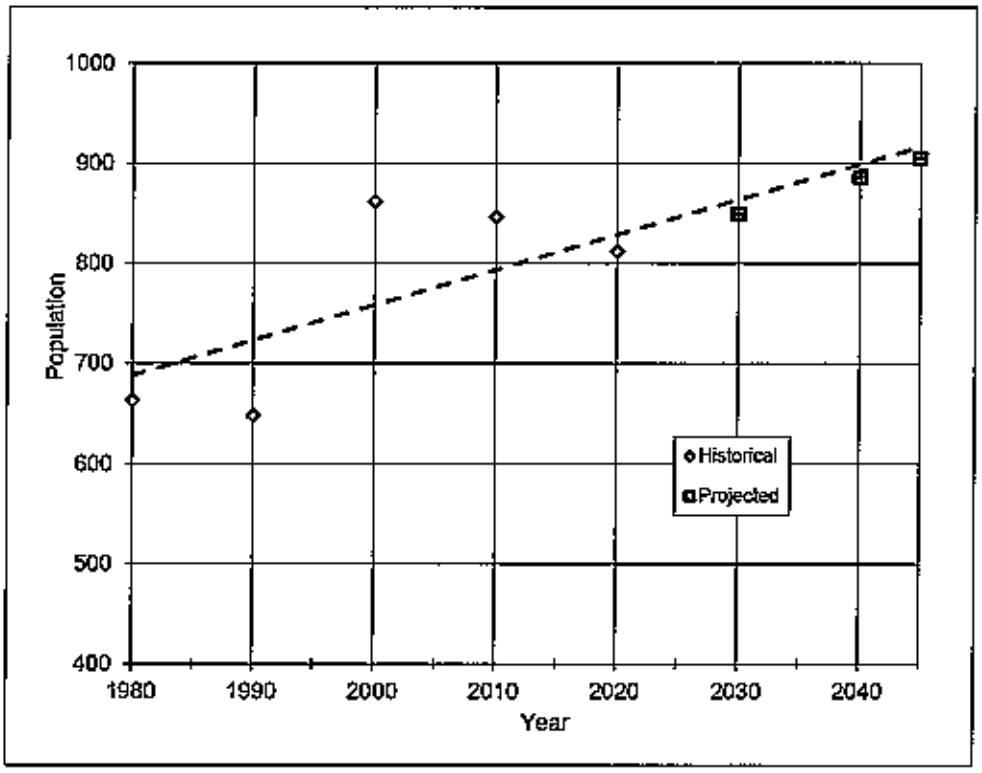

Figure 5 - Population Projection Using An Arithmetic Growth Projection.

6.2.2. Growth-By-Subdivision

Growth for Greenleaf may be better projected by assuming entitlement and buildout of a few residential developments in the planning period causing atypical growth. For example, the City currently has one entitled subdivision (Royal Ridge) with

approximately 120 EDUs that is expected to develop soon. Assuming Royal Ridge and two other developments of the same size develop over the planning period at approximately 18 EDUs per year, the system would be serving 690 EDUs at the end of the planning period. Assuming the current population density of approximately 2.46 people per EDU (population - 812 and EDUs - 330), population at the end of the planning period is estimated to be 1,698 people.

Growth by residential first, from City limits outward, is consistent with the City's Comprehensive Plan. In addition, the City has been entertaining the concept of extraterritorial development: allowing development outside of City limits to connect to and become users of City utilities. This growth scenario can be viewed as consistent with that concept. This growth scenario, and a comparison to the arithmetic scenario, are show in Figure 6.

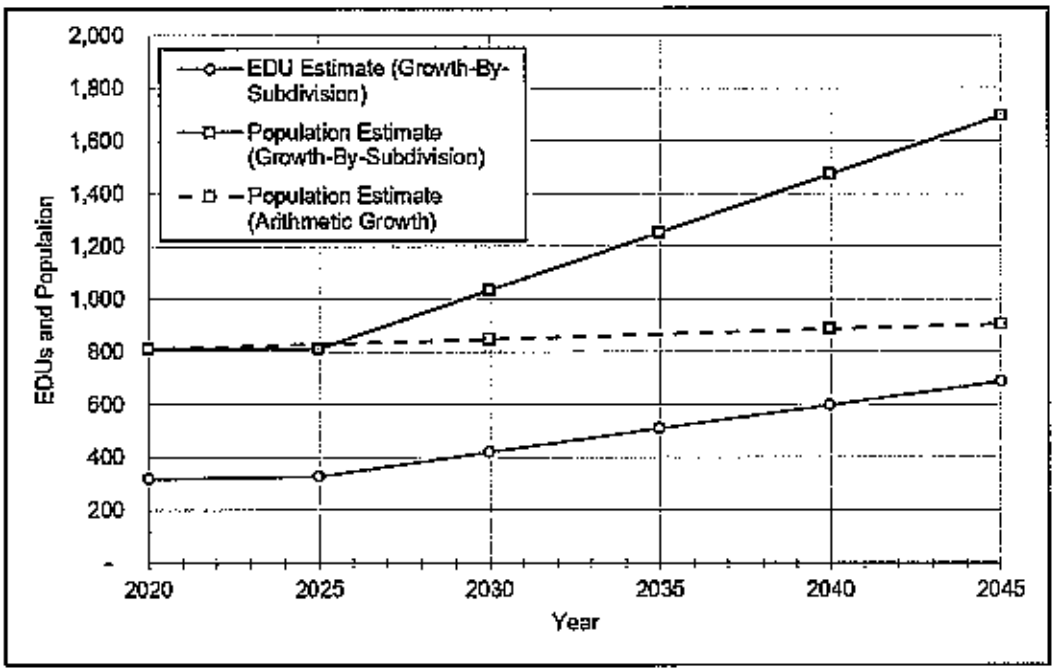

Figure 6 – Growth-By-Subdivision and Comparison to Arithmetic Growth.

6.3. Future Demands

Future demands can be estimated based on projected growth. The recommended growth projection is based on the growth-by-subdivision scenario described in section 6.2.2. Applying current unit demands (Table 6) to this growth scenario results in the future demands shown in Table 14. Appendix T includes the calculations for EDU and demand estimates for the planning period.

Demand Type	2025	2035[A]	2045[B]
Average Day (gpm)	39	60	82
Maximum Day (gpm)	80	124	167
Peak Hour (gpm)	175	270	366

Note:
[A]2035 EDU count estimated to be 510.
[B]2045 EDU count estimated to be 690.

Table 14 – Future Demand Summary.

With consideration to the items discussed in section 7, the existing system can meet future demands for the planning period (through 2045) and beyond without the addition of any new facilities. Within the planning period, when peak hour demands surpass the redundant groundwater source capacity of the system, equalization storage is available to meet demands as required by the Drinking Water Rules.

Existing system water rights (section 3.2) are sufficient to meet peak hour demand for the planning period and beyond.

7. Future Planning Recommendations

7.1. Section Overview

Section 4.9 and section 6 provide a general summary of the available capacity and future growth of the water system. The analysis includes two major assumptions:

1) Demand per EDU remains constant as growth occurs.

2) Required fire flow remains constant as growth occurs.

This section analyzes those assumptions, gives consideration to the financial components of growth, and provides facility recommendations for the planning period (a declining balance) based on the assumptions above.

7.2. Proposed Development Evaluation

7.2.1. Capacity Considerations

The water system capacity is as stated in section 4.9 (980 EDUs before requiring upgrades) assuming unit demands and fire flow requirements remain constant with growth. For typical residential growth (as considered in section 6), these assumptions will typically be accurate. However, because details of individual development projects

can impact these assumptions, they need to be checked as growth is considered. For example, fire flow demands beyond those discussed in section 3.8 will have a significant impact on system storage available for operations and equalization storage and may impact booster pumping requirements. Or if a development was proposing to use the City drinking water system for irrigation rather than using a separate irrigation system, the unit demands of the development would likely be higher than existing.

Below is a list of questions that should be considered as individual development projects are evaluated. If all the answers are "yes", then the City can move forward with evaluating facility recommendations in section 7.3 and approving connections. If any answer is "no", then the City should reevaluate the water system for the individual development – supply and delivery capacities, storage, demands, and supply versus demand.

1) Is the fire flow being required from the City less than or equal to existing (2,250 gpm for 2 hours)?

2) Does the proposed development have a separate irrigation system?

3) Are the proposed demands close to the existing demands per EDU? This will likely be "yes" if the proposed development is residential.

4) Is the proposed development within a half mile of existing City water mains and at approximately the same elevation as the City facilities?

7.2.2. Financial Considerations

As the water system is expanded and/or facilities are added, the City should regularly evaluate the water system connection fee and user rates to ensure new users are paying an equitable fee for the portion of the system capacity they will use and to ensure system ownership costs are covered, respectively. User rates should cover all system expenses including operations and maintenance, capital improvements, depreciation and replacement, debt service, and administrative costs. The existing City user rate structure is appropriate for these purposes and can be modified as necessary to adequately fund the items listed above.

7.3. Facility Recommendations - Declining Balance

While developments are in the entitlement phase and as EDUs are added to the system, Table 15 can be used to consider recommended improvements that should accompany the growth. The recommendations are based on the EDU demand to be connected to the water system. Table 15 takes a conservative approach to ensure the water system meets the Drinking Water Rules in a resilient and reliable manner. Recommended projects within the planning period are described in the sections below.

Number of EDUs Added[D]	Total Number of EDUs	Redundant Source Capacity (gpm)[A]	Maximum Day Demand (gpm)[B]	Peak Hour Demand (gpm)[C]	Notes and Facility Planning Recommendation
0	330	296	80	175	Add redundant fire flow capacity[E].
100	430		104	228	Complete Butler Booster Station medium demand pump redundancy project[E].
228	558		135	296	Peak Hour Demand equals existing redundant source pumping capacity. Surplus storage becomes equalization storage to satisfy Peak Hour Demand. Add additional source of supply[E].
300	630		153	334	
360	**690**		**167**	**366**	**End of planning period.**
400	730		177	387	
500	830		201	440	
600	930		225	493	
650	980		238	520	Without an additional source of supply, surplus storage would be exhausted at this point. Add additional source of supply, if not already installed, or add additional storage.

Note:
[A]Based on well supply and largest well out of service.
[B]Maximum day demand equals the total number of EDUs multiplied by 0.24.
[C]Peak hour demand equals the total number of EDUs multiplied by 0.53.
[D]Note that as of the writing of this report the City estimates it has ≈192 entitled but not built out EDUs. The majority of these EDUs are in the entitled Royal Ridge and Greenleaf Air Ranch developments according to the City's tracking of potential future water system connections. Accessory Dwelling Units are allowed in the City and are not included in this count.
[E]These projects are not strictly required to meet the Drinking Water Rules but offer significant benefits for overall system operation, maintenance, and reliability.

Table 15 - Facility Planning Recommendations.

7.3.1. Redundant Fire Flow Capacity

The City should consider adding a redundant booster station pump at the Butler facility capable of providing required fire flows as discussed in section 5.2.

7.3.2. Butler Booster Station Medium Demand Redundancy

The City should consider adding a second medium demand pump at the Butler facility as discussed in section 5.4.

7.3.3. Additional Source of Supply

With the addition of approximately 228 EDUs an additional source of supply should be developed with a target capacity of at least 250 gpm. This would bring the redundant ground water pumping capacity above peak hour demand for the foreseeable future and eliminate the requirement for equalization storage. The well could likely be located at or near the Butler or Harmony facilities. The project would involve the new well, pump, mechanical piping, and electrical/controls.

8. WATER SYSTEM IMPROVEMENT ALTERNATIVES

8.1. Section Overview

As detailed above, the current system can meet current and anticipated demands within the planning period without any additional facilities. As such, alternative solutions to address the system's water quality issues are analyzed in this section. Appendix U includes the Engineer's Opinion of Probable project cost of each action alternative.

The treatment alternatives contemplated below apply the oxidation/filtration process, the most common form of treatment for removal of manganese from groundwater. The alternatives differ primarily in the location, number, and capacity of the pressure-filter vessels and associated backwash facilities. Sodium hypochlorite would be added upstream of the filters to provide a dose and contact time sufficient to satisfy source-water chlorine demand and oxidize dissolved manganese into insoluble oxides. Water would then pass through pressure vessels containing manganese dioxide coated greensand media, such as GreensandPlus or an approved equivalent, which promotes catalytic oxidation and captures the resulting particulate solids. The filtration media would be capable of continuous regeneration where maintaining a slight chlorine residual through the filter keeps the media in an oxidized and active state. Accumulated solids would be removed through periodic backwashing, and each alternative includes backwash piping, controls, and residuals-handling facilities necessary to operate the filters and convey the resulting waste stream to the City's wastewater collection system.

Exact treatment system layout, technology, filter media, etc. would be selected as part of the design process. To demonstrate the concept and major components necessary for oxidation/filtration treatment, one manufacturer's example of a treatment system is included in Appendix Y.

8.2. Alternative 1 – New Groundwater Source (250 gpm)

This alternative considers installation of a new groundwater well, with a conceptual design similar to the Butler well but with smaller diameter construction, capable of producing 250 gpm and similar water quality as the Butler well (Figure 7). Improvements for this alternative would include the following items:

1) New Groundwater Well – New well, pump, mechanical piping, and electrical/controls.

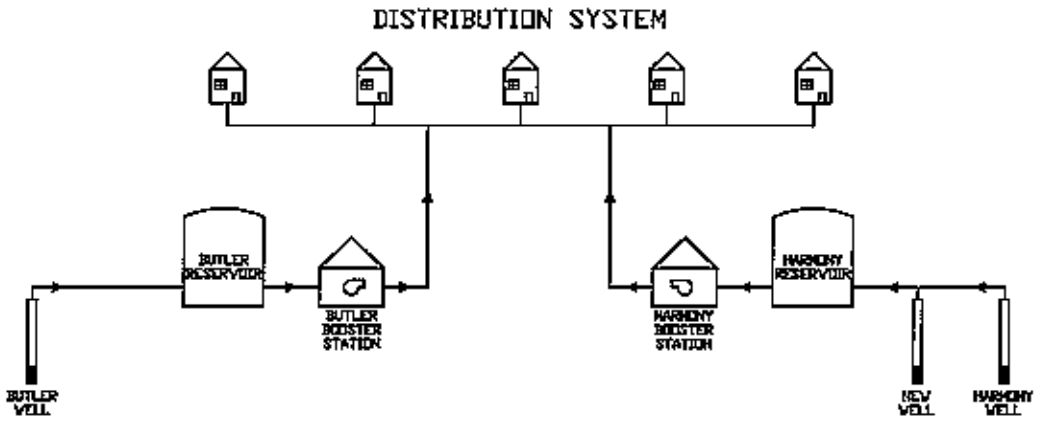

Figure 7 - Alternative 1 Schematic (components of alternative in blue).

The manganese concentration of the Butler well water is the lowest out of the City's primary groundwater sources (Table 8). The Butler well water also has the lowest hardness concentration. The intent of the new well would be to achieve similar or better water quality as the Butler well to reduce reliance on the Harmony Outside well.

If the target water quality was achieved from the new well, benefits of this alternative include a reduction in system manganese and hardness concentrations and increased system water supply. This alternative could be selected by itself to provide the listed benefits. Also, because of the reduction of manganese and hardness in the source water, this alternative would reduce ongoing costs of any water treatment.

The drawbacks of this alternative include capital and ongoing costs and, based on the Butler well completion report, a new well targeting the same aquifer as the Butler well may provide water quality improvements, but will likely still produce water with elevated levels of manganese.

8.3. Alternative 2 – Centralized Oxidation/Filtration Before Storage at Butler (450 gpm)

This alternative considers installation of water treatment upstream of storage at the Butler site capable of removing manganese from the City's primary groundwater sources (the Butler and Harmony Outside wells) at a flow rate of 450 gpm (Figure 8). Improvements for this alternative would include the following items:

1) Oxidation/Filtration Treatment – An oxidation/filtration treatment system installed at the Butler site capable of removing manganese at 450 gpm, the associated backwashing system and mechanical piping, and a new building to house the treatment system. The treatment system and building could be designed to be expandable.

2) Harmony Connection – A pipeline connecting the Harmony Outside well directly to the new treatment system.

3) Harmony Reservoir Fill Control – A connection between the distribution system and the Harmony reservoir including a valve vault installed at the Harmony site containing control valves necessary to fill the Harmony reservoir with treated distribution system water.

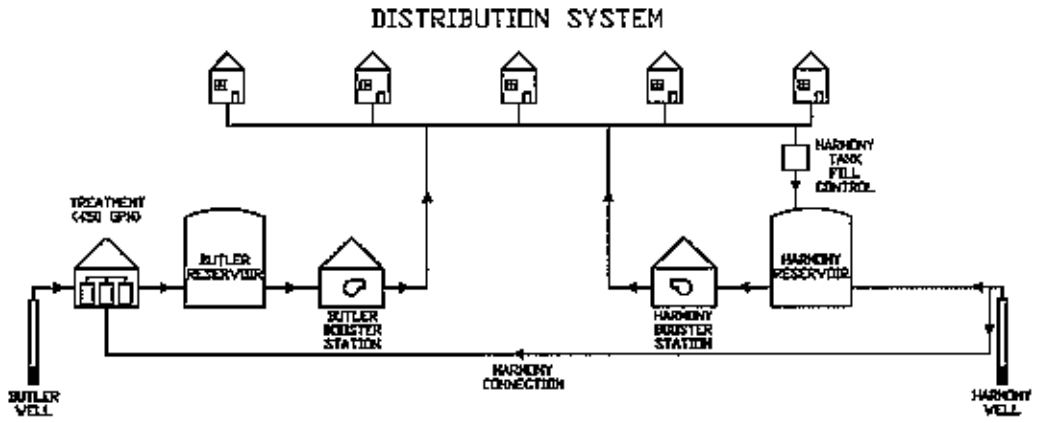

Figure 8 - Alternative 2 Schematic (components of alternative in blue).

The benefits of this alternative include full removal of manganese from the system before it enters the reservoirs, and installation of a treatment system and building at one location. The drawbacks include the high cost of large-scale manganese treatment and additional operations and maintenance.

8.4. Alternative 3 – Centralized Oxidation/Filtration After Storage at Butler (200 gpm)

This alternative considers installation of water treatment downstream of storage at the Butler site capable of removing manganese at a flow rate of 200 gpm, which is 25 gpm greater than current system peak hour demand (175 gpm). A schematic of Alternative 3 is show in Figure 9. Improvements for this alternative would include the following items:

1) Oxidation/Filtration Treatment – An oxidation/filtration treatment system installed at the Butler site capable of removing manganese at 200 gpm, the associated backwashing system and mechanical piping, and a new building to house the treatment system. The treatment system and building could be designed to be expandable.

2) Harmony Connection – A pipeline connecting the Harmony Outside well to the Butler reservoir.

3) Harmony Reservoir Fill Control – A connection between the distribution system and the Harmony reservoir including a valve vault installed at the Harmony site containing control valves necessary to fill the Harmony reservoir with treated distribution system water.

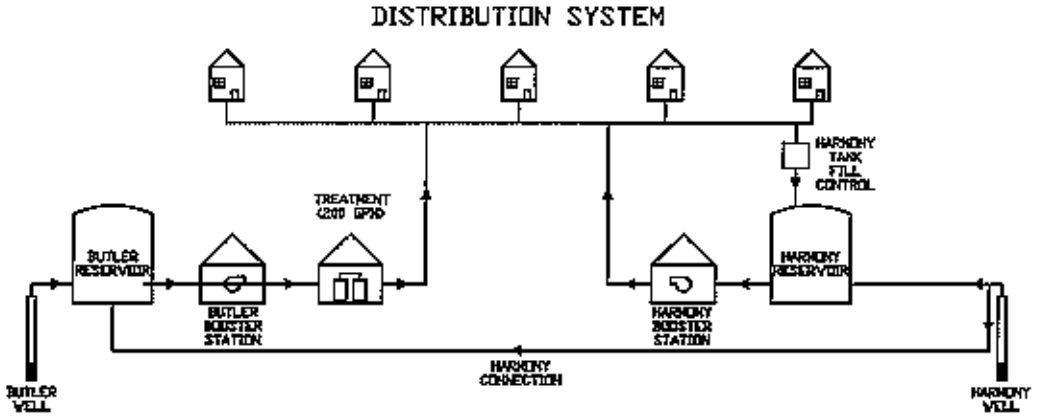

Figure 9 - Alternative 3 Schematic (components of alternative in blue).

The benefits of this alternative include the cost savings associated with installing treatment at one location sized to treat only current system demands, rather than being sized to treat the flow rates the Butler reservoir is filled at, and manganese removal from the system, rather than sequestration. The drawbacks include filling the Butler reservoir with water that still contains manganese, which may precipitate out in the reservoir, capital cost, and operations and maintenance cost of treatment.

8.5. Alternative 4 – Oxidation/Filtration Before Storage at Butler (450 gpm) and Harmony (200 gpm)

This alternative considers installation of water treatment upstream of storage at both the Butler and Harmony sites capable of removing manganese at rates of 450 gpm and 200 gpm respectively (Figure 10). Improvements for this alternative would include the following items:

1) Oxidation/Filtration Treatment – Oxidation/filtration treatment systems installed at the Butler and Harmony sites capable of removing manganese at 450 gpm and 200 gpm respectively, the associated backwashing systems and mechanical piping, and new buildings to house the treatment systems. The treatment systems and buildings could be designed to be expandable.

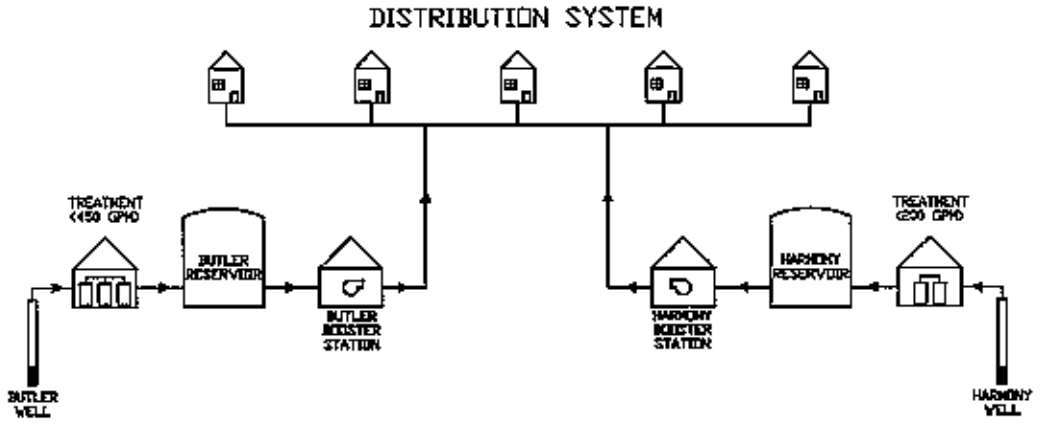

Figure 10 - Alternative 4 Schematic (components of alternative in blue).

The benefits of this alternative include full removal of manganese from the system before it enters the reservoirs, treatment at both of the City's main water system facilities which avoids the Harmony-to-Butler connection, the simplicity of operations considering the Butler well filling the Butler reservoir and the Harmony well filling the Harmony reservoir, and better compatibility with the potential future plans of a new groundwater source being installed at the Harmony site. The drawbacks include the capital costs of installing treatment at both locations to treat typical tank filling flow rates and operation and maintenance of two treatment facilities.

8.6. Alternative 5 – Oxidation/Filtration After Storage at Butler (200 gpm) and Harmony (200 gpm)

This alternative considers installation of water treatment downstream of storage at both the Butler and Harmony sites capable of removing manganese at a flow rates of 200 gpm, which is 25 gpm greater than current system peak hour demand (175 gpm).

A schematic of Alternative 5 is show in Figure 11. Improvements for this alternative would include the following items:

2) Oxidation/Filtration Treatment – Oxidation/filtration treatment systems installed at the Butler and Harmony sites capable of removing manganese at 200 gpm, the associated backwashing systems and mechanical piping, and new buildings to house the treatment systems. The treatment systems and buildings could be designed to be expandable.

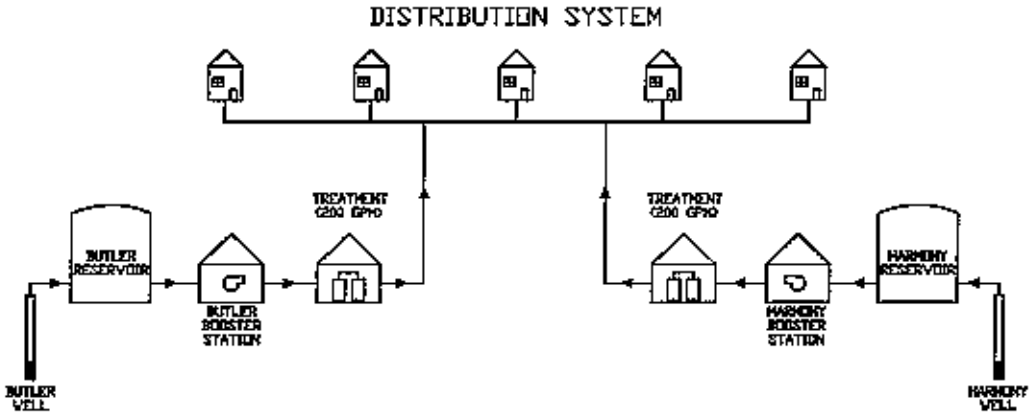

Figure 11 - Alternative 5 Schematic (components of alternative in blue).

The benefits of this alternative include the cost savings associated with installing treatment sized to treat only current system demands, rather than being sized to treat the flow rates the reservoirs are filled at, treatment at both of the City's main water system facilities which avoids the Harmony-to-Butler connection, the simplicity of operations considering the Butler well filling the Butler reservoir and the Harmony well filling the Harmony reservoir, and better compatibility with the potential future plans of a new groundwater source being installed at the Harmony site. The drawbacks include the capital costs of installing treatment at both locations, operation and maintenance of two treatment facilities, and filling the reservoirs with water that still contains manganese, which may precipitate out in the reservoir.

8.7. Alternative 6 – Oxidation/Filtration of Average Demand (40 gpm) at Butler and Harmony

This alternative considers installation of water treatment facilities at both the Butler and Harmony sites designed to continuously pull water from each tank at a rate of 40 gpm (approximate current average day demand), remove manganese, and recirculate the water back to the tank. On average, this concept would provide full manganese removal from the source water without requiring the new treatment units to be sized for higher demand periods. A schematic of Alternative 6 is show in Figure 12. Improvements for this alternative would include the following items:

1) Oxidation/Filtration Treatment – Oxidation/filtration treatment systems installed at the Butler and Harmony sites capable of removing manganese at 40 gpm, the associated backwashing systems and mechanical piping, and new buildings to house the treatment systems. The treatment systems and buildings could be designed to be expandable.

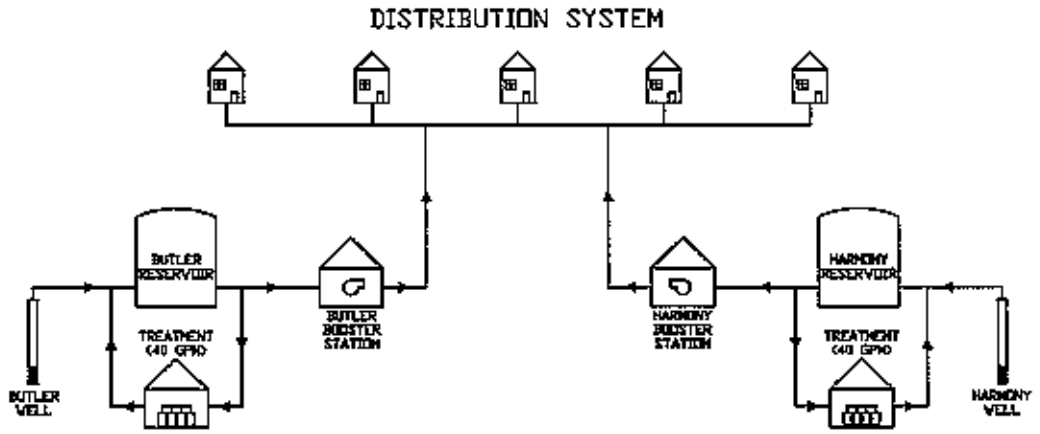

Figure 12 - Alternative 5 Schematic (components of alternative in blue).

The benefits of this alternative include the cost savings associated with installing treatment sized to treat only current average day demand, treatment at both of the City's main water system facilities which avoids the Harmony-to-Butler connection, the simplicity of operations considering the Butler well filling the Butler reservoir and the Harmony well filling the Harmony reservoir, storing treated water, and better compatibility with the potential future plans of a new groundwater source being installed at the Harmony site. The drawbacks include the capital costs of installing treatment at both locations and operation and maintenance of two treatment facilities.

8.8. Alternative 7 – No Action

The no action alternative considers no projects to improve the water quality of the system. The benefit of this alternative is no cost to the rate payer. The drawback is the system water quality remains as is (section 4.2).

8.9. Alternatives Screening

Several factors play into the selection process. One key factor is environmental issues associated with each alternative. Table 16 summarizes the potential environmental impacts with each alternative.

Other criteria for selection consideration are capital cost, the present value of life cycle operations and maintenance costs, impacts to or limitations of the City's wastewater system, and water system configuration. Capital and operational and maintenance costs directly impact the existing rate payer. Table 17 summarizes the selection criteria for each alternative.

Environmental Criteria	Alternative 1 - New Groundwater Source (250 gpm)	Alternative 2 - Centralized Oxidation / Filtration Before Storage at Butler (450 gpm)	Alternative 3 - Centralized Oxidation / Filtration After Storage at Butler (200 gpm)	Alternative 4 - Oxidation / Filtration Before Storage at Butler (450 gpm) and Harmony (200 gpm)	Alternative 5 - Oxidation / Filtration After Storage at Butler (200 gpm) and Harmony (200 gpm)	Alternative 6 - Oxidation / Filtration at Average Demand (40 gpm) at Butler and Harmony	Alternative 7 - No Action
Cultural Resources	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No impact
Land Use	No adverse impact, projects located on existing property	No impact, projects located on existing property	No impact, projects located on existing property	No adverse impact, projects located on existing property	No adverse impact, projects located on existing property	No adverse impact, projects located on existing property	No impact
Socioeconomic	Increase in user rate	Increase in user rate	Increase in user rate	Increase in user rate	Increase in user rate	Increase in user rate	No impact
Important Farmlands	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Topography, Geology, and Soils	Short term impact - Requires trenching and well drilling	Short term impact - Requires trenching and building site preperation	Short term impact - Requires trenching and building site preperation	Short term impact - Requires trenching and building site preparation	Short term impact - Requires trenching and building site preparation	Short term impact - Requires trenching and building site preparation	No impact
Surface and Groundwater Hydrology	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Wild and Scenic Rivers	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Flood Plains and Wetlands	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Fauna, Flora, and Natural Communities	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Utilities	No impact	Minimal increase in power use	Minimal increase in power use	Minimal increase in power use	Minimal increase in power use	Minimal increase in power use	No impact
Air Quality	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No impact
Noise	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No adverse impact	No impact

Table 16 - Alternatives Precursory Environmental Screening.

Assessment Criteria	Alternative 1 New Groundwater Source (250 gpm)	Alternative 2 Centralized Oxidation/Filtration Before Storage at Butler (450 gpm)	Alternative 3 Centralized Oxidation/Filtration After Storage at Butler (200 gpm)	Alternative 4 Oxidation/Filtration Before Storage at Butler (450 gpm) and Harmony (200 gpm)[4]	Alternative 5 Oxidation/Filtration After Storage at Butler (200 gpm) and Harmony (200 gpm)[4]	Alternative 6 Oxidation / Filtration at Average Demand (40 gpm) at Butler and Harmony[4]	Alternative 7 No Action
Environmental Issues	TBD	TBD	TBD	TBD	TBD	No Impact	No Impact
Regulatory Acceptance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Health and Safety	Water quality meets regulatory standards	Water quality meets regulatory standards	Water quality meets regulatory standards	Water quality meets regulatory standards	Water quality meets regulatory standards	Water quality meets regulatory standards	Water quality meets regulatory standards
Ability to Serve Growth	Yes	Yes	Yes	Yes	Yes	Yes	Yes
System Treatment Classification	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Benefits	- Improved source water quality - Increased source water supply	- Removal of manganese - Storing treated water - Centralized treatment	- Removal of manganese - Centralized treatment only at system demands	- Removal of manganese - Storing treated water - Retaining two independent water supply facilities - Compatibility with future well location	- Removal of manganese - Treatment only at system demands - Retaining two independent water supply facilities - Compatibility with future well location	- Removal of manganese - Treatment only at average demands - Retaining two independent water supply facilities - Storing treated water - Compatibility with future well location	- Water rate remains the same - No capital costs
Drawbacks	- Capital costs - Manganese still present	- Capital costs - O&M of treatment system	- Capital costs - Storing raw water - O&M of treatment system	- Capital costs of two treatment systems - O&M of two treatment systems	- Capital costs of two treatment systems - O&M of two treatment systems - Storing raw water	- Capital costs of two treatment systems - O&M of two treatment systems	- Water quality remains the same
Wastewater Considerations[A]	- Phosphate added as sequestering agent requires removal at WWTP	- Approximately 10% of backwash water discharged to WWTP (=1,300 gpd)[B] - No phosphate sequestering agent requiring removal at WWTP	- Approximately 10% of backwash water discharged to WWTP (=600 gpd)[B] - No phosphate sequestering agent requiring removal at WWTP	- Approximately 10% of backwash water discharged to WWTP (=900 gpd)[B] - No phosphate sequestering agent requiring removal at WWTP	- Approximately 10% of backwash water discharged to WWTP (=600 gpd)[B] - No phosphate sequestering agent requiring removal at WWTP	- Approximately 10% of backwash water discharged to WWTP (=100 gpd)[B] - No phosphate sequestering agent requiring removal at WWTP	- Phosphate added as sequestering agent requires removal at WWTP
Additional Annual O&M Costs (Testing, Chemicals, and Backwashing)	$1,900	$4,700	$4,700	$4,700	$4,700	$4,800	$0
Probable Initial Project Costs	$740,000	$3,020,000	$1,090,000	$3,400,000	$2,370,000	$1,490,000	$0
Present Value of New Life Cycle O&M Costs[C]	$113,404	$451,975	$308,202	$479,852	$365,589	$282,921	$0

Note:
[A]The City's WWTP currently experiences inflows well below the design capacity. None of the investigated alternatives are limited by capabilities of the WWTP.
[B]Based on AWWA guidance for backwashing rates and backwashing each filter each day, which is likely conservative. The backwash water would be batch settled in a holding tank with 90% of the water recycled to the filtration unit and 10% discharged to the wastewater collection system. The discharge water will contain concentrated levels of manganese and other well water constituents from the filter backwash. However, mass loading of any of these constituents to the WWTP will remain approximately unchanged compared to alternatives that do not include filtration. This is because, in all alternatives, constituents of the well water generally either pass through the distribution system then to WWTP or become residual of the filtration process and then pass to the WWTP. In addition, residual water sent to the WWTP can be discharged at a low rate and will become diluted with other collection system water to avoid issues in the receiving systems.
[C]A common 50-year service life was used to calculate the present worth of operation, maintenance, and equipment replacement costs. The well casing and screen for Alternative 1 and treatment pressure vessels, backwash tanks, and other major structural components for Alternatives 2 through 6 were assumed to have approximately 50-year service lives with proper maintenance. Shorter-lived mechanical, electrical, and control components were assumed to require replacement every 20 years during that period. Periodic filter media replacement was also considered. 3% inflation was assumed. These values are presented in 2026 dollars.

Table 17 – Alternatives Selection Criteria Summary.

9. RECOMMEND ALTERNATIVE

9.1. Recommend Alternative – New Groundwater Source

Alternative 1 is the recommended alternative. This alternative is a cost-effective way to make progress toward solving the City's current water quality issues. When funding allows, this alternative positions the City to treat the source water in a more efficient and cost-effective manner by selecting a treatment alternative (alternatives 2 through 5). Alternative 1 also offers an increase in source water providing more robust water supply redundancy and enhanced ability to serve future growth. The total project cost is estimated to be $740,000. This cost estimate is for a well designed to produce 250 gpm in order to reduce or eliminate reliance on the Harmony wells and provide a slight net increase in source water capacity. A well capable of producing 650 gpm like the butler well, would likely cost approximately $1,050,000. It is anticipated that the new well would pump directly into existing storage facilities.

9.1.1. Miscellaneous Project Considerations

The new well could be positioned on City-owned property at either the Harmony or Butler site and the City recently acquired property adjacent to the Harmony site considering future needs of the water system.

Additional operations and maintenance requirements of a new well and pumping system will be minimal and similar to other existing City wells/pumping systems (mostly limited to periodic pump/motor maintenance). However, costs of water quality sampling required for compliance after the initial well construction sampling should be considered.

Other than determining a funding source (see section 9.2 for financial considerations), construction and permitting of a new public water system well would require the approximately 1.5-year process outlined below:

1) Water right permitting either to add the new well as a point of diversion on existing City water rights or acquire a new water right for the well.

2) IDEQ approved Well Site Evaluation and Preliminary Engineering Report.

3) Well construction.

4) IDEQ approved Well Completion Report.

5) IDEQ approved pumping system Preliminary Engineering Report, plans, and specifications.

6) Pumping system construction.

9.2. Project Funding and Water Rate Analysis

The City recently submitted a Letter of Interest applying for fiscal year 2027 Emerging Contaminant grant funding through IDEQ for a version of the Alternative 1 project. Results from the application will be known in spring of 2026. Other feasible funding options include low interest loans available for public water system infrastructure like the USDA Rural Development loan programs. These loans can have 40-year repayment periods with interest rates of approximately 2.75 percent.

Water system base rates are intended to fund maintenance and replacement of existing infrastructure, and the repayment of loans or bonds used to build the infrastructure. Table 18 summarizes the water base rate analysis for scenarios where Alternative 1 is funded via grant and loan funding. Appendix V includes the analysis for the recommended base rate addition.

Components	Alternative 1 Funded by Grant - Base Rate for First 1,000 gallons	Alternative 1 Funded by Loan - Base Rate for First 1,000 gallons	Notes
Existing Base Rate	$ 56.25	$ 56.25	Covers existing O&M, existing debt service, and a portion of capital replacement and short-term assets maintenance
Recommended Capital Replacement and Short-Lived Assets Addition	$ 29.47	$ 29.47	Recommended to fund full system replacement cost
Alternative 1 Debt Service	$ -	$ 7.76	Assuming a 40-year loan at 2.75% annual interest
Future O&M costs	$ 0.48	$ 0.48	Covers estimated cost of ongoing water quality sampling for compliance ($1,900 /yr)
Proposed Total Base Rate	$ 86.20	$ 93.96	

Table 18 – Water Base Rate Analysis Summary.

In addition to the base rate, the City charges $3.40 for each additional 1,000 gallons used. No changes to this usage fee are recommended.

10. CAPITAL IMPROVEMENTS

10.1. Section Overview

This section considers capital improvement recommendations for the 20-year planning period including the recommended alternative, optional improvements, and other facility recommendations discussed in the sections above. These improvements were developed based on reviewing the water system with City staff and identifying system components that may need repaired or replaced in the future.

The recommended improvements are listed in Table 19. Appendix W includes the cost estimates for each improvement.

Improvement No.	Description	Project Cost Estimate	Comments
1 (Alternative 1)	New Groundwater Source (250 gpm)	$ 740,000	New well to improve system water quality
2	Redundant Fire Flow Capacity	$ 363,000	Redundant high-capacity booster pump at the Butler site
3	Butler Booster Station Medium Demand Redundancy	$ 186,520	Redundant medium capacity booster pump at the Butler site
4	Peckham Road to Butler Connection	$ 240,400	Integral water system loop via ≈314 feet of 12-inch water main and bore under the railroad
5	Academy Road 2-inch Line Upgrade	$ 210,500	Integral water system loop via ≈375 feet of 8-inch water main and bore under the railroad
6	Water Rights Cleanup	$ 6,000	Confirmation of up-to-date water right permitting
7	Additional Source of Supply - Expanded Service Area	$ 960,000	Water supply resilience for extended system
8	PRV/PSV Station	$ 240,000	High pressure mitigation for system expansion east of the City
9	Radio Read Water Meter Replacement	$ 180,000	Eventual end-of-life replacement of water meters installed in 2020
10	Water Service Location Updates	$ 37,400	Replace City owned portion of Greenleaf Friends Academy service line, add dedicated service line for Greenleaf Friends Church, Relocate water meter and service line for 21551 Butler Ct.

Table 19 - Capital Improvements Summary.

10.2. Cost Estimates

The cost estimate for each capital improvement is a Class 5 category according to the Association for the Advancement of Cost Engineering. This represents a planning level accuracy and opinion of costs with a +50% to -30% accuracy range. Costs and range are based on recent similar projects and data from surrounding cities. Project costs will vary based on market conditions, labor and material costs, regulatory requirements, and other unforeseen factors.

10.3. Funding Options

A general description of funding options to support capital improvements, in no particular order, is as follows:

1) Save and Self Fund

   For any project or a list of projects the City can establish appropriate user rates that, based on project cost estimates and desired project timeline, will allow the City to save the required money and construct the project in the desired amount of time.

2) Loans and Bonds

   Common loan programs available for public drinking water system projects include the Drinking Water State Revolving Fund through IDEQ and the United States Department of Agriculture (USDA) Rural Development loan programs. These programs offer low-interest financial assistance for planning, design, and construction of public drinking water system projects.

   After the scope and budget for a project is established, the City can request this financial assistance by submitting required letters of interest or applications for the desired program. Awardees are then generally required to obtain borrowing authority through processes available in Idaho State Code and establish appropriate user rates to repay the borrowed money based on the terms of the loan.

   Improvements can also be funded by private financial institutions with a similar process required.

3) Development Charges and Impact Fees

   Improvements required for specific development projects or those intended to allow the City to provide an established level of service to new development can be funded by capital provided by the development. The cost of these projects can be covered by the developer or by the City after collecting appropriate fees from the developer.

4) Grants

IDEQ, USDA, and similar entities sometimes offer grant programs that can be used to fund, or partially fund, system improvements. Obtaining these funds typically requires a similar process as for state and federal loans, but without the debt service.

10.4. Project Implementation

Steps to implement the recommended alternative are outlined in section 9.1.1. Generally, other improvements listed in Table 10 resulting in material modification of the system, as defined in the Drinking Water Rules, require the official actions and procedures outlined in Appendix AD, starting at Step 3.

11. SUSTAINABLE INFRASTRUCTURE EFFORTS

11.1. Section Overview

The City supports sustainability and green efforts wherever practical/applicable. All capital improvement projects should include trenchless technology, low impact construction, minimal chemical demand, variable frequency drive pumps, energy efficient motors and buildings, etc.

This section documents how specific concepts or efforts related to sustainability have been addressed or investigated.

11.2. Low-Impact Construction

Low-impact construction was considered during the development and comparison of the alternatives (section 8). The centralized treatment alternatives would require construction of a pipeline connecting the Harmony and Butler facilities, resulting in additional excavation, surface disturbance, potential utility conflicts, and restoration requirements. Alternatives were provided that would eliminate the inter-facility pipeline and associated impacts. The recommended alternative, a new source of supply located at the Harmony site, avoids the need for this inter-facility pipeline and substantially reduces the anticipated construction footprint.

11.3. Metering Unmetered Areas

As part of this planning effort and associated investigations it was determined that there are no known unmetered connections to the drinking water system.

11.4. Water Conservation and Smart Water Meter Maintenance/Replacement

The City is interested in efforts to conserve drinking water. Completed, on-going, and planned efforts and investigations into water conservation are as follows:

1) The City has separate irrigation and drinking water systems throughout the service area and in recent years has converted City parks previously irrigated via the drinking water system to be irrigated with the irrigation system. In 2026, the City completed a master planning document for the municipal irrigation system and submitted a grant application for an Idaho Water Resources Board Aging Infrastructure grant to rehabilitate some of the aged gravity irrigation delivery system. One substantial benefit of a well-planned, well-maintained, and convenient to use municipal irrigation system is reduced reliance on the drinking water system for outdoor uses.

2) The City is interested in efforts to conserve drinking water using installation of water efficient fixtures. The EPA and Water Research Foundation (WRF) estimate use of water efficient plumbing fixtures can reduce indoor water use by 20 to 35 percent (EPA, 2026 and WRF, 2026). For example, the EPA estimates replacing old, inefficient toilets alone can reduce indoor water use for the average family by 13,000 gallons annually (EPA, 2026). And the WRF attributes most of the 44 percent decline in average household indoor water use from 1999 to 2024 to adoption of more water efficient fixtures and appliances (WRF, 2026). Greenleaf has likely already experienced *some* of this reduction in household water use but encouragement of these in-home water conservation efforts and broad adoption in Greenleaf would reduce potable water production and pumping demands and help preserve available source, storage, and delivery system capacity.

3) The City installed accurate radio-read water meters throughout the system in 2020. These meters will approach the end of their estimated service life within the planning period. Meter replacement is addressed in Table 19, Improvement No. 9.

11.5. Energy Conservation

Energy conservation efforts are implemented and are planned for implementation throughout the water system. Motors at the Butler and Harmony facilities are driven by variable frequency drives (VFDs). Project planning and cost estimation throughout this Facility Plan assumes the use of VFDs and energy efficient motors. In addition, planning and cost estimation for the recommended alternative includes an energy audit of the well house and implementing the recommendations for building energy efficiency that result from the energy audit.

12. REFERENCES

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Characterization of Ground Water Flow in the Lower Boiser River Basin, Christian R. Petrich and Scott M. Urban, 2004

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Appendix A: IDEQ Facility Plan Addendum
No. 3 Approval Letter

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor
Curt Fransen, Director

TSP&S-108/2012

December 5, 2012

The Honorable Bradley Holton
Mayor, City of Greenleaf
20523 N. Whittier Drive
Greenleaf, Idaho 83626

RE: Greenleaf - Drinking Water Facility Plan Addendum #3 *(Greenleaf, Canyon County)*
Public Drinking Water System - Facility Plan

Dear Mayor Holton:

The referenced-project appears to meet State of Idaho standards, and is approved based on the conditions listed below.

I. PROJECT SPECIFIC CONDITIONS:

This approval is for the Public Drinking Water System Facility Plan (FP) Addendum #3 only. Please submit a Preliminary Engineering Report (PER) to DEQ for review and approval prior to preparing and submitting any detailed plans and specifications. Detailed plans and specifications cannot be reviewed until the PER is approved; furthermore, no construction can begin until the detailed plans and specifications have been reviewed and approved by DEQ.

Please call me with any questions at (208) 373-0274, or contact me via e-mail at mike.piechowski@deq.idaho.gov.

Sincerely,

Mike Piechowski, P.E.
Water Quality Engineer

MP:sjt

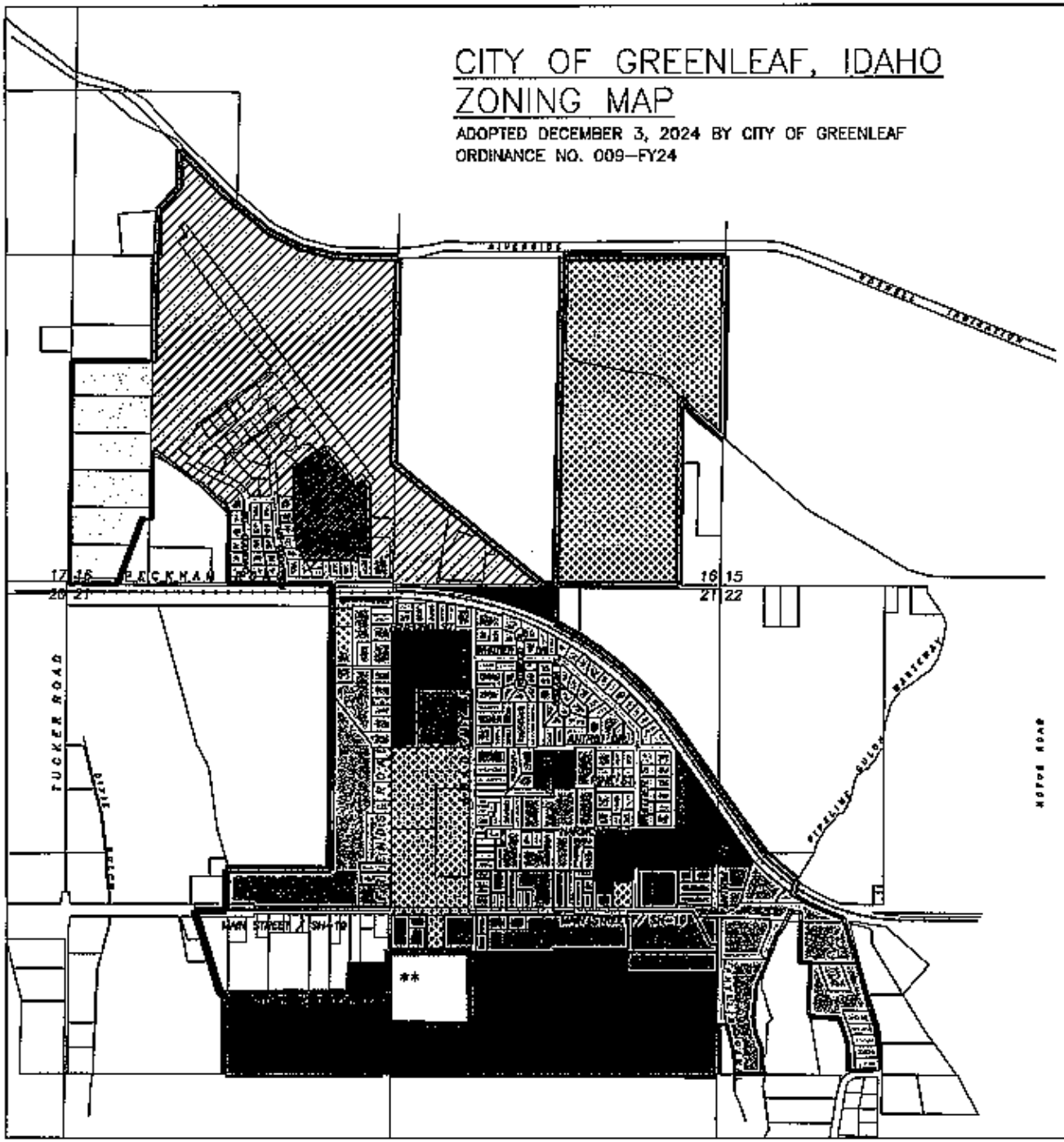
C: Mike Martin, P.E., Civil Dynamics

PDF: Todd Crutcher, P.E., DEQ Boise Regional Office
TRIM Record #2012AGD3980

Appendix B: Greenleaf Zoning Map

CITY OF GREENLEAF, IDAHO
ZONING MAP

ADOPTED DECEMBER 3, 2024 BY CITY OF GREENLEAF
ORDINANCE NO. 009–FY24



LEGEND

- AGRICULTURAL
- INDUSTRIAL
- CBD
- NC
- R–1
- R–3
- R–5
- R–12 *
- AIRPARK COMMERCIAL
- AIRPARK OVERLAY ZONE
- CIVIC USE OVERLAY ZONE
- CITY LIMITS

* PRE–EXISTING DENSITY

** ENCLAVED PARCEL–SEE CANYON COUNTY ZONING MAP

ALL PROPERTY OUTSIDE CITY LIMITS AND NOT ZONED HEREON IS CANYON COUNTY ZONING DESIGNATION

Appendix C: City Community Profile and Census Data

Greenleaf, Idaho Community Profile

https://www.gemstateprospector.com/community-profile.html?primaryColor=00526a&secondaryColor=40c0be&icTool=community-profile&geoId=1633490&geoEntId=3e4e174a-1e8c-4217-ae47-644ba0d0a035

People

The total population of Greenleaf is 825. The median age is 44.2

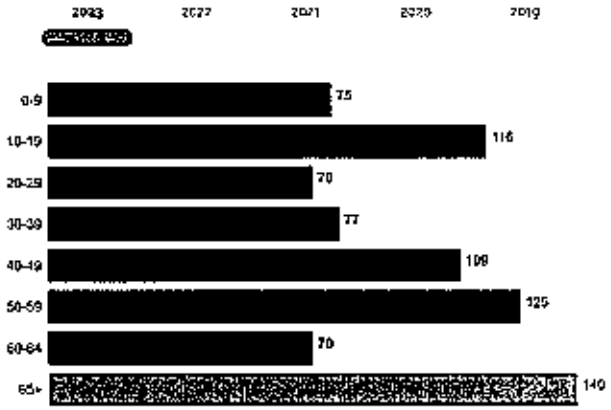
825

Total Population

55.88% Male

44.12% Female

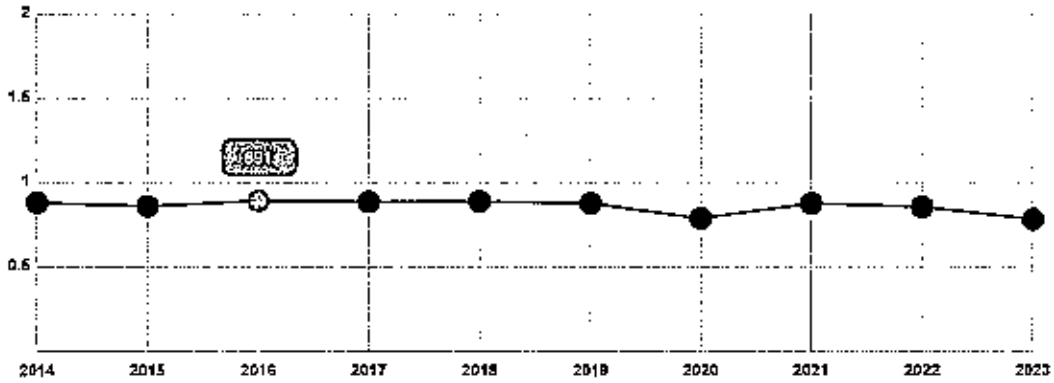
Age Distribution



Median Age

44

Population Growth (in thousands)



Educational Attainment

29.95% of the population in Greenleaf have an associate's degree or higher. 82.1% have a high school degree or higher.

< Grade 9	Grade 9-12	High School	Some College	Assoc Degree	Bach Degree	Grad Degree
9.81%	7.92%	28.4%	23.75%	8.26%	16.18%	5.51%

offer associate's Degree or Certificate

offer Bachelor's Degree or Higher

Labor Force

Greenleaf has a labor force of 402 people.

402

Labor Force

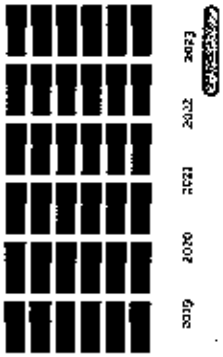
Talent

What are the largest job counts by occupation?

Construction and Extraction	Education, Training/Library	Executive, Managers, and Administrators	Office and Administrative support	Material Moving
21.62%	13.51%	11.71%	9.01%	8.11%
24	15	13	10	9

Total Employees

281



The work distribution of total employees in Greenleaf is:

50%
Blue Collar

49%
White Collar

Total Establishments

11

Businesses and Jobs

Greenleaf has a total of 11 businesses. In 2023, the leading industries in Greenleaf were Construction, Education, Transportation and Warehousing, and Other Services - Repair, Personal Care, Laundry, Religious, etc..

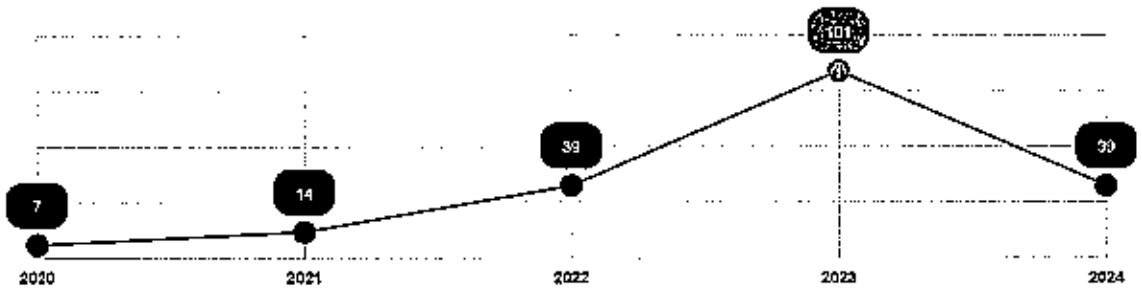
What are the top industries by jobs?

