WATER QUALITY MONITORING PLAN

FOR THE CALDOR FIRE

Grizzly Flats