1 Construction

101 Jobs | 6 Establishments

2 Education

53 Jobs | 1 Establishments



3 Transportation and Warehousing

45 Jobs | 3 Establishments

4 Other Services - Repair, Personal Care, Laundry, Religious, etc.

29 Jobs | 3 Establishments

How many employees do businesses in Greenleaf have?

1-4 Employees	63.64%
5-9 Employees	18.18%
10-19 Employees	9.09%
20-49 Employees	0%
50-99 Employees	9.09%
100+ Employees	0%

Income and Spending

Households in Greenleaf earn a median yearly income of $58,267. 22.84% of the households earn more than the national average each year. Household expenditures average $58,191 per year. The majority of earnings get spent on Shelter, Transportation, Food and Beverages, Health Care, and Utilities.

$58,267

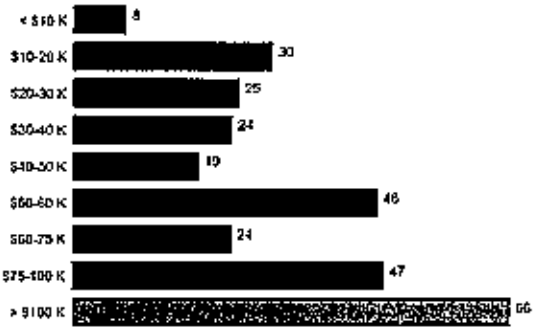
Median Household Income

20% less than the county

23% less than the state

27% less than the nation

Income Distribution



How do people spend most of their money?

PER HOUSEHOLD

Shelter	Transportation	Food and Beverages	Health Care	Utilities
$12,200	$10,724	$8,616	$5,133	$4,445

$58,191

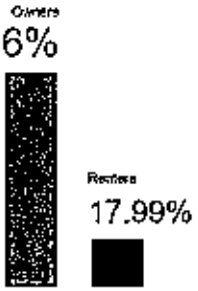
Median Household Expenditure

Housing

There are 64% more households who own their homes than there are renters.

Download Image

Owners vs. Renters



Transportation

Residents spend an average of 24 minutes commuting to work. Greenleaf is served by 12 airports within 50 miles. Rail can be accessed within the community. Interstates can be accessed 5 miles away.

24min
Commute Travel Time

0 + 12(<50 miles)
Airports in Community

5miles
Distance to Interstate

Freight Rail
In Community

Taxes

Top State Corporate Income Tax

6.5%

Top State Corporate Capital Gains Tax

7.4%

Top State Personal Income Tax

7.4%

Top State Personal Capital Gains Tax

7.4%

State Sales Tax

6%

Place

Greenleaf city, Idaho

Greenleaf city, Idaho is a city, town, place equivalent, and township located in Idaho.

// United States / Idaho / Greenleaf city, Idaho

Display Sources

Populations and People
Total Population
812
P1 | 2020 Decennial Census

Income and Poverty
Median Household Income
$56,289
S1901 | 2022 American Community Survey 5-Year Estimates

Education
Bachelor's Degree or Higher
24.1%
S1501 | 2022 American Community Survey 5-Year Estimates

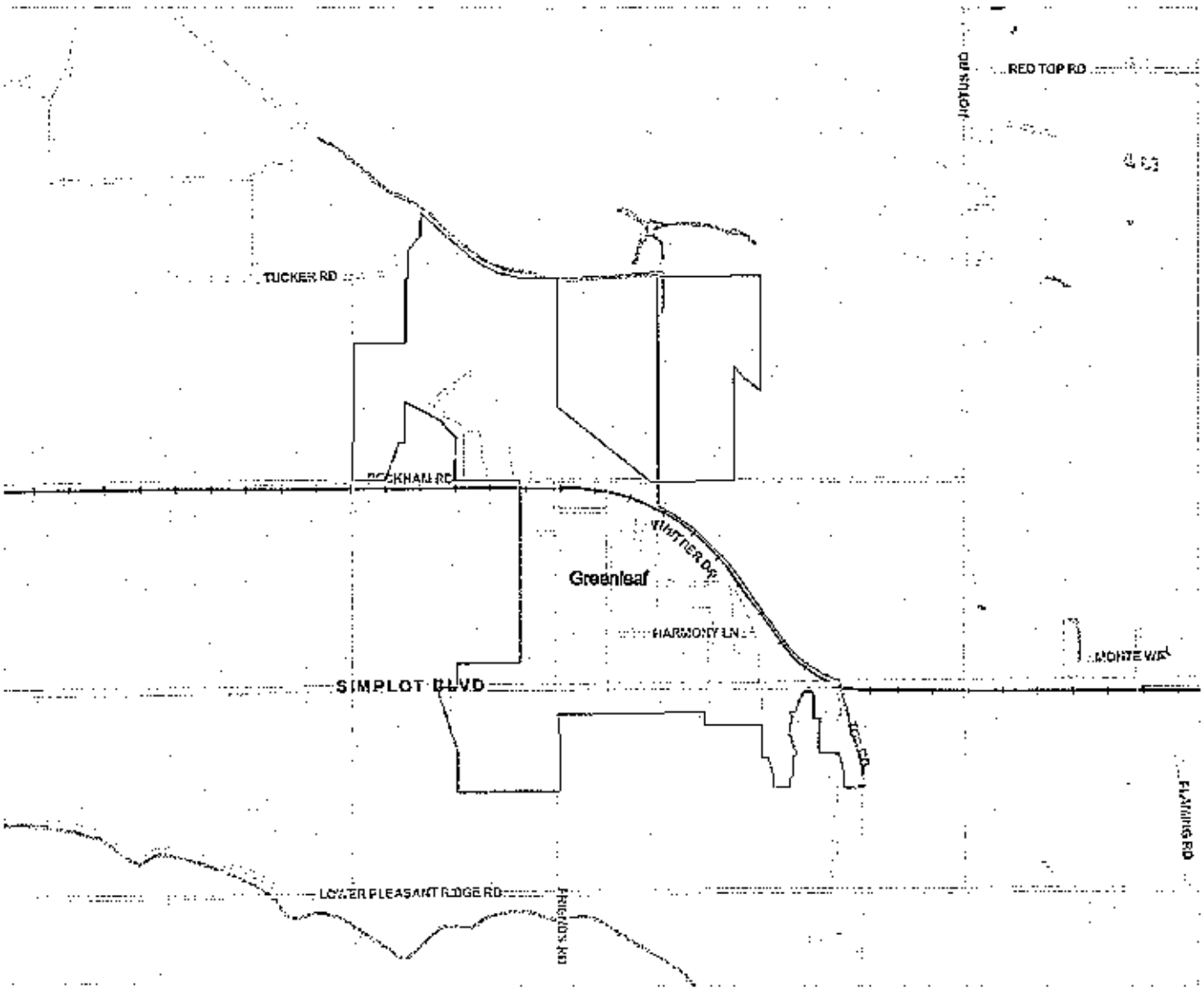
Employment
Employment Rate
59.9%
DP03 | 2022 American Community Survey 5-Year Estimates

Housing
Total Housing Units
315
H1 | 2020 Decennial Census

Health
Without Health Care Coverage
7.7%
S2701 | 2022 American Community Survey 5-Year Estimates

Families and Living Arrangements
Total Households
407
DP02 | 2022 American Community Survey 5-Year Estimates

Race and Ethnicity
Hispanic or Latino (of any race)
201
P9 | 2020 Decennial Census



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Populations and People

Age and Sex

44.6 ± 5.4
Median Age in Greenleaf city, Idaho

37.8 ± 0.2
Median Age in Idaho

S0101 | 2022 American Community Survey 5-Year Estimates

Population Pyramid: Population by Age and Sex
in Greenleaf city, Idaho

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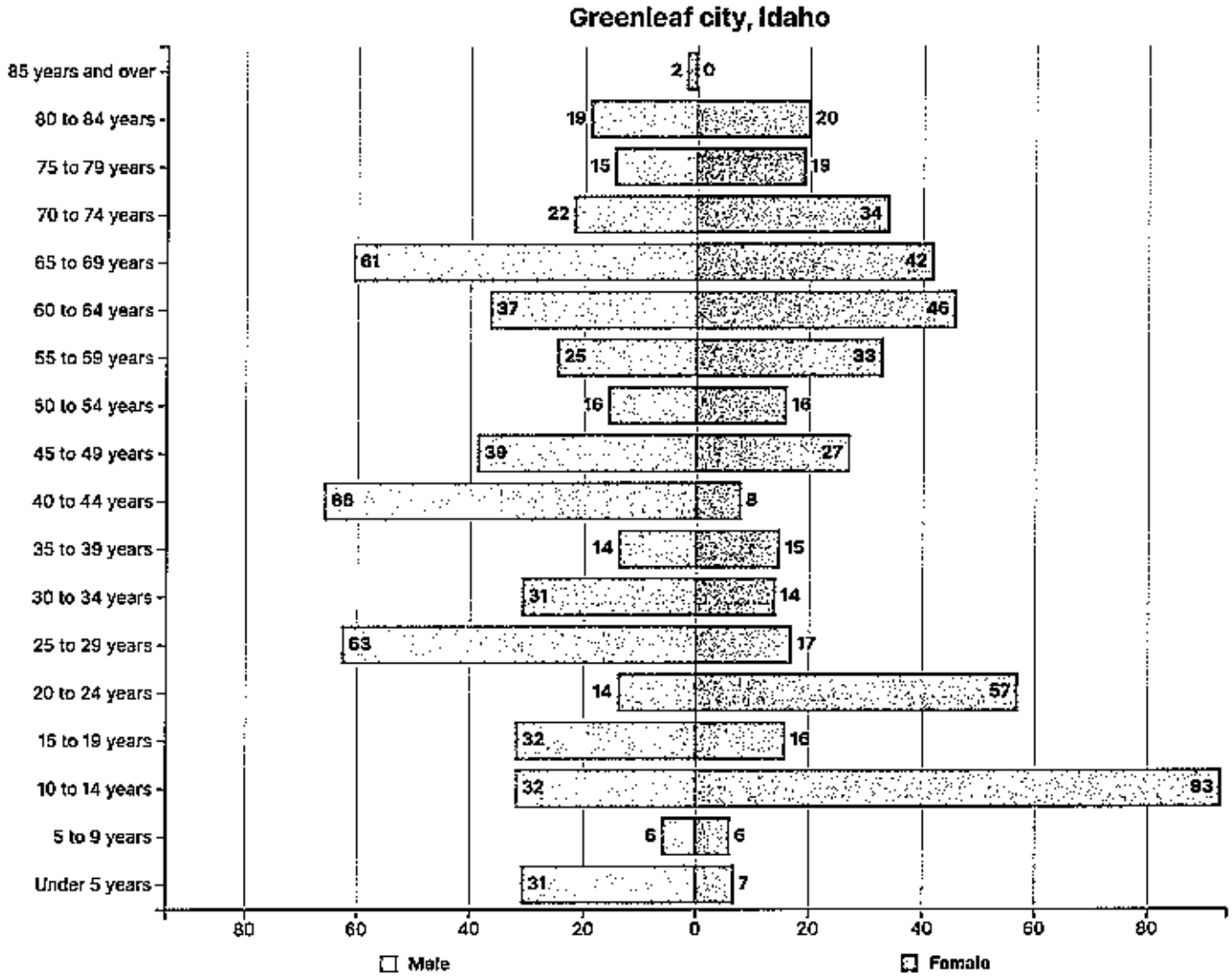

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S0101 | 2022 ACS 5-Year Estimates Subject Tables

Ancestry

Ancestry
In Greenleaf city, Idaho

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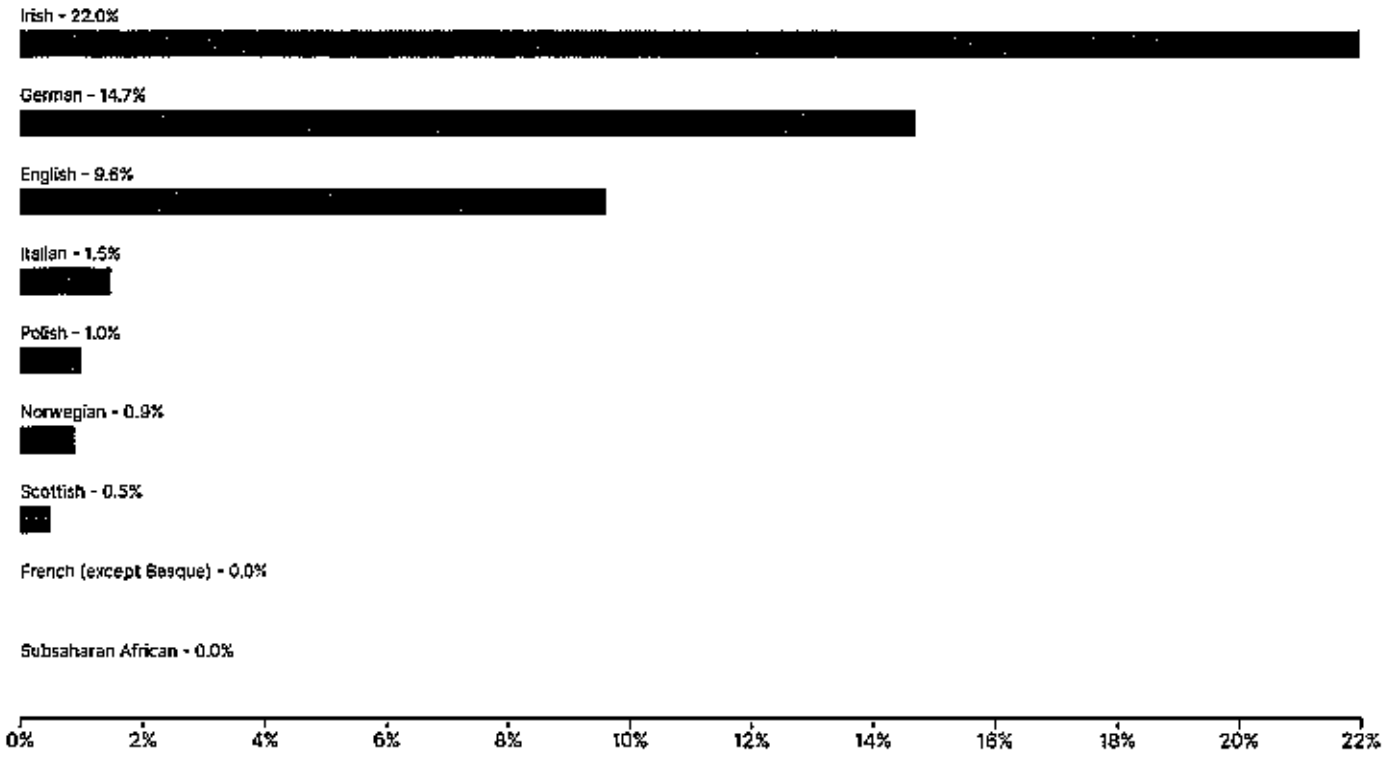

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DP02 ¦ 2022 American Community Survey 5-Year Estimates

Language Spoken at Home

17.9% ± 9.6%
Language Other Than English Spoken at Home in Greenleaf city, Idaho

10.8% ± 0.5%
Language Other Than English Spoken at Home in Idaho

S1601 ¦ 2022 American Community Survey 5-Year Estimates

Types of Language Spoken at Home
in Greenleaf city, Idaho

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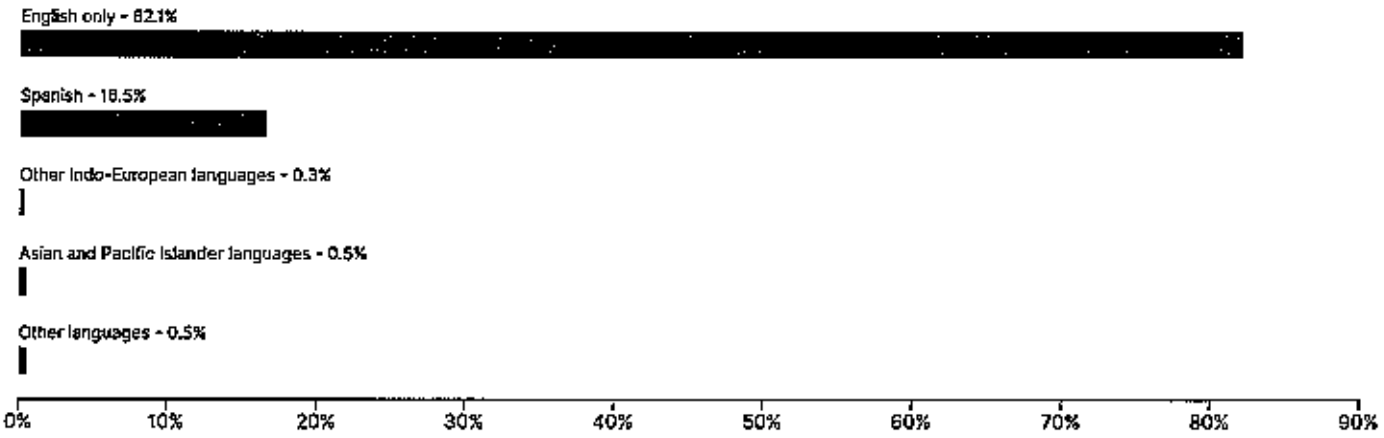

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S1601 | 2022 American Community Survey 5-Year Estimates

Older Population

23.5% ± 7.0%
65 Years and Older in Greenleaf city, Idaho

17.4% ± 0.1%
65 Years and Older in Idaho

DP05 | 2022 American Community Survey 5-Year Estimates

Older Population by Age
in Greenleaf city, Idaho

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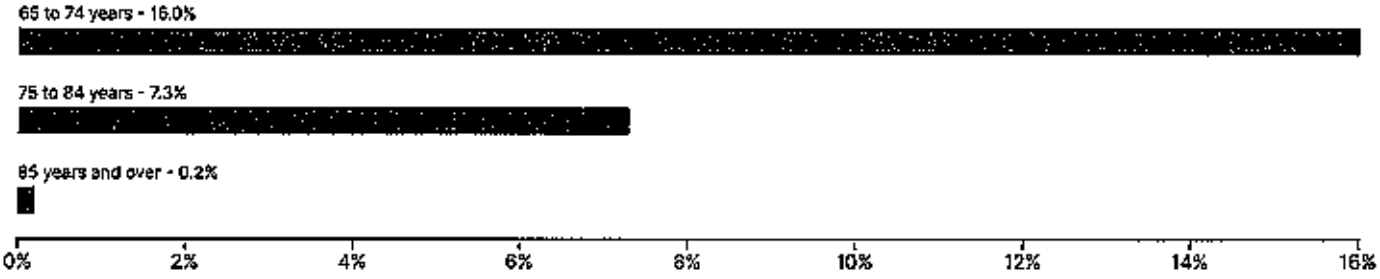

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DP05 | 2022 American Community Survey 5-Year Estimates

Residential Mobility

2.2% ± 1.6%
Moved From a Different State in the Last Year in Greenleaf city, Idaho

4.2% ± 0.4%
Moved From a Different State in the Last Year in Idaho

S0701 | 2022 American Community Survey 5-Year Estimates

Residential Mobility in the Last Year
in Greenleaf city, Idaho

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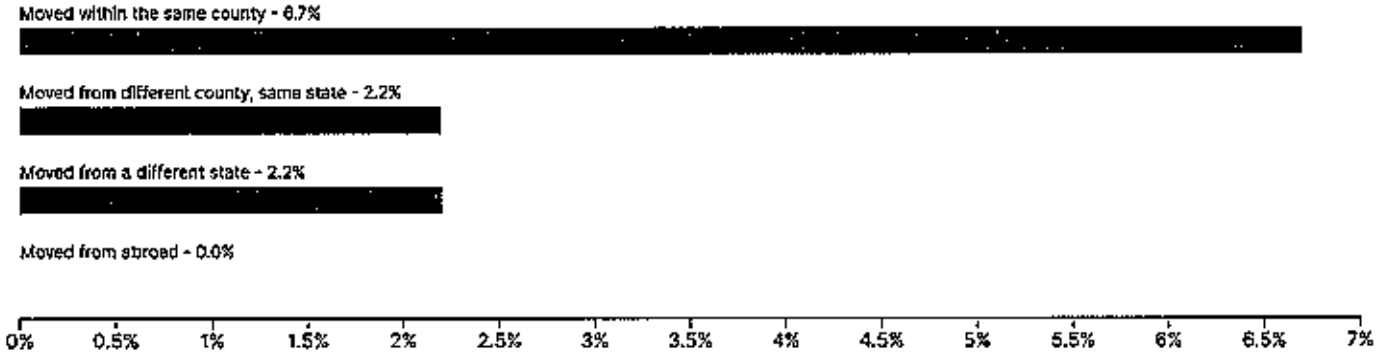

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S0701 | 2022 American Community Survey 5-Year Estimates

Veterans

10.0% ± 4.1%
Veterans in Greenleaf city, Idaho

7.6% ± 0.4%
Veterans in Idaho

S2101 | 2022 American Community Survey 5-Year Estimates

Veterans by Sex
in Greenleaf city, Idaho

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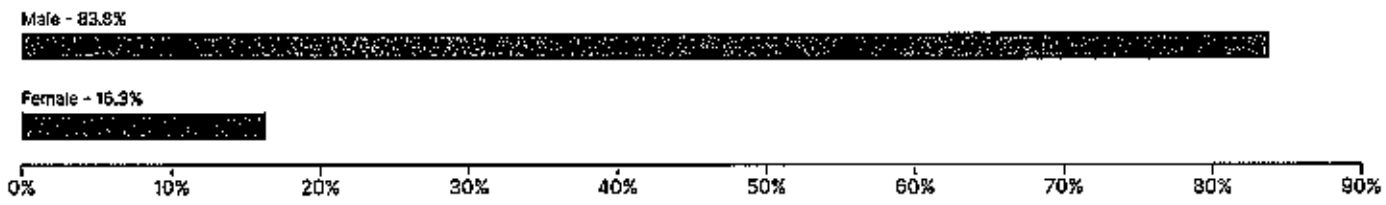

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S2101 | 2022 American Community Survey 5-Year Estimates

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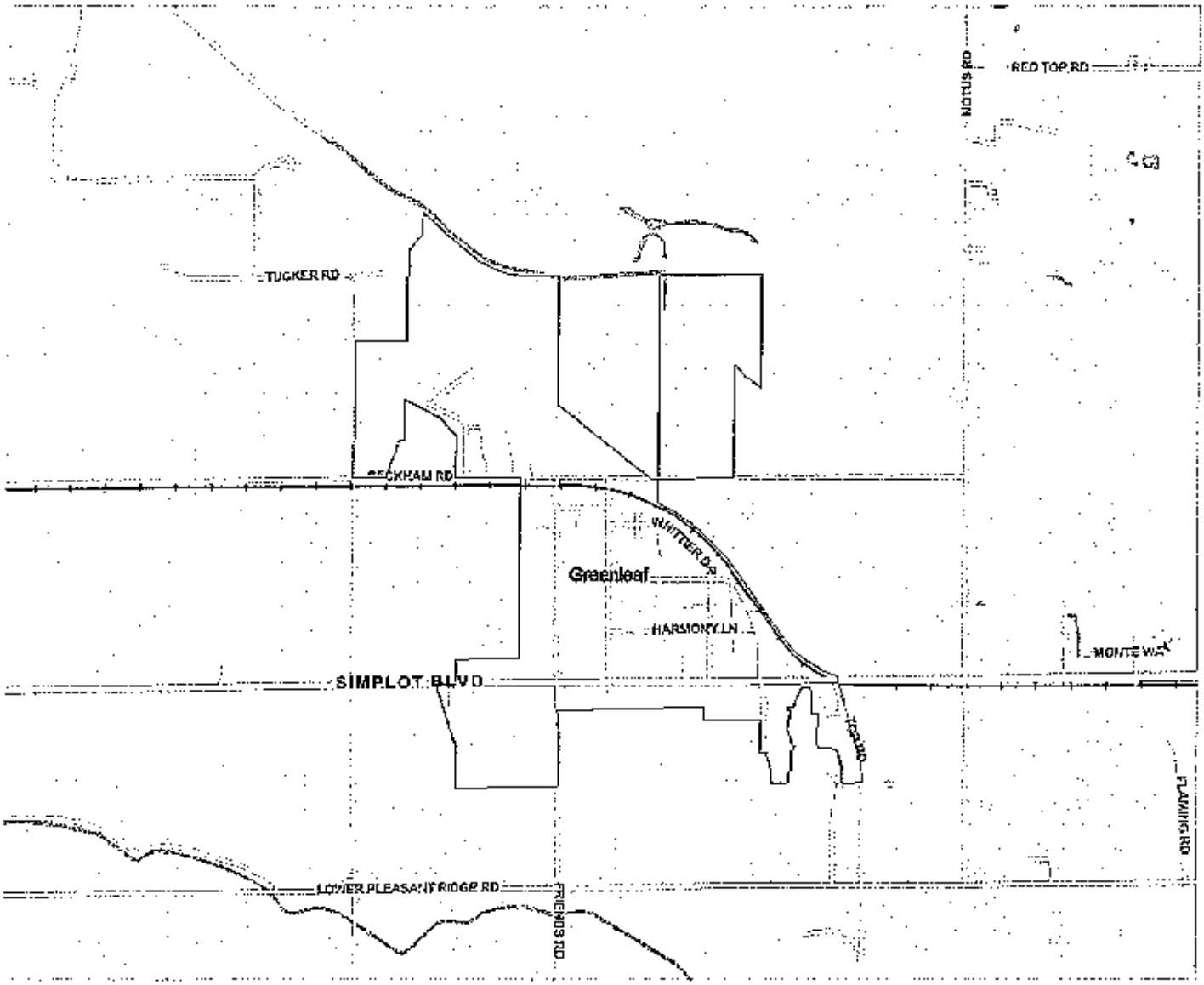

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Income and Poverty

Income and Earnings

$56,289 ± $11,690
Median Household Income in Greenleaf city, Idaho

$74,942 ± $1,126
Median Household Income in Idaho

S1901 | 2022 American Community Survey 5-Year Estimates

Median Income by Types of Families
in Greenleaf city, Idaho

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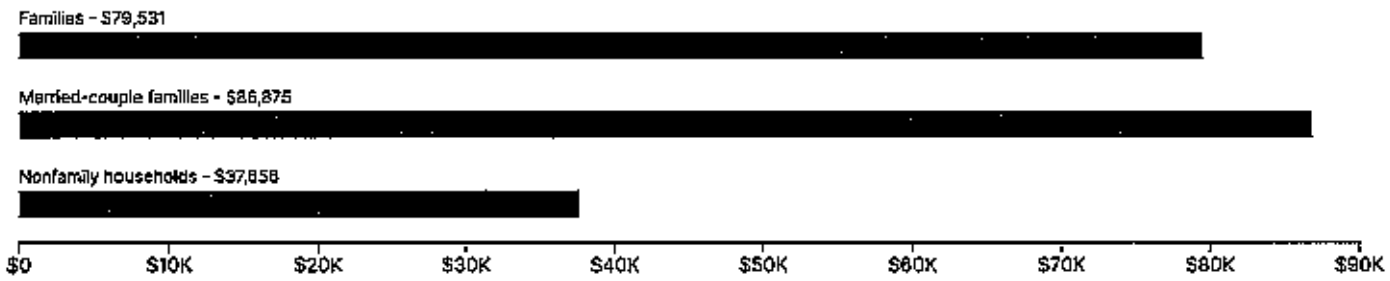

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S1901 | 2022 American Community Survey 5-Year Estimates

Poverty

10.1% ± 5.6%
Poverty, All people in Greenleaf city, Idaho

10.1% ± 0.7%
Poverty, All people in Idaho

S1701 | 2022 American Community Survey 5-Year Estimates

Poverty by Age
in Greenleaf city, Idaho

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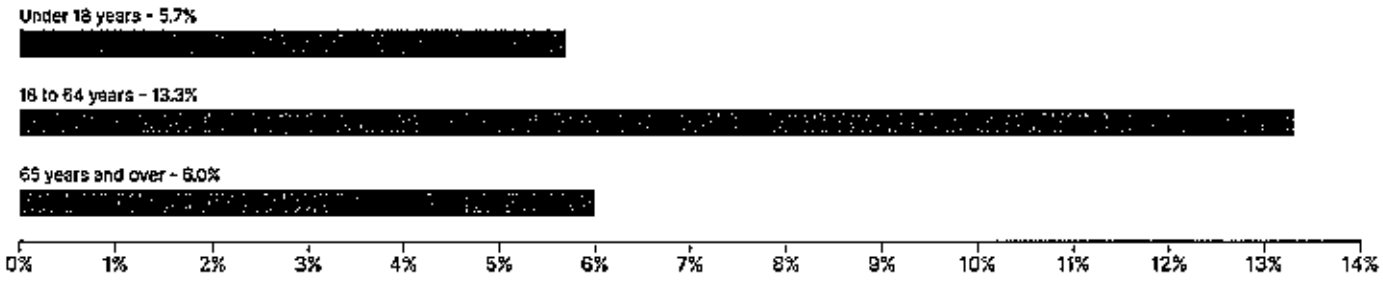

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S1701 | 2022 American Community Survey 5-Year Estimates

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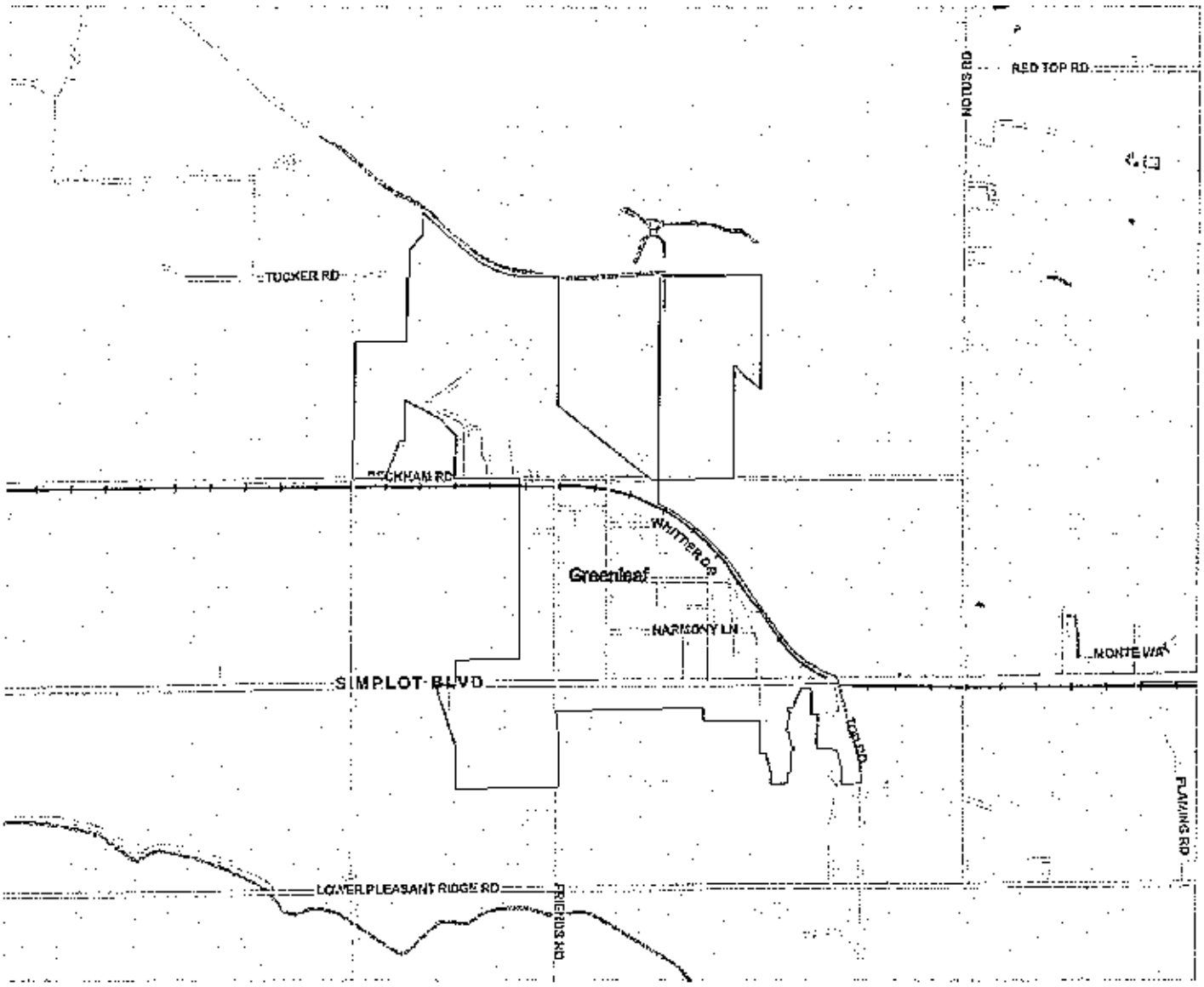

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Education

Educational Attainment

24.1% ± 6.9%
Bachelor's Degree or Higher in Greenleaf city, Idaho

32.1% ± 0.6%
Bachelor's Degree or Higher in Idaho

S1501 | 2022 American Community Survey 5-Year Estimates

Education Attainment (Population 25 Years and Older)
in Greenleaf city, Idaho

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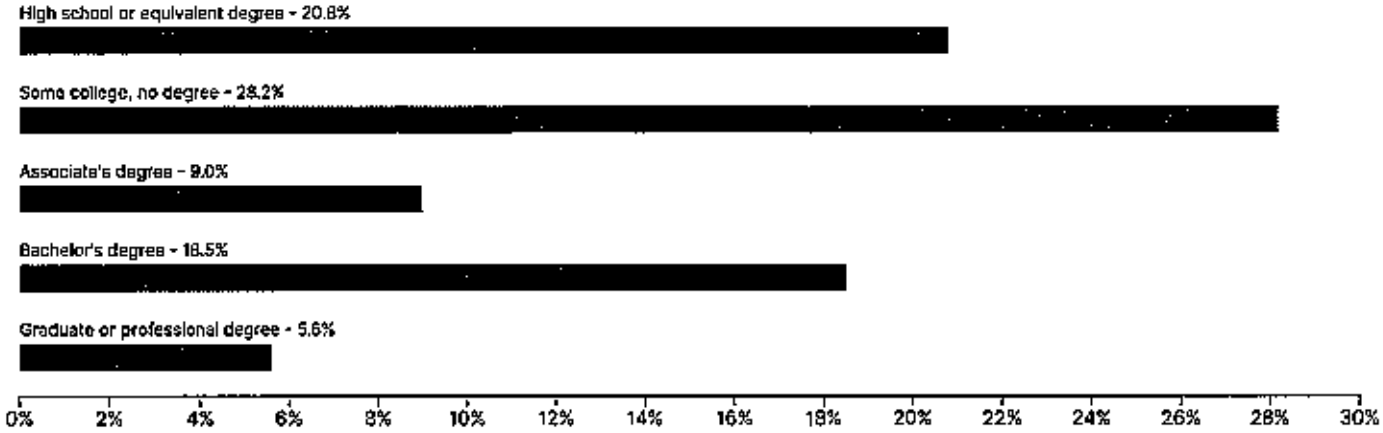

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S1501 | 2022 American Community Survey 5-Year Estimates

School Enrollment

76.8% ± 16.1%
School Enrolled Population Enrolled in Kindergarten to 12th Grade in Greenleaf city, Idaho

71.3% ± 0.9%
School Enrolled Population Enrolled in Kindergarten to 12th Grade in Idaho

S1401 | 2022 American Community Survey 5-Year Estimates

School Enrollment (Population 3 Years and Over Enrolled in School)
in Greenleaf city, Idaho

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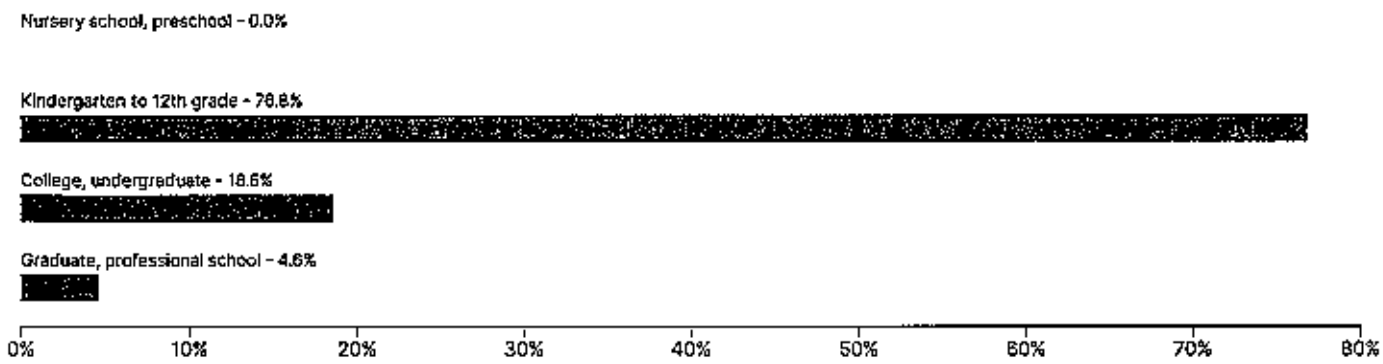

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S1401 | 2022 American Community Survey 5-Year Estimates

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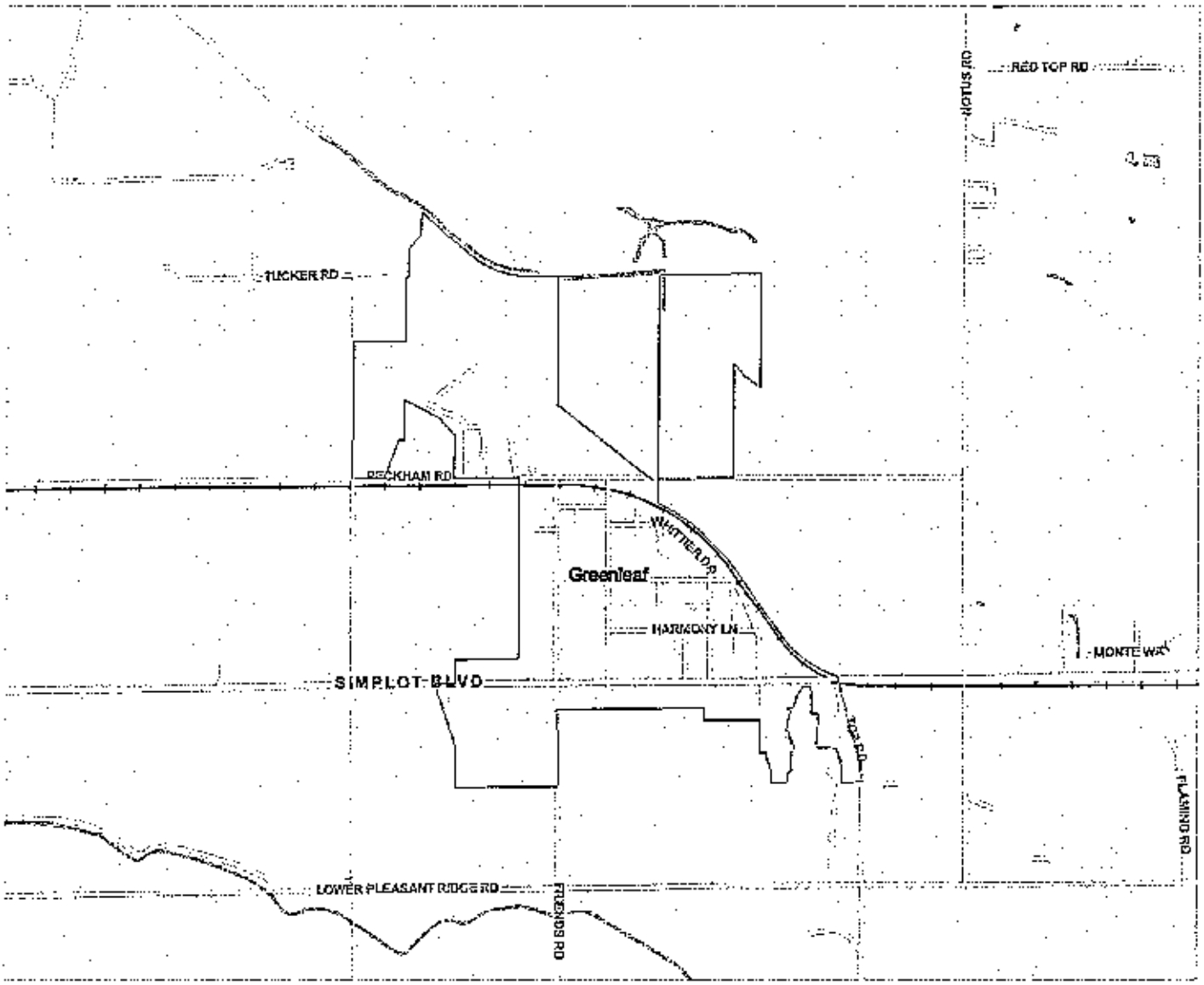

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Employment

Class of Worker

8.4% ± 5.3%
Local, state, and federal government workers in Greenleaf city, Idaho

14.8% ± 0.7%
Local, state, and federal government workers in Idaho

S2406 | *2022 American Community Survey 5-Year Estimates*

Class of Worker
In Greenleaf city, Idaho

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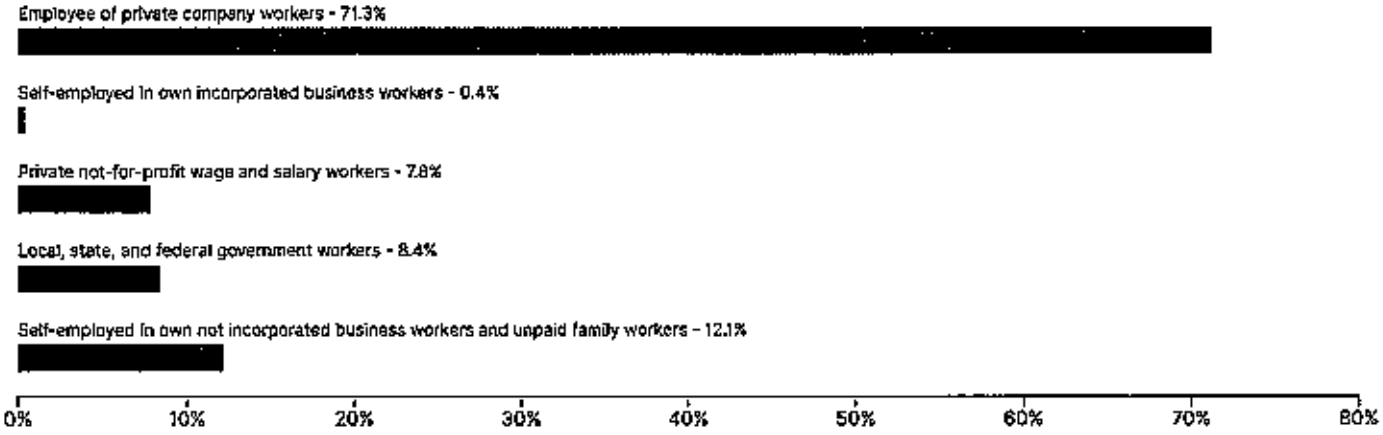

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S2406 | 2022 American Community Survey 5-Year Estimates

Commuting

26.8 ± 4.9
Average travel time to work (in minutes) in Greenleaf city, Idaho

21.9 ± 0.4
Average travel time to work (in minutes) in Idaho

S0801 | 2022 American Community Survey 5-Year Estimates

Means of Transportation to Work (Workers 16 Years and Over)
in Greenleaf city, Idaho

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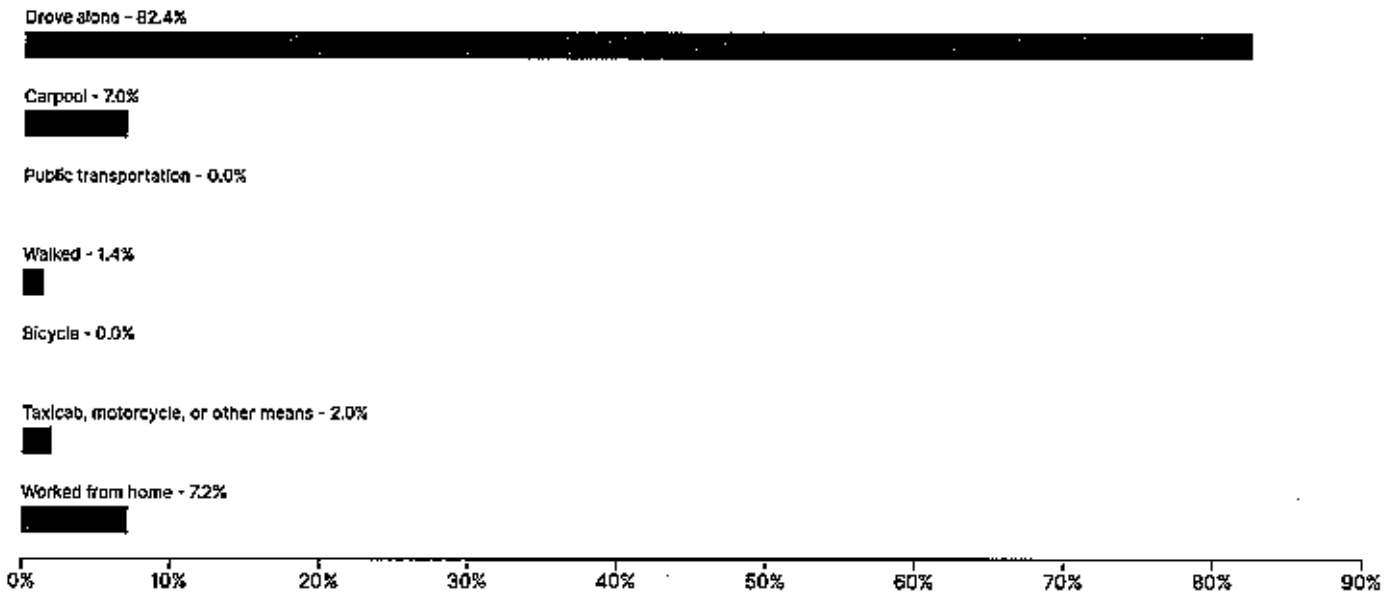

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S0801 | 2022 American Community Survey 5-Year Estimates

Employment and Labor Force Status

59.9% ± 7.8%
Employment Rate in Greenleaf city, Idaho

60.1% ± 0.6%
Employment Rate in Idaho

DP03 | 2022 American Community Survey 5-Year Estimates

Industry

Industry for the Civilian Employed Population 16 Years and Over
In Greenleaf city, Idaho

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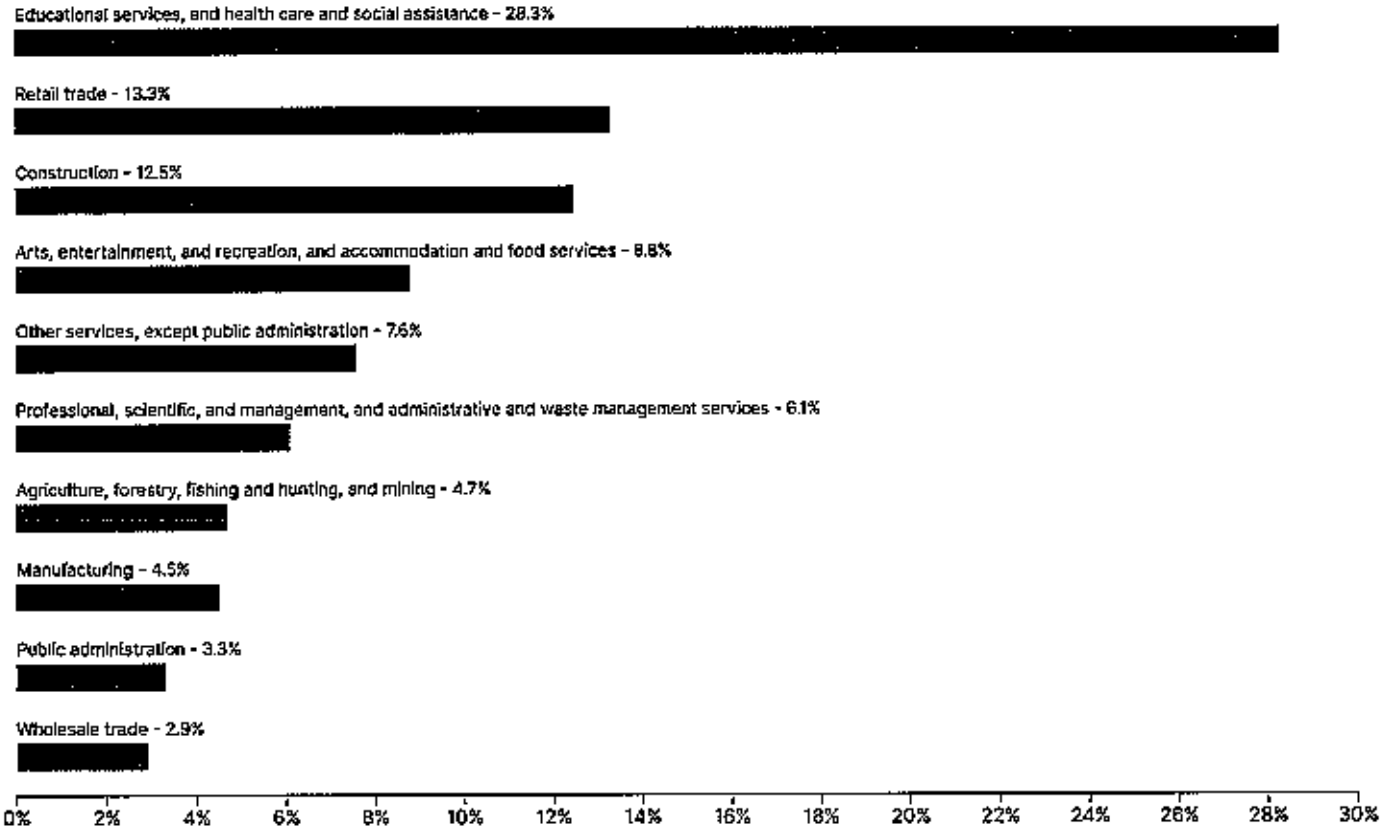

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DP03 | 2022 American Community Survey 5-Year Estimates

Occupation

Occupation for the Civilian Employed Population 16 Years and Over
In Greenleaf city, Idaho

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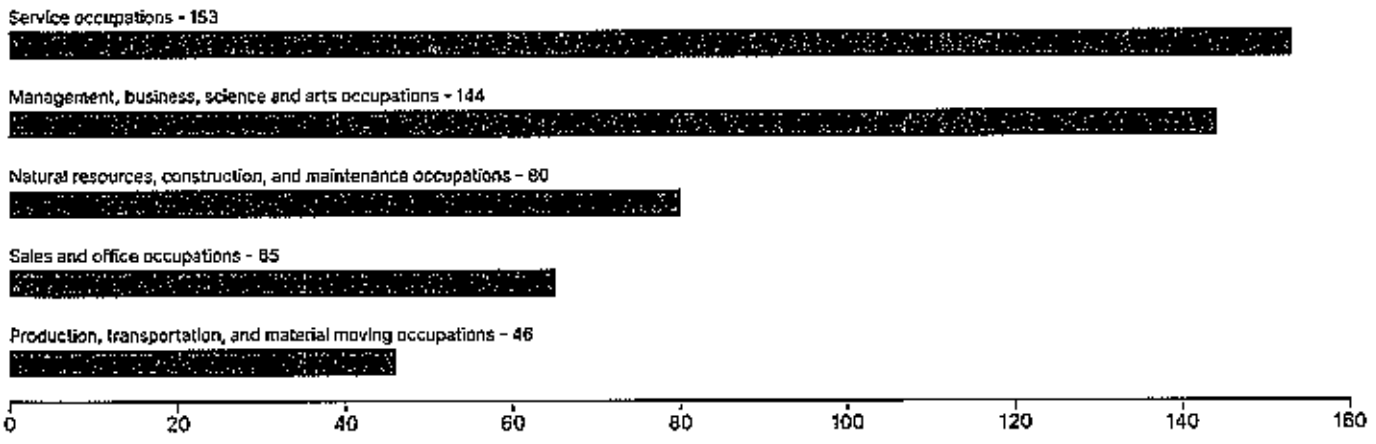

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S2401 | 2022 American Community Survey 5-Year Estimates

Work Experience

37.9 ± 4.6
Mean Usual Hours Worked for Workers in Greenleaf city, Idaho

37.8 ± 0.2
Mean Usual Hours Worked for Workers in Idaho

S2303 | 2022 American Community Survey 5-Year Estimates

Mean Usual Hours Worked for Workers by Sex
In Greenleaf city, Idaho

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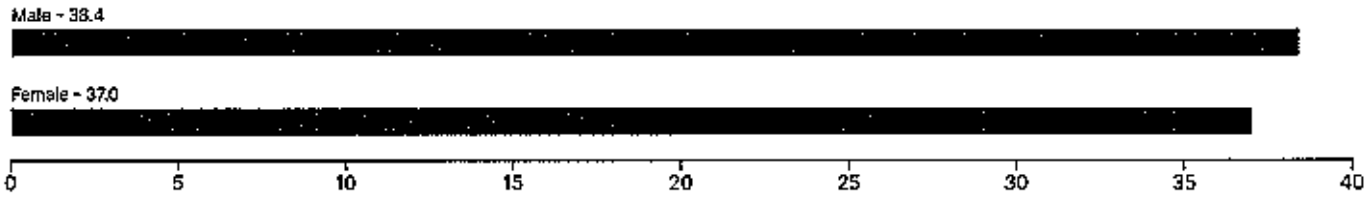

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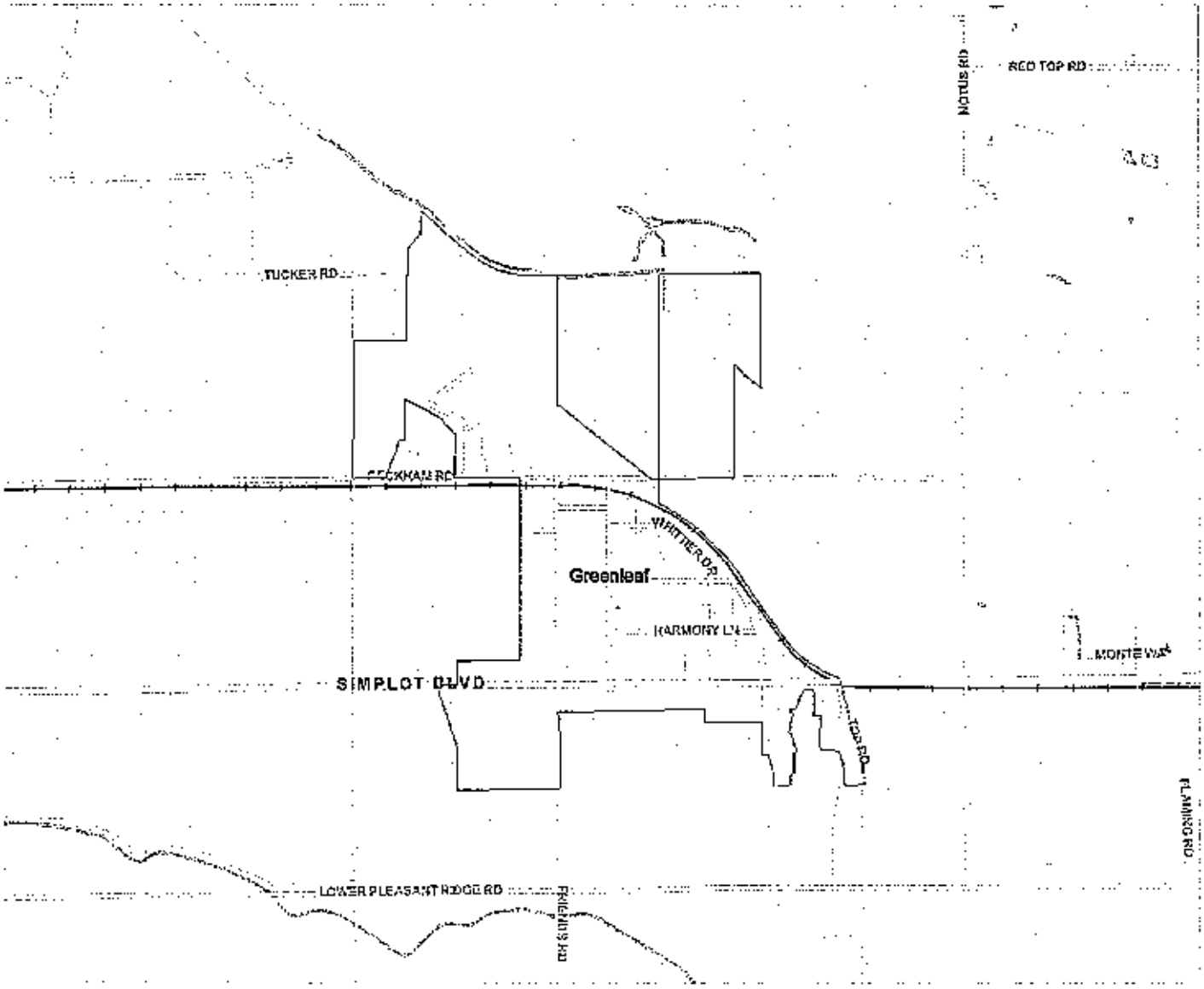
S2303 | 2022 American Community Survey 5-Year Estimates

Accessibility | Information Quality | FOIA | Data Protection and Privacy Policy | U.S. Department of Commerce | Release Notes



Source: undefined |

Housing

Financial Characteristics

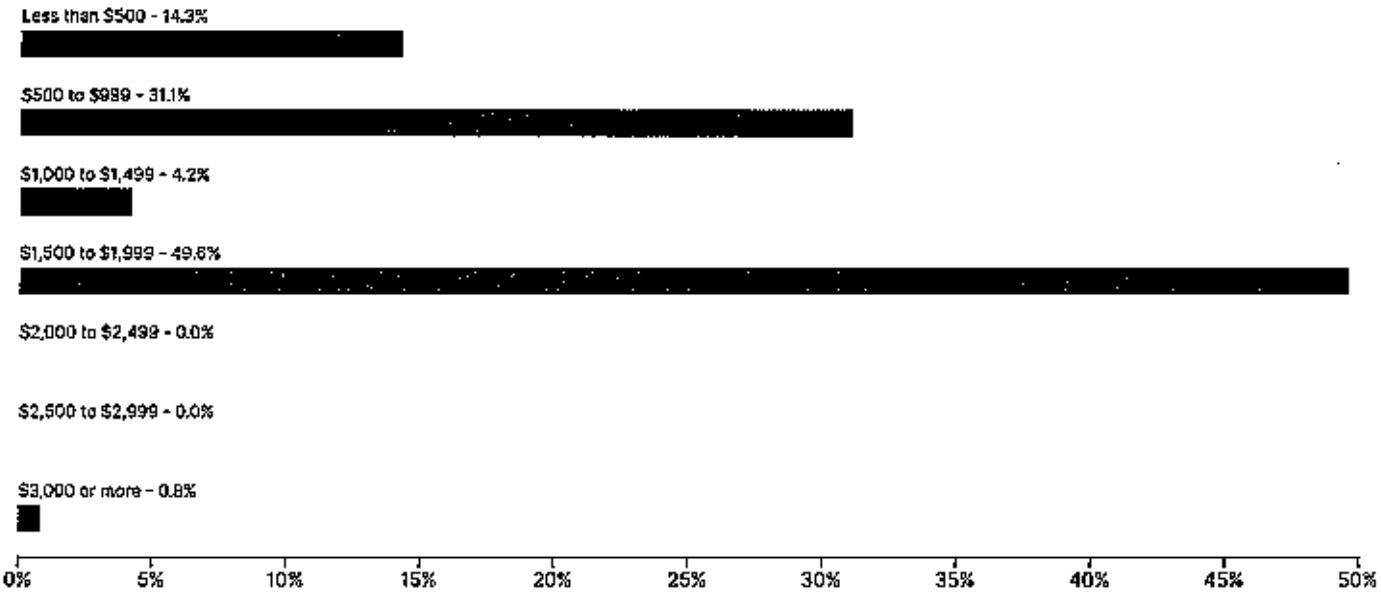
$1,504 ± $1,312
Median Gross Rent in Greenleaf city, Idaho

$1,256 ± $28
Median Gross Rent in Idaho

DP04 | 2022 American Community Survey 5-Year Estimates

Occupied Units Paying Rent
In Greenleaf city, Idaho

Share / Embed



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DP04 | 2022 American Community Survey 5-Year Estimates

Homeownership Rate

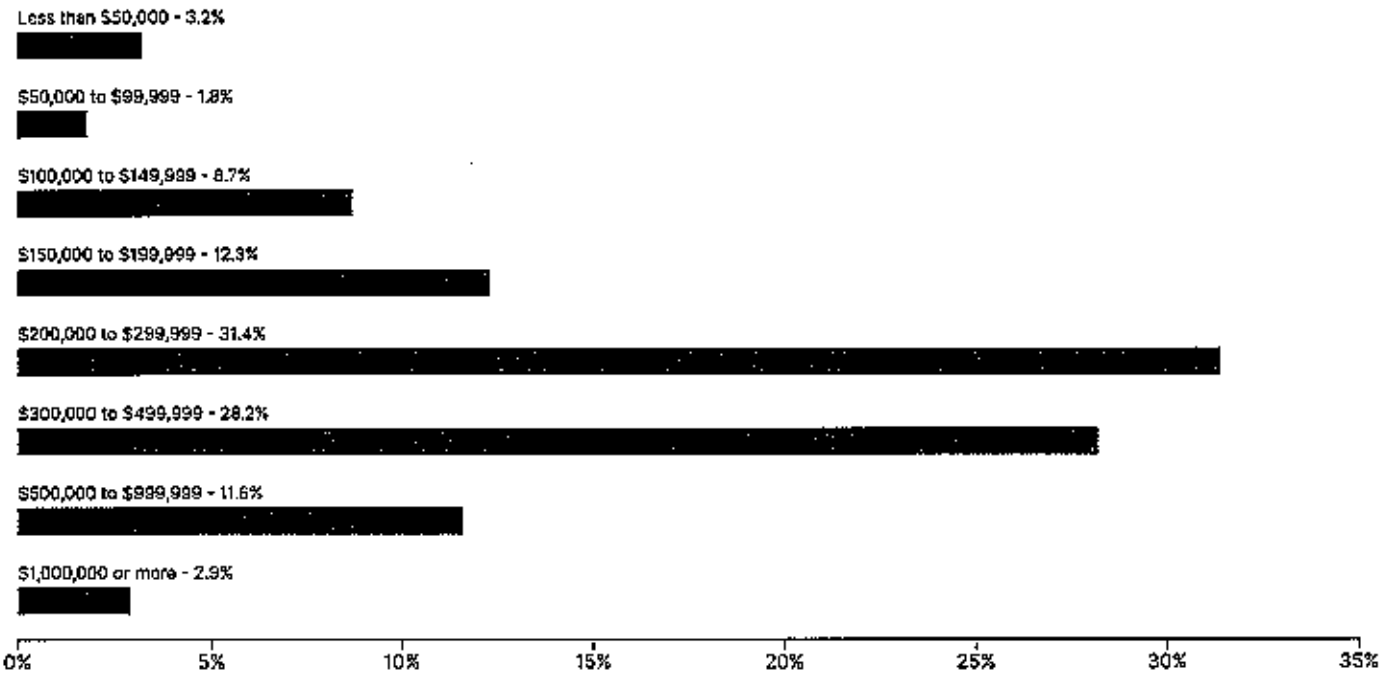
68.1% ± 15.0%
Homeownership Rate in Greenleaf city, Idaho

72.5% ± 0.8%
Homeownership Rate in Idaho

DP04 | 2022 American Community Survey 5-Year Estimates

Housing Value
in Greenleaf city, Idaho

Share / Embed



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DP04 | 2022 American Community Survey 5-Year Estimates

Housing Units

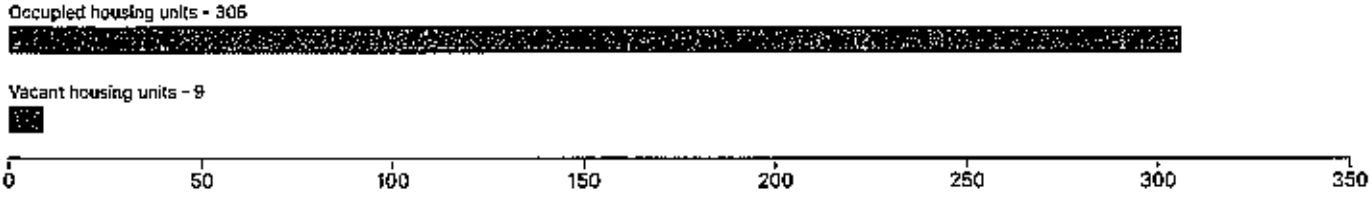
315
Total Housing Units in Greenleaf city, Idaho

751,859
Total Housing Units in Idaho

H1 | 2020 Decennial Census

Housing Occupancy
in Greenleaf city, Idaho

Share / Embed



H1 | 2020 Decennial Census

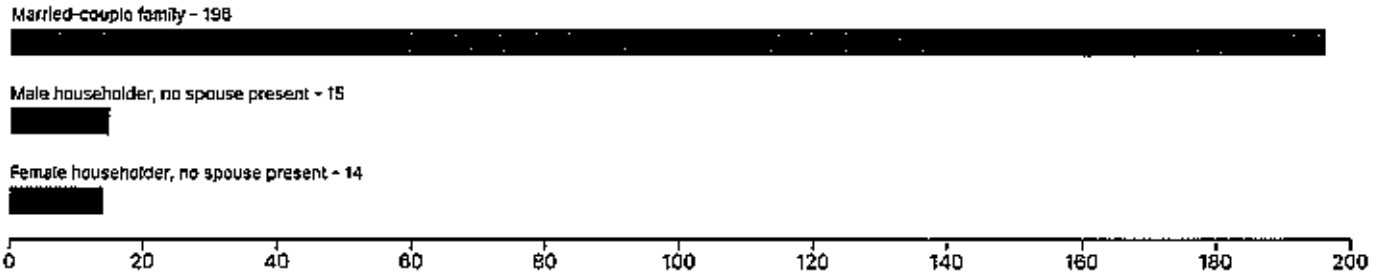
Occupancy Characteristics

306
Occupied Housing Units in Greenleaf city, Idaho

H1 | 2020 Decennial Census

Owner Occupied Housing Units by Types of Households
in Greenleaf city, Idaho

Share / Embed



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S2501 | 2022 American Community Survey 5-Year Estimates

Owner/Renter (Householder) Characteristics

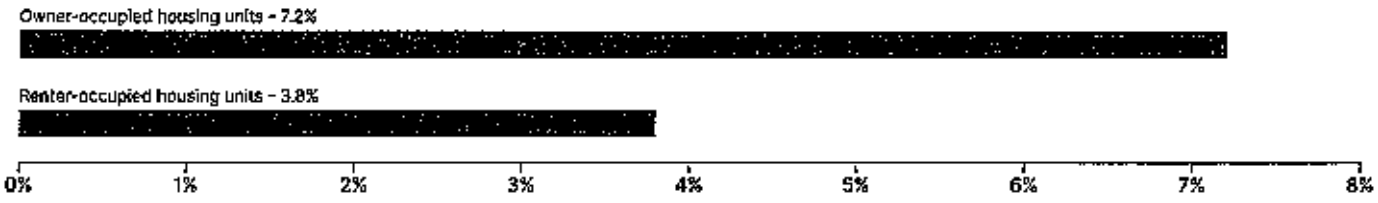
6.1% ± 6.1%
Moved 2021 or Later Into Occupied Housing Unit in Greenleaf city, Idaho

27.3% ± 1.0%
Moved 2021 or Later Into Occupied Housing Unit in Idaho

S2502 | 2022 American Community Survey 5-Year Estimates

Moved 2021 or Later Into Occupied Housing Unit by Type of Units
in Greenleaf city, Idaho

Share / Embed



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S2502 | 2022 American Community Survey 5-Year Estimates

Physical Characteristics

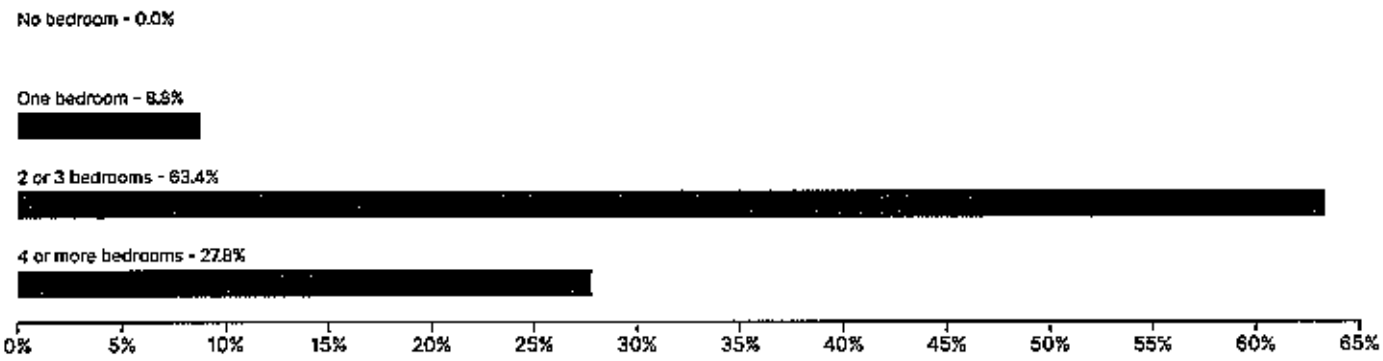
27.8% ± 15.0%
Occupied Housing Units with Four or More Bedrooms in Greenleaf city, Idaho

31.1% ± 0.9%
Occupied Housing Units with Four or More Bedrooms in Idaho

S2504 | 2022 American Community Survey 5-Year Estimates

Bedrooms in Occupied Housing Units
in Greenleaf city, Idaho

Share / Embed



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S2504 | *2022 American Community Survey 5-Year Estimates*

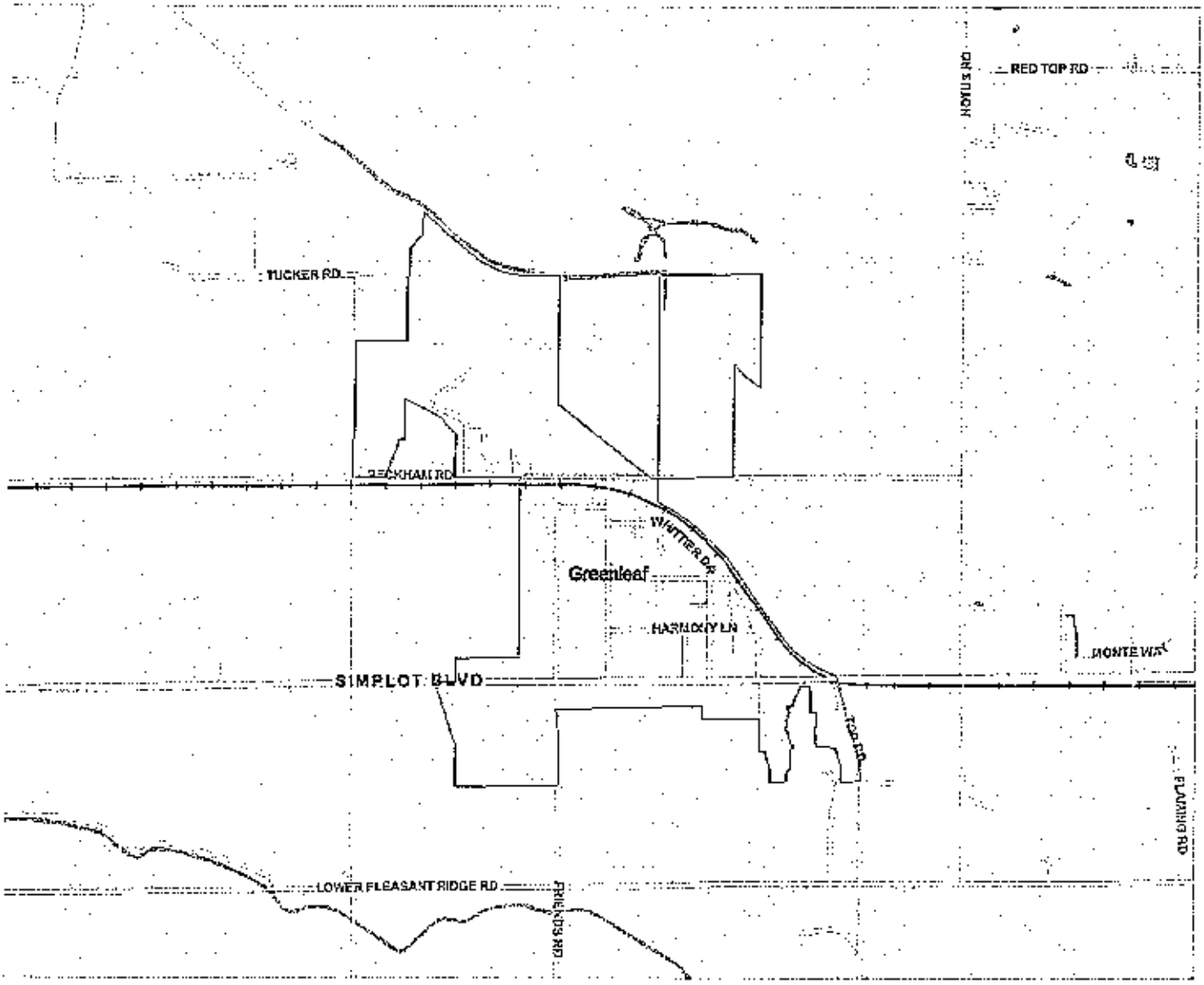
Vacancy

9

Vacant Housing Units in Greenleaf city, Idaho

H1 | *2020 Decennial Census*

Accessibility | Information Quality | FOIA | Data Protection and Privacy Policy | U.S. Department of Commerce | Release Notes



Source: undefined |

Health

Disability

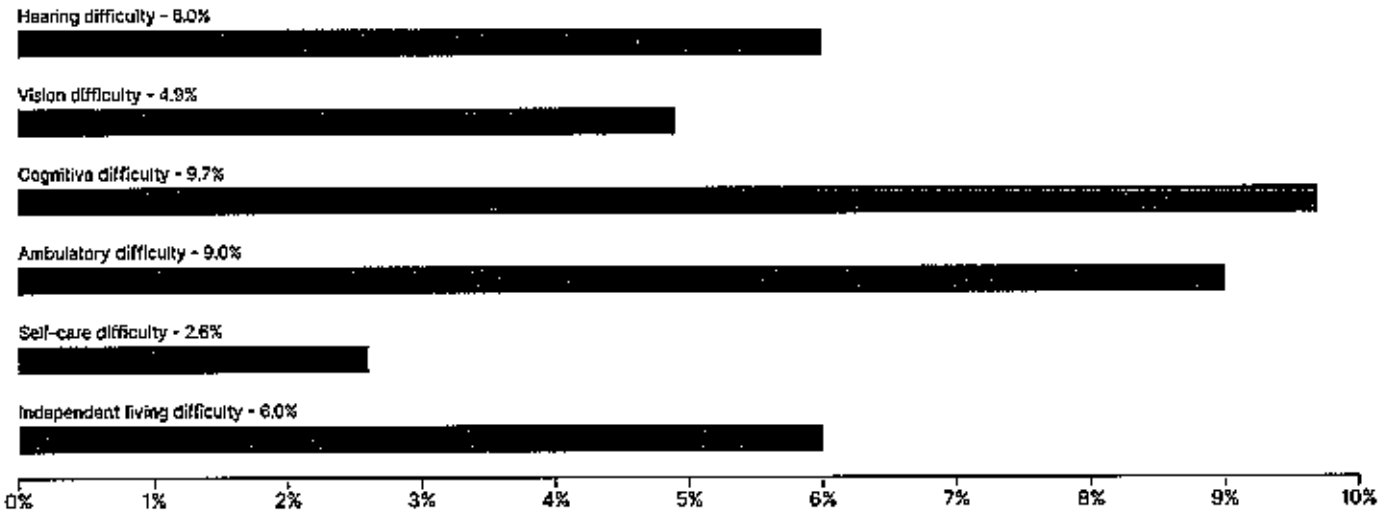
18.4% ± 6.3%
Disabled Population in Greenleaf city, Idaho

14.2% ± 0.4%
Disabled Population in Idaho

S1810 | *2022 American Community Survey 5-Year Estimates*

Types of Disabilities
in Greenleaf city, Idaho

Share / Embed



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S1810 | 2022 American Community Survey 5-Year Estimates

Fertility

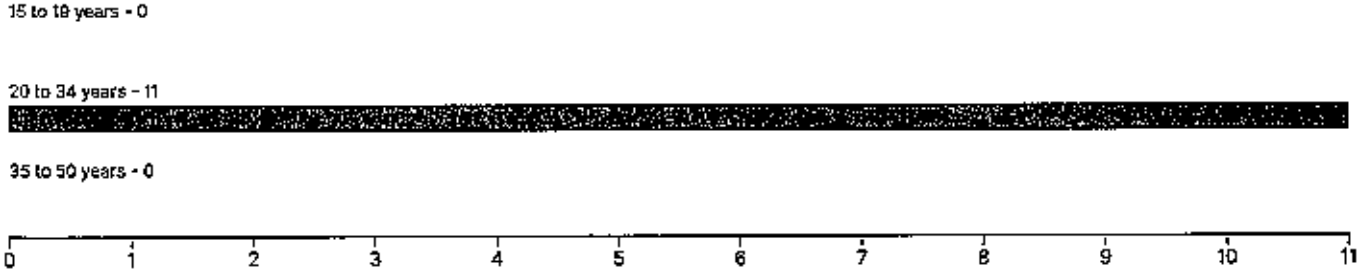
154 ± 53
Women 15 to 50 years old in Greenleaf city, Idaho

456,919 ± 2,382
Women 15 to 50 years old in Idaho

S1301 | 2022 American Community Survey 5-Year Estimates

Women with Births in the Past 12 Months
in Greenleaf city, Idaho

Share / Embed



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S1301 | 2022 American Community Survey 5-Year Estimates

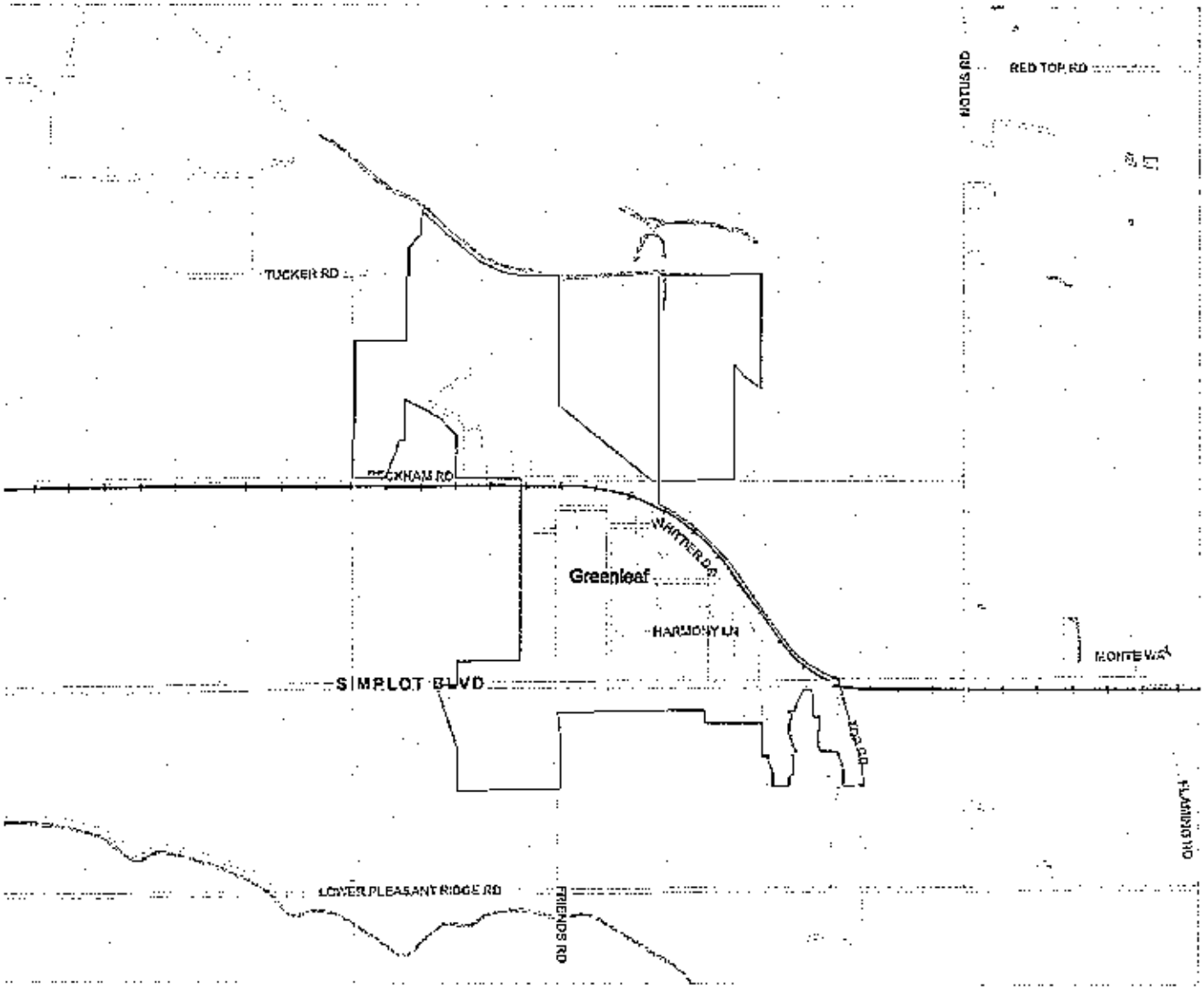
Health Insurance

7.7% ± 4.7%
Without Health Care Coverage in Greenleaf city, Idaho

8.9% ± 0.5%
Without Health Care Coverage in Idaho

S2701 | 2022 American Community Survey 5-Year Estimates

Accessibility | Information Quality | FOIA | Data Protection and Privacy Policy | U.S. Department of Commerce | Release Notes



Source: undefined |

Families and Living Arrangements

Children

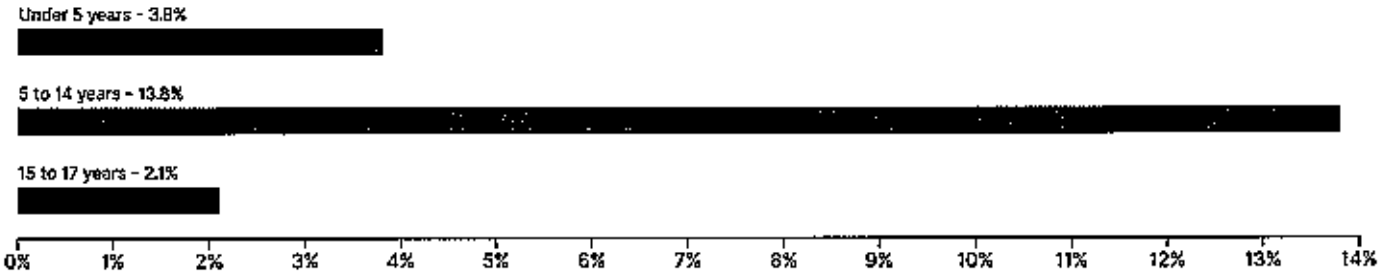
19.7% ± 9.4%
Under 18 years old in Greenleaf city, Idaho

23.7% ± 0.1%
Under 18 years old in Idaho

S0101 | 2022 American Community Survey 5-Year Estimates

Children Under 18 by Age Range
in Greenleaf city, Idaho

Share / Embed



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S0101 | 2022 American Community Survey 5-Year Estimates

Families and Household Characteristics

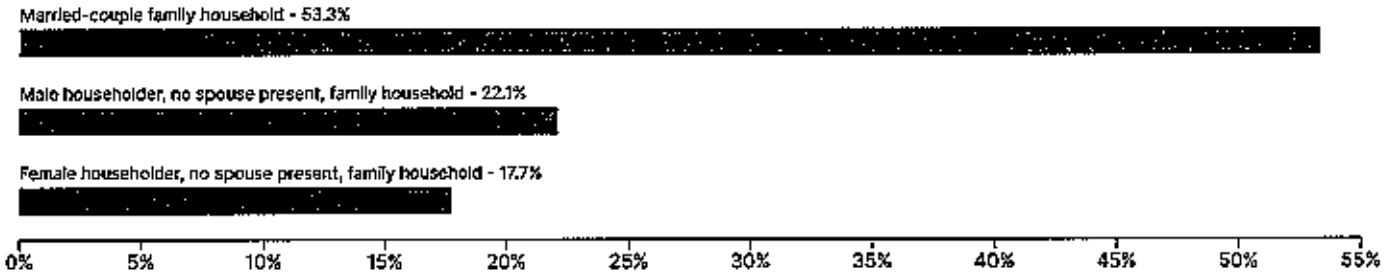
2.80 ± 0.34
Average Family Size in Greenleaf city, Idaho

3.11 ± 0.03
Average Family Size in Idaho

DP02 | 2022 American Community Survey 5-Year Estimates

Total Households by Type of Households
in Greenleaf city, Idaho

Share / Embed



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DP02 | 2022 American Community Survey 5-Year Estimates

Marital Status and Marital History

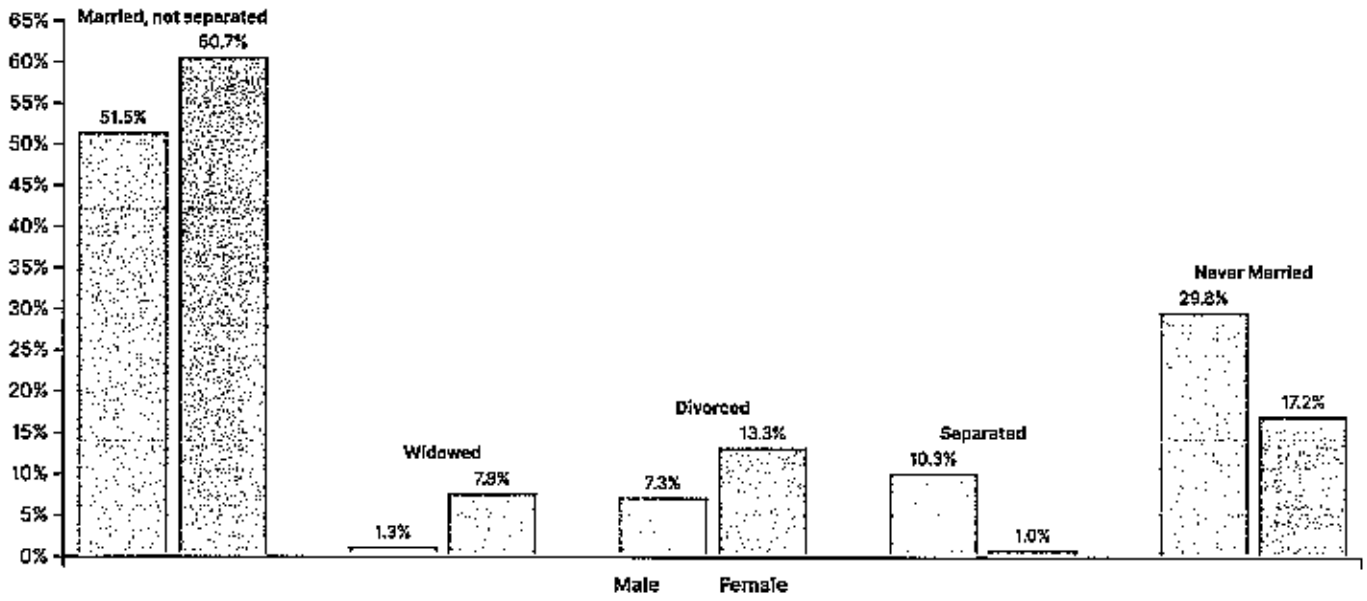
25.2% ± 8.1%
Never Married in Greenleaf city, Idaho

28.4% ± 0.5%
Never Married in Idaho

S1201 | 2022 American Community Survey 5-Year Estimates

Marital Status by Sex
in Greenleaf city, Idaho

Share / Embed



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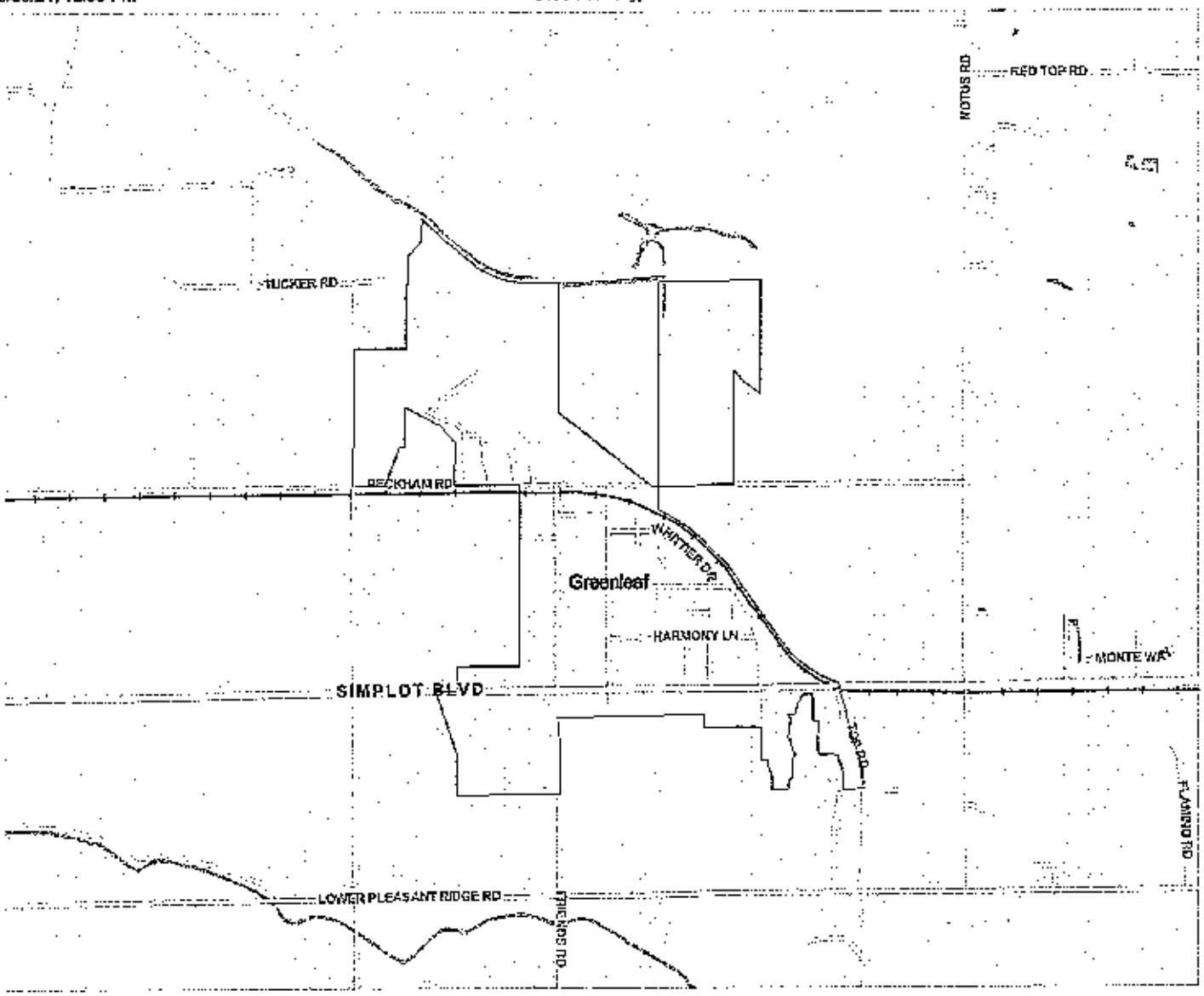
S1201 | 2021 ACS 5-Year Estimates Subject Tables



Source: undefined |

Race and Ethnicity

American Indian and Alaska Native

16
American Indian and Alaska Native alone in Greenleaf city, Idaho

25,621
American Indian and Alaska Native alone in Idaho

PB | 2020 Decennial Census

Asian

3
Asian alone in Greenleaf city, Idaho

26,836
Asian alone in Idaho

P8 | 2020 Decennial Census

Black or African American

3
Black or African American alone in Greenleaf city, Idaho

15,726
Black or African American alone in Idaho

P8 | 2020 Decennial Census

Hispanic or Latino

201
Hispanic or Latino (of any race) in Greenleaf city, Idaho

239,407
Hispanic or Latino (of any race) in Idaho

P9 | 2020 Decennial Census

Native Hawaiian and Other Pacific Islander

4
Native Hawaiian and Other Pacific Islander alone in Greenleaf city, Idaho

3,726
Native Hawaiian and Other Pacific Islander alone in Idaho

P8 | 2020 Decennial Census

Not Hispanic or Latino

564
White alone, not Hispanic or Latino in Greenleaf city, Idaho

1,450,523
White alone, not Hispanic or Latino in Idaho

P9 | 2020 Decennial Census

Some Other Race

102
Some Other Race alone in Greenleaf city, Idaho

103,632
Some Other Race alone in Idaho

P8 | 2020 Decennial Census

Two or More Races

83
Two or More Races in Greenleaf city, Idaho

153,205
Two or More Races in Idaho

P8 | 2020 Decennial Census

White

601
White alone in Greenleaf city, Idaho

1,510,360
White alone in Idaho

P8 | 2020 Decennial Census

Accessibility | Information Quality | FOIA | Data Protection and Privacy Policy | U.S. Department of Commerce | Release Notes

	Census 1940	Census 1950	Census 1960	Census 1970	Census 1980	Census 1990	Census 2000	Census 2010	Census 2020
Greenleaf					663	648	862	846	812

SOURCE: US Bureau of Census
Provided by: Idaho Deparment of Labor, Communications & Research
https://lmi.idaho.gov/census/ accessed on 2/27/2026
May 2020

Appendix D: Farmland Class Near Greenleaf

Farmland Class Near Greenleaf Idaho

9/30/2024

USA SSURGO - Farmland Class

Prime Farmland

Farmland of Statewide Importance

Not Prime Farmland

World Hillshade

1:35,683

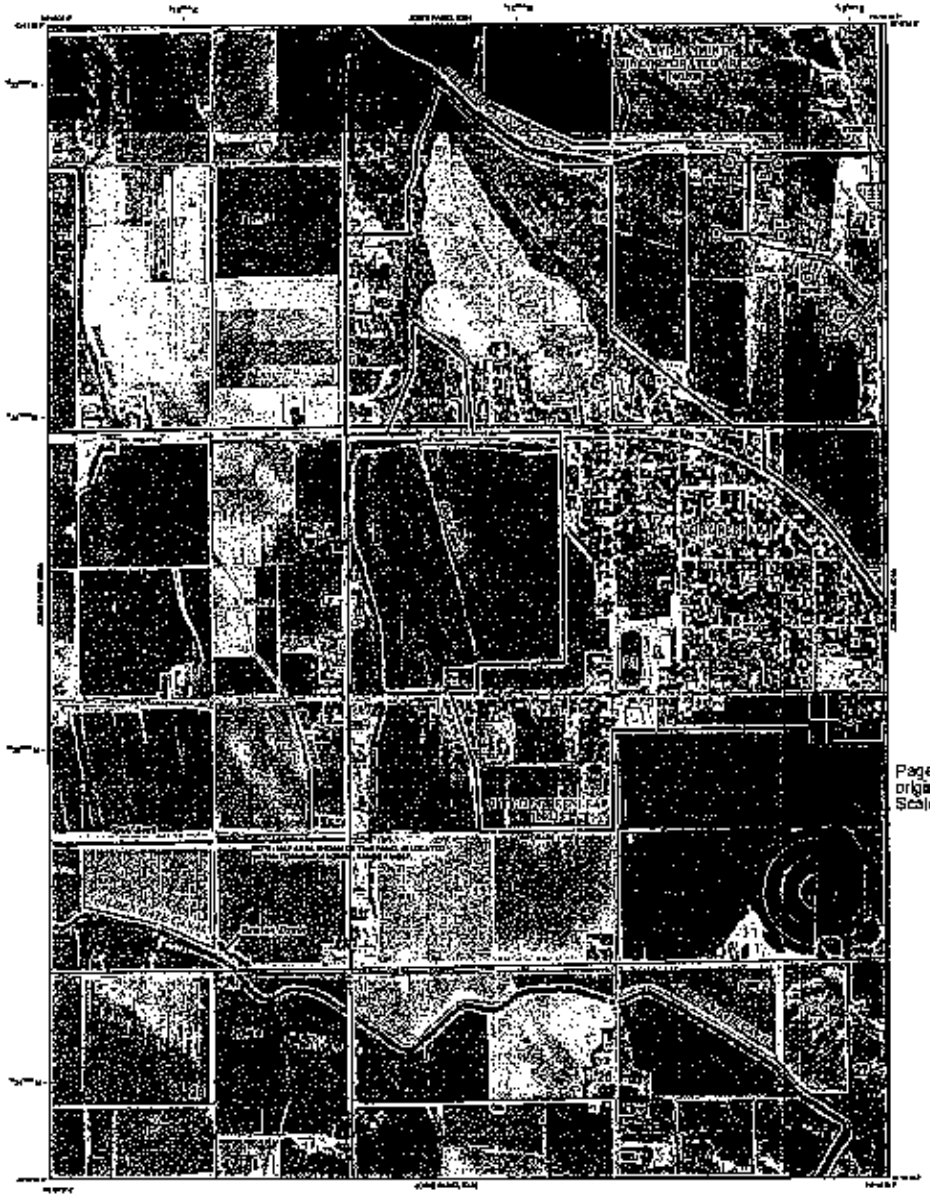
0 0.2 0.4 0.8 mi

0 0.35 0.7 1.4 km

Esri, NASA, NGA, USGS, FEMA, Source: USDA NRCS, Esri, CCSO GIS, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin,

Appendix E: Effective Flood Insurance Rate Maps

NOTES TO USERS



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LEGEND

NATIONAL FLOOD INSURANCE PROGRAM

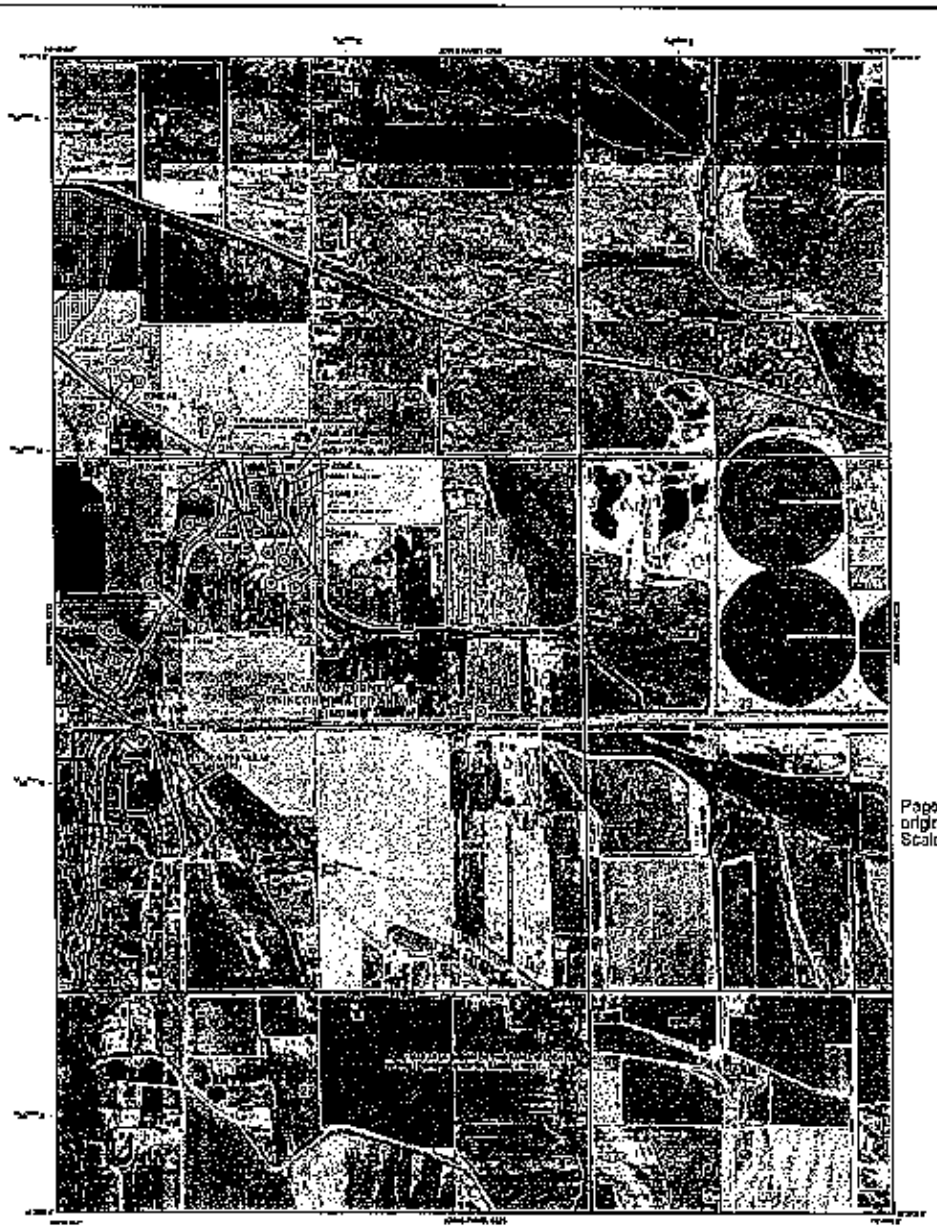
FIRM

FLOOD INSURANCE RATE MAP

CANYON COUNTY, IDAHO AND INCORPORATED AREAS

Federal Emergency Management Agency

NOTES TO USERS



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LEGEND

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150F

FIRM
FLOOD INSURANCE RATE MAP
CANYON COUNTY,
IDAHO
AND INCORPORATED AREAS

PANEL 150 OF 375
(See Map Index for firm panel layout)
Contains:
COMMUNITY | NUMBER | PANEL | SUFFIX
CANYON COUNTY | 160 | 150 | F

MAP NUMBER
16027C0150F
EFFECTIVE DATE
MARCH 19, 2013

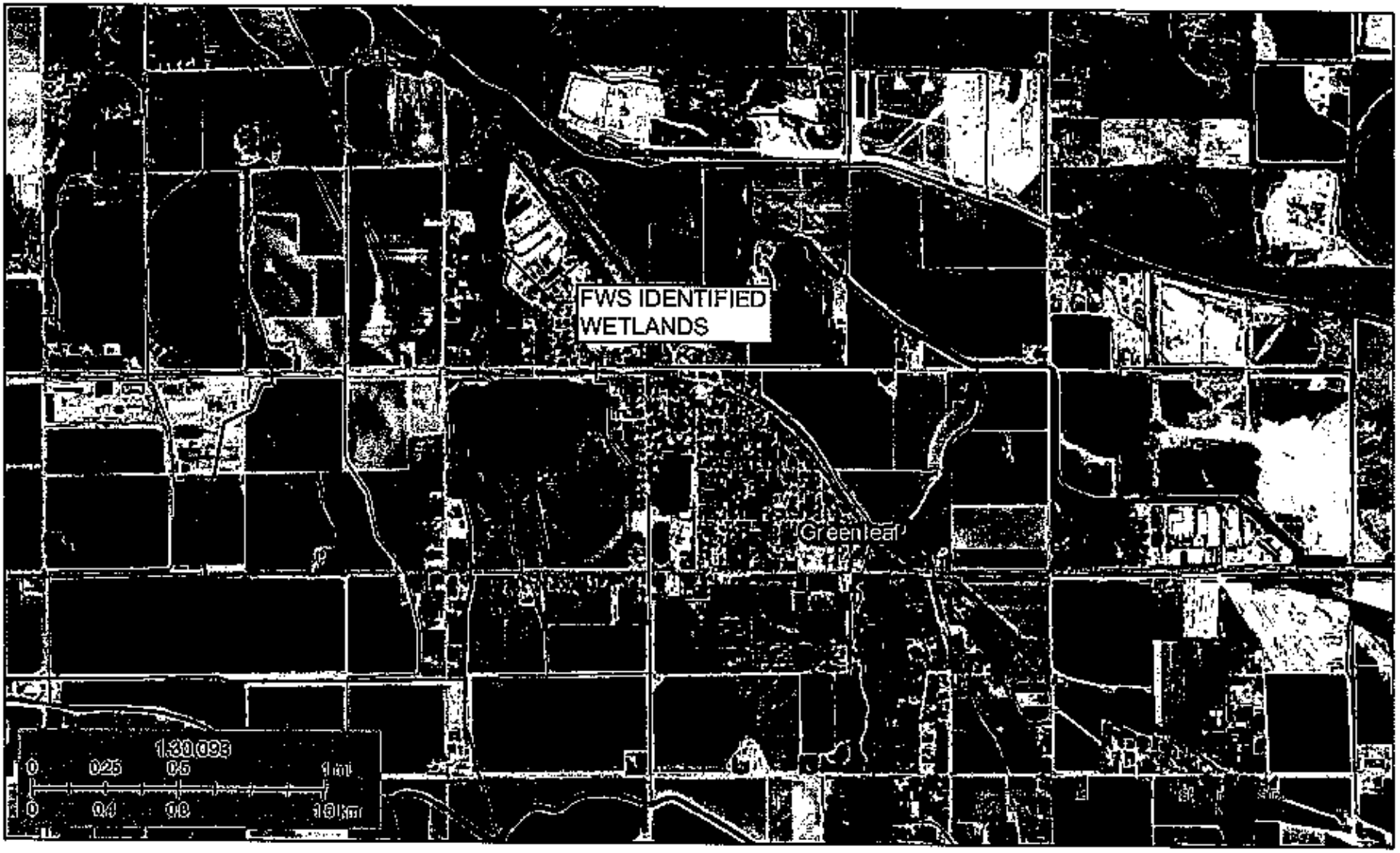
Federal Emergency Management Agency

Appendix F: Greenleaf Surface Waters and Wetlands

U.S. Fish and Wildlife Service

National Wetlands Inventory

Greenleaf Surface Waters and Wetlands



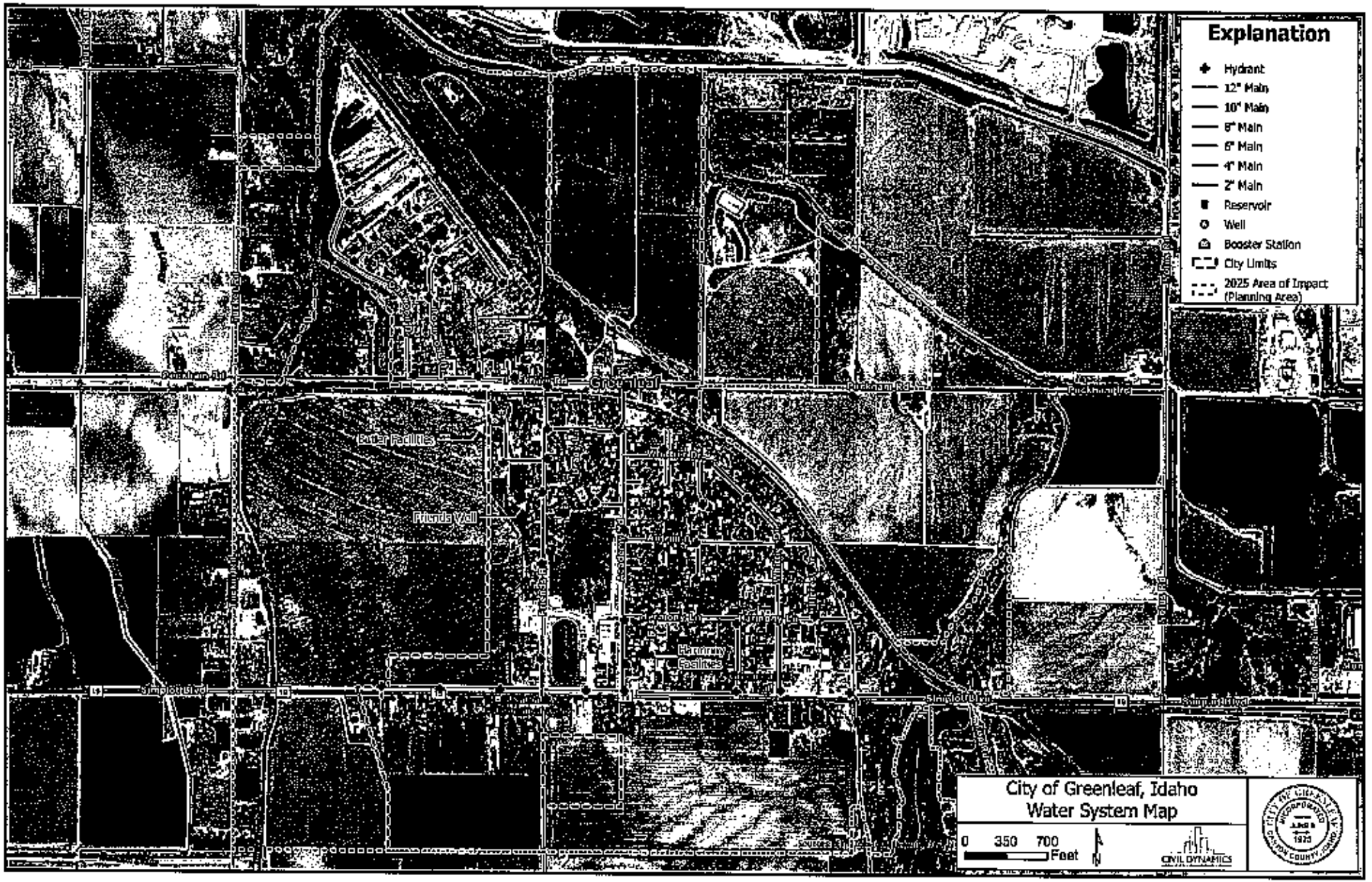
October 3, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Appendix G: Water System Map


Explanation
Hydrant
12" Main
10" Main
8" Main
6" Main
4" Main
2" Main
Reservoir
Well
Booster Station
City Limits
2025 Area of Impact (Planning Area)
Greenleaf
Boise Facilities
Friends Wall
Harmony Facilities
Simplot Blvd
City of Greenleaf, Idaho
Water System Map
0 350 700
Feet
CIVIL DYNAMICS

Appendix H: Water Rights

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Adjudication Recommended Right Report

6/5/2012

WATER RIGHT NO. 63-4117

Owner Type	Name and Address
Current Owner	CITY OF GREENLEAF C/O CITY CLERK 20523 N WHITTIER DR GREENLEAF, ID 83626 (208)454-0552
Attorney	MOORE SMITH BUXTON & TURCKE CHTD ATTN CARL J WITHROE 950 W BANNOCK, STE 520 BOISE, ID 83702 (208)331-1800
Original Owner	GREENLEAF WATER ASSN INC C/O KEITH MORSE PO BOX 252 GREENLEAF, ID 83626 (208)454-8023

Priority Date: 01/01/1916
Basis: Beneficial Use
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	0.1 CFS	
Total Diversion			0.1 CFS	

Location of Point(s) of Diversion:

GROUND WATER|NWNE|Sec. 21|Township 04N|Range 04W|CANYON County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	C18	This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the Court at a point in time no later than the entry of a final unified decree. Section 42-1412(6), Idaho Code.
2.	124	Place of use is within the service area of the City of Greenleaf municipal water supply system as provided for under Idaho Law.

Dates:

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number:
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

6/5/2012

WATER RIGHT NO. 63-7094

Owner Type	Name and Address
Current Owner	CITY OF GREENLEAF C/O CITY CLERK 20523 N WHITTIER DR GREENLEAF, ID 83626 (208)454-0552
Attorney	MOORE SMITH BUXTON & TURCKE CHTD ATTN CARL J WITHROE 950 W BANNOCK, STE 520 BOISE, ID 83702 (208)331-1800
Original Owner	GREENLEAF WATER ASSN INC C/O KEITH MORSE PO BOX 252 GREENLEAF, ID 83626 (208)454-8023

Priority Date: 04/22/1968
Basis: Decreed
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	0.21 CFS	
Total Diversion			0.21 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWNE	Sec. 21	Township 04N	Range 04W	CANYON County
GROUND WATER	SESWNE	Sec. 21	Township 04N	Range 04W	CANYON County
GROUND WATER	NESENE	Sec. 21	Township 04N	Range 04W	CANYON County
GROUND WATER	SENENW	Sec. 21	Township 04N	Range 04W	CANYON County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	C18	This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the Court at a point in time no later than the entry of a final unified decree. Section 42-1412(6), Idaho Code.
2.	124	Place of use is within the service area of the City of Greenleaf municipal water supply system as provided for under Idaho Law.

Dates:
Licensed Date:
Decreed Date: 02/06/2009
Permit Proof Due Date:
Permit Proof Made Date:
Permit Approved Date:
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number:
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:

DLE Act Number:
Cary Act Number:
Mitigation Plan: False
Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

6/5/2012

WATER RIGHT NO. 63-31787

Owner Type	Name and Address
Current Owner	CITY OF GREENLEAF C/O CITY CLERK 20523 N WHITTIER DR GREENLEAF, ID 83626 (208)454-0552
Representative	SPF WATER ENGINEERING LLC C/O TERRY SCANLAN 300 E MALLARD DR, STE 350 BOISE, ID 83706 (208)383-4140

Priority Date: 08/15/2003
Basis: License
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	1 CFS	
Total Diversion			1 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SWNE	Sec. 21	Township 04N	Range 04W	CANYON County
GROUND WATER	SWNE	Sec. 21	Township 04N	Range 04W	CANYON County

GROUND WATER	NENW	Sec. 21	Township 04N	Range 04W	CANYON County
GROUND WATER	NENW	Sec. 21	Township 04N	Range 04W	CANYON County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Greenleaf municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	01M	After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to determine the amount of water diverted from power records and shall annually report the information to the Department.
4.	102	The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
5.		Water bearing zone to be appropriated is 182 to 488 feet.
6.	103	When ordered by the Director, the right holder shall provide mitigation acceptable to the Director to offset depletion of lower Snake River flows needed for migrating anadromous fish. The amount of water required for mitigation, which is to be released into the Snake River or a tributary for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this right. Any order of the Director issued in accordance with this paragraph shall be in conformance with applicable rules allowing the right holder due process as the need for mitigation and the amount of mitigation are determined.

Dates:
Licensed Date: 09/20/2011
Decreed Date:
Permit Proof Due Date: 2/1/2009
Permit Proof Made Date: 1/30/2009
Permit Approved Date: 2/23/2004
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 08/15/2003
Protest Deadline Date: 11/24/2003
Number of Protests: 0

Other Information:
State or Federal:

Owner Name Connector:
Water District Number:
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Appendix I: Well Capacities – Proof of Beneficial Use Report

Form 219
6/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

RECEIVED
JAN 30 2009
DEPARTMENT OF
WATER RESOURCES

A. GENERAL INFORMATION Permit No. 63-31787

1. Owner: City of Greenleaf Phone No.: 208-454-0552

Current Address: c/o City Clerk, 20523 N. Whittier Dr., Greenleaf, ID 83626

2. Accompanied by: Doug Amick, Public Services Director EXAM DATE: 1/29/2009

Address: City of Greenleaf, 20523 N. Whittier Dr., Greenleaf, ID 83626 Phone No. 208-454-0552

Relationship to Permit Holder: employee

3. Source: Ground Water tributary to

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 63-4117, 63-7094

2. Other water rights with the same point of diversion: 63-7094

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

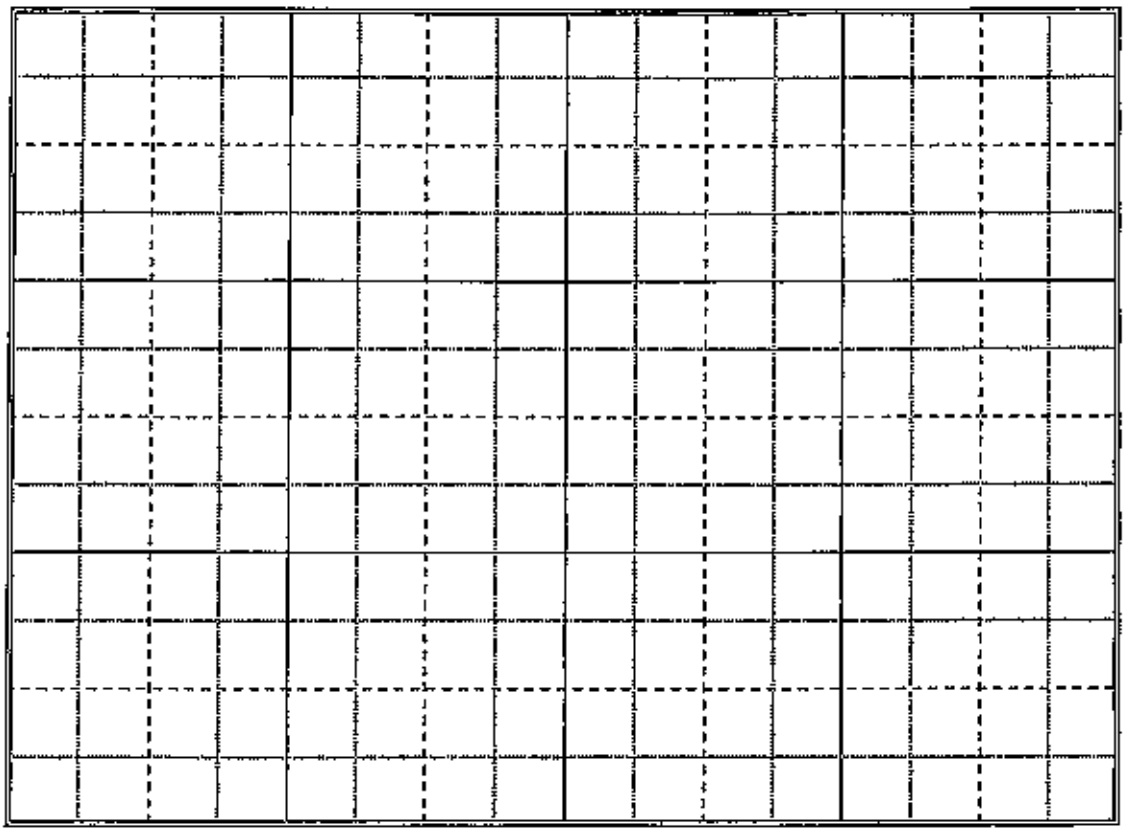
Ident No.	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
			SW	NE	21	4N	4W	Canyon	Exam (Harmony Well 1)
			SW	NE	21	4N	4W	Canyon	Exam (Harmony Well 2)
			NE	NW	21	4N	4W	Canyon	Exam (Friends Well)
			NE	NW	21	4N	4W	Canyon	Exam (Butler Well)

2. Place(s) of Use: Indicate Method of Determination Exam, 2006 aerial photo

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Municipal Use within the service area for the City of Greenleaf currently on record at IDWR.

3. **Delivery System Diagram:** Indica[illegible]ll major components and distances betwe[illegible]omponents. Indicate weir size/ditch size/pipe id as applicable. **See Attachment**



Scale: 1" = _____.

X Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

X Aerial Photo Attached (required for irrigation of 10+ acres)

X Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Butler Well	CentriPro	75	unknown	Goulds	8-inch
Harmony Well 1	unknown	10	unknown	unknown	3-inch
Harmony Well 2	unknown	15	unknown	unknown	4-inch
Friends	unknown	15	unknown	unknown	2-inch

**Code to correspond with No. on map and aerial photo*

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Butler Well	magnetic meter	Siemens	Sitrans FM Magflow Mag3100W	7ME 635 148035T336	8-inch	New in 2006
Harmony 1	propeller meter	McCrometer		01-00334-2.5	2.5-inch	Rebuilt 10/07
Harmony 2	propeller meter	McCrometer		00-09665-4	4-inch	
Friends	turbine meter	Sensus	Z-13	55911035	2-inch	

2. Measurements:

Butler Well – The Butler well pump was operated at full speed (60 hz) for approximately 30 minutes and produced an average flow of 650 gpm (magnetic flow meter) from a pumping water level of approximately 205 feet (transducer reading) below ground surface. The well was pumping to the Butler storage tank.

Harmony Well 1 – The Harmony Well No. 1 was operated at 34 gpm (based on average of total metered flow over ten minutes) while pumping to the Harmony storage tank.

Harmony Well 2 – The Harmony Well No. 2 was operated at 140 gpm (based on average of total metered flow over ten minutes) while pumping to the Harmony storage tank.

Friends Well – The Friends Well was operated at 61 gpm (one minute total metered flow) while pumping to refill the pressure tank at a well pump discharge pressure of 45 psi. The well pump also produced 68 gpm at a discharge pressure of 25 psi.

Total measured flow into municipal water system from all sources was 885 gpm (650+34+140+45) or 1.97 cfs.

E. NARRATIVE/REMARKS/COMMENTS

The City of Greenleaf municipal water system consists of four operating wells (Butler, Harmony No. 1, Harmony No. 2, and Friends). Well driller's reports are attached. A fifth City well (Academy) is currently used as part of the City's municipal irrigation system, and is not connected to the municipal water system. A sixth well (Hillcrest) is out of service. The wells pump to two storage tanks (Harmony and Butler). Booster pumps at the tanks provide system pressure for normal operations and fire flow. The system can provide fire flows in excess of 1500 gpm.

The Butler Well was constructed in 2005. The well is constructed with 10-inch casing and well screen to a total depth of 488 feet. The well is equipped with a 75-hp submersible pump with a reported setting depth of 300 feet. The well discharges through a pitless adapter with 8-inch diameter pipe through a pump house and then to a 221,000-gallon storage tank. Water from the storage tank is delivered to the distribution system by two booster pumps of 20 hp and 100 hp. Magnetic flow meters are used for flow monitoring. All pumps are variable speed.

The Friends well was constructed in 1990. The well is constructed with 12-inch and 6-inch casings and 6-inch well screen to a total depth of 285 feet. The well is equipped with a constant speed 15-hp submersible pump. The pump discharges from a pitless adapter through 2-inch piping to a well house. An adjacent structure encloses a 1000-gallon hydropneumatic tank. Piping from the well house connects directly into the City distribution system.

The Harmony No. 1 well was constructed in 1967. The well is constructed with 12-inch and 8-inch casings and 8-inch well screen to a total depth of 300 feet. The well is equipped with a constant speed 10-hp submersible pump. The pump discharges within the well house through 3-inch piping, and then to the 10,000-gallon Harmony tank. Water from the storage tank is delivered to the distribution system by two booster pumps of 15 hp each.

The Harmony No. 2 well was constructed in 1984. The well is constructed with 12-inch, 8-inch, and 6-inch casings and 6-inch well screen to a total depth of 233 feet. The well is equipped with a constant speed 15-hp submersible pump. The pump discharges from a pitless adapter to the well house through 4-inch piping, and then to the 10,000-gallon Harmony tank. Water from the storage tank is delivered to the distribution system by the two booster pumps.

Have conditions of permit approval been met? ___ yes _X_ no

Water-bearing zone on permit is 150 to 400 feet. Water-bearing zone developed was 182 to 488 feet (based on screen intervals for all wells). Recommend changing water-bearing zone to 150 to 500 feet. All other conditions have been met.

F. FLOW CALCULATIONS _____ Additional Computation Sheets Attached

Measured Method: flow meters with theoretical calculation check

Butler Well – 650 gpm measured; 832 gpm theoretical (250' TDH, 75 hp, 70% efficiency)
Friends Well – 61 gpm measured; 129 gpm theoretical (300' TDH, 15 hp, 65% efficiency)
Harmony No. 1 Well – 34 gpm measured; 79 gpm theoretical (300' TDH, 10 hp, 60% efficiency)
Harmony No. 2 Well – 140 gpm measured; 119 gpm theoretical (300' TDH, 15 hp, 65% efficiency)

Total Flow = 1.97 cfs (885 gpm) measured and 2.58 cfs (1,159 gpm) theoretical
Flow calculation does not include Academy Well which is connected to the municipal irrigation system; estimated Academy Well capacity is 0.10 cfs for purposes of SRBA recommendation
Well capacity under other water rights: 0.31 cfs (63-7094 = 0.21 cfs, 63-4117 = 0.10 cfs)

Total Municipal Water Flow (1.97 cfs measured plus 0.10 cfs Academy estimate) minus other water rights (0.31 cfs) = 1.76 cfs; 1.0 cfs flow available under this permit

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) =
$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 =
V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ =

2. Volume Calculations for Other Uses:
Potential Volume: 1.0 cfs x 365 days x 1.9835 af/cfs-day = 724 afa
Volume not applicable for a municipal water right

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use	Rate of Diversion	Annual Volume
Municipal	1/1 12/31	1.00	N/A

2. Recommended Amendments

___ Change P.D. as reflected above ___ Add P.D. as reflected above ___ None
___ Change P.U. as reflected above ___ Add P.U. as reflected above X Other
Change water-bearing zone from 150 to 400 feet to 150 to 500 feet.

I. AUTHENTICATION

Field Examiner's Name Terry M. Scanlan, P.E., P.G. (Examiner No. 9-129) Date 1-30-09

Field Examiner's Signature Terry M Scanlan

Reviewer _____ Date _____

Appendix J: 2024 Consumer Confidence Report

City of Greenleaf

20523 N. Whittier Drive
Greenleaf, Idaho 83626-9199
208/454-0552 (office)
208/454-7994 (fax)
cityhall@greenleaf-idaho.us
http://www.greenleaf-idaho.us/

City of Greenleaf, Idaho

Public Water System (PWS) #3140041

Consumer Confidence Report (CCR)
CY – 2024

Is my water safe?

The City of Greenleaf is pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). *This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality.* The City is committed to providing you with information because informed customers are our best allies.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA) / Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Where does my water come from?

The City of Greenleaf maintains four (4) active wells at three (3) active well sites. All well sites are within the city limits.

Violations

The city is unaware of any violations in CY-2024.

Source water assessment and its availability

The Idaho Department of Environmental Quality has prepared Source Water Assessment Reports for the City of Greenleaf public water system (Idaho PWS #3140041) for all active wells on the system. These reports are available at

http://www2.deq.idaho.gov/water/swaOnline/Search from the Idaho Department of Environmental Quality.

The City of Greenleaf also maintains a contingency plan for, and a vulnerability assessment of, the public water system.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. *The presence of contaminants does not necessarily indicate that water poses a health risk.* More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hot-line (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity: *Microbial contaminants*, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; *inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm-water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; *pesticides and herbicides*, which may come from a variety of sources such as agriculture, urban storm-water runoff, and residential uses; *organic chemical contaminants, including synthetic and volatile organic chemicals*, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm-water runoff, and septic systems; *and radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

How can I get involved?

Those served by the City of Greenleaf public water system are encouraged to be involved with decisions that affect the water system. The City Council meets regularly on the first Tuesday of each month. For more information, please contact Greenleaf City Hall, 20523 North Whittier Drive, Greenleaf, Idaho 83626, 208/454-0552 (phone), 208/454-7994 (fax), cityhall@greenleaf-idaho.us (E-mail), visit the city website (www.greenleaf-idaho.us), or visit the city FaceBook Page.

Description of Water Treatment Process

Water in the City system is treated by disinfection. Disinfection involves the addition of chlorine or other disinfectant to kill dangerous bacteria and microorganisms that may be in the water. *Disinfection is considered to be one of the major public health advances of the 20th century.*

Water Conservation Tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient shower-head. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit https://www.epa.gov/watersense for more information.

Cross Connection Control Survey

The purpose of this survey is to determine whether a cross-connection may exist at your home or business. A cross-connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. The City is responsible for enforcing cross-connection control regulations and ensuring that no contaminants can, under any flow conditions, enter the distribution system. *If you have any of the devices listed below please contact the City to discuss cross-connection. If needed, the City will survey your connection and assist you in isolating it if that is necessary.*

- Boiler/ Radiant heater (water heaters not included)
- Underground lawn sprinkler system
- Pool or hot tub (whirlpool tubs not included)
- Additional source(s) of water on the property
- Decorative pond
- Watering trough

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. *You can help protect your community's drinking water source in several ways:*

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

City Information

For more information regarding the City of Greenleaf, please contact Greenleaf City Hall, 20523 Whittier Drive, Greenleaf, Idaho 83626, 208/454-0552 (phone), 208/454-7994 (fax), cityhall@greenleaf-idaho.us (E-mail), visit the city website (www.greenleaf-idaho.us) or visit the city FaceBook Page. Greenleaf City Hall is open workdays from 9:00 a.m. to 5:00 p.m. and remains open during the lunch hour.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. ***Lead in drinking water is primarily from materials and components associated with private service lines and home plumbing.*** *The City of Greenleaf, Idaho Public Water System (PWS) #3140041, is responsible for providing safe drinking water to the water meter, but does not control the variety of materials used past the water meter in private service lines and plumbing components.*

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water.

Additional Information for Manganese

The City of Greenleaf's water, sourced from wells, is high in manganese. Manganese is not a regulated contaminant in drinking water nationally, and Idaho has not adopted a state drinking water standard for manganese. Manganese is a drinking water secondary contaminant, meaning water that is over the secondary standard of 0.05 mg/L is known to

cause cosmetic or aesthetic effects such as a metallic taste, stained plumbing fixtures, and discolored water. Manganese is an essential nutrient that typically comes from food. It is recommended that infants younger than 6-months do not drink water or consume formula prepared with water that has manganese over 0.3 mg/L because some baby formulas already contain manganese.

Representative water in the Greenleaf system includes:

Water Source	pH	Hardness	Iron	Manganese
Butler Well	7.69	51.0 mg/L	non-detect	0.104 mg/L
Harmony (outside)	7.38	167 mg/L	.05 mg/L	0.257 mg/L

More information on manganese and other drinking water contaminants is available at: https://www.deq.idaho.gov/water-quality/drinking-water/contaminants-in-drinking-water/

Water Quality Data

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. Please see Appendix 'A' for water quality reporting, including sampling history, violation history, and regulated contaminants information.

All sources of drinking water contain some naturally occurring contaminants. *At low levels, these substances are generally not harmful in our drinking water.* Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels.

The EPA and the State require that the City monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some test data, though representative, may be more than one year old.

For more information please contact:

Contact Name: Doug C. Amick, Public Services Director
Address: 20523 Whittier Drive, Greenleaf, ID 83626
Phone: 208/454-0552
Fax: 208/454-7994
E-Mail: douglas.amick@greenleaf-idaho.us
Website: www.greenleaf-idaho.us

City of Greenleaf
20523 N. Whittier Drive
Greenleaf, Idaho 83626-9199
208/454-0552 (office)
208/454-7994 (fax)
cityhall@greenleaf-idaho.us
http://www.greenleaf-idaho.us/

City of Greenleaf, Idaho

Public Water System (PWS) #3140041

Consumer Confidence Report (CCR)
CY – 2024

Exhibit 'A'

CY-2024 Violation History Report

CY-2024 Sampling History Report

40 CFR Part 141 Subpart O
including Appendix A - Regulated Contaminants Table
with Health Effects Language

Butler & Harmony (outside) Wells pH, Hardness, Iron, & Manganese levels

PHD Manganese in Drinking Water fact sheet
from: https://www2.deq.idaho.gov/admin/LEIA/api/document/download/13102

Available from:

Greenleaf City Hall
20523 Whittier Drive
Greenleaf, ID 83626
phone: 208/454-0552
fax: 208/454-7994
E-mail: cityhall@greenleaf-idaho.us
or
Posted at http://www.greenleaf-idaho.us

Chemical And Radiological Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the chemical monitoring report shows no results, then the system has no chemical violations for the last (2024) calendar year.

No results were found for the Chemical And Radiological Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the coliform monitoring report shows no results, then the system has no coliform violations for the last (2024) calendar year.

No results were found for the Coliform Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

If your system has a violation listed below, it means that your system was required to sample for lead and copper during calendar year 2024, but failed to do so during the appropriate time period. These violations must be reported in the CCR as a failure to monitor.

If the lead and copper monitoring violations report shows no results (Total Records: 0), then the system has no lead and copper monitoring violations for the last (2024) calendar year.

No results were found for the Lead And Copper Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Violation History
PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Monitoring violations are violations that occurred because a system failed to complete a required contaminant sampling (which means the system failed to "monitor" or sample for a contaminant).

MCL (maximum contaminant level) violations are violations that occurred because the level of the completed sampling was higher than allowed, or higher than the MCL (maximum contaminant level).

If the DBP monitoring violations report shows no results, then the system has no disinfection byproduct violations for the last (2024) calendar year.

No results were found for the DBP Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

SWTR and MRDL Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

This report only applies to systems practicing chlorination and/or filtration.

Violations listed are either treatment techniques or failure to monitor violations. Violation Type "TT" designates a treatment technique violation; violation type "MON" designates a monitoring violation.

If no records are displayed, the system did not accrue any applicable violations during the previous calendar year.

For your information - definitions of abbreviations found in the "Requirements" column:

EPRD: "entry point residual disinfection" level either not met or not reported.
DSRD: "distribution system residual disinfection" level either not met or not reported.
95PT: "95 percentile" (95%) turbidity level either exceeded or not reported.
MAXT: "maximum turbidity" level either exceeded or not reported.

No results were found for the SWTR and MRDL Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Sanitary Survey Significant Deficiency Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

This report identifies violations generated from unaddressed significant deficiencies and failing to consult with the state to produce a compliance schedule.

If the Sanitary Survey Significant Deficiency violations report shows no results, then the system has no significant deficiency violations for the last (2024) calendar year.

No results were found for the Sanitary Survey Significant Deficiency Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Public Notification Violation History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

This report identifies violations generated from failing to deliver public notification to the public in accordance with the public notification schedule.

If the Public Notification violation history report shows no results, then the system has no public notification violations for the last (2024) calendar year.

No results were found for the Public Notification Violation History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chemical And Radiological Sampling History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 661

A PWS is only required to report the most recent detections of any contaminant at each representative sampling location. For example, if nitrate is detected in a sample collected at Well X in 2023, but is not detected at Well X in 2024, then the system is not required to report nitrate for Well X in the 2024 CCR. **Note:** If a contaminant (e.g., nitrate) is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, nitrate was not detected.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the ***"Major Sources in Drinking Water"*** column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template** , find the contaminant, and copy the information from the ***"Health Effects Language"*** **column** and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)
PIC/L (pCi/L) = picocuries per liter

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,1-TRICHLOROETHANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1,2-TRICHLOROETHANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,1-DICHLOROETHYLENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

1,2,4-TRICHLOROBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DIBROMO-3-CHLOROPROPANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,2-DICHLOROETHANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROETHANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/25/2022	BUTLER WELL	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
1,2-DICHLOROPROPANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4,5-TP	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
2,4-D	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ANTIMONY, TOTAL	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
ANTIMONY, TOTAL	02/28/2025	BUTLER WELL	Y	0.000		0.000
ANTIMONY, TOTAL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ANTIMONY, TOTAL	03/25/2022	BUTLER WELL	Y	0.000		0.000
ARSENIC	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
ARSENIC	02/28/2025	BUTLER WELL	Y	0.000		0.000
ARSENIC	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ARSENIC	12/23/2022	WELL#1-HARMONY OUSTSIDE	N	0.007	MG/L	6.700
ARSENIC	03/25/2022	BUTLER WELL	Y	0.000		0.000
ATRAZINE	05/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ATRAZINE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

BARIUM	03/14/2025	WELL#1-HARMONY OUSTSIDE	N	0.100	MG/L	0.100
BARIUM	02/28/2025	BUTLER WELL	N	0.052	MG/L	0.052
BARIUM	12/23/2022	WELL #4 HARMONY INSIDE	N	0.100	MG/L	0.100
BARIUM	03/25/2022	BUTLER WELL	Y	0.000		0.000
BENZENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
BENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
BENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BENZO(A)PYRENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BERYLLIUM, TOTAL	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
BERYLLIUM, TOTAL	02/28/2025	BUTLER WELL	Y	0.000		0.000
BERYLLIUM, TOTAL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BERYLLIUM, TOTAL	03/25/2022	BUTLER WELL	Y	0.000		0.000
BHC-GAMMA	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
BHC-GAMMA	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CADMIUM	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
CADMIUM	02/28/2025	BUTLER WELL	Y	0.000		0.000
CADMIUM	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CADMIUM	03/25/2022	BUTLER WELL	Y	0.000		0.000
CARBOFURAN	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBOFURAN	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	03/25/2022	BUTLER WELL	Y	0.000		0.000
CARBON TETRACHLORIDE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CARBON TETRACHLORIDE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLORDANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

CHLOROBENZENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	12/23/2022	WELL #1-HARMONY OUTSIDE	Y	0.000		0.000
CHLOROBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
CHLOROBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHLOROBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHROMIUM	03/14/2025	WELL #1-HARMONY OUTSIDE	Y	0.000		0.000
CHROMIUM	02/28/2025	BUTLER WELL	Y	0.000		0.000
CHROMIUM	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CHROMIUM	03/25/2022	BUTLER WELL	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	12/23/2022	WELL #1-HARMONY OUTSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	03/11/2022	WELL #4 HARMONY INSIDE		1.900	PCI/L	1.900
COMBINED RADIUM (-226 & -228)	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED RADIUM (-226 & -228)	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	02/28/2025	BUTLER WELL	Y	0.000		0.000
COMBINED URANIUM	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	03/25/2022	BUTLER WELL	Y	0.000		0.000
COMBINED URANIUM	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	09/23/2021	WELL #4 HARMONY INSIDE	N	1.000	UG/L	1.000
COMBINED URANIUM	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
COMBINED URANIUM	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DALAPON	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) ADIPATE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

DI(2-ETHYLHEXYL) PHTHALATE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DI(2-ETHYLHEXYL) PHTHALATE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	12/23/2022	WELL#1-HARMONY OUTSIDE	Y	0.000		0.000
DICHLOROMETHANE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	03/25/2022	BUTLER WELL	Y	0.000		0.000
DICHLOROMETHANE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DICHLOROMETHANE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DINOSEB	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
DIQUAT	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDOTHALL	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ENDRIN	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	12/23/2022	WELL#1-HARMONY OUTSIDE	Y	0.000		0.000
ETHYLBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
ETHYLBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
ETHYLENE DIBROMIDE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

ETHYLENE DIBROMIDE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
FLUORIDE	03/14/2025	WELL#1-HARMONY OUTSIDE	N	0.590	MG/L	0.590
FLUORIDE	02/28/2025	BUTLER WELL	N	1.260	MG/L	1.260
FLUORIDE	12/23/2022	WELL #4 HARMONY INSIDE	N	0.830	MFL	0.830
FLUORIDE	03/25/2022	BUTLER WELL	N	1.390	MG/L	1.390
GLYPHOSATE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GLYPHOSATE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, EXCL. RADON & U	02/28/2025	BUTLER WELL	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/25/2022	BUTLER WELL	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
GROSS ALPHA, INCL. RADON & U	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEPTACHLOR EPOXIDE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
HEXACHLOROCYCLOPENTADIENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
LASSO	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

MERCURY	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
MERCURY	02/28/2025	BUTLER WELL	Y	0.000		0.000
MERCURY	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
MERCURY	03/25/2022	BUTLER WELL	Y	0.000		0.000
METHOXYCHLOR	09/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
METHOXYCHLOR	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NICKEL	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NICKEL	02/28/2025	BUTLER WELL	Y	0.000		0.000
NICKEL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NICKEL	03/25/2022	BUTLER WELL	Y	0.000		0.000
NITRATE	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	02/28/2025	BUTLER WELL	Y	0.000		0.000
NITRATE	12/10/2024	BUTLER WELL	Y	0.000		0.000
NITRATE	12/10/2024	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	10/04/2024	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NITRATE	10/04/2024	WELL#2-FRIENDS (EMERGENCY)	Y	0.000		0.000
NITRATE	03/24/2023	BUTLER WELL	Y	0.000		0.000
NITRATE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NITRATE	03/24/2023	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	03/24/2023	WELL#2-FRIENDS (EMERGENCY)	Y	0.000		0.000
NITRATE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NITRATE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	12/23/2022	WELL#2-FRIENDS (EMERGENCY)	Y	0.000		0.000
NITRATE	03/25/2022	BUTLER WELL	Y	0.000		0.000
NITRATE	03/05/2021	BUTLER WELL	Y	0.000		0.000
NITRATE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NITRATE	03/05/2021	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	03/05/2021	WELL#2-FRIENDS (EMERGENCY)	Y	0.000		0.000
NITRATE	12/18/2020	WELL #4 HARMONY INSIDE	Y	0.000		0.000
NITRATE	12/18/2020	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
NITRATE	09/25/2020	BUTLER WELL	Y	0.000		0.000
NITRATE	09/25/2020	WELL#2-FRIENDS (EMERGENCY)	Y	0.000		0.000
NITRITE	02/28/2025	BUTLER WELL	Y	0.000		0.000
NITRITE	02/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	09/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
O-DICHLOROBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
O-DICHLOROBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	09/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
OXAMYL	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	09/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
P-DICHLOROBENZENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
P-DICHLOROBENZENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

PENTACHLOROPHENOL	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PENTACHLOROPHENOL	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
PICLORAM	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-226	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	03/11/2022	WELL #4 HARMONY INSIDE	N	1.900	PCI/L	1.900
RADIUM-228	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
RADIUM-228	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SELENIUM	03/14/2025	WELL#1-HARMONY OUTSIDE	Y	0.000		0.000
SELENIUM	02/28/2025	BUTLER WELL	Y	0.000		0.000
SELENIUM	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SELENIUM	09/25/2022	BUTLER WELL	Y	0.000		0.000
SIMAZINE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
SIMAZINE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	12/23/2022	WELL#1-HARMONY OUTSIDE	Y	0.000		0.000
STYRENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
STYRENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
STYRENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	12/23/2022	WELL#1-HARMONY OUTSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
TETRACHLOROETHYLENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TETRACHLOROETHYLENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

THALLIUM, TOTAL	03/14/2025	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
THALLIUM, TOTAL	02/26/2025	BUTLER WELL	Y	0.000		0.000
THALLIUM, TOTAL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
THALLIUM, TOTAL	03/25/2022	BUTLER WELL	Y	0.000		0.000
TOLUENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
TOLUENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
TOLUENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOLUENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOTAL POLYCHLORINATED BIPHENYLS (PCB)	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TOXAPHENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	03/25/2022	BUTLER WELL	Y	0.000		0.000
TRICHLOROETHYLENE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
TRICHLOROETHYLENE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000
VINYL CHLORIDE	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	03/25/2022	BUTLER WELL	Y	0.000		0.000
VINYL CHLORIDE	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
VINYL CHLORIDE	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	06/27/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	03/24/2023	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	12/23/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	12/23/2022	WELL#1-HARMONY OUSTSIDE	Y	0.000		0.000

XYLENES, TOTAL	09/21/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	06/30/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	03/25/2022	BUTLER WELL	Y	0.000		0.000
XYLENES, TOTAL	03/11/2022	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	11/12/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	09/23/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	06/30/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000
XYLENES, TOTAL	03/05/2021	WELL #4 HARMONY INSIDE	Y	0.000		0.000

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Coliform Sampling History
PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 24

Only report coliform results in the CCR if one or more samples tested positive during the 2024 calendar year.

Required Language. If your water system's coliform history for the year included one or more samples present for coliform, you must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value for coliforms, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Coliform Sampling History
Total Records: 24

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	12/13/2024	A
COLIFORM (TCR)	11/15/2024	A
COLIFORM (TCR)	11/15/2024	A
COLIFORM (TCR)	11/15/2024	P
E. COLI	11/15/2024	A
COLIFORM (TCR)	11/13/2024	P
E. COLI	11/13/2024	A
COLIFORM (TCR)	10/31/2024	A
COLIFORM (TCR)	10/10/2024	P
E. COLI	10/10/2024	A
COLIFORM (TCR)	10/10/2024	A
COLIFORM (TCR)	10/10/2024	P
E. COLI	10/10/2024	A
COLIFORM (TCR)	10/08/2024	P
E. COLI	10/08/2024	A
COLIFORM (TCR)	09/10/2024	A
COLIFORM (TCR)	08/15/2024	A
COLIFORM (TCR)	07/08/2024	A
COLIFORM (TCR)	06/04/2024	A
COLIFORM (TCR)	05/07/2024	A
COLIFORM (TCR)	04/09/2024	A
COLIFORM (TCR)	03/05/2024	A
COLIFORM (TCR)	02/06/2024	A
COLIFORM (TCR)	01/12/2024	A

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Lead And Copper Sampling History
PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 2

A public water system is only required to report the most recent 90% percentile detections for lead and copper within the past five years. If a result is listed as zero, it should be assumed the result was actually a non-detect.

Other lead and copper information to be included in the CCR not listed on this page are the number of samples collected from the distribution system, and the highest level of lead or copper that was detected.

Required Language. If there are detections for lead and copper to report, the system must give the major sources of the contaminant. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system exceeds the MCL (maximum contaminant level) value of a contaminant, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Abbreviations used below:
MG/L (mg/L) = milligrams per liter (mg/L = ppm in Appendix A)
UG/L (µg/L) = micrograms per liter (µg/L = ppb in Appendix A)

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	10	0.000	MG/L	09/21/2022	0.000
COPPER SUMMARY	10	0.150	MG/L	09/21/2022	0.150

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

DBP Sampling History
PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 88

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Public water systems that are required to collect one sample for disinfection byproducts once every year, or every three years, are only required to report the most recent detections for disinfection byproducts. If the most recent sampling was a non-detect for the contaminants, then it is not necessary to report any disinfection byproduct sampling. **Note:** If a contaminant is listed with a "Y" (meaning "Yes") in the "non-detect" column, this means that sampling results showed a "non-detect" - that is to say, the contaminant was not detected.

If a public water system collects more than one sample per year, the system must report the average of Total Trihalomethanes and Haloacetic Acids Group 5 over the 2024 calendar year. The highest level detected, and the range for each contaminant must also be reported.

Required Language. If a system reports a detection, the system must give the major sources of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Major Sources in Drinking Water"* column and place it in your CCR. If the system has exceeded the MCL (maximum contaminant level) value of a contaminant, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Contaminant	Date Collected	Sampling Location	Non Detect?	Detected Level	Units	CCR Units
TOTAL HALOACETIC ACIDS (HAA5)	06/27/2024	20523 N WHITTIER	N	8.160	UG/L	8.160
TOTAL HALOACETIC ACIDS (HAA5)	09/08/2023	20523 N WHITTIER	N	1.690	UG/L	1.690
TOTAL HALOACETIC ACIDS (HAA5)	09/29/2022	20523 N WHITTIER	N	0.001	MG/L	1.330
TOTAL HALOACETIC ACIDS (HAA5)	03/31/2021	20523 N WHITTIER	N	0.007	MG/L	7.430
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2020	20523 N WHITTIER	N	0.008	MG/L	8.420
TOTAL HALOACETIC ACIDS (HAA5)	09/25/2020	21260 PECKHAM ROAD	N	0.001	MG/L	1.000
TOTAL HALOACETIC ACIDS (HAA5)	06/29/2020	21260 PECKHAM ROAD	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	06/29/2020	20523 N WHITTIER	N	0.005	MG/L	5.490
TOTAL HALOACETIC ACIDS (HAA5)	03/20/2020	20523 N WHITTIER	N	0.006	MG/L	6.030
TOTAL HALOACETIC ACIDS (HAA5)	03/20/2020	21260 PECKHAM ROAD	N	0.005	MG/L	4.950
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2019	21260 PECKHAM ROAD	N	0.007	MG/L	6.880
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2019	20523 N WHITTIER	N	0.001	MG/L	1.240
TOTAL HALOACETIC ACIDS (HAA5)	09/26/2019	20523 N WHITTIER	N	0.002	MG/L	1.540
TOTAL HALOACETIC ACIDS (HAA5)	09/26/2019	21260 PECKHAM ROAD	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	06/27/2019	21260 PECKHAM ROAD	N	0.002	MG/L	1.710
TOTAL HALOACETIC ACIDS (HAA5)	06/27/2019	20523 N WHITTIER	N	0.008	MG/L	8.070
TOTAL HALOACETIC ACIDS (HAA5)	03/29/2019	20523 N WHITTIER	N	0.010	MG/L	10.200
TOTAL HALOACETIC ACIDS (HAA5)	03/29/2019	21260 PECKHAM ROAD	N	0.003	MG/L	3.290
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2018	21260 PECKHAM ROAD	N	0.005	MG/L	5.100
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2018	20523 N WHITTIER	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/20/2018	20523 N WHITTIER	N	0.004	MG/L	3.710
TOTAL HALOACETIC ACIDS (HAA5)	09/20/2018	21260 PECKHAM ROAD	N	0.006	MG/L	6.040
TOTAL HALOACETIC ACIDS (HAA5)	06/26/2018	21260 PECKHAM ROAD	N	0.002	MG/L	1.710
TOTAL HALOACETIC ACIDS (HAA5)	06/26/2018	20523 N WHITTIER	N	0.004	MG/L	4.290
TOTAL HALOACETIC ACIDS (HAA5)	03/27/2018	20523 N WHITTIER	N	0.001	MG/L	1.210
TOTAL HALOACETIC ACIDS (HAA5)	03/27/2018	21260 PECKHAM ROAD	N	0.003	MG/L	3.450
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2017	21260 PECKHAM ROAD	N	0.002	MG/L	2.430
TOTAL HALOACETIC ACIDS (HAA5)	12/27/2017	20523 N WHITTIER	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/17/2017	20523 N WHITTIER	N	0.009	MG/L	9.480
TOTAL HALOACETIC ACIDS (HAA5)	09/17/2017	21260 PECKHAM ROAD	N	0.002	MG/L	1.990
TOTAL HALOACETIC ACIDS (HAA5)	06/30/2017	21260 PECKHAM ROAD	N	0.008	MG/L	7.950
TOTAL HALOACETIC ACIDS (HAA5)	06/30/2017	20523 N WHITTIER	N	0.013	MG/L	12.500
TOTAL HALOACETIC ACIDS (HAA5)	03/24/2017	20523 N WHITTIER	N	0.008	MG/L	8.110
TOTAL HALOACETIC ACIDS (HAA5)	03/24/2017	21260 PECKHAM ROAD	N	0.019	MG/L	19.000
TOTAL HALOACETIC ACIDS (HAA5)	09/29/2016	21260 PECKHAM ROAD	N	0.011	MG/L	10.600
TOTAL HALOACETIC ACIDS (HAA5)	09/29/2016	20523 N WHITTIER	N	0.007	MG/L	6.840
TOTAL HALOACETIC ACIDS (HAA5)	09/22/2015	20523 N WHITTIER	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/22/2015	21260 PECKHAM ROAD	Y	0.000		0.000

TOTAL HALOACETIC ACIDS (HAA5)	09/22/2014	21260 PECKHAM ROAD	N	0.013	MG/L	13.400
TOTAL HALOACETIC ACIDS (HAA5)	09/22/2014	20523 N WHITTIER	N	0.017	MG/L	17.300
TOTAL HALOACETIC ACIDS (HAA5)	08/23/2013	GENERIC SAMPLING POI	N	0.021	MG/L	21.000
TOTAL HALOACETIC ACIDS (HAA5)	09/29/2010	GENERIC SAMPLING POI	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/27/2007	GENERIC SAMPLING POI	Y	0.000		0.000
TOTAL HALOACETIC ACIDS (HAA5)	09/29/2004	GENERIC SAMPLING POI	Y	0.000	MG/L	0.000
TTHM	09/27/2024	21260 PECKHAM ROAD	N	34.300	UG/L	34.300
TTHM	09/08/2023	21260 PECKHAM ROAD	N	2.890	UG/L	2.890
TTHM	09/29/2022	21260 PECKHAM ROAD	N	0.005	MG/L	4.980
TTHM	03/05/2021	21260 PECKHAM ROAD	N	0.029	MG/L	28.800
TTHM	09/25/2020	21260 PECKHAM ROAD	N	0.006	MG/L	5.990
TTHM	09/25/2020	20523 N WHITTIER	N	0.005	MG/L	4.750
TTHM	06/29/2020	20523 N WHITTIER	N	0.006	MG/L	6.640
TTHM	06/29/2020	21260 PECKHAM ROAD	N	0.009	MG/L	9.470
TTHM	03/20/2020	21260 PECKHAM ROAD	N	0.020	MG/L	19.600
TTHM	03/20/2020	20523 N WHITTIER	N	0.007	MG/L	6.983
TTHM	12/27/2019	20523 N WHITTIER	N	0.002	MG/L	1.930
TTHM	12/27/2019	21260 PECKHAM ROAD	N	0.018	MG/L	18.900
TTHM	09/26/2019	21260 PECKHAM ROAD	N	0.005	MG/L	4.660
TTHM	09/26/2019	20523 N WHITTIER	N	0.004	MG/L	4.480
TTHM	06/27/2019	20523 N WHITTIER	N	0.008	MG/L	8.070
TTHM	06/27/2019	21260 PECKHAM ROAD	N	0.009	MG/L	8.880
TTHM	03/29/2019	21260 PECKHAM ROAD	N	0.012	MG/L	11.900
TTHM	03/29/2019	20523 N WHITTIER	N	0.015	MG/L	15.900
TTHM	12/27/2018	20523 N WHITTIER	N	0.003	MG/L	3.050
TTHM	12/27/2018	21260 PECKHAM ROAD	N	0.021	MG/L	21.200
TTHM	09/20/2018	21260 PECKHAM ROAD	N	0.008	MG/L	7.800
TTHM	09/20/2018	20523 N WHITTIER	N	0.001	MG/L	0.760
TTHM	06/26/2018	20523 N WHITTIER	N	0.001	MG/L	0.600
TTHM	06/26/2018	21260 PECKHAM ROAD	N	0.008	MG/L	8.380
TTHM	03/27/2018	21260 PECKHAM ROAD	N	0.018	MG/L	17.800
TTHM	03/27/2018	20523 N WHITTIER	N	0.002	MG/L	2.170
TTHM	12/27/2017	20523 N WHITTIER	N	0.003	MG/L	3.300
TTHM	12/27/2017	21260 PECKHAM ROAD	N	0.011	MG/L	10.600
TTHM	09/17/2017	21260 PECKHAM ROAD	N	0.016	MG/L	15.900
TTHM	09/17/2017	20523 N WHITTIER	N	0.014	MG/L	14.400
TTHM	06/30/2017	20523 N WHITTIER	N	0.026	MG/L	26.300
TTHM	06/30/2017	21260 PECKHAM ROAD	N	0.026	MG/L	26.200
TTHM	03/24/2017	20523 N WHITTIER	N	0.015	MG/L	15.300
TTHM	03/24/2017	21260 PECKHAM ROAD	N	0.051	MG/L	51.100
TTHM	09/29/2016	21260 PECKHAM ROAD	N	0.079	MG/L	78.600
TTHM	09/29/2016	20523 N WHITTIER	N	0.027	MG/L	27.000
TTHM	09/22/2015	20523 N WHITTIER	N	0.010	MG/L	9.700
TTHM	09/22/2015	21260 PECKHAM ROAD	N	0.008	MG/L	8.100
TTHM	09/22/2014	21260 PECKHAM ROAD	N	0.055	MG/L	55.100
TTHM	09/22/2014	20523 N WHITTIER	N	0.040	MG/L	39.900
TTHM	08/23/2013	GENERIC SAMPLING POI	N	0.048	MG/L	47.700
TTHM	09/29/2010	GENERIC SAMPLING POI	Y	0.000		0.000
TTHM	09/27/2007	GENERIC SAMPLING POI	Y	0.000		0.000
TTHM	09/29/2004	GENERIC SAMPLING POI	N	0.003	MG/L	2.500

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

RTCR Sampling History
PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 0

Only report if your water system was required to comply with one or more Revised Total Coliform Rule (RTCR) Level 1 and/or Level 2 Assessments during the 2017 calendar year.

Required Language: If your water system was required to conduct an RTCR Level 1 or Level 2 Assessment (numbers I-III below), the associated information must be reported in the CCR in accordance with IDAPA 58.01.08.151.

I. If your water system was required to conduct a Level 1 or 2 assessment **not** due to an *E. coli* MCL violation, go to section I below.
II. If your water system was required to conduct a Level 2 assessment **due** to an *E. coli* MCL violation, go to section II below.
III. If your water system detected *E. coli* and **did not** violate the *E. coli* MCL, go to section III below.

I. If your water system was required to conduct a Level 1 or 2 assessment not due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s). [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

c. Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. During the past year we failed to conduct all of the required assessment(s).

ii. During the past year we failed to correct all identified defects that were found during the assessment.

II. If your water system was required to conduct a Level 2 assessment due to an *E.coli* MCL violation, you must include in the report adverse health affect information and additional information regarding the number of assessments required, the number of assessments completed, the number of corrective actions required and the number of corrective actions completed.

(A) Adverse Health Effects Required Text: *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Additional Information Required:

a. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

b. Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

i. We failed to conduct the required assessment.

ii. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

c. Any system that violated the *E. coli* MCL, the system must include, in addition to the required adverse health effects text [see II.(A) above], one or more of the following statements to describe any noncompliance, as applicable:

i. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

ii. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

iii. We failed to take all required repeat samples following an *E. coli*-positive routine sample.

iv. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

III. If your water system detected *E. coli* and did not violate the *E. coli* MCL, the system may include, in addition to the required adverse health effects text [See II.(A) above], a statement that explains that although *E. coli* water detected, your system was not in violation of the *E. coli* MCL.

No results were found for the RTCR Sampling History Report.

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

Chlorine Maximum Residual Disinfectant Level Sampling History

PWS Number: ID3140041
PWS Name: GREENLEAF CITY OF
Total Records: 12

Sampling history is only listed for systems which are practicing chlorination on a full-time basis.

Please include in your CCR the highest chlorine residual level detected during the previous calendar year (2024) by your system, as well as the average of all residuals collected during 2024.

Required Language. If the system exceeds the chlorine MCL (maximum contaminant level) value, the system must show the potential health effects of the contaminant. To report this information, go to **Appendix A of the CCR template**, find the contaminant, and copy the information from the *"Health Effects Language"* column and place it in your CCR.

Samples Collected	Chlorine Residual	Units	Begin Date	Monitoring Period
1	0.1000	MG/L	01/01/2024	JAN2024
1	0.2000	MG/L	02/01/2024	FEB2024
1	0.2000	MG/L	03/01/2024	MAR2024
1	0.1000	MG/L	04/01/2024	APR2024
1	0.1000	MG/L	05/01/2024	MAY2024
1	0.3000	MG/L	06/01/2024	JUN2024
1	0.0500	MG/L	07/01/2024	JUL2024
1	0.3700	MG/L	08/01/2024	AUG2024
1	0.2200	MG/L	09/01/2024	SEP2024
5	0.1900	MG/L	10/01/2024	OCT2024
4	0.1000	MG/L	11/01/2024	NOV2024
1	0.1000	MG/L	12/01/2024	DEC2024

Note: Please notify your regional DEQ office if you find discrepancies in your sampling or violation histories. DEQ will correct the errors in the agency's database.

This content is from the eCFR and is authoritative but unofficial.

Title 40 —Protection of Environment

Chapter I —Environmental Protection Agency

Subchapter D —Water Programs

Part 141 —National Primary Drinking Water Regulations

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

Source: 40 FR 59570, Dec. 24, 1975, unless otherwise noted.

Subpart O Consumer Confidence Reports

§ 141.151 Purpose and applicability of this subpart.
§ 141.152 Compliance dates.
§ 141.153 Content of the reports.
§ 141.154 Required additional health information.
§ 141.155 Report delivery, reporting, and recordkeeping.
§ 141.156 Summary of report contents.

Appendix A to Subpart O of Part 141
Regulated Contaminants

Editorial Note: Nomenclature changes to part 141 appear at 69 FR 18803, Apr. 9, 2004.

Subpart O—Consumer Confidence Reports

Source: 63 FR 44526, Aug. 19, 1998, unless otherwise noted.

§ 141.151 Purpose and applicability of this subpart.

(a) This subpart establishes the minimum requirements for the content of reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. This subpart also includes requirements for systems serving more than 100,000 persons to develop and annually update a plan for providing assistance to consumers with limited English proficiency.

(b) Notwithstanding the provisions of § 141.3, this subpart applies only to community water systems.

(c) For the purpose of this subpart, *customers* are defined as billing units or service connections to which water is delivered by a community water system. For the purposes of this subpart, *consumers* are defined as people served by the water system, including customers, and people that do not receive a bill.

(d) For the purpose of this subpart, detected means: at or above the levels prescribed by § 141.23(a)(4) for inorganic contaminants, at or above the levels prescribed by § 141.24(f)(7) for the contaminants listed in § 141.61(a), at or above the levels prescribed by § 141.24(h)(18) for the contaminants listed in §

141.61(c) (except PFAS), at or above the levels prescribed by § 141.131(b)(2)(iv) for the contaminants or contaminant groups listed in § 141.64, at or above the levels prescribed by § 141.25(c) for radioactive contaminants, and at or above the levels prescribed in § 141.902(a)(5) for PFAS listed in § 141.61(c).

(e) A State that has primary enforcement responsibility may adopt by rule, after notice and comment, alternative requirements for the form and content of the reports. The alternative requirements must provide the same type and amount of information as required by §§ 141.153 and 141.154, and must be designed to achieve an equivalent level of public information and education as would be achieved under this subpart.

(f) For purpose of this subpart, the term "primacy agency" refers to the State or Tribal government entity that has jurisdiction over, and primary enforcement responsibility for, public water systems, even if that government does not have interim or final primary enforcement responsibility for this part. Where the State or tribe does not have primary enforcement responsibility for public water systems, the term "primacy agency" refers to the appropriate EPA regional office.

[63 FR 44526, Aug. 19, 1998, as amended at 71 FR 483, Jan. 4, 2006; 89 FR 46008, May 24, 2024; 89 FR 32746, Apr. 26, 2024]

§ 141.152 Compliance dates.

(a) Between June 24, 2024, and December 31, 2026, community water systems must comply with 40 CFR 141.151 through 141.155 (except § 141.153(d)(4)(xii)), as codified on July 1, 2023. Beginning January 1, 2027, community water systems must comply with 40 CFR 141.151 through 141.156 (except § 141.153(8)(h)(i)), as codified on July 1, 2024. Beginning November 1, 2027, community water systems must comply with 40 CFR 141.151 through 141.156, as codified on July 1, 2025.

(b) Each existing community water system must deliver reports according to § 141.155 by July 1 each year. Each report delivered by July 1 must contain data collected during the previous calendar year, or the most recent calendar year before the previous calendar year.

(c) A new community water system must deliver its first report by July 1 of the year after its first full calendar year in operation.

(d) A community water system that sells water to another community water system must deliver the applicable information required in § 141.153 to the buyer system:

(1) By April 1, 2027, and annually thereafter; or

(2) On a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties; and

(3) A community water system that sells water to another community water system that is required to provide reports biannually according to § 141.155(j) must provide the applicable information required in § 141.155(j) by October 1, 2027, to the buyer system, and annually thereafter, or a date mutually agreed upon by the seller and the purchaser, included in a contract between the parties.

[63 FR 44526, Aug. 19, 1998, as amended at 89 FR 46008, May 24, 2024; 89 FR 86662, Oct. 30, 2024]

§ 141.153 Content of the reports.

(a) Each community water system must provide to its customers a report(s) that contains the information specified in this section, § 141.154, and include a summary as specified in § 141.156.

(b) Information on the source of the water delivered:

(1) Each report must identify the source(s) of the water delivered by the community water system by providing information on:

(i) The type of the water: e.g., surface water, ground water; and

(ii) The commonly used name (if any) and location of the body (or bodies) of water.

(2) If a source water assessment has been completed, the report must notify consumers of the availability of this information, the year it was completed or most recently updated, and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the primacy agency, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the primacy agency or written by the operator.

(c) *Definitions.*

(1) Each report must include the following definitions:

(i) *Maximum Contaminant Level Goal or MCLG:* The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

(ii) *Maximum Contaminant Level or MCL:* The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

(iii) *Contaminant:* Any physical, chemical, biological, or radiological substance or matter in water.

(2) A report for a community water system operating under a variance or an exemption issued under § 1415 or 1416 of SDWA must include the following definition: *Variances and Exemptions:* State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

(3) A report that contains data on contaminants that EPA regulates using any of the following terms must include the applicable definitions:

(i) *Treatment Technique:* A required process intended to reduce the level of a contaminant in drinking water.

(ii) *Action Level:* The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

(iii) *Maximum residual disinfectant level goal or MRDLG:* The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

(iv) *Maximum residual disinfectant level or MRDL:* The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

(v) *Hazard Index or HI.* The Hazard Index is an approach that determines the health concerns associated with mixtures of certain PFAS in finished drinking water. Low levels of multiple PFAS that individually would not likely result in adverse health effects may pose health concerns

when combined in a mixture. The Hazard Index MCL represents the maximum level for mixtures of PFHxS, PFNA, HFPO-DA, and/or PFBS allowed in water delivered by a public water system. A Hazard Index greater than 1 requires a system to take action.

(4) A report that contains information regarding a Level 1 or Level 2 Assessment required under Subpart Y of this part must include the applicable definitions:

(i) *Level 1 Assessment:* A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

(ii) *Level 2 Assessment:* A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

(5) Systems must use the following definitions for the terms listed below if the terms are used in the report unless the system obtains written approval from the state to use an alternate definition:

(i) *Pesticide:* Generally, any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest.

(ii) *Herbicide:* Any chemical(s) used to control undesirable vegetation.

(d) *Information on detected contaminants.*

(1) This sub-section specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to:

(i) Contaminants subject to a MCL, action level, maximum residual disinfectant level, or treatment technique (regulated contaminants); and

(ii) Contaminants for which monitoring is required by § 141.40 (unregulated contaminants).

(2) The data relating to these contaminants must be presented in the reports in a manner that is clear and understandable for consumers. For example, the data may be displayed in one table or in several adjacent tables. Any additional monitoring results which a community water system chooses to include in its report must be displayed separately.

(3) The data must be derived from data collected to comply with EPA and State monitoring and analytical requirements during the previous calendar year, or the most recent calendar year before the previous calendar year except that:

(i) Where a system is allowed to monitor for regulated contaminants less often than once a year, the contaminant data section must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than 5 years need be included.

(ii) [Reserved]

(4) For each detected regulated contaminant (listed in appendix A to this subpart), the contaminant data section(s) must contain:

(i) The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in appendix A to this subpart);

(ii) The MCLG for that contaminant expressed in the same units as the MCL;

(iii) If there is no MCL for a detected contaminant, the contaminant data section(s) must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in paragraph (c)(3) of this section;

(iv) For contaminants subject to an MCL, except turbidity and *E. coli*, the contaminant data section(s) must contain the highest contaminant level used to determine compliance with an NPDWR and the range of detected levels, as follows:

(A) When compliance with the MCL is determined annually or less frequently: The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.

(B) When compliance with the MCL is determined by calculating a running annual average of all samples taken at a monitoring location: the highest average of any of the monitoring locations and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. For the MCLs for TTHM and HAA5 in § 141.64(b)(2), systems must include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the locational running annual averages for all locations that exceed the MCL.

Note to paragraph (d)(4)(iv): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in appendix A of this subpart.

(v) For turbidity.

(A) When it is reported pursuant to § 141.13: The highest average monthly value.

(B) When it is reported pursuant to the requirements of § 141.71: the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.

(C) When it is reported pursuant to § 141.73 or § 141.173 or § 141.551: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in § 141.73 or § 141.173, or § 141.551 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;

(vi) For lead and copper: the 90th percentile concentration of the most recent round(s) of sampling, the number of sampling sites exceeding the action level, and the range of tap sampling results;

(vii)-(viii) [Reserved]

(ix) The likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in appendix A to this subpart that is most applicable to the system; and

(x) For *E. coli* analytical results under subpart Y: The total number of *E. coli* positive samples;

(5) If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the contaminant data section(s) should differentiate contaminant data for each service area and the report should identify each separate distribution system. For example, if displayed in a table, it should contain a separate column for each service area. Alternatively, systems could produce separate reports tailored to include data for each service area.

(6) The detected contaminant data section(s) must clearly identify any data indicating violations of MCLs, MRDLs, or treatment techniques, and the report must contain a clear and readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system must use the relevant language of appendix A to this subpart.

(7) For detected unregulated contaminants for which monitoring is required, the reports must present the average and range at which the contaminant was detected. The report must include a brief explanation of the reasons for monitoring for unregulated contaminants such as:

(i) Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the Agency should consider regulating those contaminants in the future.

(ii) May use an alternative educational statement in the CCR if approved by the Primacy Agency.

(8) For systems that exceeded the lead action level in § 141.80(c), the detected contaminant data section must clearly identify the exceedance if any corrective action has been required by the Administrator or the State during the monitoring period covered by the report. The report must include a clear and readily understandable explanation of the exceedance, the steps consumers can take to reduce their exposure to lead in drinking water, and a description of any corrective actions the system has or will take to address the exceedance.

(e) Information on *Cryptosporidium*, radon, and other contaminants:

(1) If the system has performed any monitoring for *Cryptosporidium* which indicates that *Cryptosporidium* may be present in the source water or the finished water, the report must include:

(i) A summary of the results of the monitoring; and

(ii) An explanation of the significance of the results.

(2) If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:

(i) The results of the monitoring; and

(ii) An explanation of the significance of the results.

(3) If the system has performed additional monitoring which indicates the presence of other contaminants in the finished water, EPA strongly encourages systems to report any results which may indicate a health concern. To determine if results may indicate a health concern, EPA recommends that systems find out if EPA has proposed an NPDWR or issued a health advisory for that contaminant by contacting the Agency by calling the Safe Drinking Water Hotline (800-426-4791) or an alternative method identified on the website *epa.gov/safewater*. EPA considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, EPA recommends that the report include:

(i) The results of the monitoring; and

(ii) An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

(f) Compliance with NPDWR. In addition to the requirements of paragraph (d)(6) of this section, the report must note any violation that occurred during the period covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

(1) Monitoring and reporting of compliance data;

(2) Filtration and disinfection prescribed by subpart H of this part. For systems which have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

(3) Lead and copper control requirements prescribed by subpart I of this part. For systems that fail to take one or more actions prescribed by §§ 141.80 through 141.93, the report must include the applicable language of appendix A to this subpart for lead, copper, or both.

(4) Treatment techniques for Acrylamide and Epichlorohydrin prescribed by subpart K of this part. For systems that violate the requirements of subpart K of this part, the report must include the relevant language from appendix A to this subpart.

(5) Recordkeeping of compliance data.

(6) Special monitoring requirements prescribed by §§ 141.40 and 141.41; and

(7) Violation of the terms of a variance, an exemption, or an administrative or judicial order.

(g) Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under § 1415 or 1416 of SDWA, the report must contain:

(1) An explanation of the reasons for the variance or exemption;

(2) The date on which the variance or exemption was issued;

(3) A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and

(4) A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

(h) Additional information:

(1) The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of paragraphs (h)(1)(i) through (iii) of this section or systems may use their own comparable language. The report also must include the language of paragraph (h)(1)(iv) of this section.

(i) Both tap water and bottled water come from rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material. The water can also pick up and transport substances resulting from the presence of animals or from human activity. These substances are also called contaminants.

(ii) Contaminants are any physical, chemical, biological, or radiological substance or matter in water. Contaminants that may be present in source water include:

(A) *Microbial contaminants,* such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(B) *Inorganic contaminants,* such as salts and metals, which can occur naturally in the soil or groundwater or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(C) *Pesticides and herbicides,* which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

(D) *Organic chemical contaminants,* including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

(E) *Radioactive contaminants,* which can occur naturally or be the result of oil and gas production and mining activities.

(iii) To protect public health, the Environmental Protection Agency prescribes regulations which limit the amount of certain contaminants in tap water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

(iv) Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily mean that water poses a health risk. More information about contaminants and potential health effects can be obtained by contacting the Environmental Protection Agency by calling the Safe Drinking Water Hotline (800-426-4791) or visiting the website *epa.gov/safewater.*

(2) The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report. If a system uses a website or social media to share additional information, EPA recommends including information about how to access such media platforms in the report.

(3) In communities with a large proportion of consumers with limited English proficiency, as determined by the Primacy Agency, the report must contain information in the appropriate language(s) regarding the importance of the report and either contain information where such consumers may obtain a translated copy of the report, or assistance in the appropriate language(s), or the report must be in the appropriate language(s).

(4) The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

(5) The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

(6) Systems required to comply with subpart S of this part.

(i) Any ground water system that receives notice from the State of a significant deficiency or notice from a laboratory of a fecal indicator-positive ground water source sample that is not invalidated by the State under § 141.402(d) must inform its customers of any significant deficiency that is uncorrected at the time of the next reporting period or of any fecal indicator-positive ground water source sample in the next report or 6-month update according to § 141.155. The system must continue to inform the public annually until the State determines that particular significant deficiency is corrected or the fecal contamination in the ground water source is addressed under § 141.403(a). Each report must include the following elements:

(A) The nature of the particular significant deficiency or the source of the fecal contamination (if the source is known) and the date the significant deficiency was identified by the State or the dates of the fecal indicator-positive ground water source samples;

(B) If the fecal contamination in the ground water source has been addressed under § 141.403(a) and the date of such action;

(C) For each significant deficiency or fecal contamination in the ground water source that has not been addressed under § 141.403(a), the State-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed; and

(D) If the system receives notice of a fecal indicator-positive ground water source sample that is not invalidated by the State under § 141.402(d), the potential health effects using the health effects language of appendix A to this subpart.

(ii) If directed by the State, a system with significant deficiencies that have been corrected before the next report is issued must inform its customers of the significant deficiency, how the deficiency was corrected, and the date of correction under paragraph (h)(6)(i) of this section.

(7) Systems required to comply with subpart Y of this part.

(i) Any system required to comply with the Level 1 assessment requirement or a Level 2 assessment requirement that is not due to an *E. coli* MCL violation must include in the report the text found in paragraphs (h)(7)(i)(A) through (C) of this section as appropriate, filling in the blanks accordingly and the text found in paragraphs (h)(7)(i)(D)(1) and (2) of this section if appropriate. Systems may use an alternative statement with equivalent information for paragraphs (h)(7)(i)(B) and (C) of this section if approved by the primacy agency.

(A) Coliforms are bacteria that occur naturally in the environment and are used as an indicator that other, potentially harmful, waterborne organisms may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

(B) Because we found coliforms during sampling, we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] assessment(s) of the system, also known as a Level 1 assessment, to identify possible sources of contamination. [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessment(s) were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

(C) Because we found coliforms during sampling, we were required to conduct [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] detailed assessments, also known as a Level 2 assessment, to identify possible sources of contamination. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

(D) Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

(1) During the past year we failed to conduct all the required assessment(s).

(2) During the past year we failed to correct all identified defects that were found during the assessment.

(ii) Any system required to conduct a Level 2 assessment due to an *E. coli* MCL violation must include in the report the text found in paragraphs (h)(7)(ii)(A) and (B) of this section, and health effects language in appendix A to this subpart, filling in the blanks accordingly and the text found in paragraphs (h)(7)(ii)(C)(1) and (2) of this section, if appropriate. Systems may use an alternative statement with equivalent information for paragraphs (h)(7)(ii)(A) through (C) of this section, if approved by the primacy agency.

(A) We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s), also known as a Level 2 assessment, to identify problems and to correct any problems that were found during these assessments.

(B) We were required to complete a detailed assessment of our water system, also known as a Level 2 assessment, because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

(C) Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

(1) We failed to conduct the required assessment.

(2) We failed to correct all defects that were identified during the assessment that we conducted.

(iii) If a system detects *E. coli* and has violated the *E. coli MCL*, in addition to completing the table as required in paragraph (d)(4) of this section, the system must include one or more of the following statements to describe any noncompliance, as applicable:

(A) We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(B) We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

(C) We failed to take all required repeat samples following an *E. coli*-positive routine sample.

(D) We failed to test for *E. coli* when any repeat sample tested positive for total coliform.

(iv) If a system detects *E. coli* and has not violated the *E. coli MCL*, in addition to completing the table as required in paragraph (d)(4) of this section, the system may include a statement that explains that although they have detected *E. coli*, they are not in violation of the *E. coli* MCL.

(8) Systems required to comply with subpart I of this part.

(i) The report must notify consumers that complete lead tap sampling data are available for review and must include information on how to access the data.

(ii) The report must include a statement that a service line inventory (including inventories where the publicly accessible inventory consists of a written statement that there are no lead, galvanized requiring replacement, or lead status unknown service lines, known lead connectors or connectors of unknown material) has been prepared and include instructions to access the publicly accessible service line inventory. If the service line inventory is available online, the report must include the direct link to the inventory.

(iii) For systems with lead, galvanized requiring replacement, or lead status unknown service lines in the system's inventory pursuant to § 141.84(a) and (b), the report must include information on how to obtain a copy of the service line replacement plan or a direct link to the plan if the system is required to make the service line replacement plan available online.

(iv) The report must contain a plainly worded explanation of the corrosion control efforts the system is taking in accordance with subpart I of this part. Corrosion control efforts consist of treatment (*e.g.*, pH adjustment, alkalinity adjustment, or corrosion inhibitor addition) and other efforts contributing to the control of the corrosivity of water (*e.g.*, monitoring to assess the corrosivity of water). The system may use one of the following templates or use their own explanation that includes equivalent information.

(A) For systems with State or EPA-designated Optimal Corrosion Control Treatment:

(*1*) Corrosion of pipes, plumbing fittings, and fixtures may cause lead and copper to enter drinking water. To assess corrosion of lead and copper, [name of system] conducts tap sampling for lead and copper at selected sites [insert frequency at which system conducts tap sampling]. [Name of system] treats water using [identify treatment method] to control corrosion, which was designated as the optimal corrosion control treatment by [the State or EPA, as applicable]. To ensure the treatment is operating effectively, [name of system] monitors water quality parameters set by the [the State or EPA, as applicable] [insert frequency at which system conducts water quality parameter monitoring].

(2) If applicable add: [Name of system] is currently conducting a study of corrosion control to determine if any changes to treatment methods are needed to minimize the corrosivity of the water.

(B) For systems without State or EPA designated Optimal Corrosion Control Treatment:

(1) Corrosion of pipes, plumbing fittings and fixtures may cause metals, including lead and copper, to enter drinking water. To assess corrosion of lead and copper, [name of system] conducts tap sampling for lead and copper at selected sites [insert frequency at which system conducts tap sampling].

(2) If applicable, add: [Name of system] treats water using [identify treatment method] to control corrosion.

(3) If applicable add: [Name of system] is currently conducting a study of corrosion control to determine if any changes to treatment methods are needed to minimize the corrosivity of the water.

(v) The report must include a statement that the water system is required to sample for lead in schools and licensed child care facilities as requested by the facility and that directs the public to contact their school or child care facility for further information about potential sampling results.

[63 FR 44526, Aug. 19, 1998, as amended at 63 FR 69516, Dec. 16, 1998; 64 FR 34733, June 29, 1999; 65 FR 26022, May 4, 2000; 67 FR 1836, Jan. 14, 2002; 71 FR 483, Jan. 4, 2006; 71 FR 65651, Nov. 8, 2006; 78 FR 10348, Feb. 13, 2013; 86 FR 4309, Jan. 15, 2021; 89 FR 32746, Apr. 26, 2024; 89 FR 46008, May 24, 2024; 89 FR 86662, Oct. 30, 2024]

§ 141.154 Required additional health information.

(a) All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or on EPA's website *epa.gov/safewater*.

(b) A system that detects arsenic above 0.005 mg/L and up to and including 0.010 mg/L:

(1) Must include in its report a short informational statement about arsenic, using language such as: Arsenic is known to cause cancer in humans. Arsenic also may cause other health effects such as skin damage and circulatory problems. [NAME OF UTILITY] meets the EPA arsenic drinking water standard, also known as a Maximum Contaminant Level (MCL). However, you should know that EPA's MCL for arsenic balances the scientific community's understanding of arsenic-related health effects and the cost of removing arsenic from drinking water. The highest concentration of arsenic found in [YEAR] was [INSERT MAX ARSENIC LEVEL per § 141.153(d)(4)(iv)] ppb.

(2) May use an alternative educational statement in the CCR if approved by the Primacy Agency.

(c) A system which detects nitrate at levels above 5 mg/l, but below the MCL:

(1) Must include a short informational statement about the impacts of nitrate on children using language such as: Even though [NAME OF UTILITY] meets the EPA nitrate drinking water standard, also known as a Maximum Contaminant Level (MCL), if you are caring for an infant and using tap water to prepare formula, you may want to use alternate sources of water or ask for advice from your health care provider. Nitrate levels above 10 ppm pose a particularly high health concern for infants under 6 months of age and can interfere with the capacity of the infant's blood to carry

oxygen, resulting in a serious illness. Symptoms of serious illness include shortness of breath and blueness of the skin, known as "blue baby syndrome." Nitrate levels in drinking water can increase for short periods of time due to high levels of rainfall or agricultural activity, therefore we test for nitrate [INSERT APPLICABLE SAMPLING FREQUENCY]. The highest level for nitrate found during [YEAR] was [INSERT MAX NITRATE LEVEL per § 141.153(d)(4)(iv)] ppm.

(2) May use an alternative educational statement in the CCR if approved by the Primacy Agency.

(d) Every report must include the following lead-specific information:

(1) A short informational statement about lead in drinking water and its effects on children. The statement must include the information in figure 1 to this paragraph (d)(1):

Figure 1 to Paragraph (d)(1)

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. [INSERT NAME OF SYSTEM] is responsible for providing high quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requiring replacement service line, you may need to flush your pipes for a longer period. If you are concerned about lead in your water and wish to have your water tested, contact [INSERT NAME OF SYSTEM and CONTACT INFORMATION]. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *https://www.epa.gov/safewater/lead.*

(2) May use an alternative educational statement in the CCR if approved by the Primacy Agency.

[63 FR 44526, Aug. 19, 1998, as amended at 63 FR 69475, Dec. 16, 1998; 64 FR 34733, June 29, 1999; 65 FR 26023, May 4, 2000; 66 FR 7064, Jan. 22, 2001; 68 FR 14506, Mar. 25, 2003; 72 FR 57820, Oct. 10, 2007; 86 FR 4309, Jan. 15, 2021; 89 FR 46011, May 24, 2024; 89 FR 86662, Oct. 30, 2024]

§ 141.155 Report delivery, reporting, and recordkeeping.

(a) Except as provided in paragraph (g) of this section, each community water system must directly deliver a copy of the report to each customer.

(1) Systems must use at a minimum, one of the following forms of delivery:

(i) Mail or hand deliver a paper copy of the report;

(ii) Mail a notification that the report is available on a website via a direct link;

(iii) Email a direct link or electronic version of the report; or

(iv) Another direct delivery method approved in writing by the primacy agency.

(2) Systems using electronic delivery methods in paragraph (a)(1)(ii), (iii), or (iv) of this section must provide a paper copy of the report to any customer upon request. The notification method must prominently display directions for requesting such copy.

(3) For systems that choose to electronically deliver the reports by posting the report to a website and providing a notification either by mail or email:

(i) The report must be publicly available on the website at time notification is made;

(ii) Notifications must prominently display the link and include an explanation of the nature of the link; and

(iii) Systems may use a web page to convey the information required in §§ 141.153, 141.154, and 141.156.

(4) Systems that use a publicly available website to provide reports must maintain public access to the report for no less than 3 years.

(b) The system must make a good faith effort to reach consumers who do not get water bills, using means recommended by the primacy agency. EPA expects that an adequate good faith effort will be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers includes a mix of methods to reach the broadest possible range of persons served by the water system such as, but not limited to: Posting the reports on the internet; mailing reports or postcards with links to the reports to all service addresses and/or postal customers; using an opt in notification system to send emails and/or texts with links to the reports to interested consumers; advertising the availability of the report in the news media and on social media; publication in a local newspaper or newsletter; posting a copy of the report or notice of availability with links (or equivalent, such as Quick Response (QR) codes) in public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community organizations; holding a public meeting to educate consumers on the reports.

(i) Where a system is aware that it serves a substantial number of non-bill paying consumers, the system is encouraged to directly deliver the reports or notices of availability of the reports to service addresses.

(ii) Where a system is aware of a substantial number of bill-paying consumers without access to electronic forms of the report, the system should use at least one non-electronic form of delivery.

(c) No later than 10 days after the date the system is required to distribute the report to its customers, each community water system must provide a copy of the report to the primacy agency and a certification that the report(s) has/have been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the primacy agency.

(d) No later than the date the system is required to distribute the report to its customers, each community water system must deliver the report to any other agency or clearinghouse identified by the primacy agency.

(e) Each community water system must make its reports available to the public upon request. Systems should make a reasonable effort to provide the reports in an accessible format to anyone who requests an accommodation.

(f) Each community water system serving 50,000 or more persons must post its current year's report to a publicly-accessible site on the Internet.

(g) The Governor of a State or their designee, or the Tribal Leader where the Tribe has met the eligibility requirements contained in § 142.72 for the purposes of waiving the mailing requirement, can waive the requirement of paragraph (a) of this section for community water systems serving fewer than 10,000 persons. In consultation with the tribal government, the Regional Administrator may waive the requirement of § 141.155(a) in areas in Indian country where no tribe has been deemed eligible.

(1) Such systems must:

(i) Publish the reports in one or more local newspapers or on one or more local online news sites serving the area in which the system is located;

(ii) Inform the customers that the reports will not be mailed, either in the newspapers in which the reports are published or by other means approved by the State; and

(iii) Make the reports available to the public upon request.

(2) Systems serving 500 or fewer persons may forego the requirements of paragraphs (g)(1)(i) and (ii) of this section if they provide notice that the report is available upon request at least once per year to their customers by mail, door-to-door delivery or by posting in one or more locations where persons served by the system can reasonably be expected to see it.

(h) Any system subject to this subpart must retain copies of its Consumer Confidence Report for no less than 3 years.

(i) Systems serving 100,000 or more persons, must develop a plan for providing assistance to consumers with limited English proficiency. The system must evaluate the languages spoken by persons with limited English proficiency served by the water system, and the system's anticipated approach to address translation needs. The first plan must be provided to the state with the first report in 2027. Plans must be evaluated annually and updated as necessary and reported with the certification required in paragraph (c) of this section.

(j) Delivery timing and biannual delivery:

(1) Each community water system must distribute reports by July 1 each year. Each report distributed by July 1 must use data collected during, or prior to, the previous calendar year using methods described in paragraph (a) of this section.

(2) Each community water system serving 10,000 or more persons must distribute the report biannually, or twice per calendar year, by December 31 using methods described in paragraph (a) of this section.

(3) Systems required to comply with paragraph (j)(2) of this section, with a violation or action level exceedance that occurred between January 1 and June 30 of the current year, or have received monitoring results from required monitoring under the Unregulated Contaminant Monitoring Rule in § 141.40, must include a 6-month update with the second report with the following:

(i) A short description of the nature of the 6-month update and the biannual delivery.

(ii) If a system receives an MCL, MRDL, or treatment technique violation, the 6-month update must include the applicable contaminant section information in § 141.153(d)(4), and a readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, actions taken by the system to address the violation, and timeframe the system expects to complete those actions. To describe the potential health effects, the system must use the relevant language of appendix A to this subpart.

(iii) If a system receives any other violation, the 6-month update must include the information in § 141.153(f).

(iv) If a system exceeded the lead action level following monitoring conducted between January 1 and June 30 of the current year, the system must include information identified in § 141.153(d)(4)(vi) and (d)(8).

(v) For systems monitoring under § 141.40 that become aware of results for samples collected during the reporting year but were not included in the reports distributed by July 1, the system must include information as required by § 141.153(d)(7).

[63 FR 44526, Aug. 19, 1998, as amended at 65 FR 26023, May 4, 2000; 89 FR 46012, May 24, 2024]

§ 141.156 Summary of report contents.

(a) Each report must include a summary displayed prominently at the beginning of the report, including a brief description of the nature of the report.

(b) Systems must include, at a minimum, the following information in the summary:

(1) Summary of violations and compliance information included in the report required by § 141.153(d)(6) and (8), (f), and (h)(6) and (7).

(2) Contact information for owner, operator, or designee of the community water system as a source of additional information concerning the report, per § 141.153(h)(2).

(c) If applicable, systems must include the following in the summary:

(1) For systems using delivery methods in § 141.155(a)(1)(ii), (iii), or (iv), the summary must include directions for consumers to request a paper copy of the report, as described in § 141.155(a)(2).

(2) For systems subject to § 141.153(h)(3) because they serve a large proportion of consumers with limited English proficiency, the summary must include information where consumers may obtain a translated copy of the report, or get assistance in the appropriate language(s).

(3) For systems using the report to also meet the public notification requirements of subpart Q of this part, the summary must specify that it is also serving to provide public notification of one or more violations or situations, provide a brief statement about the nature of the notice(s), and a brief description of how to locate the notice(s) in the report.

(d) The summary should be written in plain language and may use infographics.

(e) For those systems required to include a 6-month update with the second report under § 141.155(j)(2), the summary should include a brief description of the nature of the report and update, noting the availability of new information for the current year (between January and June).

(f) The report summary must include the following standard language to encourage the distribution of the report to all persons served:

> Please share this information with anyone who drinks this water (or their guardians), especially those who may not have received this report directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this report in a public place or distributing copies by hand, mail, email, or another method.

[89 FR 46013, May 24, 2024]

Appendix A to Subpart O of Part 141—Regulated Contaminants

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
Microbiological contaminants:						
Total Coliform Bacteria	TT		TT		N/A	Use language found in § 141.153(h)(7)(i)(A).
E. coli	Routine and repeat samples are total coliform-positive		Routine and repeat samples are total coliform-positive	0	Human and animal fecal waste	*E. coli* are bacteria whos presence indicates that t water may be contaminated with huma or animal wastes. Huma pathogens in these wast

Key:

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MCLG = Maximum Contaminant Level Goal

MFL = million fibers per liter

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

mrem/year = millirems per year (a measure of radiation absorbed by the body)

N/A = Not Applicable

NTU = Nephelometric Turbidity Units (a measure of water clarity)

pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

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TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
	and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*		and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*			can cause short-term effects, such as diarrhea cramps, nausea, headaches, or other symptoms. They may po a greater health risk for infants, young children, t elderly, and people with severely-compromised immune systems.
Fecal Indicators (enterococci or coliphage)	TT		TT	N/A	Human and animal fecal	Fecal indicators are microbes whose present

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					waste	indicates that the water may be contaminated wi human or animal wastes Microbes in these waste can cause short-term health effects, such as diarrhea, cramps, nausea headaches, or other symptoms. They may po a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Total organic carbon (ppm)	TT		TT	N/A	Naturally present in the environment	Total organic carbon (TC has no health effects. However, total organic carbon provides a mediu for the formation of disinfection by products. These byproducts includ

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, li or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT		TT	N/A	Soil runoff	Turbidity has no health effects. However, turbidi can interfere with disinfection and provide medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						bacteria, viruses, and parasites that can cause symptoms such as naus cramps, diarrhea and associated headaches.
Radioactive contaminants:						
Beta/photon emitters (mrem/yr)	4 mrem/yr	–	4	0	Decay of natural and man-made deposits	Certain minerals are radioactive and may emi forms of radiation know as photons and beta radiation. Some people who drink water contain beta particle and photon radioactivity in excess of the MCL over many year may have an increased r of getting cancer.
Alpha emitters (pCi/L)	15 pCi/L	–	15	0	Erosion of natural deposits	Certain minerals are radioactive and may emi form of radiation known alpha radiation. Some people who drink water

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						containing alpha emitter in excess of the MCL ove many years may have an increased risk of getting cancer.
Combined radium (pCi/L)	5 pCi/L	–	5	0	Erosion of natural deposits	Some people who drink water containing radium-226 or -228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (pCi/L)	30 µg/L	–	30	0	Erosion of natural deposits	Some people who drink water containing uranium in excess of the MCL ove many years may have an increased risk of getting cancer and kidney toxici
Inorganic contaminants:						
Antimony (ppb)	.006	1000	6	6	Discharge from petroleum refineries; fire	Some people who drink water containing antimo well in excess of the MC

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					retardants; ceramics; electronics; solder	over many years could experience increases in blood cholesterol and decreases in blood suga
Arsenic (ppb)	0.010	1000	10	0	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	Some people who drink water containing arsenic excess of the MCL over many years could experience skin damage problems with their circulatory system, and may have an increased r of getting cancer.
Asbestos (MFL)	7 MFL		7	7	Decay of asbestos cement water mains; Erosion of natural deposits	Some people who drink water containing asbest in excess of the MCL ov many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2		2	2	Discharge of	Some people who drink

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					drilling wastes; Discharge from metal refineries; Erosion of natural deposits	water containing barium excess of the MCL over many years could experience an increase i their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Some people who drink water containing berylliu well in excess of the MC over many years could develop intestinal lesion
Bromate (ppb)	.010	1000	10	0	By-product of drinking water disinfection	Some people who drink water of containing bromate in excess of the MCL over many years m have an increased risk of

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						getting cancer.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints	Some people who drink water containing cadmiu in excess of the MCL ove many years could experience kidney dama
Chloramines (ppm)	MRDL = 4		MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use water containing chloramines well in exce of the MRDL could experience irritating effe to their eyes and nose. Some people who drink water containing chloramines well in exce of the MRDL could

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4		MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use water containing chlorin well in excess of the MRI could experience irritatin effects to their eyes and nose. Some people who drink water containing chlorine well in excess o the MRDL could experier stomach discomfort.
Chlorine dioxide (ppb)	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes	Some infants and young children who drink water chlorine dioxide in exces of the MRDL could experience nervous syst effects. Similar effects may occur in fetuses of pregnant women who dr water containing chlorin dioxide in excess of the

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						MRDL. Some people may experience anemia.
Chlorite (ppm)	1		1	0.8	By-product of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous syst effects. Similar effects may occur in fetuses of pregnant women who dr water containing chlorite excess of the MCL. Som people may experience anemia.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits	Some people who use water containing chromium well in excess the MCL over many years could experience allergic dermatitis.
Copper (ppm)	AL = 1.3		AL = 1.3	1.3	Corrosion of household	Copper is an essential nutrient, but some peopl

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					plumbing systems; Erosion of natural deposits	who drink water containi copper in excess of the action level over a relativ short amount of time co experience gastrointesti distress. Some people w drink water containing copper in excess of the action level over many years could suffer liver o kidney damage. People with Wilson's disease should consult their personal doctor.
Cyanide (ppb)	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories	Some people who drink water containing cyanide well in excess of the MC over many years could experience nerve damag or problems with their thyroid.
Fluoride (ppm)	4		4	4	Erosion of	Some people who drink

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	water containing fluoride excess of the MCL over many years could get bo disease, including pain a tenderness of the bones Fluoride in drinking wate at half the MCL or more may cause mottling of children's teeth, usually i children less than nine years old. Mottling, also known as dental fluorosi may include brown stain and/or pitting of the teet and occurs only in developing teeth before they erupt from the gum
Lead (mg/L)	AL = 0.010	1,000	AL = 10	0	Corrosion of household plumbing systems and service lines	There is no safe level of lead in drinking water. Exposure to lead in drinking water can cause serious health effects in

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					connecting buildings to water mains, erosion of natural deposits	age groups, especially pregnant people, infants (both formula-fed and breastfed), and young children. Some of the health effects to infants and children include decreases in IQ and attention span. Lead exposure can also result new or worsened learnin and behavior problems. The children of persons who are exposed to lead before or during pregnan may be at increased risk these harmful health effects. Adults have increased risks of heart disease, high blood pressure, kidney or nervc system problems. Conta

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						your health care provider for more information abc your risks.
Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; Dis charge from refineries and factories; Runoff from landfills; Runoff from cropland	Some people who drink water containing inorgar mercury well in excess o the MCL over many year: could experience kidney damage.
Nitrate (ppm)	10		10	10	Runoff from fertilizer use; Leaching from septic tanks, sew age; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrate excess of the MCL could become seriously ill and, untreated, may die. Symptoms include shortness of breath and blue baby syndrome.

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pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million, or milligrams per liter (mg/l)

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
Nitrite (ppm)	1		1	1	Runoff from fertilizer use; Leaching from septic tanks, sew age; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrite i excess of the MCL could become seriously ill and, untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with th circulation.
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing	Some people who drink water containing thallium

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					sites; Discharge from electronics, glass, and drug factories	in excess of the MCL ove many years could experience hair loss, changes in their blood, o problems with their kidneys, intestines, or liv
Synthetic organic contaminants including pesticides and herbicides:						
2,4-D (ppb)	.07	1000	70	70	Runoff from herbicide used on row crops	Some people who drink water containing the wee killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex](ppb)	.05	1000	50	50	Residue of banned herbicide	Some people who drink water containing silvex i excess of the MCL over many years could experience liver problem

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Acrylamide	TT		TT	0	Added to water during sewage/ wastewater treatment	Some people who drink water containing high levels of acrylamide over long period of time could have problems with their nervous system or blood and may have an increas risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops	Some people who drink water containing alachlo in excess of the MCL ove many years could have problems with their eyes liver, kidneys, or spleen, c experience anemia, and may have an increased r of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops	Some people who drink water containing atrazin well in excess of the MC over many years could experience problems wit

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						their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene [PAH] (nanograms/l)	.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines	Some people who drink water containing benzo(a)pyrene in exces of the MCL over many years may experience reproductive difficulties and may have an increas risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa	Some people who drink water containing carbofuran in excess of t MCL over many years could experience probler with their blood, or nervo or reproductive systems.
Chlordane (ppb)	.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlorda in excess of the MCL ove many years could

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						experience problems wit their liver or nervous system, and may have ar increased risk of getting cancer.
Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way	Some people who drink water containing dalapor well in excess of the MC over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb)	.4	1000	400	400	Discharge from chemical factories	Some people who drink water containing di(2-ethylhexyl) adipate well in excess of the MC over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb)	.006	1000	6	0	Discharge from rubber and	Some people who drink water containing

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					chemical factories	di(2-ethylhexyl) phthalat well in excess of the MC over many years may ha problems with their liver, experience reproductive difficulties, and may hav an increased risk of getti cancer.
Dibromochloropropane (ppt)	.0002	1,000,000	200	0	Runoff/ leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	Some people who drink water containing DBCP i excess of the MCL over many years could experience reproductive problems and may have increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables	Some people who drink water containing dinose well in excess of the MC over many years could experience reproductive difficulties.

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Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use	Some people who drink water containing diquat i excess of the MCL over many years could get cataracts.
Dioxin [2,3,7,8-TCDD] (ppq)	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories	Some people who drink water containing dioxin i excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getti cancer.
Endothall (ppb)	.1	1000	100	100	Runoff from herbicide use	Some people who drink water containing endoth in excess of the MCL ove many years could experience problems wit their stomach or intestin
Endrin (ppb)	.002	1000	2	2	Residue of banned insecticide	Some people who drink water containing endrin i excess of the MCL over

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						many years could experience liver problem
Epichlorohydrin	TT		TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of tim could experience stomac problems, and may have increased risk of getting cancer.
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries	Some people who drink water containing ethylen dibromide in excess of tl MCL over many years could experience proble with their liver, stomach, reproductive system, or kidneys, and may have a increased risk of getting cancer.
Glyphosate (ppb)	.7	1000	700	700	Runoff from herbicide use	Some people who drink water containing

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						glyphosate in excess of t MCL over many years could experience probler with their kidneys or reproductive difficulties.
Hazard Index PFAS (HFPO-DA, PFBS, PFHxS, and PFNA) (unitless)	1 (unitless)		1	1	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities	Per- and polyfluoroalkyl substances (PFAS) can persist in the human boc and exposure may lead t increased risk of adverse health effects. Low level of multiple PFAS that individually would not lik result in increased risk o adverse health effects m result in adverse health effects when combined i a mixture. Some people who consume drinking water containing mixture of PFAS in excess of the Hazard Index (HI) MCL

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						may have increased heal risks such as liver, immu and thyroid effects following exposure over many years and developmental and thyro effects following repeate exposure during pregnar and/or childhood.
Heptachlor (ppt)	.0004	1,000,000	400	0	Residue of banned pesticide	Some people who drink water containing heptachlor in excess of t MCL over many years could experience liver damage and may have a increased risk of getting cancer.
Heptachlor epoxide (ppt)	.0002	1,000,000	200	0	Breakdown of heptachlor	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could

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						experience liver damage and may have an increas risk of getting cancer.
Hexachlorobenzene (ppb)	.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems wit their liver or kidneys, or adverse reproductive effects, and may have ar increased risk of getting cancer.
Hexachlorocyclopentadiene (ppb)	.05	1000	50	50	Discharge from chemical factories	Some people who drink water containing hexachlorocyclopentadi well in excess of the MC over many years could experience problems wit their kidneys or stomach
HFPO-DA (ng/l)	0.00001	1,000,000	10	10	Discharge from	Some people who drink

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Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities	water containing HFPO-I in excess of the MCL ove many years may have increased health risks st as immune, liver, and kidney effects. There is also a potential concern cancer associated with HFPO-DA exposure. In addition, there may be increased risks of developmental effects fc people who drink water containing HFPO-DA in excess of the MCL following repeated exposure during pregnar and/or childhood.
Lindane (ppt)	.0002	1,000,000	200	200	Runoff/ leaching from insecticide used on cattle,	Some people who drink water containing lindane excess of the MCL over many years could

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					lumber, gardens	experience problems wit their kidneys or liver.
Methoxychlor (ppb)	.04	1000	40	40	Runoff/ leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Some people who drink water containing methoxychlor in excess the MCL over many year could experience reproductive difficulties.
Oxamyl [Vydate] (ppb)	.2	1000	200	200	Runoff/ leaching from insecticide used on apples, potatoes and tomatoes	Some people who drink water containing oxamyl excess of the MCL over many years could experience slight nervou system effects.
PCBs [Polychlorinated biphenyls] (ppt)	.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals	Some people who drink water containing PCBs ir excess of the MCL over many years could experience changes in th skin, problems with their

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						thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased r of getting cancer.
Pentachlorophenol (ppb)	.001	1000	1	0	Discharge from wood preserving factories	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems wit their liver or kidneys, and may have an increased r of getting cancer.
PFHxS (ng/l)	0.00001	1,000,000	10	10	Discharge from manufacturing and industrial chemical facilities, use of certain consumer	Some people who drink water containing PFHxS excess of the MCL over many years may have increased health risks su as immune, thyroid, and liver effects. In addition,

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					products, occupational exposures, and certain firefighting activities	there may be increased risks of developmental effects for people who drink water containing PFHxS in excess of the MCL following repeated exposure during pregnar and/or childhood.
PFNA (ng/l)	0.00001	1,000,000	10	10	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities	Some people who drink water containing PFNA i excess of the MCL over many years may have increased health risks su as elevated cholesterol levels, immune effects, a liver effects. In addition, there may be increased risks of developmental effects for people who drink water containing PFNA in excess of the M following repeated

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						exposure during pregnar and/or childhood.
PFOA (ng/l)	0.0000040	1,000,000	4.0	0	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities	Some people who drink water containing PFOA i excess of the MCL over many years may have increased health risks su as cardiovascular, immu and liver effects, as well increased incidence of certain types of cancers including kidney and testicular cancer. In addition, there may be increased risks of developmental and immune effects for peop who drink water containi PFOA in excess of the M following repeated exposure during pregnar and/or childhood.

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PFOS (ng/l)	0.0000040	1,000,000	4.0	0	Discharge from manufacturing and industrial chemical facilities, use of certain consumer products, occupational exposures, and certain firefighting activities	Some people who drink water containing PFOS ir excess of the MCL over many years may have increased health risks su as cardiovascular, immu and liver effects, as well increased incidence of certain types of cancers including liver cancer. In addition, there may be increased risks of developmental and immune effects for peop who drink water containi PFOS in excess of the M following repeated exposure during pregnar and/or childhood.
Picloram (ppb)	.5	1000	500	500	Herbicide runoff	Some people who drink water containing piclora in excess of the MCL ov

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						many years could experience problems wit their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazi in excess of the MCL ov many years could experience problems wit their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/ leaching from insecticide used on cotton and cattle	Some people who drink water containing toxaphene in excess of t MCL over many years could have problems wit their kidneys, liver, or thyroid, and may have ar increased risk of getting cancer.
Volatile organic contaminants:						
Benzene (ppb)	.005	1000	5	0	Discharge from factories;	Some people who drink water containing benzen

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TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					Leaching from gas storage tanks and landfills	in excess of the MCL ove many years could experience anemia or a decrease in blood platele and may have an increas risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities	Some people who drink water containing carbon tetrachloride in excess o the MCL over many years could experience probler with their liver and may have an increased risk of getting cancer.
Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories	Some people who drink water containing chlorobenzene in excess the MCL over many years could experience probler with their liver or kidneys
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial	Some people who drink water containing o-

Key:

AL = Action Level

MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

MFL = million fibers per liter

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

mrem/year = millirems per year (a measure of radiation absorbed by the body)

N/A = Not Applicable

NTU = Nephelometric Turbidity Units (a measure of water clarity)

pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

ppt = parts per trillion, or nanograms per liter

ppq = parts per quadrillion, or picograms per liter

TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					chemical factories	dichlorobenzene well in excess of the MCL over many years could experience problems wit their liver, kidneys, or circulatory systems.
p-Dichlorobenzene (ppb)	.075	1000	75	75	Discharge from industrial chemical factories	Some people who drink water containing p-dichlorobenzene in exce of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, changes in their blood.
1,2-Dichloroethane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
1,1-Dichloroethylene (ppb)	.007	1000	7	7	Discharge from	Some people who drink

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ppt = parts per trillion, or nanograms per liter

ppq = parts per quadrillion, or picograms per liter

TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					industrial chemical factories	water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems wit their liver.
cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories	Some people who drink water containing cis-1,2-dichloroethylene i excess of the MCL over many years could experience problems wit their liver.
trans-1,2-Dichloroethylene (ppb)	.1	1000	100	100	Discharge from industrial chemical factories	Some people who drink water containing trans-1,2-dichloroethylen well in excess of the MC over many years could experience problems wit their liver.
Dichloromethane (ppb)	.005	1000	5	0	Discharge from pharmaceutical	Some people who drink water containing

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ppt = parts per trillion, or nanograms per liter

ppq = parts per quadrillion, or picograms per liter

TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					and chemical factories	dichloromethane in exce of the MCL over many years could have liver problems and may have increased risk of getting cancer.
1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene (ppb)	.7	1000	700	700	Discharge from petroleum refineries	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems wit their liver or kidneys.
Haloacetic Acids (HAA) (ppb)	.060	1000	60	N/A	By-product of drinking water	Some people who drink water containing

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ppq = parts per quadrillion, or picograms per liter

TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					disinfection	haloacetic acids in exce of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills	Some people who drink water containing styrene well in excess of the MC over many years could have problems with their liver, kidneys, or circulatc system.
Tetrachloroethylene (ppb)	.005	1000	5	0	Discharge from factories and dry cleaners	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increas risk of getting cancer.
1,2,4-Trichlorobenzene (ppb)	.07	1000	70	70	Discharge from textile-finishing	Some people who drink water containing

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TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					factories	1,2,4-trichlorobenzene w in excess of the MCL ove many years could experience changes in th adrenal glands.
1,1,1-Trichloroethane (ppb)	.2	1000	200	200	Discharge from metal degreasing sites and other factories	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems wit their liver, nervous syste or circulatory system.
1,1,2-Trichloroethane (ppb)	.005	1000	5	3	Discharge from industrial chemical factories	Some people who drink water containing 1,1,2-trichloroethane wel excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
Trichloroethylene (ppb)	.005	1000	5	0	Discharge from	Some people who drink

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ppb = parts per billion, or micrograms per liter (µg/l)

ppt = parts per trillion, or nanograms per liter

ppq = parts per quadrillion, or picograms per liter

TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
					metal degreasing sites and other factories	water containing trichloroethylene in exce of the MCL over many years could experience problems with their liver and may have an increas risk of getting cancer.
TTHMs [Total trihalomethanes] (ppb)	0.10/.080	1000	100/80	N/A	By-product of drinking water disinfection	Some people who drink water containing trihalomethanes in exces of the MCL over many years may experience problems with their liver, kidneys, or central nervo systems, and may have i increased risk of getting cancer.
Toluene (ppm)	1		1	1	Discharge from petroleum factories	Some people who drink water containing toluene well in excess of the MC over many years could have problems with their

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MRDLG = Maximum Residual Disinfectant Level Goal

mrem/year = millirems per year (a measure of radiation absorbed by the body)

N/A = Not Applicable

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pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

ppt = parts per trillion, or nanograms per liter

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TT = Treatment Technique

Contaminant (units)	Traditional MCL in mg/l.	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects languag
						nervous system, kidneys or liver.
Vinyl Chloride (ppb)	.002	1000	2	0	Leaching from PVC piping; Discharge from plastics factories	Some people who drink water containing vinyl chloride in excess of the MCL over many years m have an increased risk of getting cancer.
Xylenes (ppm)	10		10	10	Discharge from petroleum factories; Discharge from chemical factories	Some people who drink water containing xylenes excess of the MCL over many years could experience damage to th nervous system.

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mrem/year = millirems per year (a measure of radiation absorbed by the body)

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pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

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TT = Treatment Technique

[65 FR 26024, May 4, 2000, as amended at 65 FR 76749, Dec. 7, 2000; 66 FR 7064, Jan. 22, 2001; 67 FR 70855, Nov. 27, 2002; 67 FR 73011, Dec. 9, 2002; 68 FR 14506, Mar. 25, 2003; 71 FR 65652, Nov. 8, 2006; 78 FR 10349, Feb. 13, 2013; 86 FR 4309, Jan. 15, 2021; 89 FR 32746, Apr. 26, 2024; 89 FR 86663, Oct. 30, 2024]

Subject: Water Quality
From: <douglas.amick@greenleaf-idaho.us>
Date: 6/16/2025, 3:49 PM
To: "'Mayor'" <mayor@greenleaf-idaho.us>
CC: "'Greenleaf City Clerk'" <clerk@greenleaf-idaho.us>, "'Carrie Huggins - Work'" <treasurer@greenleaf-idaho.us>, "'Ruben Flores'" <ruben.flores@greenleaf-idaho.us>, "'Andrew Tuning'" <andrew.tuning@greenleaf-idaho.us>

Some general information you may want to keep handy. Lee you might want to print this and put it on the bulletin board for when people ask about water quality.

Water Source	pH	Hardness	Iron	Manganese
Butler	7.69	51.0 mg/L	<0.05 mg/L*	0.104 mg/L
Harmony Outside	7.38	167 mg/L	0.05 mg/L**	0.257 mg/L

* Indicates non-detectable level
** Indicates the lowest level measurable
Mg/L means "milligrams per liter", also known as "parts per million"

Doug C. Amick

Public Services Director
City of Greenleaf,
20523 Whittier Dr.
Greenleaf, ID 83626
Cell (208)989-2983

[redacted]

The Division of Public Health

MANGANESE IN DRINKING WATER

What You Need to Know

Key Facts

- Manganese (Mn) occurs naturally in rocks and soil in regions of Idaho and may be found in Idaho's drinking water sources. Your body needs some manganese to stay healthy but too much can be harmful.
- **Infants younger than 6 months should not drink water that has manganese over 0.3 mg/L.** (mg/L = milligrams per liter)
- Manganese is not currently regulated in drinking water, but some public water systems test for it.

What are the health effects of manganese?

- Manganese is an essential nutrient that typically comes from food.
- Formula-fed infants are **most at risk** from consuming too much manganese because some baby formulas already contain manganese.
  - **Infants younger than 6 months** should not drink water that has manganese over the health advisory level of 0.3 mg/L.
  - Formula should not be prepared with water that has manganese over the health advisory level of 0.3 mg/L.
- Children and adults who drink water with high levels of manganese may have:
  - Problems with memory, attention, and motor skills.
  - Learning and behavior issues.

How do I know if I have manganese in my water?

- Manganese in tap water at levels greater than 0.05 mg/L may stain your bathroom fixtures or laundry black or brown. It may make your water look, smell, or taste bad.
- Your public water system may notify you if manganese levels are above the health advisory level of 0.3 mg/L.
- Contact your public water system or have your tap water tested to find out the level of manganese in your water.
  - All water testing should be done through an accredited laboratory. See the Idaho Bureau of Laboratories' website.
  - If you have a private well, you may want to test your water for manganese.
  - **Consider testing, especially if an infant is drinking your tap water.**

How can I protect myself and my family?

- **Do not** prepare baby formula with water that has high levels of manganese (above 0.3 mg/L).
- **Do not** boil the water because this will increase the level of manganese.
- Ensure your family eats a **well-balanced diet** with enough iron to help maintain a healthy level of manganese.
- **Consider filtering your water.**
  - Oxidizing filters, reverse osmosis units, or water softeners may lower manganese levels in tap water.
  - Confirm with the manufacturer that the device can remove manganese.
  - Remember, treatment devices require regular maintenance to ensure the water is safe to drink.
- **Consider using an alternate source** of drinking water, especially for infants.
  - If you choose to use bottled water, manganese may still be present. Contact the bottled water manufacturer for their water quality information.

0.3 mg/L
Formula-fed infants under 6 months old should not drink water with Mn greater than this level.

Learn more:

Search for Your Public Water System
dww.deq.idaho.gov/IDPDWW/

Find Drinking Water Health Advisories in Idaho
www.deq.idaho.gov/water-quality/drinking-water/drinking-water-health-advisories/

Find a Home Water Treatment System
www.nsf.org/consumer-resources/water-quality/

Search for Certified Laboratories
healthandwelfare.idaho.gov/health/labs/tabid/99/default.aspx

Learn more about health effects
www.atsdr.cdc.gov/toxfaqs/tfacts151.pdf

Contact information:

Idaho Department of Health and Welfare's Environmental Health Program
(800) 445-8647
bceh@dhw.idaho.gov
environmentalhealth.dhw.idaho.gov

Idaho Bureau of Laboratories
(208) 334-2235
healthandwelfare.idaho.gov/Health/Labs/EnvironmentalTesting/tabid/189/Default.aspx

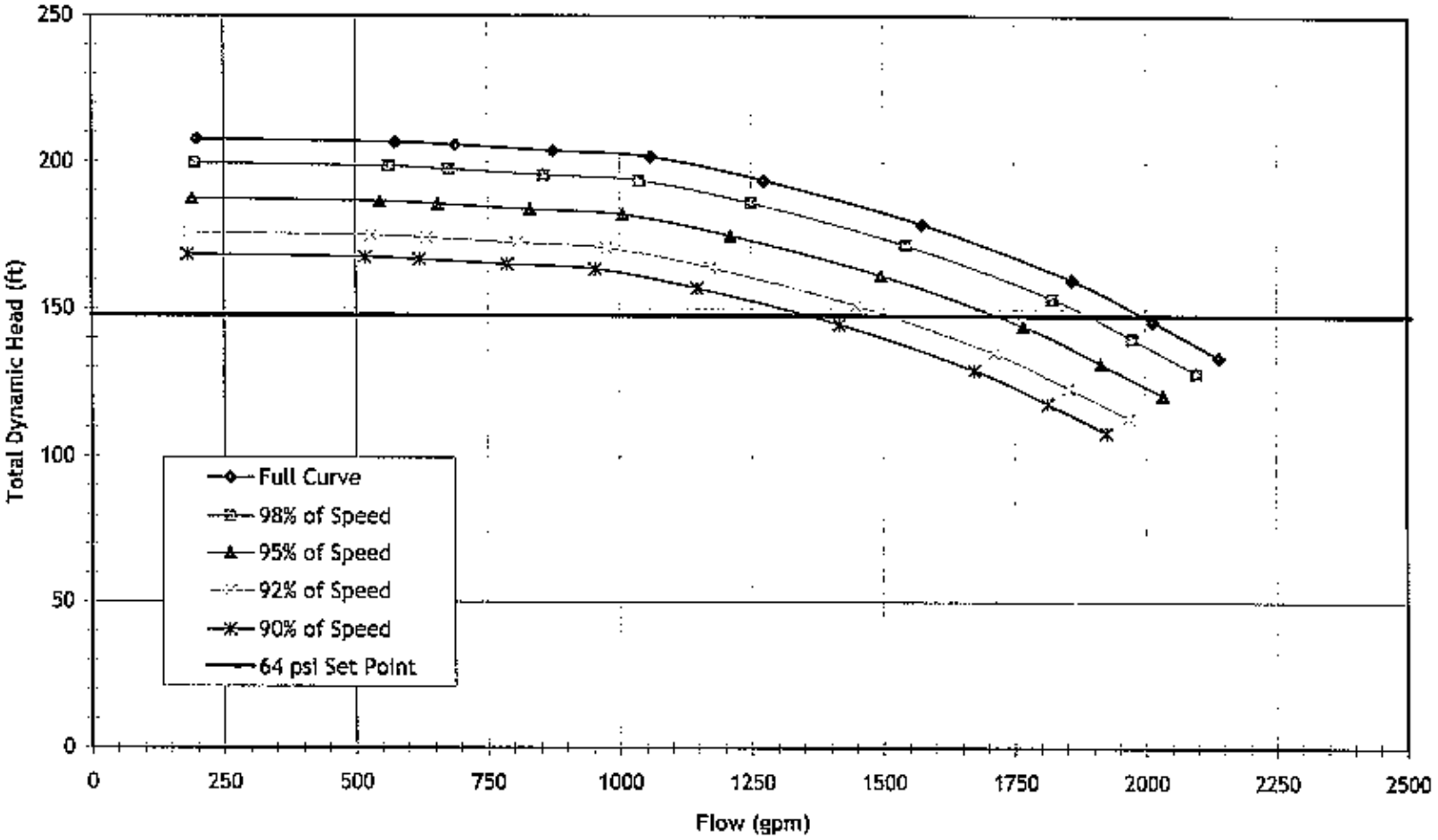
Idaho Department of Environmental Quality
(208) 373-0502
www.deq.idaho.gov/water-quality/

Idaho Public Health Districts
www.idahopublichealthdistricts.org/

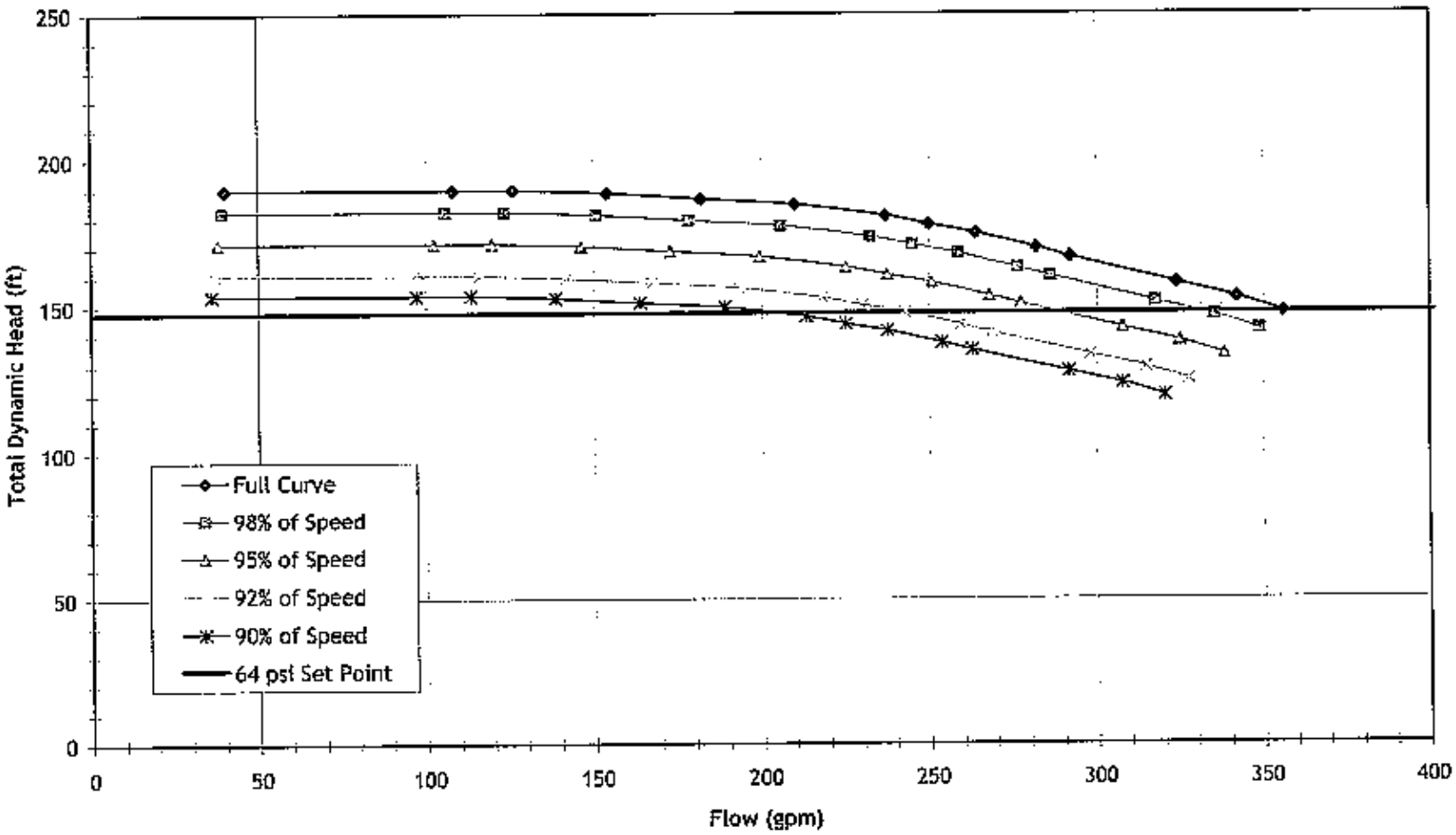
IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH
June 2019

Appendix K: 2024 Booster Station Pump Capacities

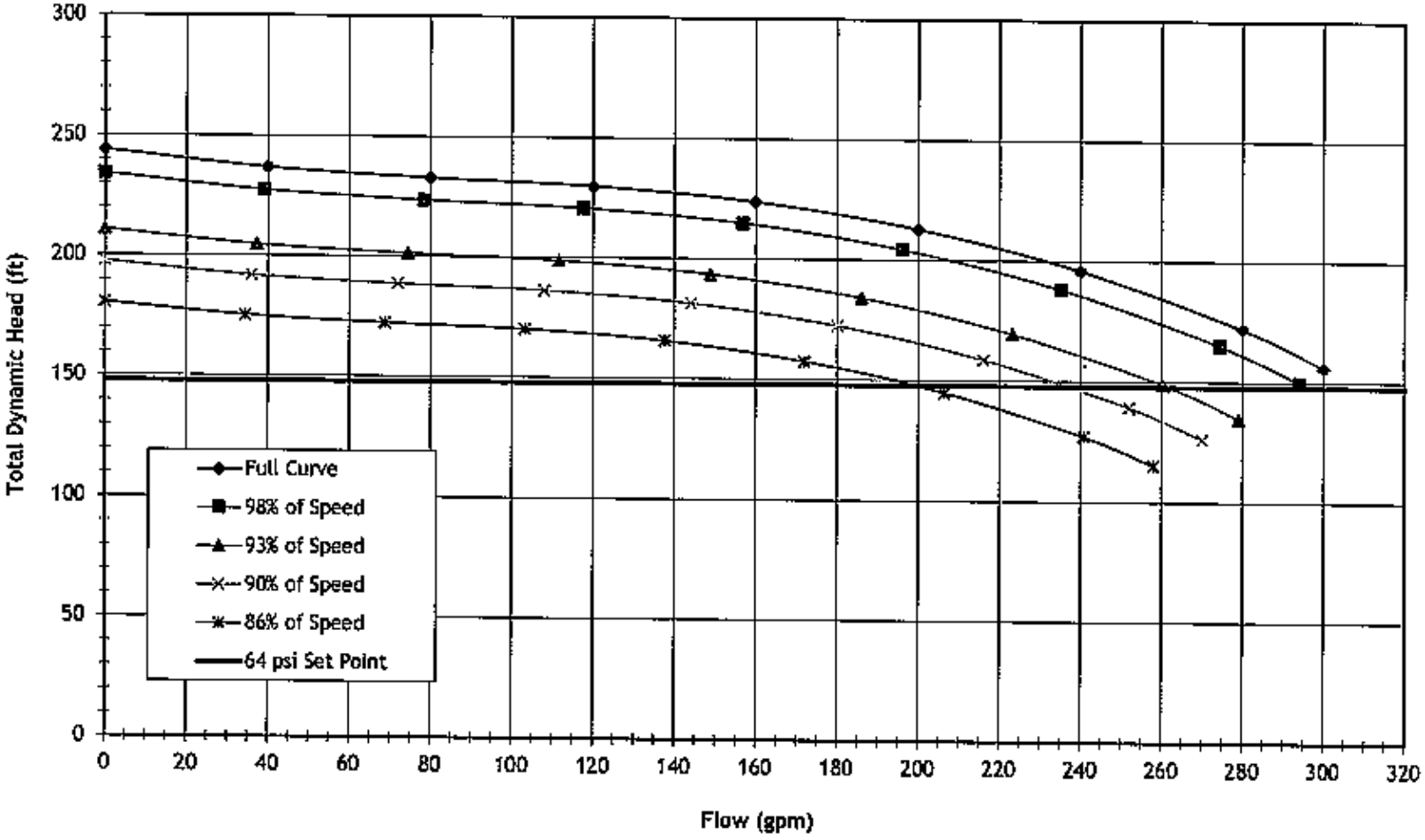
Butler Booster Pump Station
Big Cornell System Curve
Pump: 13.75" diameter 5HH-100-4



Butler Booster Pump Station
Little Cornell System Curve
Pump: 12.8" diameter 2.5RB-20-4



Harmony Booster Pump Station
Goulds Pump System Curve
Pump: 46SV20GL4C60N



Appendix L: SCADA Data and Analysis

(Excel Document)

Appendix M: 2021 Sanitary Survey

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1445 N. Orchard Street, Boise ID 83706
(208) 373-0550

Brad Little, Governor
Jess Byrne, Director

January 11, 2022

By email: *clerk@greenleaf-idaho.us*

Lee Belt
20523 Whittier
Greenleaf ID 83626

Subject: Sanitary Survey conducted on December 16, 2021
City of Greenleaf (Public Water System No. ID3140041)

Dear Mr. Belt:

On December 16, 2021, the Department of Environmental Quality (DEQ) conducted a Sanitary Survey for the City of Greenleaf (Greenleaf). Enclosed is a copy of the Sanitary Survey Report (Report).

Any significant deficiencies identified in the Report are required to be addressed following consultation with DEQ. Consultation and a written corrective action plan are required **within 30 days** regarding any significant deficiencies and/or follow-up requirements identified in this written notification, as required by the "Idaho Rules for Public Drinking Water Systems" (IDAPA 58.01.08). Please follow the four steps identified in the Report to address all significant deficiencies.

Be advised that modifications to Greenleaf may require the assistance of an Idaho licensed professional engineer and require DEQ review and approval prior to making water system modifications or installing new components. Please contact DEQ before making modifications.

Thank you for your help in completing the Sanitary Survey. Please contact me at (208) 373-0568 or *brandon.lowder@deq.idaho.gov*.

Sincerely,

Brandon Lowder
Drinking Water Compliance Supervisor

BL:dr
2022ACA144

Attachment: Sanitary Survey Report

c: Doug Amick, City of Greenleaf

Sanitary Survey Report

January 11, 2022
ID3140041
City of Greenleaf

RE: Sanitary Survey conducted on December 16, 2021

A list of findings for the City of Greenleaf public water system (Greenleaf) has been summarized below. In order to address all significant deficiencies, follow steps 1, 2, 3, and 4.

Step 1: Within 30 days of receiving this notification, submit to the Department of Environmental Quality (DEQ), in writing, a corrective action plan including planned completion dates for each identified significant deficiency.

Step 2: Complete the planned action(s) by the "Planned Completion Date(s)."

Step 3: After completing each planned action, enter an "Actual Completion Date," your initials, and write the "Corrective action taken."

Step 4: Sign your name at the bottom certifying that each corrective action has been corrected by the planned completion date and that the public water system (PWS) has completed the sanitary survey response requirements pursuant to the "Idaho Rules for Public Drinking Water Systems" (IDAPA 58.01.08). Send DEQ a copy of the signed paperwork.

System Description

Greenleaf consists of three facilities, Butler, Harmony, and Friends. Two of these facilities, Butler and Harmony, include storage tanks, and all pressure to the system is provided by booster pumps drawing off the tanks.

The Butler well is the highest producing well and feeds the 200,000-gallon bolted steel storage tank. A 20 Hp booster draws off the tank and serves the system, and a 100 Hp booster pump is also available for fire flow. The water is treated with Oxarc sodium hypochlorite (disinfection) and Carus 8100 polyphosphate (iron sequestration) prior to entering the tank. A diesel auxiliary power unit is available onsite for use during power outages. The Butler facility is controlled via SCADA.

The Harmony facility consists of two wells, Harmony Inside and Harmony Outside. Harmony Outside is the main well at this facility, producing 140 gallons per minute (gpm), while the inside well is a backup, producing 35 gpm when the Outside well can't keep up with filling the tank. Both wells feed a 100,000-gallon welded steel storage tank. The water from the wells is treated with the same sodium hypochlorite and polyphosphate prior to entering the storage tank. Two booster pumps (10 Hp and 20 Hp) draw from the tank and serve the distribution system. The Harmony facility is observed by SCADA, but SCADA does not control it. Everything is manually controlled. A portable diesel generator is available for auxiliary power during outages.

The Friends facility is more of a backup facility if the others malfunction or can't keep up. It only consists of a single well and sodium hypochlorite disinfection. A pump control valve monitors pressure downstream and will call the well to serve if needed. No auxiliary power is provided at this facility.

Enforcement Actions

No enforcement actions

Significant Deficiencies

A significant deficiency, as identified during a sanitary survey, is any defect in a PWS's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that DEQ determines to cause, or have the potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water (IDAPA 58.01.08.003.131). Failure to address significant deficiencies constitutes a violation of IDAPA 58.01.08.302 or 58.01.08.303.

Significant deficiencies may reference IDAPA design standard requirements. IDAPA Rule citations for sections 500-549 are primarily requirements during the design or modification stage of a new system or component, and may not be enforceable as part of a sanitary survey. These have been listed to provide reference of what current standards would apply if that particular component were designed, modified, or constructed today. Corrective actions that include material modifications must be approved by DEQ.

Plan of Action for Significant Deficiencies:

When possible, please provide a photo as part of the corrective action taken.

Storage:

#6: The Butler storage reservoir is not protected from contamination (IDAPA 58.01.08.544.03 and 544.09). The roof has buckled, resulting in a concaved top that slopes down toward the center vent. Please evaluate the roof and repair or replace. Until repair or replacement is completed, please continue inspecting on a regular basis to ensure water is not entering the vent or tank.

The storage reservoir roof needs to have a watertight roof and sidewalls to exclude potential sources of contamination such as birds, animals, insects, and excessive dust. The roof must facilitate drainage to prevent pooling water that creates an environment where algae, bacteria, and pathogens can grow and potentially lead to a waterborne disease outbreak.

Planned Completion Date: _____,

Actual Completion Date: _____, *Initials*_____.

Corrective action taken (Please provide photo(s) when possible):

#7: Fencing, locks on access manholes, and other necessary precautions have not been provided for the Butler storage structure to prevent trespassing, vandalism, and sabotage (IDAPA 58.01.08.544.04). Please install a watertight gasket and lock onto the Butler tank access hatch. Since the Harmony tank could not be inspected, please verify the gasket and lock, and install if absent.

Maintain storage tanks in a manner to deter unauthorized entry, vandalism, and sabotage to protect from contamination.

*Planned Completion Date:*_____,

*Actual Completion Date:*_____, *Initials*_____.

Corrective action taken (Please provide photo(s) when possible):

Treatment Application:

#24: There is no means to contain bulk liquid chemical container leaks and/or spills at the Harmony pump house (IDAPA 58.01.08.531.02.j.viii). Since this facility contains a well, secondary containment to hold 110% of the chemical is required.

A method of preventing bulk liquid chemical container leaks or spills must be provided to prevent contamination of the drinking water.

*Planned Completion Date:*_____,

*Actual Completion Date:*_____, *Initials*_____.

Corrective action taken (Please provide photo(s) when possible):

I certify, to the best of my knowledge, that all significant deficiencies have been corrected by the agreed upon date(s) and that the corrective action(s) meets the requirements pursuant to IDAPA 58.01.08.

Signature: _____ **Date:** _____

Deficiencies

Groundwater Source:

#12: The pump-to-waste discharge for the Friends Well (Tag# E0006175) terminates at ground level, with the open end of the pipe pointing up. Raising this pipe up to provide a down-turned elbow and screened outlet will prevent contamination and clogging.

Distribution:

#11: A means to flush all dead end water mains is not provided (IDAPA 58.01.08.542.09). It was stated that there are a couple of cul-de-sacs dead ends without flushing devices. Address the dead end water mains through tie-ins or flushing devices the next time material modifications are made to this section of the distribution system.

Dead ends in distribution systems can lead to water becoming stagnant in portions of the distribution system, which could lead to loss of disinfectant residual and bacterial regrowth. Minimize dead end water mains through appropriate tie-ins where practical or install flushing devices.

Managerial:

#7: The current RTCR Sample Siting Plan (Plan) does not meet requirements (40 CFR 141.853.a). The Plan was not representative of water throughout the distribution system as there were no sampling points in the north portion of Greenleaf. This was corrected just after the Sanitary Survey, with the wastewater treatment plant being added as an additional location. Please send a copy of this new plan to DEQ if possible.

A sample siting plan is designed to specify where in the distribution system samples will be drawn to ensure they are representative of the PWS.

#12: There is not a complete operation and maintenance (O&M) manual for Greenleaf (IDAPA 58.01.08.501.12, 003.90, and 003.91). An O&M manual should be developed and implemented as time and funding allows.

When creating an O&M manual, it should include the following items:

- daily, weekly, monthly, and yearly operating instructions
- information specific to a particular type of treatment
- locations of valves and other key distribution system features
- pertinent contact information (telephone and address) including the responsible charge water system operator and water system owner
- operator safety procedures
- alarm system and emergency procedures
- trouble-shooting advice
- water quality testing procedures
- response plan for depressurization events
- customer service procedures
- response plan for customer complaints
- maintenance information and checklists
- manufacturer's product information including troubleshooting information
- parts list, spare parts list, and parts order form
- necessary special tools

An O&M manual provides procedures to operate and maintain a PWS's various systems and equipment. It is important to analyze and evaluate a PWS from the system level, then develop procedures to attain the most efficient systems integration. Lack of an O&M manual can lead to system failures and contamination of drinking water.

Recommendations

Distribution:

#7: All valves should be inspected and exercised at least semiannually. Locating and exercising valves minimizes interruption of service during main breaks or construction activities.

Treatment Application:

#24: There is no means to contain bulk liquid chemical container leaks and/or spills at the Butler or Friends pump houses (IDAPA 58.01.08.531.02.j.viii). Since these pump houses do not contain wells, risk is minimized, but secondary containment should be considered. Any modifications to these facilities may require addition at that time.

From: Danielle Robbins
To: Lee Belt
Cc: Doug Amick; Brandon Lowder
Subject: ID3140041 City of Greenleaf - Sanitary Survey
Date: Tuesday, January 11, 2022 11:12:00 AM
Attachments: ID3140041 City of Greenleaf - Sanitary Survey.pdf

Mr. Belt:

Please see the attached Sanitary Survey Letter and Report from Brandon Lowder.

Sincerely,

Dani Robbins | Administrative Assistant
Idaho Department of Environmental Quality | Boise Regional Office
1445 North Orchard Street
Boise, Idaho 83706
Office: (208) 373-0177
Email: Danielle.robbins@deq.idaho.gov
http://www.deq.idaho.gov/

Our mission is to protect human health and the quality of Idaho's air, land, and water.

Appendix N: Ground Water Source Capacity Analysis

Source of Supply	Capacity (gpm)	"X" Pump Out of Service			
		Available Capacity (gpm)	Available Capacity (gpm)	Available Capacity (gpm)	Available Capacity (gpm)
Butler Well	650	X	650	650	650
Harmony Inside Well	35	35	X	35	35
Harmony Outside Well	200	200	200	X	200
Friends Well	61	61	61	61	X
Total	**946**	**296**	**911**	**746**	**885**

Supply Versus Demand Analysis					
Greater Than MDD?	80	yes	yes	yes	yes
MDD Surplus/(Deficit)		216	831	666	805
Greater Than PHD?	175	yes	yes	yes	yes
PHD Surplus/(Deficit)		121	736	571	710

Appendix O: IDEQ Components of Finished Water Storage

Components of Finished Water Storage.

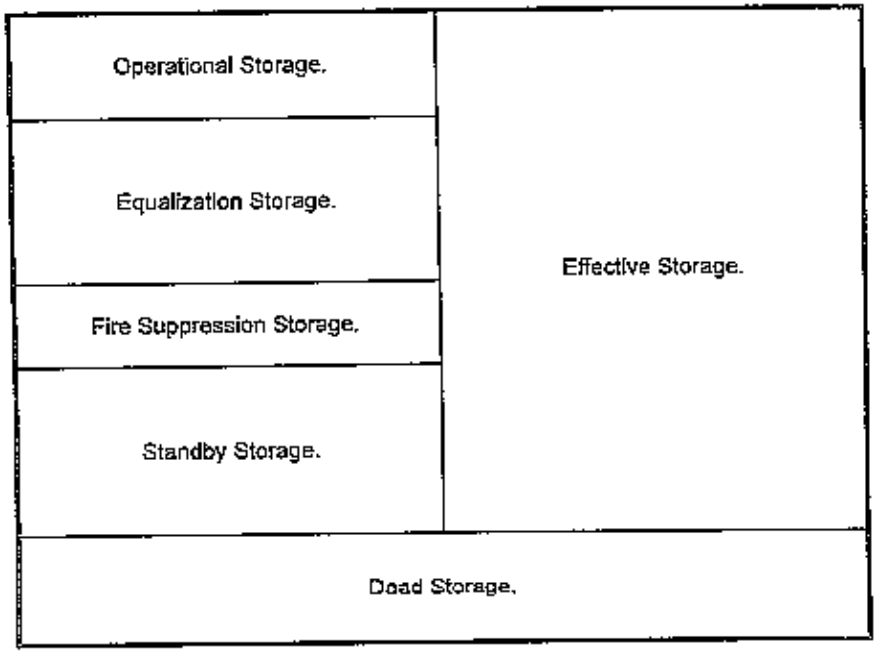
Operational storage supplies water when, under normal conditions, the sources are off.

Storage of finished water in sufficient quantity to compensate for the difference between a water system's maximum pumping capacity and peak daily usage.

The water needed to support fire flow in those systems that provide it.

Standby storage provides a measure of reliability or safety factor should sources fail or when unusual conditions impose higher than anticipated demands.

Storage that is either not available for use in the system or can provide only substandard flows and pressures.



Effective storage is all storage other than dead storage.

Guidance for Determining Equalization Water Storage for Public Water Systems

Idaho Department of Environmental Quality
Drinking Water Program
Revised March 2013

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Authority 1

Recommended Methods for Estimating Equalization Storage 2

Recommended Equalization Storage Volume for Constant Rate Inflow 2

Recommended Equalization Storage Volume for Pumping With Demand 3

Design Assumptions and Use 3

References 3

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Summary

Idaho Department of Environmental Quality (DEQ) guidance does not have the force of law or regulation, nor does it replace best professional judgment; it provides a starting point and assistance in the design of drinking water facilities.

This guidance provides additional direction for determining sufficient equalization storage, as defined in the *Components of Finished Water Storage* presented in section 003 of the *Idaho Rules for Public Drinking Water Systems* (IDAPA 58.01.08 2012):

> **16. Components of Finished Water Storage.** Storage is available to serve the system if the storage structure or facility is elevated sufficiently or is equipped with sufficient booster pumping capability to pressurize the system. Components of finished water storage are further defined as:
>
> a. Dead Storage. Storage that is either not available for use in the system or can provide only substandard flows and pressures.
>
> b. Effective Storage. Effective storage is all storage other than dead storage and is made up of the additive components described in Paragraphs c. through f. of this Subsection.
>
> c. Operational Storage. Operational storage supplies water when, under normal conditions, the sources are off. This component is the larger of:
>
> i. The volume required to prevent excess pump cycling and ensure that the following volume components are full and ready for use when needed; or
>
> ii. The volume needed to compensate for the sensitivity of the water level sensors.
>
> d. **Equalization Storage.** Storage of finished water in sufficient quantity to compensate for the difference between a water system's maximum pumping capacity and peak hour demand.
>
> e. Fire Suppression Storage. The water needed to support fire flow in those systems that provide it.
>
> f. Standby Storage. Standby storage provides a measure of reliability or safety factor should sources fail or when unusual conditions impose higher than anticipated demands. Normally used for emergency operation, if standby power is not provided, to provide water for eight (8) hours of operation at average day demand.

The methods for estimating equalization storage presented in this guidance are not the only methods acceptable. Other methods, such as using a computer model, are equally acceptable provided they are based upon sound engineering analysis.

Authority

The Idaho Legislature has given the Idaho Board of Environmental Quality the authority to promulgate rules governing quality and safety of drinking water, pursuant to Title 37, Chapter 21 and Title 39, Chapter 1, Idaho Code. The Idaho Department of Environmental Quality (DEQ) promulgated IDAPA 58.01.08 for the purpose of controlling and regulating the design, construction, operation, maintenance, and quality control of public drinking water systems, to provide a degree of assurance that such systems are protected from contamination and maintained free from contaminants that may injure the health of the consumer.

Recommended Methods for Estimating Equalization Storage

When analysis of equalization storage using a computer model is not feasible, the following methods of estimating minimum equalization storage volume could be considered acceptable:

- The first method assumes a constant rate of pumping to provide inflow to the reservoir and outflow based upon a typical diurnal demand curve.
- The second method assumes pumping follows demand, typical of a system using variable frequency drive (VFD) pumps.

Recommended Equalization Storage Volume for Constant Rate Inflow

When the inflow to the system is constant, outflow can be based on Maximum Day Demand (Qmxdy) and distributed according a typical diurnal curve presented in *Design Standards for Public Water Supplies* (WSDSHS 1973). To estimate equalization volume, divide the source capacity of the system (Qs, gallons per day, GPD) by Qmxdy (GPD) and use the ratio in Table 1 to select the appropriate equalization storage (Es) in gallons.

Table 1. Reservoir Capacity as a Function of Source Capacity/Qmxdy

Qs/Qmxdy	Equalization (Es) (gallons)
1.00	(5.4) x Qmxdy/24
1.05	(4.7) x Qmxdy/24
1.10	(4.0) x Qmxdy/24
1.15	(3.3) x Qmxdy/24
1.20	(2.6) x Qmxdy/24
1.25	(2.0) x Qmxdy/24
1.30	(1.5) x Qmxdy/24
1.35	(1.2) x Qmxdy/24
1.40	(1.0) x Qmxdy/24
1.45	(0.8) x Qmxdy/24
1.50	(0.6) x Qmxdy/24
1.55	(0.4) x Qmxdy/24
1.60	(0.3) x Qmxdy/24
1.65	(0.1) x Qmxdy/24
1.70	(0.1) x Qmxdy/24
1.75	(0.0) x Qmxdy/24

Example A

System A has a source capacity of 500 gpm (720,000 GPD) and a Qmxdy of 500 gpm (720,000 GPD)

Qs/Qmxdy = 1.0

Es = (5.4)(720,000)/24 = 162,000 gallons

Example B

System B has a source capacity of 200 gpm (288,000 GPD) and a Qmxdy of 167 gpm (240,480 GPD)

Qs/Qmxdy = 288,000/240,480 = 1.2

Es = (2.6)(240,480)/24 = 26,052 gallons

Recommended Equalization Storage Volume for Pumping With Demand

For systems in which pumping matches demand, *Water System Design Manual* (WSDOH 2009) suggests calculating Es based on peak hour demand (Qpkhr in GPM, note shift in units from Table 1) and Qs (GPM, note shift in units from Table 1) as shown in Equation 1.

$$Es = (Qpkhr - Qs)(150 \text{ minutes}) \qquad \text{Equation 1}$$

Example A

System A has a source capacity of 500 gpm and a Qpkhr of 1,000 gpm

Es = (1,000 – 500)(150) = 75,000 gallons

Example B

System B has a source capacity of 200 gpm and a Qpkhr of 334 gpm

Es = (334-200)(150) = 20,100 gallons

Design Assumptions and Use

This guidance provides simplified methods for estimating equalization storage in a single pressure zone system. Fire flow, landscape irrigation and other components of storage should be calculated separately and then added to the equalization storage to determine total storage needed. These recommended equalization storage volume estimation methods may not be suitable for very small public water systems such as campgrounds that have storage tanks. Ultimately, the method used to estimate equalization storage needs to be chosen by the project engineer; the methods offered by the guidance simply serve as acceptable starting points when more sophisticated means of analysis are not feasible.

References

IDAPA 58.01.08. 2013. *Idaho Rules for Public Drinking Water Systems*. Accessed 3/21/2013 at http://adminrules.idaho.gov/rules/current/58/0108.pdf.

WSDSHS (Washington State Department of Social and Health Services). 1973. *Design Standards for Public Water Supplies*. Olympia, WA.

WSDOH (Washington State Department of Health). 2009. *Water System Design Manual*. Accessed 3/21/2013 at http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-123.pdf.

Appendix P: Delivery System Capacity Analysis

Delivery System Pump	Capacity (gpm)	"X" Pump Out of Service			
		Available Capacity (gpm)	Available Capacity (gpm)	Available Capacity (gpm)	Available Capacity (gpm)
Friends Well	61	X	61	61	61
Butler Large Demand	2,140	Y	Y	Y	Y
Butler Medium Demand	350	350	X	350	350
Harmony 1	300	300	300	X	300
Harmony 2	300	300	300	300	X
Total	**3151**	**950**	**661**	**711**	**711**

Supply Versus Demand Analysis					
Greater Than MDD?	80	yes	yes	yes	yes
MDD Surplus/(Deficit)		870	581	631	631
Greater Than PHD?	175	yes	yes	yes	yes
PHD Surplus/(Deficit)		775	486	536	536

"Y" pump excluded from analysis. Cannot pump at 198 or less gpm.

Appendix Q: Fire Flow Analysis and Caldwell Fire Letter

Source	Wells (gpm)	Booster Pumps (gpm)	Duration (hr)	Volume During Required Fire Duration		Fire Protection and Max Day Demand Volume Required (gallons)	Fire Protection Volume After Friends Well Contribution (gallons)	Fire Protection Volume from Each Facility[B] (gallons)	Fire Protection Volume Required in Storage[C] (gallons)
				From Wells (gallons)	Max Available At Facility[A] (gallons)				
Friends Well	61		2	7,320		279,600	272,280		
Butler Well	650			78,000					
Butler Booster		2,490							
Butler Facility					211,484			200,280	122,280
Harmony Inside Well	35			4,200					
Harmony Outside Well	200			24,000					
Harmony Boosters		600							
Harmony Facility					102,227			72,000	43,800

Notes:

[A]Total facility volume minus Dead, Operational, and Equalization storage plus well pumping volume during the fire duration.

[B]Based on booster station pumping capacities.

[C]Required fire protection volume minus well pumping volume at each facility.

CITY OF *Caldwell, Idaho*

City Hall
205 South 6th Avenue
Caldwell, Idaho 83605

Post Office Box
P.O. Box 1179
Caldwell, Idaho 83606

Fire Administration
621 Cleveland Blvd.
Caldwell, Idaho 83605

Website
www.cityofcaldwell.org

BRYAN DANIELS
Fire Chief

MATT SHUPE
Deputy Chief / Operations

ALAN PERRY
Fire Marshal
Deputy Chief / Fire Prevention

CORY GERARD
Deputy Chief / Administration

208.455.3032
(f) 208.455.3014

March 3, 2026

City of Greenleaf
20523 Whittier Dr.
Greenleaf, ID 83626

Subject: City of Greenleaf Fire Flow Capacity

To Whom It May Concern:

The Caldwell City Fire Department and Caldwell Rural Fire Protection District provide fire protection services to the City of Greenleaf (City) and the surrounding unincorporated area of Canyon County. On March 2, 2026, Deputy Chief Perry met with the City Engineer (Civil Dynamics) and the City Director of Public Services, Doug Amick, to discuss the existing water system and the available fire flows, which are detailed in the attached information provided by Civil Dynamics.

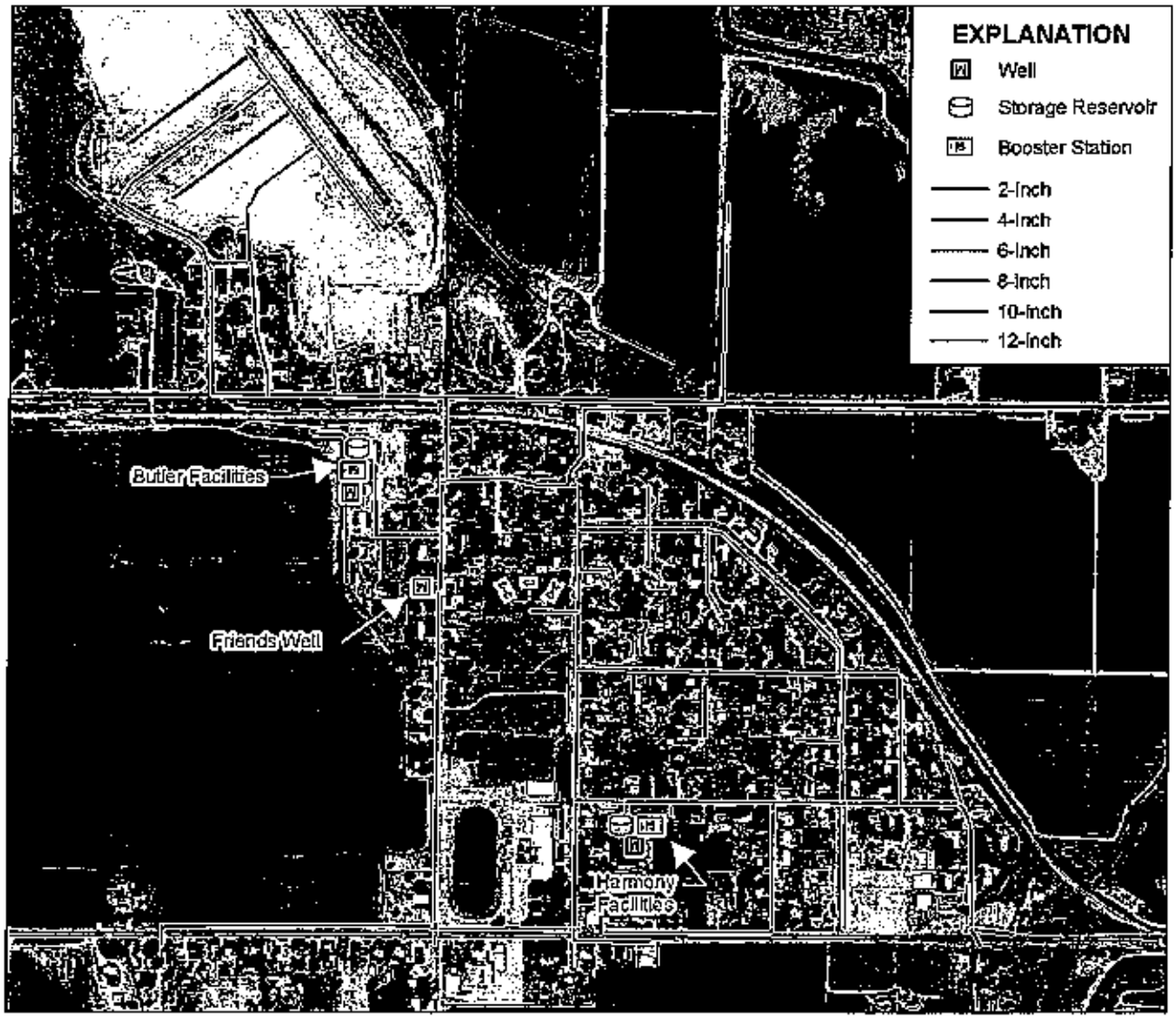
After review of the provided information, Deputy Chief Perry finds that the City of Greenleaf's water system is capable of meeting the fire protection water supply demands of the existing development in the service area and, within limits, certain anticipated new growth. The Caldwell Fire Department is also able to waive the fire flow pumping redundancy requirement listed in IDAPA 50.01.18.a, consistent with the approach taken in Chief Brown's March 7, 2008 letter (attached).

Please feel free to contact me if you have any questions.

Sincerely,

Caldwell Fire Department
Alan Perry
Deputy Chief of Fire Prevention

Greenleaf Water System:



I. IDAPA Code

a. 501.18.a and b

> **18. Redundant Fire Flow Capacity.** (7-1-24)
>
> a. PWSs that provide fire flow must be designed to provide maximum day demand plus fire flow. Fire flow requirements and system adequacy will be determined by the local fire authority or by a hydraulic analysis by a licensed professional engineer to establish required fire flows in accordance with the International Fire Code as adopted by the State Fire Marshal. Pumping systems supporting fire flow capacity must be designed so that maximum day demand plus fire flow may be provided with any pump out of service. (7-1-24)
>
> b. The requirement for redundant pumping capacity specified in Subsection 501.18.a. may be reduced to the extent that fire suppression storage is provided in sufficient quantity to meet some or all of fire flow demands.

b. 552.01.c

> c. Any PWS designed to provide fire flows must ensure that such flows are compatible with the water demand of existing and planned fire-fighting equipment and fire fighting practices in the area served by the PWS. (7-1-24)

II. Current ratings (confirm still relevant)

Owner	Location	Fire Flow (gpm)^	Duration (hours)^
GFA High School	20565 N. Academy Rd.	2,250	2
Greenleaf Friends Church	20535 N. Academy Rd.	2,250	2
Mikes Metal Fabrication	21048 Highway 19	1,500	2
Greenleaf Custom Meats	21342 Highway 19	1,500	2
ITM	20675 N. Friends Rd.	1,250	2
I.P. Callisons	Highway 19 and Antrim	1,000	2
Greenleaf Café	21513 Highway 19	1,000	2
Maximum Fire Flow		2,250	2

^From Greenleaf Water Study Addenda 2 (May 2008), which obtained data from the Idaho Survey and Rating Bureau. There have not been any structures added to the service area that would impact required fire flow.

III. **Current Fire Flow Abilities**

Booster Pumps and Well	Capacity (gpm)
Friends Well	61
Butler Large Demand	2,140
Butler Medium Demand	350
Harmony 1	300
Harmony 2	300
Total	3,151

a. Hydrant testing demonstrates the ability to provide at least 2,250 gpm at >20 psi.

IV. **Existing waiver (request waiver again)**

a. Attached

V. **Request of fire protection adequacy letter (to attached to facility plan)**

Caldwell Rural Fire Protection District

"Saving Lives, Protecting Property"

Fire Prevention Division
310 S. 7th Ave. Caldwell, ID 83605

Deputy Chief Doug Brown, Fire Marshal
208-455-3032 V. / 208-455-3014 F.

March 7, 2008

Department of Environmental Quality
1445 N. Orchard
Boise, Idaho 83706

Reference: City of Greenleaf Water Supply

To Whom It May Concern:

Please be advised that the Caldwell Rural Fire Protection District (CRFPD), which proudly serves the City of Greenleaf, has reviewed the Greenleaf Water Study that was recently prepared by Keller Associates, Inc.

The CRFPD acknowledges that the City of Greenleaf has opted to eliminate mechanical pumping redundancy for the fire flow system. Mr. Doug Young of the Idaho Survey and Rating Bureau has also confirmed that this requirement was eliminated years ago as it relates to fire insurance ratings in Idaho. The CRFPD concurs with this finding.

The CRFPD finds that the City of Greenleaf's water system's role in community fire protection has been greatly enhanced by the numerous improvements undertaken by the City of Greenleaf. We believe that the system is capable of meeting the fire protection water supply demands of the majority of existing development and, within limits, certain expected new growth.

Please feel free to contact me if you have any questions.

Sincerely,

Douglas Brown

Douglas Brown
Deputy Chief / Fire Marshal

xc: Greenleaf Mayor Brad Holton
CRFPD Fire Chief Mark Wendelsdorf
Roland Rocha, Keller Associates, Inc.

Appendix R: Pertinent Operation and Maintenance Issues and Concerns

CITY OF GREENLEAF

20523 North Whittier Drive
Greenleaf, Idaho 83626

2026 Water Facility Plan

Summary of Pertinent Operation and maintenance Issues and Concerns

1) Fire flow. Code requires fire flow pumping redundancy. As discussed in the Facility Plan, we will continue to work toward this redundancy.
2) Source of supply. The city has an adequate water supply. However, it would be an improvement to have two separate wells that could supply 600 to 800 gallons per minute on a continuous basis.
3) The primary ongoing issue with the Greenleaf Water System is the elevated levels of Manganese.

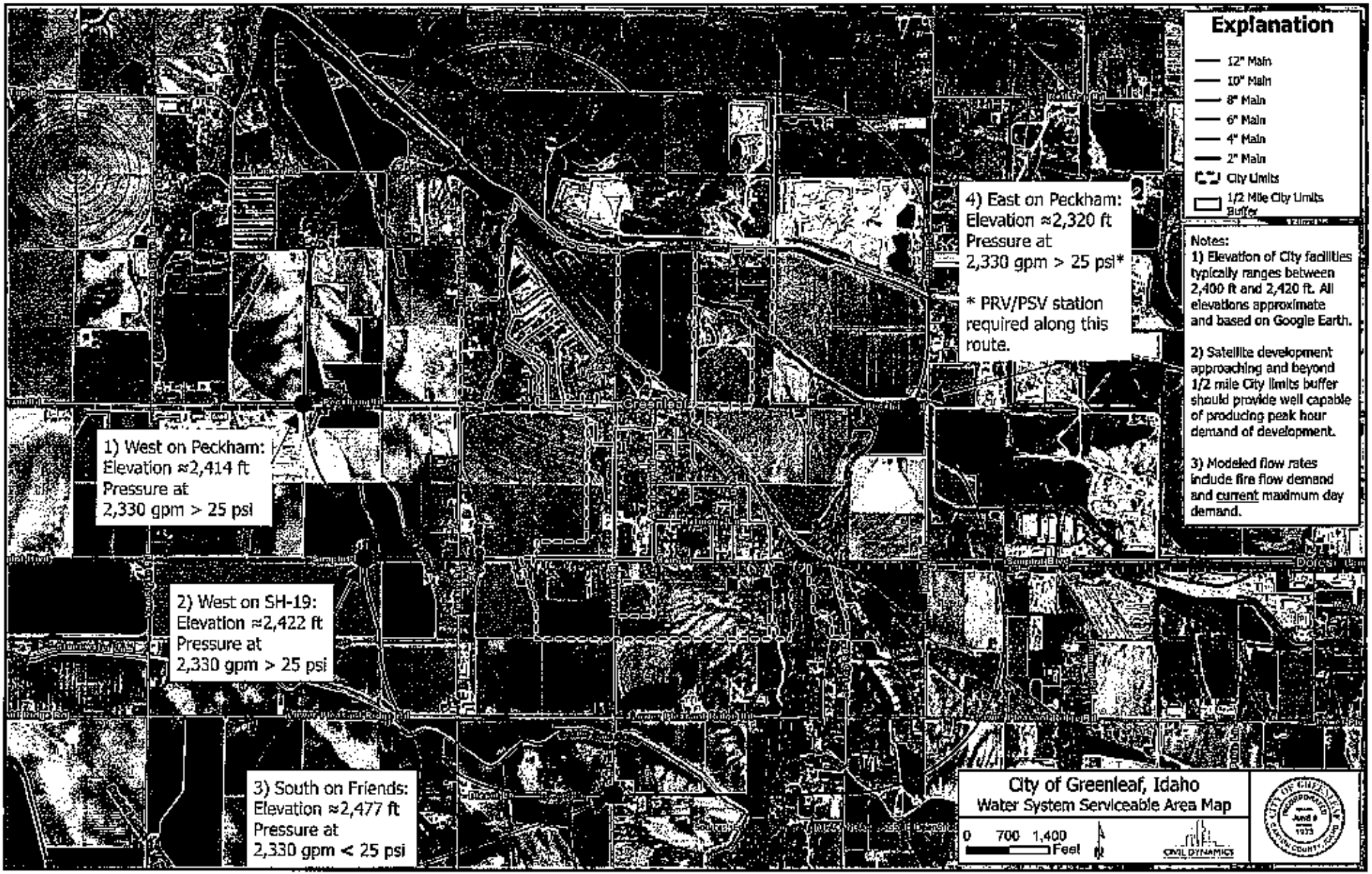
Respectfully Submitted,

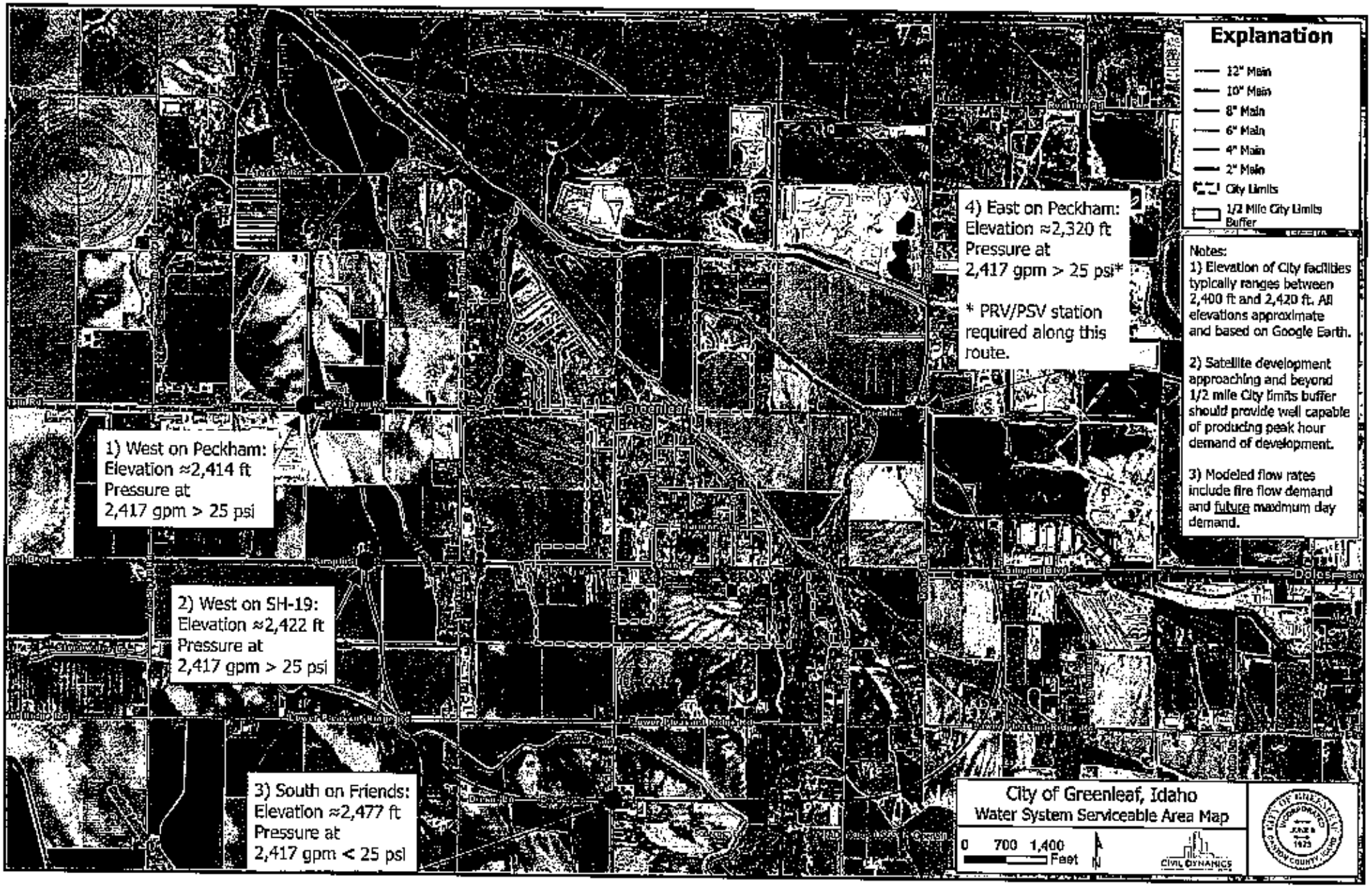
Doug Amick

Doug Amick

208.454.0552 • greenleafcity@cableone.net

Appendix S: Existing System Serviceable Area Map and Hydraulic Modeling


Explanation
12" Main
10" Main
8" Main
6" Main
4" Main
2" Main
City Limits
1/2 Mile City Limits Buffer
Notes:
1) Elevation of City facilities typically ranges between 2,400 ft and 2,420 ft. All elevations approximate and based on Google Earth.
2) Satellite development approaching and beyond 1/2 mile City limits buffer should provide well capable of producing peak hour demand of development.
3) Modeled flow rates include fire flow demand and current maximum day demand.
1) West on Peckham:
Elevation ≈2,414 ft
Pressure at
2,330 gpm > 25 psi
2) West on SH-19:
Elevation ≈2,422 ft
Pressure at
2,330 gpm > 25 psi
3) South on Friends:
Elevation ≈2,477 ft
Pressure at
2,330 gpm < 25 psi
4) East on Peckham:
Elevation ≈2,320 ft
Pressure at
2,330 gpm > 25 psi*
* PRV/PSV station required along this route.
Greenleaf
Peckham
Dorcas
City of Greenleaf, Idaho
Water System Serviceable Area Map
0 700 1,400
Feet
CIVIL DYNAMICS


Explanation
12" Main
10" Main
8" Main
6" Main
4" Main
2" Main
City Limits
1/2 Mile City Limits Buffer
Notes:
1) Elevation of City facilities typically ranges between 2,400 ft and 2,420 ft. All elevations approximate and based on Google Earth.
2) Satellite development approaching and beyond 1/2 mile City limits buffer should provide well capable of producing peak hour demand of development.
3) Modeled flow rates include fire flow demand and future maximum day demand.
1) West on Peckham:
Elevation ≈2,414 ft
Pressure at
2,417 gpm > 25 psi
2) West on SH-19:
Elevation ≈2,422 ft
Pressure at
2,417 gpm > 25 psi
3) South on Friends:
Elevation ≈2,477 ft
Pressure at
2,417 gpm < 25 psi
4) East on Peckham:
Elevation ≈2,320 ft
Pressure at
2,417 gpm > 25 psi*
* PRV/PSV station required along this route.
Greenleaf
Dollar
City of Greenleaf, Idaho
Water System Serviceable Area Map
0 700 1,400
Feet
CIVIL DYNAMICS

Serviceable Area Analysis (Current Conditions)

Main Extension Path Map #:	Main Extension Path	Assumed Pressure at End of Existing Main[A], P1 (ft)	Elevation at Existing Main, Z1 (ft)	Required Pressure at Analyzed Point[B], P2 (ft)	Required Main Extension Length (ft)	Required Flow[C] (cfs)	Main Extension Diameter (ft)	Major Headloss[D], hL (ft)	Serviceable Elevation at Analyzed Point[E], Z2 (ft)	Ground Elevation at Analyzed Point (ft)	Required Pressure Met?
1	West on Peckham	115.5	2,404	57.75	4,076	5.19	1	43.17	2,419	2,414	yes
2	West on SH-19	115.5	2,419	57.75	2,850	5.19	1	30.19	2,447	2,422	yes
3	South on Friends	115.5	2,423	57.75	3,935	5.19	1	41.68	2,439	2,477	no
4	East on Peckham	161.7	2,348	57.75	3,697	5.19	1	39.16	2,413	2,320	yes

Note:

[A]Based on wellhouse discharge pressure of 64 psi (148 ft).

[B]25 psi.

[C]Fire flow plus Maximum Day Demand.

[D]Based on the Hazen-Williams equation and pipe roughness of 140.

[E]Based on energy equation solution:

Z2 = P1 + Z1 - P2 - hL

Serviceable Area Analysis (Planning Period End)

Main Extension Path Map #:	Main Extension Path	Assumed Pressure at End of Existing Main[A], P1 (ft)	Elevation at Existing Main, Z1 (ft)	Required Pressure at Analyzed Point[B], P2 (ft)	Required Main Extension Length (ft)	Required Flow[C] (cfs)	Main Extension Diameter (ft)	Major Headloss[D], hL (ft)	Serviceable Elevation at Analyzed Point[E], Z2 (ft)	Ground Elevation at Analyzed Point (ft)	Required Pressure Met?
1	West on Peckham	115.5	2,404	57.75	4,076	5.39	1	46.22	2,416	2,414	yes
2	West on SH-19	115.5	2,419	57.75	2,850	5.39	1	32.31	2,444	2,422	yes
3	South on Friends	115.5	2,423	57.75	3,935	5.39	1	44.62	2,436	2,477	no
4	East on Peckham	161.7	2,348	57.75	3,697	5.39	1	41.92	2,410	2,320	yes

Note:

[A]Based on wellhouse discharge pressure of 64 psi (148 ft).

[B]25 psi.

[C]Fire flow plus end-of-planning-period Maximum Day Demand

[D]Based on the Hazen-Williams equation and pipe roughness of 140.

[E]Based on energy equation solution:

Z2 = P1 + Z1 - P2 - hL

Peak Hour Flow Compliance Modeling

Condition	Peak Hour Demand (gpm)	Pressure at Wellhouse[A] (psi)	Length of 6-inch Pipe Resulting in Pressure Below 40 psi (ft)
Current	175	64	21,633
End-of-Planning-Period	366	64	5,519

[A]Based on the Hazen-Williams equation and pipe roughness of 140.

Appendix T: Growth Estimates

Population Estimate (Arithmetic Growth)

Year	Population	Ka	Note
1980	663		2012 FP from Idaho Commerce and Labor
1990	648	-1.5	US Census
2000	862	21.4	US Census
2010	846	-1.6	US Census
2020	812	-3.4	US Census
2030	849		
2040	887		
2045	905		

Ka ave
3.725

Subdivision Growth Estimate

Demand Type	gpm/EDU	Development Size (EDU)	120	Water Supply	
ADD	0.12	Number of Developments	3	296	gpm
MDD	0.24			426240	gpd
PHD	0.53				

Year	EDU Estimate (Growth-By-Subdivision)	Population Estimate (Growth-By-Subdivision)	EDU Increase	MDD (gpm)	PHD (gpm)	MDD (gpd)	Source/ Qmxday
2020	316	812		77	169	111,011	3.84
2025	330	812	0	80	175	115,200	3.7
2030	420	1,033	90	102	223	146,618	2.91
2035	510	1,255	90	124	270	178,036	2.4
2040	600	1,476	90	145	318	209,455	2.04
2045	690	1,698	90	167	366	240,873	1.77

Appendix U: Engineer's Opinion of Probable Cost for Alternatives

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 1 / ALTERNATIVE 1

NEW GROUNDWATER SOURCE (250 GPM)

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement/Alternative 1	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 23,351
2.0	NEW WELL	1	LS	$ 251,000	$ 251,000
3.0	EQUIPMENT AND MECHANICAL PIPING	1	LS	$ 100,000	$ 100,000
4.0	POWER SERVICE UPGRADE	1	LS	$ 78,024	$ 78,024
5.0	MANAGEMENT BASED INITIATIVES	1	LS	$ 38,000	$ 38,000
6.0	ENGINEERING AND PERMITTING			20%	$ 98,075
7.0	CONTINGENCY			30%	$ 147,113
			OPINION OF TOTAL PROJECT COST		$ 740,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

ALTERNATIVE 2

450 GPM CENTRALIZED OXIDATION/FILTRATION BEFORE STORAGE AT BUTLER

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 4)

Project:	Alternative 2	**Estimate Class:**	4
Client:	City of Greenleaf	**Date:**	3/13/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY.	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 95,612
2.0	8-INCH C900 PVC RAW WATER LINE	3700	LF	$ 100.00	$ 370,000
3.0	TREATMENT BUILDING ADDITION	1080	SF	$ 266.00	$ 287,280
4.0	SITEWORK & YARD PIPING	1	LS	$ 84,872.00	$ 84,872
5.0	OXIDATION/FILTRATION TREATMENT SYSTEM	450	GPM	$ 1,698.00	$ 764,100
6.0	SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM	1	LS	$ 8,488.00	$ 8,488
7.0	4-INCH SDR 35 PVC SEWER MAIN	450	LF	$ 31.00	$ 13,950
8.0	BACKWASH TANK AND RECYCLE SYSTEM	1	LS	$ 92,299.00	$ 92,299
9.0	1000 GAL PROPANE TANK AND PIPING	1	LS	$ 6,366.00	$ 6,366
10.0	PIPING MODIFICATIONS AT HARMONY	1	LS	$ 80,000.00	$ 80,000
11.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 204,883
12.0	ENGINEERING AND PERMITTING			12%	$ 240,942
13.0	INSPECTION			8%	$ 160,628
14.0	CONTINGENCY			30%	$ 602,355
				OPINION OF TOTAL PROJECT COST	$ 3,020,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

ALTERNATIVE 3

CENTRALIZED OXIDATION/FILTRATION AFTER STORAGE AT BUTLER (200 GPM)

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 4)

Project:	Alternative 3	**Estimate Class:**	4
Client:	City of Greenleaf	**Date:**	3/13/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 62,902
2.0	8-INCH C900 PVC RAW WATER LINE	3700	LF	$ 100.00	$ 370,000
3.0	TREATMENT BUILDING ADDITION	480	SF	$ 266.00	$ 127,680
4.0	SITEWORK & YARD PIPING	1	LS	$ 84,872.00	$ 84,872
5.0	OXIDATION/FILTRATION TREATMENT SYSTEM	200	GPM	$ 1,698.00	$ 339,600
6.0	SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM	1	LS	$ 8,488.00	$ 8,488
7.0	4-INCH SDR 35 PVC SEWER MAIN	450	LF	$ 31.00	$ 13,950
8.0	BACKWASH TANK AND RECYCLE SYSTEM	1	LS	$ 92,299.00	$ 92,299
9.0	1000 GAL PROPANE TANK AND PIPING	1	LS	$ 6,366.00	$ 6,366
10.0	PIPING MODIFICATIONS AT HARMONY	1	LS	$ 80,000.00	$ 80,000
11.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 134,791
12.0	ENGINEERING AND PERMITTING			12%	$ 158,514
13.0	INSPECTION			8%	$ 105,676
14.0	CONTINGENCY			30%	$ 396,284
				OPINION OF TOTAL PROJECT COST	$ 1,990,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

ALTERNATIVE 4

OXIDATION/FILTRATION BEFORE STORAGE AT BUTLER (450 GPM) AND HARMONY (200 GPM)

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 4)

Project:	Alternative 4	**Estimate Class:**	4
Client:	City of Greenleaf	**Date:**	3/13/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 107,680
2.0	TREATMENT BUILDING ADDITION (BUTLER)	1080	SF	$ 266.00	$ 287,280
3.0	TREATMENT BUILDING ADDITION (HARMONY)	480	SF	$ 266.00	$ 127,680
4.0	SITEWORK & YARD PIPING	2	LS	$ 84,872.00	$ 169,744
5.0	OXIDATION/FILTRATION TREATMENT SYSTEM (BUTLER)	450	GPM	$ 1,698.00	$ 764,100
6.0	OXIDATION/FILTRATION TREATMENT SYSTEM (HARMONY)	200	GPM	$ 1,698.00	$ 339,600
7.0	SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM	2	LS	$ 8,488.00	$ 16,976
8.0	4-INCH SDR 35 PVC SEWER MAIN (BUTLER)	450	LF	$ 31.00	$ 13,950
9.0	4-INCH SDR 35 PVC SEWER MAIN (HARMONY)	200	LF	$ 31.00	$ 6,200
10.0	BACKWASH TANK AND RECYCLE SYSTEM	2	LS	$ 92,299.00	$ 184,598
11.0	1000 GAL PROPANE TANK AND PIPING	2	LS	$ 6,366.00	$ 12,732
12.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 230,743
13.0	ENGINEERING AND PERMITTING			12%	$ 271,354
14.0	INSPECTION			8%	$ 180,903
15.0	CONTINGENCY			30%	$ 678,385
				OPINION OF TOTAL PROJECT COST	$ 3,400,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

ALTERNATIVE 5

OXIDATION/FILTRATION AFTER STORAGE AT BUTLER (200 GPM) AND HARMONY (200 GPM)

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 4)

Project:	Alternative 5	**Estimate Class:**	4
Client:	City of Greenleaf	**Date:**	3/13/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 74,971
2.0	TREATMENT BUILDING ADDITION (BUTLER)	480	SF	$ 266.00	$ 127,680
3.0	TREATMENT BUILDING ADDITION (HARMONY)	480	SF	$ 266.00	$ 127,680
4.0	SITEWORK & YARD PIPING	2	LS	$ 84,872.00	$ 169,744
5.0	OXIDATION/FILTRATION TREATMENT SYSTEM (BUTLER)	200	GPM	$ 1,698.00	$ 339,600
6.0	OXIDATION/FILTRATION TREATMENT SYSTEM (HARMONY)	200	GPM	$ 1,698.00	$ 339,600
7.0	SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM	2	LS	$ 8,488.00	$ 16,976
8.0	4-INCH SDR 35 PVC SEWER MAIN (BUTLER)	450	LF	$ 31.00	$ 13,950
9.0	4-INCH SDR 35 PVC SEWER MAIN (HARMONY)	200	LF	$ 31.00	$ 6,200
10.0	BACKWASH TANK AND RECYCLE SYSTEM	2	LS	$ 92,299.00	$ 184,598
11.0	1000 GAL PROPANE TANK AND PIPING	2	LS	$ 6,366.00	$ 12,732
12.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 160,651
13.0	ENGINEERING AND PERMITTING			12%	$ 188,926
14.0	INSPECTION			8%	$ 125,951
15.0	CONTINGENCY			30%	$ 472,315
				OPINION OF TOTAL PROJECT COST	$ 2,370,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

ALTERNATIVE 6

OXIDATION/FILTRATION OF AVERAGE DEMAND (40 GPM) AT BUTLER AND HARMONY

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Alternative 6	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	7/24/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14308	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 47,128
2.0	TREATMENT BUILDING ADDITION (BUTLER)	360	SF	$ 266.00	$ 95,760
3.0	TREATMENT BUILDING ADDITION (HARMONY)	360	SF	$ 266.00	$ 95,760
4.0	SITEWORK & YARD PIPING	2	LS	$ 42,436.00	$ 84,872
5.0	40 GPM OXIDATION/FILTRATION TREATMENT SYSTEM (BUTLER)	1	LS	$ 220,000.00	$ 220,000
6.0	40 GPM OXIDATION/FILTRATION TREATMENT SYSTEM (HARMONY)	1	LS	$ 220,000.00	$ 220,000
7.0	4-INCH SDR 35 PVC SEWER MAIN (BUTLER)	450	LF	$ 31.00	$ 13,950
8.0	4-INCH SDR 35 PVC SEWER MAIN (HARMONY)	200	LF	$ 31.00	$ 6,200
9.0	BACKWASH TANK AND RECYCLE SYSTEM	2	LS	$ 46,149.50	$ 92,299
10.0	1000 GAL PROPANE TANK AND PIPING	2	LS	$ 6,366.00	$ 12,732
11.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 100,989
12.0	ENGINEERING AND PERMITTING			12%	$ 118,763
13.0	INSPECTION			8%	$ 79,175
14.0	CONTINGENCY			30%	$ 296,907
				OPINION OF TOTAL PROJECT COST	$ 1,490,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

Appendix V: Water Rate Model

Capital Replacement and Short Term Asset Schedule

Equipment Description	CR or STA	Quantity	Unit Cost	Initial Cost	Expected Life	Replacement Year	Replacement Cost @3%	Annual Cost @8%	
Distribution System									
PVC C900 Pipe - 12-inch	CR	6381	$ 150	$ 957,150	75	2101	$ 7,408,770	$ 5,694.90	Larger piping i
PVC C900 Pipe - 10-inch	CR	1527	$ 150	$ 229,050	75	2101	$ 2,102,433	$ 1,616.08	
PVC C900 Pipe - 8-inch	CR	15243	$ 150	$ 2,286,450	75	2101	$ 20,987,165	$ 16,132.19	
PVC C900 Pipe - 6-inch	CR	6648	$ 150	$ 997,200	75	2101	$ 9,154,225	$ 7,035.81	
PVC Pipe - 4-inch	CR	1722	$ 150	$ 258,300	75	2101	$ 2,370,918	$ 1,822.45	
PVC Pipe - 2-inch	CR	719	$ 150	$ 107,850	75	2101	$ 989,947	$ 760.94	
PRV/PSV Station	CR	1	$ 209,000	$ 209,000	50	2076	$ 916,238	$ 3,155.78	
Fire Hydrants	CR	49	$ 7,500	$ 367,500	50	2076	$ 1,611,085	$ 5,549.04	
Butler Reservoir	CR	1	$ 605,000	$ 605,000	50	2076	$ 2,652,263	$ 9,135.15	
Harmony Reservoir	CR	1	$ 302,500	$ 302,500	50	2076	$ 1,326,132	$ 4,567.58	
Sources of Supply									
Butler Well									
Well	CR	1	$ 425,000	$ 425,000	50	2076	$ 1,863,160	$ 6,417	
Pump and Motor	CR	1	$ 50,000	$ 50,000	25	2051	$ 104,589	$ 1,908	
Mechanical Piping	CR	1	$ 75,000	$ 75,000	30	2056	$ 182,045	$ 2,303	
Harmony Inside Well									
Well	CR	1	$ 120,000	$ 120,000	50	2076	$ 526,069	$ 1,812	
Pump and Motor	CR	1	$ 20,000	$ 20,000	25	2051	$ 41,876	$ 763	
Mechanical Piping	CR	1	$ 20,000	$ 20,000	30	2056	$ 48,545	$ 614	
Harmony Outside Well									
Well	CR	1	$ 120,000	$ 120,000	50	2076	$ 526,069	$ 1,812	
Pump and Motor	CR	1	$ 20,000	$ 20,000	25	2051	$ 41,876	$ 763	
Mechanical Piping	CR	1	$ 20,000	$ 20,000	30	2056	$ 48,545	$ 614	
Friends Well									
Well	CR	1	$ 120,000	$ 120,000	50	2076	$ 526,069	$ 1,812	
Pump and Motor	CR	1	$ 20,000	$ 20,000	25	2051	$ 41,876	$ 763	
Mechanical Piping	CR	1	$ 20,000	$ 20,000	30	2056	$ 48,545	$ 614	
Well House	CR	1	$ 50,000	$ 50,000	30	2056	$ 121,363	$ 1,535	
Alternative 1 Well									
Well	CR	1	$ 251,000	$ 251,000	50	2076	$ 1,100,360	$ 3,790	
Pump, Motor, and Mechanical Piping	CR	1	$ 100,000	$ 100,000	25	2051	$ 209,378	$ 3,816	
Booster Stations									
Butler Booster Station	CR	1	$ 515,000	$ 515,000	50	2076	$ 2,257,712	$ 7,778	
Generator	CR	1	$ 115,000	$ 115,000	25	2051	$ 240,784	$ 4,389	
Harmony Booster Station	CR	1	$ 400,000	$ 400,000	50	2076	$ 1,753,562	$ 6,040	
Generator	CR	1	$ 100,000	$ 100,000	25	2051	$ 209,378	$ 3,816	
Water Meters									
water meters	STA	301	$ 500	$ 150,500	20	2046	$ 271,820	$ 7,389	
Communication and Controls									
Communication/Control Equipment	STA	1	$ 50,000	$ 50,000	20	2046	$ 90,306	$ 2,455	
Total Annualized Payment				$ 2,931,540			$ 89,772,187	$ 116,760	

Assumptions:
1) Inflation Rate = 3.0 %
2) Interest Rate = 8.0 %
3) CR is capital replacement
4) STA is short term asset

330 EDU
$ 29.47 per month

Appendix W: Capital Improvement Costs

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 1 / ALTERNATIVE 1

NEW GROUNDWATER SOURCE (250 GPM)

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement/Alternative 1	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE		COST	
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$	23,351	
2.0	NEW WELL	1	LS	$ 251,000	$	251,000	
3.0	EQUIPMENT AND MECHANICAL PIPING	1	LS	$ 100,000	$	100,000	
4.0	POWER SERVICE UPGRADE	1	LS	$ 78,024	$	78,024	
5.0	MANAGEMENT BASED INITIATIVES	1	LS	$ 38,000	$	38,000	
6.0	ENGINEERING AND PERMITTING			20%	$	98,075	
7.0	CONTINGENCY			30%	$	147,113	
			OPINION OF TOTAL PROJECT COST		$	740,000	

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 2

REDUNDANT FIRE FLOW CAPACITY

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACE CLASS 5)

Project:	Improvement 2	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	Buffer Booster Station	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 11,000
2.0	REDUNDANT FIRE PROTECTION PUMP	1	LS	$ 59,000	$ 59,000
3.0	MECHANICAL PIPING ADDITION/MODIFICATION	1	LS	$ 70,000	$ 70,000
4.0	BUILDING ADDITION	1	LS	$ 50,000	$ 50,000
5.0	ELECTRICAL AND CONTROLS	1	LS	$ 41,000	$ 41,000
6.0	SCADA PROGRAMMING	1	LS	$ 10,000	$ 10,000
7.0	ENGINEERING AND PERMITTING			12%	$ 29,000
8.0	INSPECTION			8%	$ 20,000
9.0	CONTINGENCY			30%	$ 73,000
			OPINION OF TOTAL PROJECT COST		$ 363,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 3

BUTLER BOOSTER STATION MEDIUM DEMAND REDUNDANCY

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 3	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	Butler Booster Station	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 6,000
2.0	MEDIUM DEMAND PUMP	1	LS	$ 36,000	$ 36,000
3.0	MECHANICAL PIPING ADDITION/MODIFICATION	1	LS	$ 60,000	$ 60,000
4.0	ELECTRICAL & CONTROLS	1	LS	12%	$ 11,520
5.0	SCADA PROGRAMMING	1	LS	$ 10,000	$ 10,000
6.0	ENGINEERING AND PERMITTING			12%	$ 15,000
7.0	INSPECTION			8%	$ 10,000
8.0	CONTINGENCY			30%	$ 38,000
			OPINION OF TOTAL PROJECT COST		$ 186,520

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 4

PECKHAM ROAD TO BUTLER CONNECTION

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 4	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	Butler Booster Station	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$ 8,000
2.0	12-INCH WATER MAIN	314	LF	$ 100	$ 31,400
3.0	BORE, JACK, AND 20-INCH CASING	80	LF	$ 1,400	$ 112,000
4.0	RAILROAD LICENSE AGREEMENT FEE	1	LS	$ 11,000	$ 11,000
5.0	ENGINEERING AND PERMITTING			12%	$ 19,000
6.0	INSPECTION			8%	$ 13,000
7.0	CONTINGENCY			30%	$ 46,000
			OPINION OF TOTAL PROJECT COST		$ 240,400

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 5

ACADEMY ROAD 2-INCH LINE UPGRADE

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 5	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	Bulter Booster Station	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE		COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$	7,000
2.0	8-INCH WATER MAIN	375	LF	$ 100	$	37,500
3.0	BORE, JACK, AND 12-INCH CASING	80	LF	$ 1,100	$	88,000
4.0	RAILROAD LICENSE AGREEMENT FEE	1	LS	$ 11,000	$	11,000
5.0	ENGINEERING AND PERMITTING			12%	$	16,000
6.0	INSPECTION			8%	$	11,000
7.0	CONTINGENCY			30%	$	40,000
			OPINION OF TOTAL PROJECT COST		$	210,500

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 6

WATER RIGHT CLEAN UP

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 6	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	Permitting	1	LS	$ 5,000	$ 5,000
2.0	CONTINGENCY			20%	$ 1,000
				OPINION OF TOTAL PROJECT COST	$ 6,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 7

ADDITIONAL SOURCE OF SUPPLY - EXPANDED SERVICE AREA

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 7	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/10/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE		COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$	30,450
2.0	NEW WELL	1	LS	$ 251,000	$	251,000
3.0	WELL HOUSE - STRUCTURE	500	SF	$ 266	$	133,000
4.0	EQUIPMENT AND MECHANICAL PIPING	1	LS	$ 125,000	$	125,000
5.0	POWER SERVICE AND STANDBY POWER	1	LS	$ 100,000	$	100,000
6.0	ENGINEERING AND PERMITTING			20%	$	127,890
7.0	CONTINGENCY			30%	$	191,835
			OPINION OF TOTAL PROJECT COST		$	960,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 8

PRV/PSV STATION

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 8	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/5/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE		COST
1.0	GENERAL CONDITIONS (BONDS, MOB, INS)			5%	$	8,000
2.0	PRV STATION	1	LS	$ 150,000	$	150,000
3.0	ENGINEERING AND PERMITTING			12%	$	19,000
4.0	INSPECTION			5%	$	8,000
5.0	CONTINGENCY			30%	$	48,000
			OPINION OF TOTAL PROJECT COST		$	240,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 9

RADIO READ WATER METER REPLACEMENT

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 9	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	3/18/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14156	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	WATER METER REPLACEMENT	1	LS	$ 150,000	$ 150,000
2.0	CONTINGENCY			20%	$ 30,000
			OPINION OF TOTAL PROJECT COST		$ 180,000

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

CIVIL DYNAMICS

City of Greenleaf

IMPROVEMENT 10

Water Service Location Updates

ENGINEER'S OPINION OF PROBABLE PROJECT COST

BUDGET LEVEL (AACEI CLASS 5)

Project:	Improvement 10	**Estimate Class:**	5
Client:	City of Greenleaf	**Date:**	7/21/2026
Location:	City of Greenleaf	**By:**	DK
ENR CCI:	14308	**Reviewed:**	

ITEM	DESCRIPTION	QTY	Unit	UNIT PRICE	COST
1.0	2-INCH SERVICE LINE REPLACEMENT	50	LF	$ 40	$ 2,000
2.0	1.5-INCH SERVICE TAP INSTALLATION	1	LS	$ 5,200	$ 5,200
3.0	1.5-INCH SERVICE LINE	60	LF	$ 35	$ 2,100
4.0	3/4-INCH SERVICE TAP INSTALLATION	1	LS	$ 1,800	$ 1,800
5.0	1-INCH SERVICE LINE	340	LF	$ 35	$ 11,900
6.0	ASPHALT REPAIR	85	LF	$ 40	$ 3,400
7.0	INSPECTION			8%	$ 3,000
8.0	CONTINGENCY			30%	$ 8,000
				OPINION OF TOTAL PROJECT COST	$ 37,400

This cost opinion reflects our professional opinion of accurate costs at this time based on current conditions at the project location. This estimate is subject to change through the project planning and design process. Actual construction cost will depend on the cost of labor, materials, equipment, and services provided by others, contractor's methods of determining prices, competitive bidding and market conditions.

Appendix X: Water Quality Sampling Results Table

Site/Area	Location	Parameter																	
		Total Cl Resid	Turbidity	Ortho PO4	Total PO4	NH3/NH4	Total Fe	Total Mn	Hardness	Dissolved Fe	Dissolved Mn	Calculated Particulate Mn	Particulate % Mn	Calculated Particulate Fe	Particulate % Fe	Field pH	Field Temp	Free Cl	Total Cl Resid
	Unit	mg/l	NTU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	%	mg/l	%	Standard	Deg C	mg/l	mg/l
Butler	Raw	0	-	0.07	0	1.36	0	0.1	49.1	0	0.1	0	[redacted]	0	#DIV/0!	7.8	21.7	-	-
Butler	Before tank/after injection	1.85	2	0.05	1.44	0	0	0.008	47.4	0	0.078	0.02	21%	0	#DIV/0!	8.5	21.6	>8	>8
Butler	Finished (After tank)	0.43	1.2	1.26	1.82	0	0.051	0.067	32.8	0	0.031	0.036	[redacted]	0.051	100%	7.8	19.9	0.87	0.64
Harmony	Raw	0	-	0.05	0	0.82	0.059	0.261	170	0.052	0.262	0.001	0%	0.007	12%	8	18.3	-	-
Harmony	Before tank/after injection	0.56	0.6	0.71	1.32	0.75	0.076	0.248	-	0	0.247	0.002	[redacted]	0.078	100%	7.83	18.5	0.16	0.2
Harmony	Finished (After tank)	2.14	0	0.72	1.37	0.88	0.082	0.248	172	0	0.226	0.024	[redacted]	0.082	100%	7.80	18.0	0.29	3.54
Distribution	20723 Friends Hydrant, pre-flush	0	3.4	1.73	2.14	-	0.2	0.405	83.8	0	0.084	0.021	20%	0.2	100%	7.68	23.7	Nil	0.02
Distribution	20723 Friends Hydrant, during-flush	0.48	15.2	1.43	4	-	3.58	0.868	83	0	0.069	0.819	[redacted]	3.58	100%	7.7	19.4	0.51	0.68
Distribution	20681 Glens Ct Hydrant, pre-flush	0.81	1.2	0.78	1.31	-	0.08	0.233	167	0	0.22	0.013	[redacted]	0.08	100%	8	16.5	0.67	0.9
Distribution	20681 Glens Ct Hydrant, during-flush	1.7	10.1	0.98	2.22	-	1.84	1.88	-	0	0.248	1.414	[redacted]	1.84	100%	8	14	2	4.35
Distribution	20836 Whittier Dr Hydrant, pre-flush	0.21	1	1.12	1.72	-	0.081	0.151	74.4	0	0.111	0.04	26%	0.081	100%	8.08	13.1	0.28	0.51
Distribution	20836 Whittier Dr Hydrant, during-flush	0.29	1.6	1.14	1.78	-	0.174	0.268	-	0	0.058	0.207	[redacted]	0.174	100%	7.97	13.4	0.35	0.53
Distribution	20717 Hillcrest Rd Hydrant, pre-flush	0.78	4	1.14	1.74	-	0.488	0.705	-	0	0.17	0.535	[redacted]	0.439	100%	8.16	11.2	0.51	0.8
Distribution	20717 Hillcrest Rd Hydrant, during-flush	0.35	5.5	1.37	2.24	-	0.649	0.634	-	0	0.142	0.492	[redacted]	0.649	100%	7.84	13.1	0.26	1.2
Distribution	21167 Pine St Hydrant, pre-flush	0.16	1.3	1.13	1.76	-	0.071	0.175	-	0	0.138	0.04	23%	0.071	100%	8.11	11.9	0.13	0.34
Distribution	21167 Pine St Hydrant, during-flush	1.13	2.9	0.09	1.53	-	0.521	0.09	-	0	0.245	0.345	[redacted]	0.521	100%	8.12	12.8	1.66	4.33

Note: Non-detect results shown as 0.

Appendix Y: Treatment Technology Example

Filter Tech Systems, Inc.
Designers & Manufacturers of Water Systems
2844 Chipeta Avenue Grand Junction, CO 81501
Toll Free (888) 287-8292 Local (970) 254-2855

Proposal No. 25-1761

04 November 2025

Greenleaf, Idaho

650 GPM AquaSand Filter Proposal

We are pleased to provide a Proposal for an Iron and Manganese Filter System for the City of Greenleaf, Idaho. The iron and manganese removal filter portion of this proposed system consists of four (4) 102" diameter AquaSand filters that are broken into two (2) separate skids for ease of shipping and maintenance.

This Proposal includes the following equipment:

One (1) 650 GPM AquaSand Filter System (Two-Skid System)

- Four (4) 8.5'Ø ASME Fabricated Vertical Carbon Steel Filter Vessel
  - 12" Graded Gravel Underbed per Filter
  - 36" Greensand+ Media per Filter
- One Lot Electrically Actuated Butterfly Valve
  - Four (4) 4" Filter Inlet Valve
  - Four (4) 4" Filter Outlet Valve
  - Four (4) 8" Filter Backwash Inlet Valve
  - Four (4) 8" Filter Backwash Outlet Valve
  - Four (4) 4" Filter Rinse-to-Waste Valve
- One (1) Manual Butterfly Valve
  - One (1) 4" Rinse-to-Waste Outlet Isolation Valve
- Four (4) Air Release Assemblies
  - One (1) 1" Air Release Valve
  - One (1) 1" Air Release Isolation Ball Valve
- One Lot Pressure Monitoring Equipment
  - Eight (8) ¼" MPT 0-100 psi Pressure Gauge
  - Four (4) ¼" Differential Pressure Transmitter
- One Lot Sch80 PVC Face Piping, Isolation Valves, Sample Valves, and Pipe Supports

One (1) Field-Mounted Equipment

- One (1) Raw Water Feed Equipment
  - One (1) 8" Manual Butterfly Valve
  - One (1) 8" Wafer-Style Check Valve
  - One (1) 8" PVC Flanged Static Mixer
  - One (1) Chemical Storage Tank
  - One (1) Chemical Dosing Pump
- Two (2) AquaSand Filter Feed Equipment
  - One (1) 8" Manual Butterfly Valve
  - One (1) 8" Magnetic Flow Meter
  - One (1) 8" Electrically Actuated Butterfly Valve with Positioner
- One (1) Finished Water Outlet Equipment
  - One (1) 8" Wafer-Style Check Valve
  - One (1) 8" PVC Flanged Static Mixer
  - One (1) Chemical Storage Tank
  - One (1) Chemical Dosing Pump
  - One (1) 8" Magnetic Flow Meter
  - One (1) 1/2" Sample Tap
  - One (1) 8" Manual Butterfly Valve

Filter Control Panel

PLC-Based Automatic Control of All Electrical Equipment Provided by Filter Tech Systems

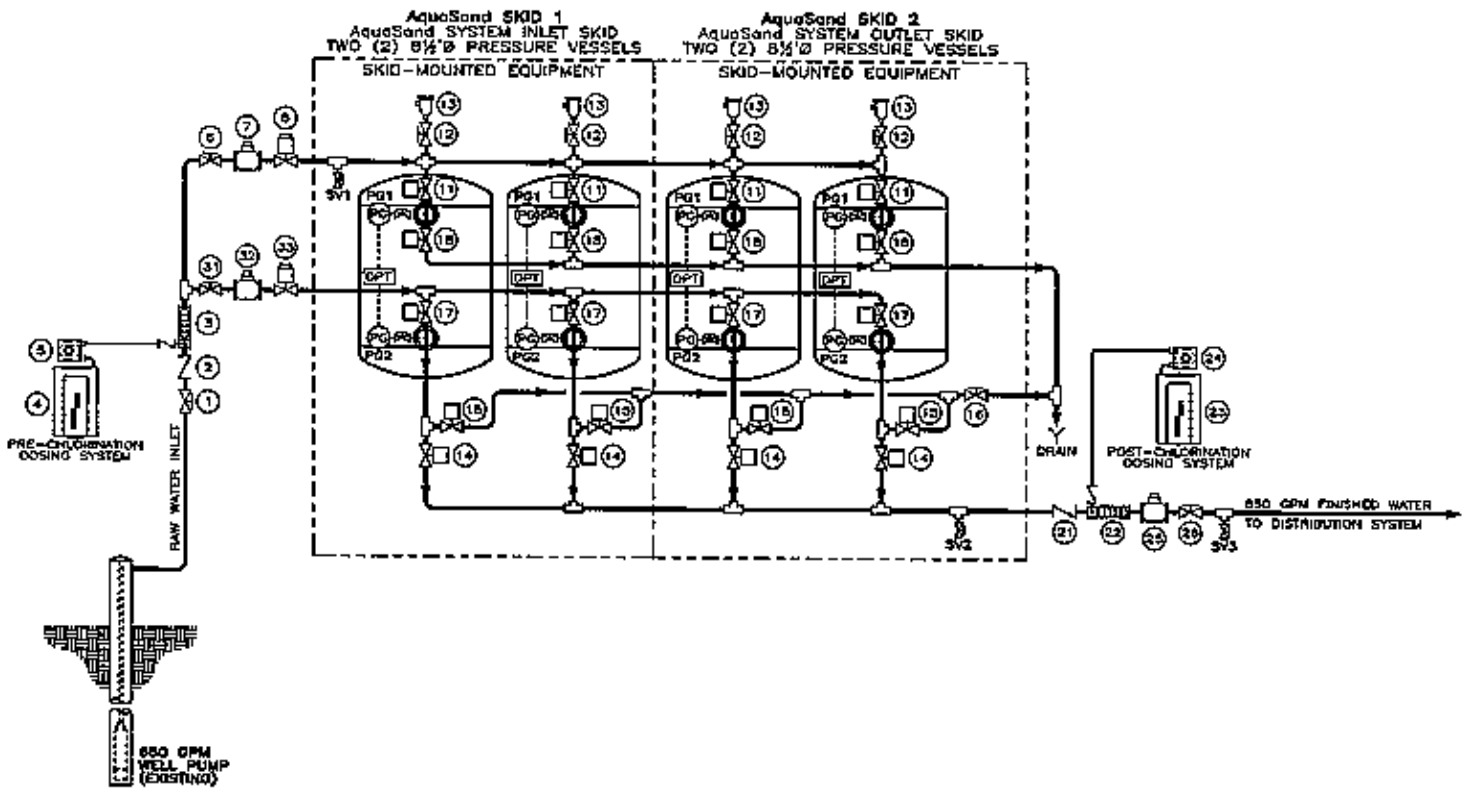
Control System Features:

- Automatic Start/Stop Based on Signal from Outside Source
- Manual "Push-Button" Start Operation
- Chlorine Dosing Rate Monitoring
- Point-and-Click access to all Timers and Set Points
- Windows-based PC Touchscreen for Operator Interface Station

One Lot Start Up & Operator Training
Factory-Direct Field Installation Supervisor and Start Up Technician.

Filter Tech Systems to provide personnel for the following functions:
Supervision of Underdrain Assembly & Installation
Supervision of Media Installation
Start Up & Check Out of Equipment
Operator Training

One Lot Operation & Maintenance Manuals



PROCESS FLOW SCHEMATIC

— PRELIMINARY —

#	DATE	BY	DESCRIPTION

FILTER TECH SYSTEMS, Inc.
DESIGNERS & MANUFACTURERS OF
AquaFlow & UltraFlex FILTERS
& WATER TREATMENT SYSTEMS
888-287-8292
GRAND JUNCTION, COLORADO

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PROCESS FLOW SCHEMATIC
650 GPM AquaSand SYSTEM
GREENLEAF, IDAHO

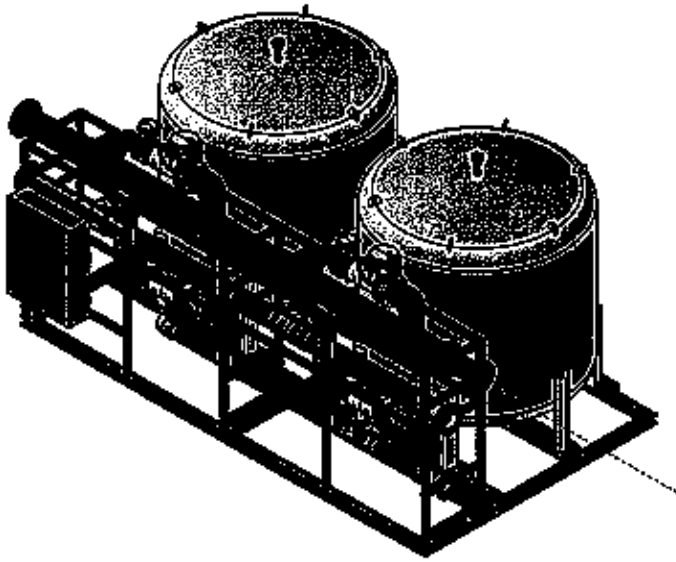
DRAWN	CHKD	DATE	SCALE	SHEET	REV
TAA		03 NOV 25	- NONE -	1A	0

PROPOSAL No. 24-1775 | PROJECT No.

Equipment Item List
650 gpm AquaSand Filter System
Proposal #25-1775 Greenleaf, Idaho

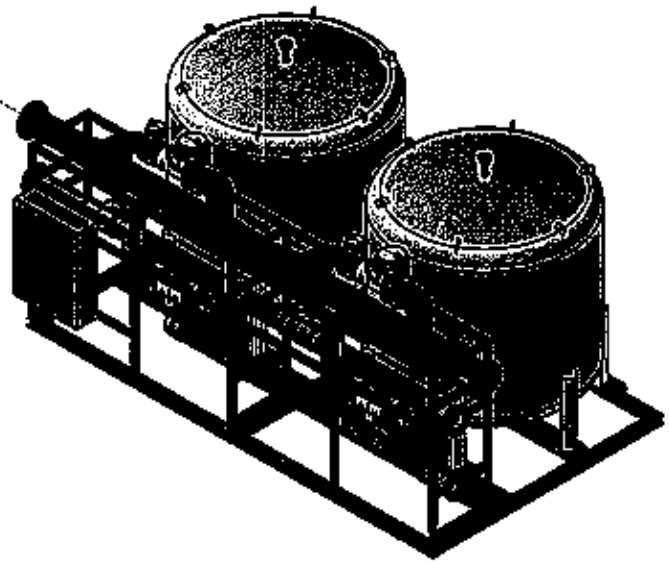
Item	Qty	Size	Item	Purpose
Raw Water Inlet Equipment				
1	1	8"	Manual Butterfly Valve	System Inlet Isolation Valve
2	1	8"	Wafer-Style Check Valve	Chlorine Backflow Prevention
3	1	8"	Static Mixer	Chlorine Mixer
4	1	---	Chemical Storage Tank	Chlorine Storage Tank
5	1	---	Chemical Dosing Pump	Chlorine Dosing Pump
6	1	8"	Manual Butterfly Valve	AquaSand Raw Water Inlet Isolation Valve
7	1	8"	Magnetic Flow Meter	AquaSand Raw Water Inlet Flow Rate
8	1	8"	Electrically Actuated Butterfly Valve with Positioner	AquaSand Raw Water Inlet Flow Control Valve
AquaSand Filter System Equipment				
11	4	4"	Electrically Actuated Butterfly Valve	AquaSand Filter Influent Valve
12	4	1"	Ball Valve	Air Release Isolation Valve
13	4	1"	Air Release Valve	AquaSand Filter Air Release
14	4	4"	Electrically Actuated Butterfly Valve	AquaSand Filter Effluent Valve
15	4	4"	Electrically Actuated Butterfly Valve	AquaSand Filter Rinse Outlet Valve
16	4	4"	Manual Butterfly Valve	AquaSand Filter Rinse Outlet Isolation Valve
17	4	8"	Electrically Actuated Butterfly Valve	AquaSand Filter Backwash Inlet Valve
18	4	8"	Electrically Actuated Butterfly Valve	AquaSand Filter Backwash Outlet Valve

Item	Qty	Size	Item	Purpose
Finished Water Equipment				
21	1	8"	Wafer-Style Check Valve	Chlorine Backflow Prevention
22	1	8"	Static Mixer	Chlorine Mixer
23	1	---	Chemical Storage Tank	Chlorine Storage Tank
24	1	---	Chemical Dosing Pump	Chlorine Dosing Pump
25	1	8"	Magnetic Flow Meter	System Outlet Flow Rate
26	1	8"	Manual Butterfly Valve	System Outlet Isolation Valve
Backwash Supply Equipment				
31	1	8"	Manual Butterfly Valve	AquaSand Backwash Supply Isolation Valve
32	1	8"	Magnetic Flow Meter	AquaSand Backwash Supply Flow Rate
33	1	8"	Electrically Actuated Butterfly Valve with	AquaSand Backwash Supply Flow Control Valve
Metering Components				
PG1	4	1/4"	0-150 PSI Pressure Gauge	AquaSand Filter Influent Pressure
PG2	4	1/4"	0-150 PSI Pressure Gauge	AquaSand Filter Effluent Pressure
DPT	4	1/4"	Differential Pressure Transmitter	1-Micron Filter Influent Pressure
SV1	1	1/2"	Smooth-Nosed Sample Valve	Raw Water Sample
SV2	1	1/2"	Smooth-Nosed Sample Valve	AquaSand Filter Effluent Sample
SV3	1	1/2"	Smooth-Nosed Sample Valve	System Effluent Sample
PGIV	8	1/4"	Brass Ball Valve	Pressure Indicator Isolation Valve
WQA1	1	---	Free-Chlorine Residual Analzyer	Filtered Water Chlorine Residual
WQC1	1	---	Controller	Chlorine Analyzer Controller



AquaSand SKID 1 ISOMETRIC

RAW WATER AND BACKWASH INLET



AquaSand SKID 2 ISOMETRIC

FILTERED WATER AND DRAIN (2) OUTLET

— PRELIMINARY —

#	DATE	BY	DESCRIPTION

FILTER TECH SYSTEMS, Inc.
DESIGNERS & MANUFACTURERS OF
AquaFloc & UltraFlex FILTERS
& WATER TREATMENT SYSTEMS
888-287-8292
GRAND JUNCTION, COLORADO

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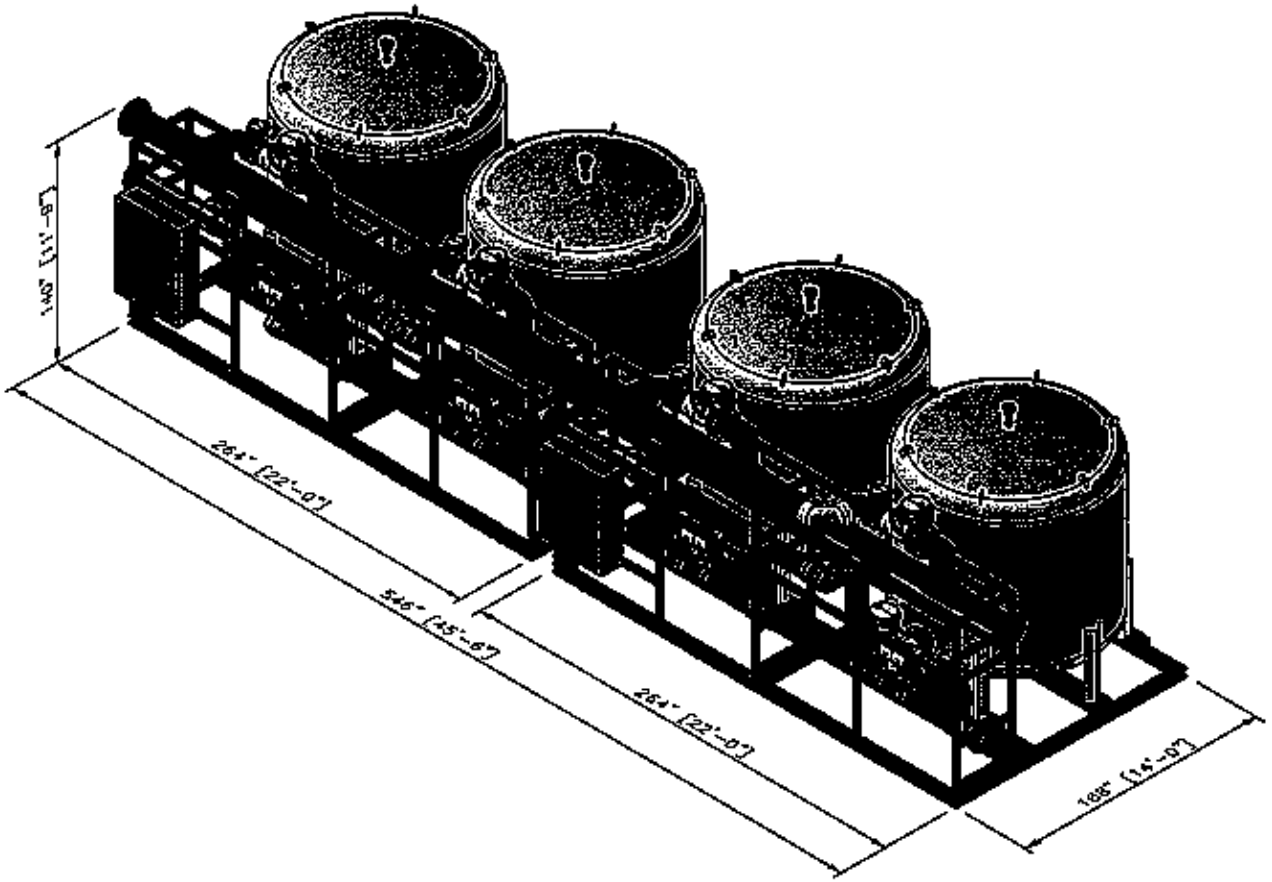
SKID ISOMETRICS
650 GPM AquaSand SYSTEM
GREENLEAF, IDAHO

DRAWN:	CHKD'D:	DATE	SCALE	SHT. No.	REV
TAA		03 NOV 25	— NONE —	4A	0
PROPOSAL No. 24-1775		PROJECT No.			



650 GPM AquaSand SYSTEM ASSEMBLY ISOMETRIC

AquaSand SKID 1 + AquaSand SKID 2

— PRELIMINARY —

#	DATE	BY	DESCRIPTION

FILTER TECH SYSTEMS, Inc.
DESIGNERS & MANUFACTURERS OF
AquaFloc & UltraFlex FILTERS
& WATER TREATMENT SYSTEMS

888-287-8292
GRAND JUNCTION, COLORADO

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SYSTEM ISOMETRIC
650 GPM AquaSand SYSTEM
GREENLEAF, IDAHO

DRAWN:	CHKD:	DATE	SCALE	SH.No.	REV
TAS		03 NOV 25	— NONE —	4B	0
PROPOSAL No. 24-1775		PROJECT No.			

Appendix Z: Components of Storage Analysis for Additional 650 EDUs

Explanation/Calculations

An increase of 650 EDUs would create the need for Equalization storage due to peak demand surpassing redundant groundwater pumping capacity and increase the Fire Suppression storage required due to an increase in maximum day demand. The City's existing storage reservoirs can satisfy the required components of storage to serve an additional 650 EDUs for a total of 980 EDUs before surplus storage at Harmony is diminished. Compared to the existing components of storage (Table 10), the additional EDUs would require:

Butler - The pump-on elevation at the Butler reservoir would need to be raised by approximately 3 feet which would reduce operational storage (by approximately 28,516 gallons) while keeping well pump cycling significantly below 6 cycles per hour. 18,909 gallons of that water would be used to provide the increased Fire Suppression requirement at the Butler reservoir with the remainder labeled Surplus. Fire flow analysis showing required Fire Suppression volumes for the additional 650 EDU scenario is on the following page.

Harmony – Given booster station capacities, the increase in Fire Suppression storage required by the addition of 650 EDUs is accounted for in the Butler reservoir. At Harmony, 29,207 gallons of what was Surplus storage is now accounted for as Equalization to provide the difference between the redundant groundwater pumping capacity and peak usage according to the calculation methods in the cited 2013 IDEQ guidance:

Qs/Qmxdy ≈ 426,240 gal / 342,109 gal ≈ 1.246 => Table 1 in the 2013 Guidance =>

Es ≈ 2.05 * 342,109 gal / 24 ≈ 29,207 gal

Components of Storage for 650 Additional EDUs (980 Total)			
Storage Components	Butler Reservoir (gallons)	Harmony Reservoir (gallons)	Total (gallons)
Dead[A]	4,700	2,644	7,344
Operational[C]	55,146	30,668	85,815
Equalization[D]	0	29,207	29,207
Fire Suppression[B]	141,189	43,800	184,989
Standby[E]	0	0	0
Surplus[F]	20,811	1,020	21,831
Total	221,846	107,339	329,186

Note:
[A]Dead storage is the volume not available for use.

[B]Fire suppression storage is the difference between fire demand and well pumping capacities, divided between the two reservoirs based on booster pumping capacities.

[C]Operational storage based on altered "pump on" elevation in the Butler Reservoir to provide additional Fire Suppression volume.

[D]Equalization storage is present at the Harmony reservoir once required based on the criteria established in the 2013 IDEQ Guidance for Determining Equalization Water Storage for Public Water Systems (Appendix O).

[E] Standby storage is 0 because the Butler and Harmony facilities are equipped with standby power meeting the requirements of the Drinking Wate Rules.

[F]Surplus storage is unallocated water in the IDEQ components of storage.

Source	Wells (gpm)	Booster Pumps (gpm)	Duration (hr)	Volume During Required Fire Duration		Fire Protection and Max Day Demand Volume Required (gallons)	Fire Protection Volume After Friends Well Contribution (gallons)	Fire Protection Volume from Each Facility[B] (gallons)	Fire Protection Volume Required in Storage[C] (gallons)
				From Wells (gallons)	Max Available At Facility[A] (gallons)				
Friends	61		2	7,320		298,509	291,189		
Butler	650			78,000					
Butler Booster		2,490							
Butler Facility					240,000			219,189	141,189
Harmony Small	35			4,200					
Harmony Large	200			24,000					
Harmony Boosters		600							
Harmony Facility					73,020			72,000	43,800

Notes:
[A]Total facility volume minus Dead, Operational, and Equalization storage plus well pumping volume during the fire duration.
[B]Based on booster station pumping capacities.
[C]Required fire protection volume minus well pumping volume at each facility.

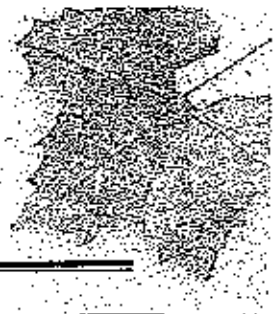
Appendix AA: Equivalent Unit Table and Water Accounts

CITY OF GREENLEAF

20523 North Whittier Drive
Greenleaf, Idaho 83626
www.greenleaf-idaho.us

Equivalent Unit Table

	Classification	Equivalent Units (EDUs)
1	Airport Terminal – For each 2,000 sq. ft.	1.0
2	Apartment	See multi-dwelling unit
3	Assembly Hall or Auditorium – for each 200 seats	1.0
4	Bank or Savings – For each 3,000 sq. ft.	1.0
5	Barbershop, Beauty Salon - additional per station over 2	1.0 0.5
6	Bowling Alley - additional per Lane over 2	1.0 0.2
7	Cafe, per customer seating capacity	See restaurant
8	Campsite - for each Trailer Unit - For each Camp site - Additional for RV dump	 1.0 .046 4.0
9	Car Dealer - no Repair or Wash Facilities - With Wash Bays and/or Stalls - Additional per stall	 1.0 1.0 0.5
10	Car Wash (per bay)	2.0
11	Church – For each 50 seats	1.0
12	Club or Lodge	Same as Church
13	Condominium	See multiple living unit
14	Dentist (per practitioner at site)	2.0
15	Doctor	Same as dentist
16	Department Store	See retail store
17	Drugstore	See retail store
18	Duplex	See multiple living unit
19	Florist – For each 1,500 sq. ft.	1.0
20	Fourplex	See multiple living unit
21	Garage – Per 3 employees	1.0
22	Grocery	See retail food store
23	Hardware store	See retail store
24	Hospital and/or Convalescent Home - Additional per bed	1.0 0.3



25	Hotel / Motel - First Unit - Additional per Unit - Additional per Unit with Kitchen	 1.0 0.5 0.2
26	Industrial Use	Director Calculated
27	Jail - Additional per Bed	1.0 0.5
28	Laundry - Self Service up to 10 machines - Self Service – Additional machines over 10 - Commercial	 4.0 0.25 Director Calculated
29	Mobilehome and Trailer Park – For each Unit	1.0
30	Multiple Living Unit – Per Unit	1.0
31	Office Building – For each 2,500 sq. ft.	1.0
32	Photo Lab / Printing Shop	Director Calculated
33	Post Office	See office building
34	Residential Units	1.0
35	Retail Store – For each 3,000 sq. ft.	1.0
36	Retail Food Store – For each 1,500 sq. ft.	1.0
37	Restaurant – Sit Down – For each Seat (minimum 2.0)	0.1
38	Restaurant – Fast Food – For each Seat (minimum 1.0)	0.05
39	Schools – Per 25 Students	1.0
40	Service Station - Gas and Restroom Only - per Set of Pumps - Full Service	 1.0 See garage
41	Service Station - Convenience Store	See retail food
42	Tire Store	See garage, office
43	Warehouse / Storage Units – For each 10,000 sq. ft.	1.0

208.454.0552 • cityhall@greenleaf-idaho.us

City Water Accounts and EDU Assignment as of 9/18/2025					
Account	Address	Account Name	Meter Size	EDUs	Commercial (C) / Residential (R)
44-00220-00	20803 Academy	Friends Retirement Home	2	19	C
44-00050-00	20565 Academy	Greenleaf Friends Academy	2	5	C
44-00020-00	20535 Academy	Greenleaf Friends Church	¾	4	C
44-00060-00	20567 Academy	Greenleaf Elementary	¾	3	C
44-01450-00	21431 Main	Greenleaf Meat Packing	5/8 – 3/4	3	C
43-00080-00	20529 Friends	Smith, Lowell	5/8 – 3/4	1	C
44-01470-01	21358 Main	Gas L, LLC c/0 Scott Stanley	5/8 – 3/4	1	C
45-00050-05	20990 Main	Damrath, David	5/8 – 3/4	1	C
53-00010-02	21513 Main	Nathan's Greenleaf Cafe	5/8 – 3/4	1	C
54-00010-00	20460 Friends	Wilhite, Jim	5/8 – 3/4	1	C
34-00010-00	21260 Peckham	Wastewater Treatment Plant	5/8 – 3/4	1	C
33-00010-02	21022 Briarwood	MacLeod, Andrew	5/8 – 3/4	1	R
33-00020-01	21023 Briarwood	Patten-Strecker, Heather	5/8 – 3/4	1	R
33-00100-00	21254 Cessna	Culver, Edward and Carol	5/8 – 3/4	1	R
33-00110-02	21260 Cessna	Cousens, John	5/8 – 3/4	1	R
33-00120-00	21266 Cessna	Jardine, Brian and Suzanne	5/8 – 3/4	1	R
33-00140-01	21283 Cessna	Porter, Courtney	5/8 – 3/4	1	R
33-00170-01	20301 Cessna	Taylor, Dean	5/8 – 3/4	1	R
33-00180-00	21307 Cessna	Cloud, Ralph and Darlene	5/8 – 3/4	1	R
33-00190-01	21313 Cessna	Gallagher, Joseph and Linda	5/8 – 3/4	1	R
33-00200-01	21319 Cessna	Roberts Living Trust, Warren Stanley	5/8 – 3/4	1	R
33-00220-01	21331 Cessna	Perini, Mark and Gayla	5/8 – 3/4	1	R
33-00230-00	21336 Cessna	Haley, Leland and Jeanette	5/8 – 3/4	1	R
33-00250-01	21017 Cottonwood	Bragg, James	5/8 – 3/4	1	R
33-00260-07	21021 Cottonwood	Bragg, James	5/8 – 3/4	1	R
33-00270-01	21132 Cottonwood	Montana, Jacob	5/8 – 3/4	1	R
33-00300-01	21348 Cessna	Jellison, Michael and Shelley	5/8 – 3/4	1	R
33-01250-01	21031 Oakwood	Miller, Cresta	5/8 – 3/4	1	R
33-01260-00	21036 Oakwood	Roberson, Leonard and Ilsa	5/8 – 3/4	1	R
33-01270-01	21045 Oakwood	Turnbull, Bob	5/8 – 3/4	1	R
33-01280-00	21046 Oakwood	Harris, Marlene	5/8 – 3/4	1	R
33-01290-05	21051 Oakwood	Bryte, Wilbur and Lucy	5/8 – 3/4	1	R
33-01300-02	21066 Oakwood	McGuire, Garth and Marilyn	5/8 – 3/4	1	R
33-01310-01	21071 Oakwood	Waldon, Roger and Patricia	5/8 – 3/4	1	R
33-01320-00	21072 Oakwood	Myers, David	5/8 – 3/4	1	R
33-01340-00	21084 Oakwood	Squibb, Chris	5/8 – 3/4	1	R
33-01350-03	21101 Oakwood	Higley, Michael	5/8 – 3/4	1	R
33-01360-05	21129 Oakwood	Clover Trust, Rainey, Susan trustee	5/8 – 3/4	1	R
33-01370-03	21246 Oakwood Dr	Nielsen, Clark	5/8 – 3/4	1	R
33-01380-02	21249 Oakwood Dr	Kuykendall, Steve and Amy	5/8 – 3/4	1	R
33-02400-03	21524 Peckham	Hunsperger, Mark and Duran, Janine	5/8 – 3/4	1	R
33-02410-03	21526 Peckham	Eells, Scott and Hailey	5/8 – 3/4	1	R
33-02420-03	21636 Peckham	Knuth, Mark and Kathy	5/8 – 3/4	1	R
33-02500-00	21032 Rosewood	Devoy, Mary	5/8 – 3/4	1	R
33-02510-04	21033 Rosewood	Giannini, Austin	5/8 – 3/4	1	R
33-02520-03	21044 Rosewood	Alford, Andrew and Megan	5/8 – 3/4	1	R
33-02530-00	21049 Rosewood	Dennis, Tim and Ronda	5/8 – 3/4	1	R
33-02540-01	21062 Rosewood	Wraught, Angela and William	5/8 – 3/4	1	R
33-02550-00	21065 Rosewood	Campos,Edmundo	5/8 – 3/4	1	R

City Water Accounts and EDU Assignment as of 9/18/2025					
Account	Address	Account Name	Meter Size	EDUs	Commercial (C) / Residential (R)
33-02560-05	21077 Rosewood	Reid, Beth and Glen	5/8 – 3/4	1	R
33-02570-00	21082 Rosewood	Kopadt, Kurt	5/8 – 3/4	1	R
33-02580-00	21089 Rosewood	Squibb, Dave	5/8 – 3/4	1	R
33-02590-02	21092 Rosewood	Peterson, Peggy	5/8 – 3/4	1	R
33-02600-00	21222 Rosewood Place	McBean, John and Debra	5/8 – 3/4	1	R
33-02610-00	21205 Rosewood Place	Wilson, Tommy and Beltran, Jan	5/8 – 3/4	1	R
33-02620-00	21209 Rosewood Place	Rosenkranz, Joshua & Rosenkranz, Herbert & Sheila	5/8 – 3/4	1	R
33-02630-01	21215 Rosewood Place	Chabay, Shawna	5/8 – 3/4	1	R
33-02640-00	21219 Rosewood Place	Wilhite, Lucas and Chandra	5/8 – 3/4	1	R
33-02670-00	21230 Rosewood Place	Shaw, Seth and Samantha		1	R
33-02680-01	21234 Rosewood Drive	Muhleman, Evan and Frisby, Christy	5/8 – 3/4	1	R
33-03300-01	21664 Sprucewood	O'Neal,Debra	5/8 – 3/4	1	R
33-03400-00	21678 Sprucewood	Ascencio, Manuel	5/8 – 3/4	1	R
34-00020-02	21392 Peckham	Swainston, Hallee	5/8 – 3/4	1	R
34-00030-01	21480 Peckham	Barrie, Jack and Brenda	5/8 – 3/4	1	R
43-00010-00	21551 Butler	Fritter, Charles	5/8 – 3/4	1	R
43-00020-02	21540 Butler	Ortega, Jorge	5/8 – 3/4	1	R
43-00030-01	21550 Butler	Lopez, Acilegna	5/8 – 3/4	1	R
43-00040-03	21560 Butler	Smith, David	5/8 – 3/4	1	R
43-00050-02	21559 Butler	Markley, Trey	5/8 – 3/4	1	R
43-00070-05	20547 Friends	Watson, Kevin and Christina	5/8 – 3/4	1	R
43-00080-01	20563 Friends	Robinson, Jennifer	5/8 – 3/4	1	R
43-00090-01	20571 Friends	Powell, Daniel	5/8 – 3/4	1	R
43-00100-02	20585 Friends	Hibbs, Janet	5/8 – 3/4	1	R
43-00110-01	20675 Friends	Holton, Brad	5/8 – 3/4	1	R
43-00120-01	20723 Friends	Brobeck, Jacob and Rachel	5/8 – 3/4	1	R
43-00130-02	20741 Friends	Lagerstedt, Erika & Croft, Brendan	5/8 – 3/4	1	R
43-00140-01	20761 Friends	Lindsey, Dan and Dena	5/8 – 3/4	1	R
43-00150-01	20781 Friends	Wilson, Sandra and Ernest	5/8 – 3/4	1	R
43-00160-03	20803 Friends	Hernandez, Elodia	5/8 – 3/4	1	R
43-00170-03	20841 Friends	Murairra, Justin	5/8 – 3/4	1	R
43-00180-02	20857 Friends	Mayberry, Michael	5/8 – 3/4	1	R
43-00190-00	20885 Friends	Brown, Gary	5/8 – 3/4	1	R
43-00200-00	20925 Friends	Sheets, Avery	5/8 – 3/4	1	R
43-00210-01	20955 Friends	Baker, Rodney and Elizabeth	5/8 – 3/4	1	R
43-00220-04	20959 Friends	Gibson, John	5/8 – 3/4	1	R
44-00010-10	20532 Academy	Hansen, Amanda	5/8 – 3/4	1	R
44-00030-00	20540 Academy	Brown, Dianna	5/8 – 3/4	1	R
44-00040-02	20556 Academy	Burgos, Teresa	5/8 – 3/4	1	R
44-00070-01	20570 Academy	Dakan, Debra	5/8 – 3/4	1	R
44-00080-00	20586 Academy	McDonald, Roxanna and Osa	5/8 – 3/4	1	R
44-00090-00	20594 Academy	Strange, Clovis	5/8 – 3/4	1	R
44-00100-04	20602 Academy	Hunter, Tana and Larry	5/8 – 3/4	1	R
44-00110-01	20616 Academy	Knie, Seth	5/8 – 3/4	1	R
44-00120-00	20660 Academy	Sorensen, Gary and Jane	5/8 – 3/4	1	R
44-00130-00	20668 Academy	Mikesell, Jim	5/8 – 3/4	1	R
44-00140-00	20680 Academy	Hawkins, Norman and Debra	5/8 – 3/4	1	R
44-00150-01	20686 Academy	Land, Michael	5/8 – 3/4	1	R

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Account	Address	Account Name	Meter Size	EDUs	Commercial (C) / Residential (R)
44-00160-05	20698 Academy	Massoth, Emily	5/8 – 3/4	1	R
44-00170-01	20714 Academy	Venneman, Joseph and Debra	5/8 – 3/4	1	R
44-00180-05	20736 Academy	Greenwood, Chelsea	5/8 – 3/4	1	R
44-00190-02	20776 Academy	Cordova, David	5/8 – 3/4	1	R
44-00200-02	20791 Academy	Greenleaf Friends Academy	5/8 – 3/4	1	R
44-00210-01	20792 Academy	Bartlow, Aimee and John	5/8 – 3/4	1	R
44-00230-03	20812 Academy	Borja, Thomas	5/8 – 3/4	1	R
44-00240-02	20832 Academy	Mendoza, Luciano	5/8 – 3/4	1	R
44-00260-02	20847 Academy	Mullins, Aimee	5/8 – 3/4	1	R
44-00270-01	20856 Academy	Hawkins, Kim	5/8 – 3/4	1	R
44-00280-04	20871 Academy	Rambo, Sarah	5/8 – 3/4	1	R
44-00290-00	20874 Academy	Vega, Natividad and Margaret	5/8 – 3/4	1	R
44-00300-00	20897 Academy	Neighbors, Diane	5/8 – 3/4	1	R
44-00310-00	20898 Academy	Wilkden, Lance and Janie	5/8 – 3/4	1	R
44-00320-04	20922 Academy	Contreras, Santos	5/8 – 3/4	1	R
44-00340-01	20551 Antrim	Frickey, Brice	5/8 – 3/4	1	R
44-00350-07	20571 Antrim	Esparza, Ruben	5/8 – 3/4	1	R
44-00360-00	20591 Antrim	Amaral, Jennifer and Rickey	5/8 – 3/4	1	R
44-00370-05	20611 Antrim	Escutia, Luis	5/8 – 3/4	1	R
44-00380-00	20632 Antrim	Johnson, John	5/8 – 3/4	1	R
44-00390-00	20643 Antrim	Ehrlich, John	5/8 – 3/4	1	R
44-00400-02	20654 Antrim	Semple, James and Karen	5/8 – 3/4	1	R
44-00410-02	20657 Antrim	McClure, Jack	5/8 – 3/4	1	R
44-00420-03	20663 Antrim	Fendley, Christine	5/8 – 3/4	1	R
44-00430-04	20667 Antrim	Bailey-Dennis, Angelia	5/8 – 3/4	1	R
44-00440-01	20683 Antrim	Sunshine Mountain Land LLC	5/8 – 3/4	1	R
44-00450-06	21081 Antrim	Lara, Javier	5/8 – 3/4	1	R
44-00460-03	21151 Antrim	Barlow, Gregory and Carolyn	5/8 – 3/4	1	R
44-00470-01	21160 Antrim	Dennis, Dan	5/8 – 3/4	1	R
44-00480-02	21177 Antrim	Ratternee,Ronald and Shauna	5/8 – 3/4	1	R
44-00490-01	21178 Antrim	Needham, Tom	5/8 – 3/4	1	R
44-00500-00	21188 Antrim	Wilkins, Mark	5/8 – 3/4	1	R
44-00510-03	21193 Antrim	Erickson, Martha	5/8 – 3/4	1	R
44-00520-00	21222 Antrim	Pease, Randy	5/8 – 3/4	1	R
44-00530-00	21231 Antrim	Flores, Ruben	5/8 – 3/4	1	R
44-00540-01	21242 Antrim	Jordan, Ashley	5/8 – 3/4	1	R
44-00550-04	21254 Antrim	Rossmiller, Taryn	5/8 – 3/4	1	R
44-00560-07	21261 Antrim	Herrera, Maria	5/8 – 3/4	1	R
44-00570-08	21272 Antrim	Castellanos, Daisy	5/8 – 3/4	1	R
44-00580-00	21284 Antrim	Douty, Angela and Danielle	5/8 – 3/4	1	R
44-00590-01	21291 Antrim	Allen, Jaimie	5/8 – 3/4	1	R
44-00600-00	21300 Antrim	Garza, Rafael	5/8 – 3/4	1	R
44-00610-00	21307 Antrim	Escobar, Arcadio	5/8 – 3/4	1	R
44-00620-04	21334 Antrim	Gallegos, Jose and Yolanda	5/8 – 3/4	1	R
44-00630-08	21388 Binford	Avila, Jacob	5/8 – 3/4	1	R
44-00640-02	21397 Binford	Poe, Floyd and Patricia	5/8 – 3/4	1	R
44-00650-04	21410 Binford	Chesser, Joseph	5/8 – 3/4	1	R
44-00660-00	21413 Binford	Ortiz, Sammy	5/8 – 3/4	1	R
44-00670-03	21425 Binford	Hazen, Michael and Kathy	5/8 – 3/4	1	R

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44-00680-02	21426 Binford	Gezzaway, Beau	5/8 – 3/4	1	R
44-00690-01	21429 Binford	Brown, Brady	5/8 – 3/4	1	R
44-00700-02	21431 Binford	McBride, Isaac	5/8 – 3/4	1	R
44-00710-01	21435 Binford	Velasquez, Violeta	5/8 – 3/4	1	R
44-00720-01	21440 Binford	O'Meara, William and Beth	5/8 – 3/4	1	R
44-00730-00	21453 Binford	Newhauser, Richard	5/8 – 3/4	1	R
44-00740-01	21464 Binford	Pemberton, Steven and Susan	5/8 – 3/4	1	R
44-00750-01	20521 Brown	Sellee, Eric and Katie	5/8 – 3/4	1	R
44-00760-02	20538 Brown	Coleman, Gordon and Rachel	5/8 – 3/4	1	R
44-00770-02	20555 Brown	Gonzalez, Lucio	5/8 – 3/4	1	R
44-00780-04	20556 Brown	Rhoades, Shawn and Kathy	5/8 – 3/4	1	R
44-00790-11	20569 Brown	Twyman, Nicole and Carter, Cypress	5/8 – 3/4	1	R
44-00800-05	20574 Brown	Ehrlin, Pam	5/8 – 3/4	1	R
44-00810-02	20592 Brown	Lawson, Shawn	5/8 – 3/4	1	R
44-00820-04	20610 Brown	Sloan, Jordyn & Jeffrey	5/8 – 3/4	1	R
44-00830-00	20728 Friends	Friends Parsonage	5/8 – 3/4	1	R
44-00840-00	20762 Friends	Arnold, Steve and Sandy	5/8 – 3/4	1	R
44-00850-03	20778 Friends	Catandella, John and Colleen	5/8 – 3/4	1	R
44-00860-05	20798 Friends	Hamilton, Shamaine	5/8 – 3/4	1	R
44-00870-00	20814 Friends	Metcalf, Cliff	5/8 – 3/4	1	R
44-00880-02	20826 Friends	Lincoln, Rodney and Kristal	5/8 – 3/4	1	R
44-00890-00	20840 Friends	Thompson, Tracy	5/8 – 3/4	1	R
44-00900-00	20868 Friends	Dale, David	5/8 – 3/4	1	R
44-00910-00	20894 Friends	Bujold, Leveta	5/8 – 3/4	1	R
44-00920-01	20912 Friends	Stanley, NaDonna	5/8 – 3/4	1	R
44-00930-04	20954 Friends	Rogers, Bill	5/8 – 3/4	1	R
44-00940-06	20964 Friends	Pedraza, Ruben	5/8 – 3/4	1	R
44-00960-06	20679 Gem	Anderson, Kathryn	5/8 – 3/4	1	R
44-00970-00	20691 Gem	Ralstin, Lewis	5/8 – 3/4	1	R
44-00980-00	20694 Gem	Lopez, Domingo	5/8 – 3/4	1	R
44-00990-00	20703 Gem	Vargas, Jose	5/8 – 3/4	1	R
44-01000-00	20706 Gem	Arnold, Edna	5/8 – 3/4	1	R
44-01010-00	20713 Gem	Cassity, Lorne and Kathleen	5/8 – 3/4	1	R
44-01020-02	20716 Gem	Arslenien, Jonathan and Leiken	5/8 – 3/4	1	R
44-01030-01	20725 Gem	Voss, Debra	5/8 – 3/4	1	R
44-01040-01	20728 Gem	Chapman, Gregg & Loretta	5/8 – 3/4	1	R
44-01050-03	21049 Harmony	Henas, Nicholas and Erin	5/8 – 3/4	1	R
44-01060-04	21050 Harmony	Smith, Gary	5/8 – 3/4	1	R
44-01070-02	21079 Harmony	Acosta, Miraiah	5/8 – 3/4	1	R
44-01080-01	21080 Harmony	Shores, Brandon	5/8 – 3/4	1	R
44-01090-00	21089 Harmony	Malone, Cindy	5/8 – 3/4	1	R
44-01100-03	21138 Harmony	McBride, Richard & Femicola, Stephanie	5/8 – 3/4	1	R
44-01110-06	21156 Harmony	Cortes, Lissette and Joel	5/8 – 3/4	1	R
44-01120-04	21176 Harmony	Johnson, Scott and Sondra	5/8 – 3/4	1	R
44-01130-00	21204 Harmony	Germain, Bruce	5/8 – 3/4	1	R
44-01140-01	21207 Harmony	Dock, Fay	5/8 – 3/4	1	R
44-01150-00	21235 Harmony	Humphreys, Julie	5/8 – 3/4	1	R
44-01160-04	21247 Harmony	Monaghan, Benjamin and Suzanne	5/8 – 3/4	1	R
44-01170-01	21256 Harmony	Hale, Nathan	5/8 – 3/4	1	R

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44-01180-09	21277 Harmony	Dow, Terry and Pam	5/8 – 3/4	1	R
44-01190-00	21284 Harmony	Fisher, Rob	5/8 – 3/4	1	R
44-01200-03	21293 Harmony	Stich, Nicole	5/8 – 3/4	1	R
44-01210-03	21304 Harmony	Cotton, Philip	5/8 – 3/4	1	R
44-01220-03	21313 Harmony	Beagley, Derrik & Moen, Kourtney	5/8 – 3/4	1	R
44-01230-01	21314 Harmony	Vazquez, Eleazar	5/8 – 3/4	1	R
44-01240-07	21335 Harmony	Brooks, Chloe	5/8 – 3/4	1	R
44-01250-00	21340 Harmony	Dalton, Nathan	5/8 – 3/4	1	R
44-01260-06	21341 Harmony	Alford, Kyrstin (HomeRiver Group)	5/8 – 3/4	1	R
44-01270-00	21356 Academy	Alvarez, Antonio	5/8 – 3/4	1	R
44-01280-00	20558 Hillcrest Ct	Gomez, Raul	5/8 – 3/4	1	R
44-01290-03	20578 Hillcrest Ct	Herrera, Jesus	5/8 – 3/4	1	R
44-01300-02	20561 Hillcrest Ct	Sotelo, Ayala	5/8 – 3/4	1	R
44-01310-02	20659 Hillcrest	Ming, Anthony and Jessica	5/8 – 3/4	1	R
44-01320-01	20675 Hillcrest	Granden, Dakota	5/8 – 3/4	1	R
44-01330-01	20694 Hillcrest	Schnuerle, Robert and CeCe	5/8 – 3/4	1	R
44-01340-00	20697 Hillcrest	Winchester, Mike	5/8 – 3/4	1	R
44-01350-01	20717 Hillcrest	Reyes,Christina	5/8 – 3/4	1	R
44-01370-01	21176 Main	Weinacht, Alan and Marjorie	5/8 – 3/4	1	R
44-01380-04	21200 Main	Delacruz, Cynthia and Francisco	5/8 – 3/4	1	R
44-01390-13	21212 Main	Miller, Daniel	5/8 – 3/4	1	R
44-01400-12	21242 Main	Hickman, Gavin & Abigail	5/8 – 3/4	1	R
44-01410-09	21274 Main	Kinney, Richard	5/8 – 3/4	1	R
44-01420-00	21292 Main	Meholchick, Paul	5/8 – 3/4	1	R
44-01430-03	21302 Main	Figueroa, Jesus	5/8 – 3/4	1	R
44-01440-00	21316 Main	Rowland, Scott	5/8 – 3/4	1	R
44-01480-04	21141 Peckham	Denlinger, Logan & Melissa	5/8 – 3/4	1	R
44-01490-00	21317 Peckham	Robnett, Dale	5/8 – 3/4	1	R
44-01500-01	21323 Peckham	Farris, Jean	5/8 – 3/4	1	R
44-01510-03	21343 Peckham	Morris, Darby & Forrest	5/8 – 3/4	1	R
44-01520-07	21397 Peckham	Garrigus, Richard and Cindy	5/8 – 3/4	1	R
44-01530-01	21145 Pine	Rubens, Joe	5/8 – 3/4	1	R
44-01540-01	21150 Pine	Sanders, Kevin	5/8 – 3/4	1	R
44-01550-01	21167 Pine	Mullen, Jessica	5/8 – 3/4	1	R
44-01560-03	21174 Pine	Borstelman, Travis	5/8 – 3/4	1	R
44-01570-01	20843 Redwood	Monteith, Willy and Georgean	5/8 – 3/4	1	R
44-01580-01	20846 Redwood	Cuevs Vargas, Hugo & Meza, Rachel	5/8 – 3/4	1	R
44-01590-02	20865 Redwood	Owens, Brian	5/8 – 3/4	1	R
44-01600-03	20868 Redwood	Vega, Camelia	5/8 – 3/4	1	R
44-01610-01	20882 Redwood	RDR Holdings	5/8 – 3/4	1	R
44-01620-02	20893 Redwood	Barnes, Tonya	5/8 – 3/4	1	R
44-01630-02	20906 Redwood	Ferrell, Alonzo	5/8 – 3/4	1	R
44-01640-00	20913 Redwood	Ahaus, Bill and Doreen	5/8 – 3/4	1	R
44-01650-01	20777 Sequoia	Reynolds, Angela	5/8 – 3/4	1	R
44-01660-11	20786 Sequoia	Turing, Andrew & Taralynn	5/8 – 3/4	1	R
44-01670-01	20797 Sequoia	Shirley, Kyle	5/8 – 3/4	1	R
44-01680-04	20806 Sequoia	Onofrel, Hunter	5/8 – 3/4	1	R
44-01690-00	20809 Sequoia	Kyle, Ed	5/8 – 3/4	1	R
44-01700-01	20833 Sequoia	Rafferty, Melisa	5/8 – 3/4	1	R

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44-01710-00	20838 Sequoia	Hyer, Daniel	5/8 – 3/4	1	R
44-01720-02	20851 Sequoia	Gonzalez, Cindy	5/8 – 3/4	1	R
44-01730-00	20523 Whittier	City of Greenleaf	5/8 – 3/4	1	R
44-01740-00	20550 Whittier	Gordon, Rebecca and Marfia	5/8 – 3/4	1	R
44-01750-01	20567 Whittier	Cardenuto, Barbara	5/8 – 3/4	1	R
44-01760-00	20576 Whittier	Shannon, Amber	5/8 – 3/4	1	R
44-01770-02	20589 Whittier	Arregui, Martha	5/8 – 3/4	1	R
44-01780-05	20607 Whittier	Moreno, Kat	5/8 – 3/4	1	R
44-01790-01	20635 Whittier	Dittman, Steve	5/8 – 3/4	1	R
44-01800-04	20636 Whittier	Flores, Cynthia	5/8 – 3/4	1	R
44-01810-00	20644 Whittier	Garner,Douglas	5/8 – 3/4	1	R
44-01820-02	20658 Whittier	Summers, Robert and Rebecca	5/8 – 3/4	1	R
44-01830-00	20669 Whittier	Krause, Cynthia	5/8 – 3/4	1	R
44-01840-03	20676 Whittier	Henrick, Stefan & Kushlan, Haley	5/8 – 3/4	1	R
44-01850-01	20694 Whittier	Norris, Gerald and Beverly	5/8 – 3/4	1	R
44-01860-04	20701 Whittier	Cruz, Raymond	5/8 – 3/4	1	R
44-01870-10	20712 Whittier	G. Gomez, Aurora	5/8 – 3/4	1	R
44-01880-03	20730 Whittier	Pew, Scott	5/8 – 3/4	1	R
44-01890-01	20733 Whittier	Bunker, Jarrod	5/8 – 3/4	1	R
44-01900-03	20804 Whittier	Porter, Dale & Jennifer	5/8 – 3/4	1	R
44-01910-00	20805 Whittier	Sandberg, Barbara and Scott	5/8 – 3/4	1	R
44-01920-04	20808 Whittier	White, Irene	5/8 – 3/4	1	R
44-01930-00	20812 Whittier	Vargas, Yolanda	5/8 – 3/4	1	R
44-01940-04	20816 Whittier	Young, Matthew	5/8 – 3/4	1	R
44-01950-01	20820 Whittier	Tiegs, Bruce	5/8 – 3/4	1	R
44-01960-01	20829 Whittier	Young, Linda and Mike	5/8 – 3/4	1	R
44-01970-03	20839 Whittier	Erhart, Mark and Janet	5/8 – 3/4	1	R
44-01980-03	20850 Whittier	Weilmunster, Jon	5/8 – 3/4	1	R
44-01990-01	20865 Whittier	Ruiz, Estevan	5/8 – 3/4	1	R
44-02000-00	20874 Whittier	Whitley, Wes	5/8 – 3/4	1	R
44-02010-00	20889 Whittier	Acevedo, Terry and Carol	5/8 – 3/4	1	R
44-02020-00	20896 Whittier	Carlson, Crayce	5/8 – 3/4	1	R
44-02030-03	20912 Whittier	Harrison, Scott and Jade	5/8 – 3/4	1	R
44-02040-02	20928 Whittier	Aguayo, Lindsey and Joe	5/8 – 3/4	1	R
44-02050-03	21270 Whittier	Hyslop John and Jeri	5/8 – 3/4	1	R
44-02060-01	21298 Whittier	Humphrey, Brandon and Audra	5/8 – 3/4	1	R
44-02070-04	21323 Whittier	Eells, Kaitlyn	5/8 – 3/4	1	R
45-00010-01	20560 Antrim	Rettkowski, Matthew A	5/8 – 3/4	1	R
45-00020-01	20582 Antrim	Germire, Mike and Ashley	5/8 – 3/4	1	R
45-00030-00	20616 Antrim	Brown, Clay	5/8 – 3/4	1	R
53-00020-00	21533 Main	Pedraza, Emeterio	5/8 – 3/4	1	R
53-00070-02	21567 Main	Wilhite, Jim	5/8 – 3/4	1	R
53-00090-00	21609 Main	Pedraza, Greg	5/8 – 3/4	1	R
53-00100-00	21643 Main	Fowble, Perry Joe	5/8 – 3/4	1	R
53-00130-00	21695 Main	Pedraza, Ismael	5/8 – 3/4	1	R
53-00140-00	21705 Main	Pedraza, Ismael	5/8 – 3/4	1	R
53-00150-00	21729 Main	Hernandez, Alfredo	5/8 – 3/4	1	R
54-00040-00	21307 Main	Big Valley Supply	5/8 – 3/4	1	R
54-00060-00	21327 Main	Rowland, Joe	5/8 – 3/4	1	R

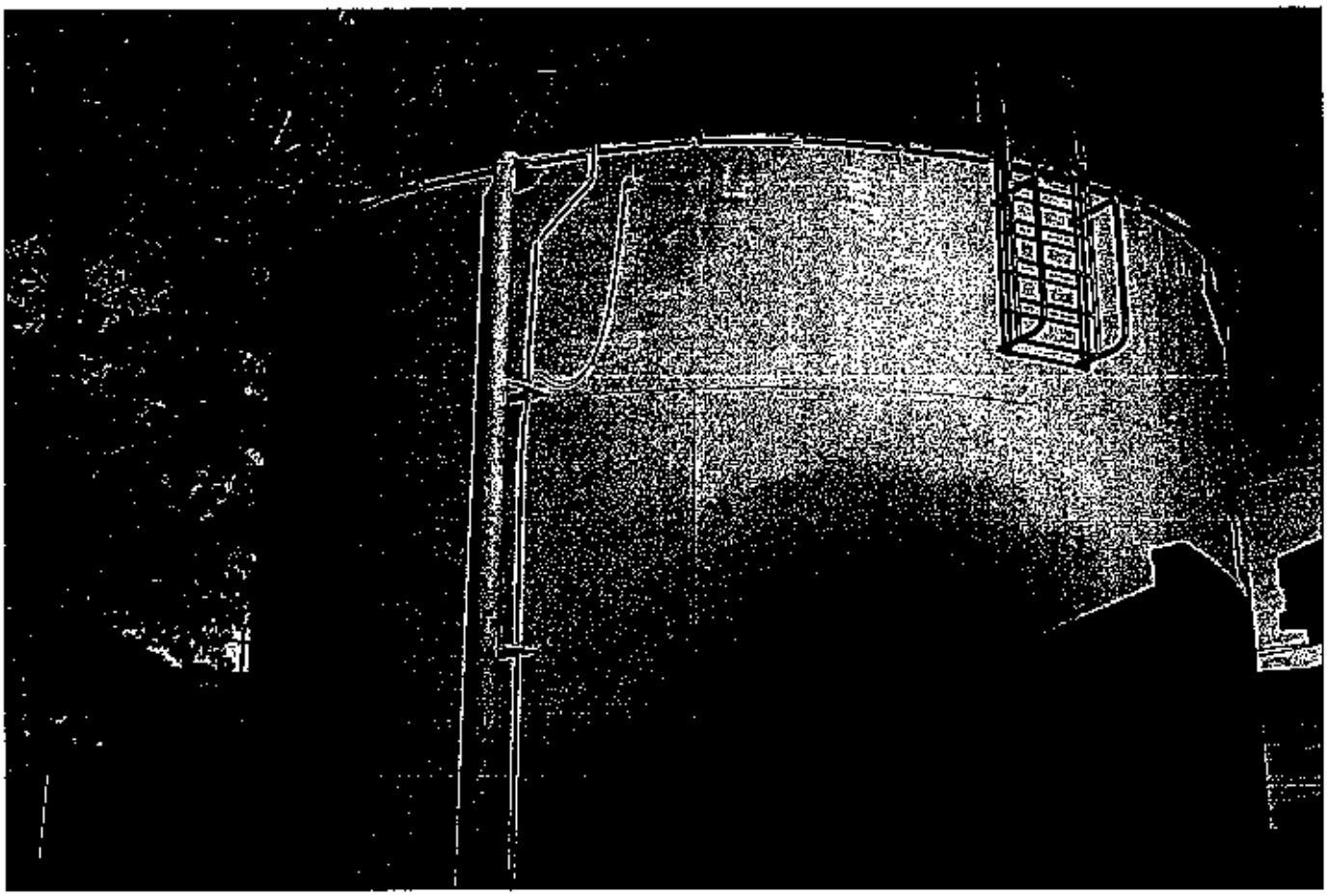
City Water Accounts and EDU Assignment as of 9/18/2025					
Account	Address	Account Name	Meter Size	EDUs	Commercial (C) / Residential (R)
54-00070-05	21365 Main	Baldwin, Catelynn	5/8 – 3/4	1	R
54-00090-06	21393 Main	McGee, Desmonn & Tamra	5/8 – 3/4	1	R
54-00110-00	21441 Main	Greenleaf Friends Church	5/8 – 3/4	1	R
54-00120-01	21463 Main	Greenleaf Friends Church	5/8 – 3/4	1	R
54-00130-00	21469 Main	Wilhite, Jim	5/8 – 3/4	1	R
55-00010-03	20995 Main	Rodriquez, Jose J	5/8 – 3/4	1	R
55-00020-04	20997 Main (notes)	Gordon, Rebecca & Calvin	5/8 – 3/4	1	R
55-00030-00	20999 Main	Ramirez, Moises	5/8 – 3/4	1	R
Total Commercial EDUs				40	
Total Residential EDUs				290	
Total EDUs				330	

Appendix AB: Harmony Tank Inspection Report

INTEGRATED UNDERWATER SERVICES
SUBSEA ASSET ASSURANCE

City of Greenleaf, ID
Harmony Lane Reservoir
General Condition Inspection & Internal Cleaning

October 28, 2025



Submitted to:
City of Greenleaf
20523 N. Whittier Dr.
Greenleaf, Idaho
83626

Submitted By:
Integrated Underwater Services
7074 Portal Way #110
Ferndale, WA. 98248
www.iusdiving.com

Association of Diving Contractors International

AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
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INTEGRATED
UNDERWATER
SERVICES
SUBSEA ASSET ASSURANCE

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2. Personnel & Methodology
3. Results of Inspection
4. Summary

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INTEGRATED UNDERWATER SERVICES
SUBSEA ASSET ASSURANCE

1. Introduction

On October 28, 2025, **Integrated Underwater Services, Inc.** dispatched a two (2) person ROV team, contracted by the City of Greenleaf to conduct underwater intervention services while on-line of Harmony Lane Reservoir located in Greenleaf, ID. The purpose of the service was to perform an in-water general condition inspection as well as remove any silt that accumulated from the floor.

2. Personnel & Methodology

The underwater intervention services were completed utilizing a (2) person ROV team working out of an operations control trailer. The team deployed an inspection class ROV with manipulator and video recording software. A crawler class ROV was deployed to remove the accumulated silt from the floor.

3. Results of Inspection

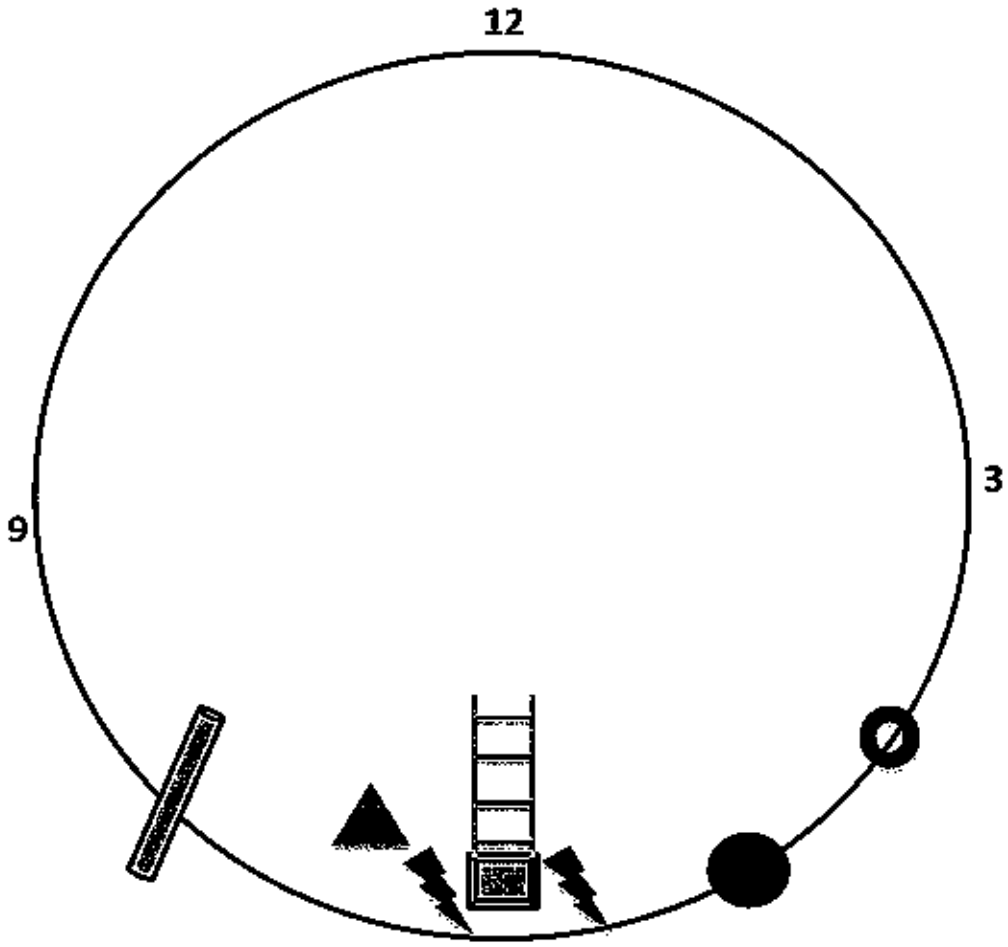
Steel Water Reservoir Inspection Report		
General Information:		
Client/Operator: City of Greenleaf	Client Representative: Doug Amick	Inspection Date: October 28, 2025
Reservoir ID Number: Harmony Lane Reservoir	Reservoir Location: 21307 Harmony Lane, Greenleaf, Idaho 83626	
ROV Pilot: Trevor T. and Sean M.		
ROV System Type & Number: VR Pro 4 J20030	ROV Accessory Equipment: Manipulator	
General Description:		
Reservoir Type: Welded Steel	Reservoir Dimensions: 20' Diameter X 30' Height	Reservoir Capacity: 100,000 Gal.
Number and Type of Roof Vents:		
Overflow Height: 23-1/4" from splash pad.	Splash Pad Condition: Observed in good condition.	Screen Present & Guage: Screen present.
Drain Height: None observed	Splash Pad Condition: None observed	Screen Present & Guage: None observed
Safe Roof Access? Boom lift was required to access roof and hatch.	Safe Vehicle Access? Safe vehicle access for truck and trailer.	
Access Hatch Type and Size: Steel Grain hatch measuring 37" length X 20-3/4" width		
Description of Visible External Anomalies: None observed.		
General Safety Observations: Site was Safe for gear and personnel.		
General Condition Comments: Reservoir exterior is in good condition consistent with age.		

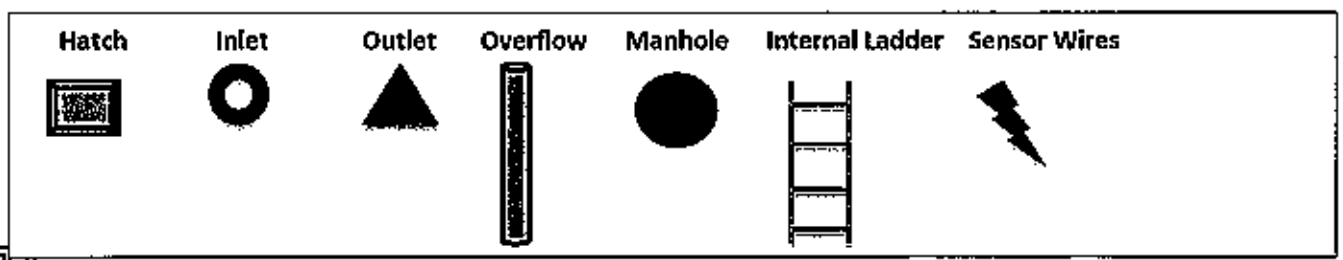
INTEGRATED UNDERWATER SERVICES
SUBSEA ASSET ASSURANCE

Reservoir Internal Condition:	
Water Level Indicator:	None present.
Shell Penetrators:	External shell penetrator is in good condition and sealed.
Roof Support Columns:	None observed
Water Inlet/Outlet:	Inlet and outlet in good condition consistent with age. All welds in good condition.
Overflow Pickup:	Overflow pickup observed above water line. Appeared to be unobstructed. See **Overflow** video.
Internal Washdown Pipework:	None observed
Shell Manholes:	Manhole and seals covered in silt and in good condition.
Suspected Leaks:	None observed
Leak Test Conducted:	No leak test conducted.
Silt Color, Type and Depth:	Dark brown colored silt covered the bottom of reservoir in a layer ranging from ¼"-1" in thickness.
General Condition:	In good condition consistent with age.
Internal Ladder:	
Material:	Steel
Visible Damage/Debris:	No visible damage or debris observed.
Visible Corrosion:	Grade 8-S spot rusting observed. See **Ladder** video.
Isolated From Shell?	Ladder welded to tank.
Corrosion at Contact Points:	None observed.
Other Observations:	In good condition consistent with age.
Cathodic Protection:	
Type:	None observed.
Number of Anodes:	N/A
Anode Depletion %:	N/A
Cathodic Potential Readings:	N/A
Internal Coating:	
Overall Condition:	Internal coating is in good condition.
Visible Defects:	Coating appears to be blistering, and sediment lands on/builds up on wall coating. See **Wall Seam Floor +1** and **Wall Seam Floor +2** videos.
Visible Corrosion:	None observed
Areas of Missing Coating:	None observed
Observed Anomalies:	See Internal Coating: Visible Defects.
Recommendations	
• Recommend internal inspection and cleaning on 3-5 year schedule. • Assess blistering of internal coating. • Call Kristy Gessner with any questions, concerns, quotes or referrals at (509) 251-0892.	

INTEGRATED UNDERWATER SERVICES
SUBSEA ASSET ASSURANCE

Internal Diagram of Reservoir





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INTEGRATED UNDERWATER SERVICES
SUBSEA ASSET ASSURANCE

4. Summary

Harmony Lane Reservoir appeared to be in overall good condition. All services performed were to the satisfaction of the attending on-site representative.

The ROV team was dispatched to Greenleaf, ID to perform a full internal inspection and cleaning. Upon arrival on site the team set up gear and equipment, then deployed the inspection ROV and began the internal inspection and pre-clean operations. The team then deployed the cleaning ROV and removed silt and debris from the bottom of the reservoir. Once cleaning was completed, final inspections were taken and both ROVs were removed from the reservoir. After removing the ROVs, the team closed and locked the hatch and began breakdown of equipment on site. After a final job walk to ensure nothing was left or forgotten, the ROV team was offsite.

Respectfully Submitted Without Prejudice,

Trevor Tomlinson

Appendix AC: Backflow Prevention Ordinance

B. Penalty Imposed; Discontinue Service: Any person who shall continue any violation beyond the time limit provided for in this section, may be cited as an infraction as provided in Greenleaf Code §1-4-1, and shall have his water service terminated. Each day in which such violation shall continue may be deemed a separate offense.

C. Liability To City For Loss Or Damage: Any person violating any of the provisions of this chapter shall become liable to the City for any expense, loss, or damage occasioned the City by reason of such violation and, for other than nonpayment of water bill violations, may have their water supply terminated after the above ten (10) day notice period has expired.

Cumulative Penalties: These penalties shall not be construed to be exclusive but shall be construed to be cumulative of, and in addition to, any other penalties provided for in this code or the criminal code of the state of Idaho. As an example, a person stealing water could be criminally charged with theft or a person injuring the water system could be criminally charged with malicious injury to property. For all criminal violations relating or pertaining to the water system, the notice provisions provided for in this chapter shall not apply. (Ord. 257, 10-02-2014; Amd Ord #300, 03-14-2023)

ARTICLE A. BACKFLOW PREVENTION

7-4A-1: PURPOSE AND POLICY:
7-4A-2: DEFINITIONS:
7-4A-3: CROSS CONNECTION PROHIBITED:
7-4A-4: SURVEYS AND INVESTIGATIONS:
7-4A-5: TYPE OF PROTECTION REQUIRED:
7-4A-6: BACKFLOW PREVENTION ASSEMBLIES:
7-4A-7: BACKFLOW PREVENTION SUPERVISOR:
7-4A-8: ADMINISTRATIVE PROCEDURES:
7-4A-9: WATER SERVICE TERMINATION:
7-4A-10: NONCOMPLIANCE; BACKFLOW ASSEMBLY TEST AND INSTALLATION:

7-4A-1: PURPOSE AND POLICY:

A. Purpose: The purpose of this article is:

1. To protect the public water supply of the city by isolating the customer's water service from the city water system, thus preventing contamination or pollution, which could backflow from the customer's premises to the city water system;

2. To eliminate both potential and existing cross connections between the potable water system and nonpotable water systems within the customer's premises;

3. To maintain the backflow prevention program by administering an inspection and testing program of the customer premises and backflow prevention assemblies installed at the location specified by the public works director.

B. Policy:

1. The public services department has a responsibility to protect the public water system from contamination caused by the backflow of contaminants through a water service connection. If, in the judgment of the director, an approved backflow prevention assembly is required to prevent contamination, the city shall give notice to the customer to install the approved assembly or assemblies at the service connection to the premises, or at an alternate location deemed acceptable by the public works director. The customer shall immediately install the approved assembly or assemblies at the customer's own expense. Failure, refusal or inability of the customer to install the approved assembly or assemblies shall constitute grounds for disconnecting water service to the premises until the backflow assembly or assemblies have been installed.

2. These regulations shall apply to all premises served water by the city water system. (Ord. 197, 11-1-2005)

7-4A-2: DEFINITIONS: The following words and phrases shall have the meanings ascribed to them, unless otherwise noted:

AWWA STANDARD: An official standard developed and approved by the American Water Works Association (AWWA).

AIR GAP SEPARATION: A physical break between a supply pipe and a receiving vessel which shall be at least double the diameter of supply pipe, measured vertically above the top rim of the vessel, and in no case less than one inch (1").

APPROVED BACKFLOW PREVENTION ASSEMBLY: A device or a physical separation that has been designed specifically for preventing the backflow of water or liquid from entering the system and the device that has passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the state of Idaho department of environmental quality.

APPROVED WATER SUPPLY: Any potable water supply which is regulated by the state or local health agency.

AUXILIARY SUPPLY: Any water supply on or available to the premises other than the city water supply.

BACKFLOW: A flow condition, caused by a differential in pressure that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a

potable supply of water from any source or sources other than an approved water supply source. To draw off or convey through as if in a siphon is one cause of backflow. Back pressure is the other cause.

BACKFLOW PREVENTION SUPERVISOR: A person, designated by and at the expense of the water user, to maintain the backflow prevention assemblies and to prevent cross connections on the premises.

CITY WATER SYSTEM: The city of Greenleaf's water source facilities, water storage facilities and distribution system under the control of the public services department up to and including the meter.

CONTAMINATION: An impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual or potential hazard to the public health.

CROSS CONNECTION: Means and includes any unprotected actual or potential connection or structural arrangement between a potable water system used to supply for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome and potable. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices and other temporary or permanent devices through which or because of which "backflow" can or may occur are considered to be cross connections.

CUSTOMER'S WATER SYSTEM: Means and includes all facilities beyond the service meter. The system or systems may include both potable and nonpotable water systems.

DEPARTMENT: The public services department of the city.

DOUBLE CHECK DETECTOR CHECK ASSEMBLY: A backflow prevention device consisting of a line size double check valve assembly in parallel with a detector meter and meter size double check valve assembly. Each double check valve assembly is to be equipped with properly located test cocks and a tightly closing shutoff valve at the end of the assembly. Specific details of this assembly are on file in the director's office.

DOUBLE CHECK VALVE ASSEMBLY: An assembly composed of at least two (2) independently acting check valves including tightly closing shutoff valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY: A backflow prevention device consisting of two (2) independently operating spring loaded check valves. In the event one valve is obstructed, the second valve should close to prevent reverse flow. The device should include tightly closing resilient seated shutoff valves at each end of the assembly and be fitted with properly located resilient seated test cocks.

HAZARD, DEGREE OF: "Degree of hazard" is a term derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable

water system.

HEALTH AGENCY: The state of Idaho department of environmental quality.

HEALTH HAZARD: Any condition, device, or practice in the water supply system and its operation which could create, or in the judgment of the mayor, health department, county or state health official, may create a danger to the health and well being of the water customer.

LOCAL HEALTH AGENCY: The Southwest District health department.

PERSON: An individual, corporation, company, association, limited liability company, trust, partnership, other legal entity, municipality, public utility or other public body or institution.

PLUMBING HAZARD: A plumbing type cross connection in a customer's potable water system that has not been properly protected by an approved air gap or approved backflow prevention assembly.

POLLUTION: The presence of any foreign substance (organic, inorganic or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

POLLUTION HAZARD: An actual or potential threat to the physical properties of the potable water system or of the customer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

PREMISES: The integral property or area, including improvements thereon, to which water service is provided or for which an application for water service is filed.

PUBLIC WATER SYSTEM: A system for the provision of piped water to the public for human consumption by the city.

REDUCED PRESSURE DETECTOR CHECK ASSEMBLY: An approved backflow prevention device consisting of a line size reduced pressure principle device in parallel with a detector meter and meter size reduced pressure principle device. Each reduced pressure principle device is to be equipped with properly located test cocks and a tightly closing shutoff valve at each end of the assembly. Specific details of this assembly are on file in the director's office.

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY: An approved assembly incorporating not less than two (2) independently acting approved check valves together with an automatically operated differential relief valve located between the check valves. The unit shall include properly located test cocks and tightly closing shutoff valves at each end of the assembly.

SERVICE CONNECTION: The point of connection of a user's piping to the water supplier's facilities.

SYSTEM HAZARD: An actual or potential threat of severe damage to the physical properties of the public potable water system or the customer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

WATER SUPPLIER: The city public services department.

WATER USER: Any person obtaining water from an approved water supply system. (Ord. 197, 11-1-2005)

7-4A-3: CROSS CONNECTION PROHIBITED: No water service connection shall be installed or maintained to any premises where actual or potential cross connections are known to exist unless such cross connections are abated or controlled to the satisfaction of the director. It is unlawful for the owner or occupant of any premises using water supplied by the water utility to cross connect such water supply to a foreign or nonapproved source of water that does not meet the standards of the city of Greenleaf and DEQ. (Ord. 197, 11-1-2005)

7-4A-4: SURVEYS AND INVESTIGATIONS:

A. Existing Facilities: The customer's premises shall be open at all reasonable times to the department for the purpose of conducting surveys and investigations of the water use practices to determine whether there are actual or potential cross connections within the customer's premises through which contamination or pollution could backflow into the city water system.

B. New Buildings And Facilities: The city building section and permit services section, in cooperation with the water service section of the public services department, will review plans and other conditions to determine if a backflow assembly is required as water service protection for new buildings and facilities. If the installation of a backflow prevention assembly is required in the building or as a meter protection, the permit services section to comply with the state plumbing code shall require the installation of the specified approved backflow prevention assembly as part of issuing a plumbing permit. Existing commercial and industrial buildings and facilities will be reviewed for compliance with city backflow prevention ordinance when changes in occupancy occur or when required by the director. The director's inspection responsibility begins at the point of service at the meter and carries throughout the entire length of the customer's water system. (Ord. 197, 11-1-2005)

7-4A-5: TYPE OF PROTECTION REQUIRED:

A. Types Of Devices: The type of protective device that may be required to prevent backflow into the approved water supply (listing in an increasing level of

protection) includes: double check valve assembly (DC), reduced pressure principle backflow prevention assembly (RP), and an air gap separation (AG). The customer may choose a higher level protection than required by the division.

B. Degrees Of Hazard: The minimum types of backflow protection that shall be installed on customer's premises at the service connection whenever the following degrees of hazard exist are set forth in the following chart:

Degree of Hazard Prevention	Minimum Type of Backflow
1. Sewage And Hazardous Substances:	
a. A system where there are wastewater pumping and/or treatment plants and there is no interconnection (but the potential exists) with the city water system. This includes multi-family buildings, but not a single-family residence that has a sewage lift pump. A reduced pressure principle backflow prevention assembly may be provided in lieu of an air gap if approved by the director and the health agency.	AG, RP1
b. A system where hazardous substances are handled such as to create an actual or potential hazard to the city water system. This shall include systems having auxiliary water supplies, tanks or industrial piping systems containing process fluids or used waters originating from the city water system which are no longer under the sanitary control of the city. This, however, does not include a single-family residence that has a sewage lift pump. A reduced pressure principle backflow prevention assembly may be provided in lieu of an air gap if approved by the director and the health agency.	AG, RP1
c. A system where there are irrigation systems into which fertilizers, herbicides or pesticides are, or can be, injected.	RP
2. Auxiliary Water Supplies:	
a. A system where there is an unapproved auxiliary water supply which is interconnected with the public water system. A reduced pressure principle backflow prevention assembly may be provided in lieu of an air gap if approved by the director and the health agency.	AG, RP1
b. A system where there is an unapproved auxiliary water supply and there are no interconnections with the public water system. A double check valve assembly may be provided in lieu of a reduced pressure principle backflow prevention assembly if approved by the director and the health agency.	RP, DC1
3. Fire Protection Systems: All fire protection systems will be required to have backflow prevention devices as described below. However, class I and class II fire protection systems will be exempt from these	

requirements. Class I and class II fire protection systems are defined (refer to AWWA manual M-14).	
a. A fire system that is directly supplied or from the public water system and an unapproved auxiliary water supply reduced pressure is available for use on or to the detector check premises (not interconnected). A double check valve assembly may be provided in lieu of a reduced pressure principle backflow prevention assembly if approved by the director and health agency.	RP, DC1
b. A fire system that is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A reduced pressure principle backflow prevention assembly may be provided in lieu of an air gap if approved by the director and the health agency.	AG, RP1
c. A fire system supplied by the recycled water and the department's water system is used as a supplemental supply.	AG
d. A fire system that is supplied from the department's water system and there exists a recycled water supply to the premises (not interconnected). An RP assembly may be provided in lieu of an air gap if approved by the director and the health agency.	AG, RP1
e. A fire system that is supplied from the public water system and where reduced either elevated storage tanks or fire pressure pumps which take suction from the detector private reservoirs or tanks are used. A double check valve assembly may be provided in lieu of a reduced pressure principle backflow prevention assembly if approved by the director and the health agency.	RP or reduced pressure detector check assembly
f. A fire system that is interconnected with more than 1 service connection from the city water system and check no other system hazard exists.	DC or double check detector check assembly
4. Other Systems:	
a. A system that requires a booster pump on the service connection line. (For fire service requirements, refer to subsection B3e of this section.)	RP
b. A system where there are intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes making it impracticable or impossible to ascertain whether or not cross connections exist.	RP
c. A system that is restricted, classified or closed to on site inspection.	RP
d. A system where there is a repeated history of cross connections being established or reestablished within customer's premises.	RP

e. A system with internal cross connections that cannot be permanently corrected and controlled to the satisfaction of the director and health agency.	RP
f. 2 or more services supplying water from different street mains to the same building, assembly, structure or premises through which an interstreet main flow may occur, shall have a double check valve on each water service to be located adjacent to and on the property side of the respective meters.	DC
g. Other systems which may be specified by public services department from time to time.	Device to be specified

Note:
1. May be installed if approved by the director and the health agency.
(Ord. 197, 11-1-2005)

7-4A-6: BACKFLOW PREVENTION ASSEMBLIES:

A. Approved Backflow Prevention Assemblies: Only backflow prevention devices which have been approved by the director shall be acceptable for installation by a water user connected to the public water system.

B. Backflow Prevention Assembly Installation:

1. Expense Of Customer: The approved backflow assembly shall be installed at the expense of the customer.

2. Air Gap Separation (AG): The air gap separation shall be located on the customer's premises as close to the service connection as is practical. All piping from the service connection to the receiving tank shall be above grade and be entirely visible. No water use shall be provided from any point between the service connection and the air gap separation. The water inlet piping shall terminate a distance of at least two (2) pipe diameters of the supply inlet, but in no case less than one inch (1") above the overflow rim of the receiving tank as specified in the current edition of the uniform plumbing code adopted by the state of Idaho requirements for minimum air gaps for water distribution.

3. Reduced Pressure Principle Backflow Prevention Assembly (RP): The approved reduced pressure principle backflow prevention device shall be installed on the customer's premises and as close to the service connection as is practical. The device shall be installed a minimum of twelve inches

(12") above grade and no more than thirty six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance. The assembly shall be installed so that it is readily accessible for maintenance and testing. Water supplied from any point between the service connection and the RP device shall be protected in a manner approved by the director.

4. Double Check Valve Assembly (DC): The approved double check valve assembly shall be located as close as practical to the user's connection and shall be installed horizontally above grade and in a manner where it is readily accessible for testing and maintenance. If it is necessary to put a double check valve assembly below the grade upon the approval of the director and the local health agency, it must be installed in a vault such that there is a minimum of twelve inches (12") between the bottom of the vault and the bottom of the assembly so that the top of the assembly is not more than a maximum of eight inches (8") below grade, so there is a minimum of twenty four inches (24") of clearance between the side of the assembly with the test cocks and the side of the vault, and a minimum of twelve inches (12") clearance between the other side of the assembly and the side of the vault. The vault must have adequate drainage to prevent flooding. Special consideration must be given to double check valve assemblies of the "Y" type. These devices must be installed on their "side" with the test cocks in a vertical position so that either check valve may be removed for service without removing the assembly. Vaults, which do not have an integrated bottom, must be placed on a three inch (3") layer of gravel.

5. Parallel Assemblies: Approved backflow assemblies shall have at least the same cross sectional area as the water meter. If a continuous water supply is necessary, two (2) sets of approved backflow assemblies shall be installed in parallel. Where parallel assemblies are required, the sum of the cross sectional areas of the assemblies shall be at least equivalent to the cross sectional area of the meter.

6. Exceptions: There shall be no outlet, tee, tap or connection of any sort between the water meter and the approved backflow assembly. A "Y" strainer and/or pressure reducing valve installed before the approved backflow assembly are the only exceptions.

7. Prohibited: Approved backflow assemblies shall not be bypassed, made inoperative or removed without specific written authorization by the director.

8. Protection: Approved backflow assemblies shall be protected, when necessary, from extreme weather or site condition that could cause physical damage to or malfunction of the backflow assembly.

C. Backflow Prevention Device Testing And Maintenance:

1. The owners of any premises on which, or on account of which, backflow prevention assemblies are installed, shall have the assemblies tested by a certified backflow prevention assembly tester licensed by the local health agency. Backflow prevention assemblies must be tested at least one time every year and immediately after installation, relocation or repair. The department will require testing every six (6) months if the device has a history of failing tests. No device shall be placed back in service unless it is functioning as required. A report in a form acceptable to the city shall be filed with the public services department each time a device is tested, relocated or repaired. These devices shall be serviced, overhauled or replaced whenever they are found to be defective and all costs of testing, repair and maintenance shall be borne by the water user.

2. The department will notify affected customers by mail when annual testing of a device is needed and water users will submit the completed test reports to the city. The city will make available a model report to all certified backflow prevention assembly testers that will serve as a guide for the data to be submitted to the city.

D. Backflow Prevention Assembly Removal:

1. In no case shall a backflow prevention assembly be removed, relocated or replaced without approval from the director.

a. Removal: The use of a device may be discontinued and the device removed from service upon presentation of sufficient evidence to the director to verify that a hazard no longer exists or is not likely to be created in the future;

b. Relocation: An assembly may be relocated following confirmation by the director that the relocation will continue to provide the required protection and satisfy installation requirements. A retest will be required following the relocation of the device;

c. Repair: An assembly may be removed for repair, provided the water use is either discontinued until repair is completed and the device is returned to service, or the service connection is equipped with other backflow protection approved by the director. A retest will be required following the repair of the assembly; and

d. Replacement: An assembly may be removed and replaced, provided the water use is discontinued until the replacement assembly is installed. All replacement assemblies must be approved by the director and must be commensurate with the degree of hazard involved. (Ord. 197, 11-1-2005)

7-4A-7: BACKFLOW PREVENTION SUPERVISOR: At each of the premises, when required by the department, a "backflow prevention supervisor" shall be designated by and at the expense of the water customer. Such backflow prevention supervisor shall be responsible for the monitoring of the backflow prevention assemblies and for avoidance of cross connections. In the event of contamination or pollution of the drinking water system due to a cross connection on the premises, the backflow prevention supervisor shall promptly notify the director so that appropriate measures may be taken to overcome the contamination. The water customer shall inform the director of the backflow prevention supervisor's identity on an annual basis and whenever a change occurs. (Ord. 197, 11-1-2005)

7-4A-8: ADMINISTRATIVE PROCEDURES:

A. Water Supply Survey:

1. The director shall review all requests for new services to determine if backflow protection is needed. Plans and specifications must be submitted to the director for review of possible cross connection hazards as a condition of service for new service connections. If it is determined that a backflow prevention assembly is necessary to protect the public water system, the required device must be installed before service will be granted.

2. The director may require an on premises inspection to evaluate cross connection hazards. Any customer who cannot or will not allow an on premises inspection of their piping system shall be required to install the backflow prevention assembly the director considers necessary.

3. The director may require a reinspection for cross connection hazards of any premises to which the department services water. Any customer who cannot or will not allow an on premises reinspection of their piping system shall be required to install, at the meter, the backflow prevention assembly the director considers necessary.

B. Customer Notification; Device Installation:

1. Device Installation:

a. The director shall notify the customer of the survey findings, listing corrective action to be taken if required. If the corrective action is not taken within twenty four (24) hours, the director may discontinue water service to the parcel immediately and until the hazard is no longer present. The director, at his discretion, may grant additional time for corrective action to be taken.

C. Customer Notification; Testing And Maintenance:

1. The director shall notify each affected customer when it is time for the backflow prevention assembly installed on their service connection to be tested. This written notice shall give the water user thirty (30) days to have the device tested by a state licensed backflow assembly tester and have the results of the test submitted to the department.

2. A second notice shall be sent to each customer who does not have his/her backflow prevention device tested as prescribed in the first notice within the thirty (30) day period allowed. The second notice shall give the customer a two (2) week period to have his/her backflow prevention assembly tested. If no action is taken within the two (2) week period, the director shall terminate water service to the affected water user until the subject device is tested. (Ord. 197, 11-1-2005)

7-4A-9: WATER SERVICE TERMINATION:

A. General: When the department encounters water uses that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the director shall discontinue water service to the parcel immediately and until the hazard is no longer present.

B. Basis For Termination: Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:

1. Refusal to install required backflow prevention assembly;

2. Refusal to test a backflow prevention assembly;

3. Refusal to repair a faulty backflow prevention assembly;

4. Refusal to replace a faulty backflow prevention assembly;

5. Removal and/or bypassing without prior approval of a backflow assembly where required;

6. Direct or indirect connection between the public water system and a sewer line;

7. Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants;

8. Unprotected direct or indirect connection between the public water system and an auxiliary water system;

9. A situation which presents an immediate health hazard to the public water system;

10. No designation of a customer's supervisor when required within a specific time period;

11. No submission of records of tests, repairs and maintenance to the department upon a second letter request of their submission; and

12. Nonpayment of fees/charges incurred by the division in connection with the administration of the backflow prevention program.

C. Water Service Termination Procedures:

1. For conditions in subsections B1 through and including B12 of this section, the water service to a customer's premises shall be terminated. The water service shall remain inactive until the director has approved correction of violations and the customer has paid any charges due to the department. (Ord. 197, 11-1-2005)

7-4A-10: NONCOMPLIANCE; BACKFLOW ASSEMBLY TEST AND INSTALLATION:

A. Backflow Assembly Test: Upon noncompliance by user pursuant to subsection 7-4A-8C of this article regarding the periodic testing of the backflow prevention assembly, the water service to a customer's premises shall be terminated. The water service shall remain inactive until the director has approved corrective action, and the customer has paid any charges due to the department.

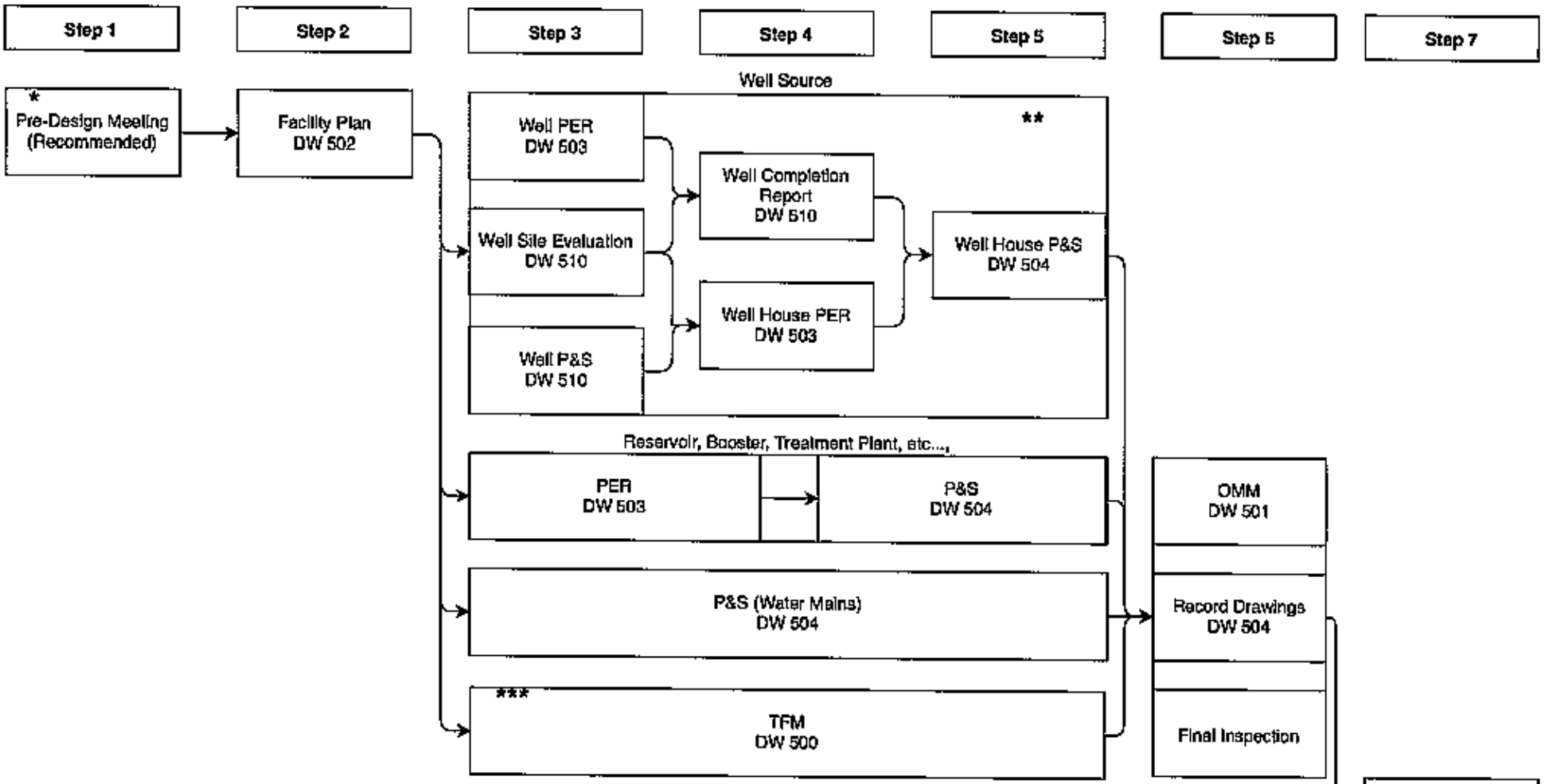
B. Installation: For noncompliance in the installation of required backflow prevention assembly, the water service to a customer's premises shall be terminated. The water service shall remain inactive until the director has approved correction of violations and the customer has paid any charges due to the department. (Ord. 197, 11-1-2005)

Chapter 5
MUNICIPAL WASTEWATER SYSTEM ORDINANCE

7-5-1: SHORT TITLE:
7-5-2: PURPOSE:
7-5-3: DEFINITIONS:
7-5-4: APPLICABILITY:
7-5-5: ADMINISTRATION AND MANAGEMENT OF MUNICIPAL WASTEWATER SYSTEM:
7-5-6: GREENLEAF SEWER REVENUE FUND:
7-5-7: BUILDING SEWERS AND SERVICE CONNECTION REQUIREMENTS:
7-5-8: SERVICE CONNECTIONS OUTSIDE CITY:
7-5-9: USERS LIABLE FOR VIOLATION:
7-5-10: POINT OF LIABILITY FOR MAINTENANCE; SUPERVISION:
7-5-11: CITY NOT LIABLE FOR DAMAGE OR STOPPAGE:
7-5-12: SEWER LINE EXTENSIONS:

Appendix AD: Project Implementation Process

Drinking Water System General Submittal and Review Process Idaho DEQ



Definitions:

FP	Facility Plan (a.k.a. Master Plan or Facility Planning Study)
PER	Preliminary Engineering Report
WSE	Well Site Evaluation
TFM	Technical Financial and Managerial Documentation
OMM	Operation & Maintenance Manual
P & S	Plans and Specifications (reservoir, well, dist. system...)
PDC	Pre-Design Conference

Notes:

* The Pre-Design Conference with DEQ is not required, however it is recommended by the Regional Office and helps outline the process and identify possible roadblocks.

** The Regional office may allow the WSE, Well P&S, and Well PER to submitted together

*** A TFM shall be submitted concurrently or prior to plans and specifications

Submittals not stamped by an Idaho PE will be rejected

The Quality of the submittal can affect the review time and the number of revisions

Ver. Jan. 2020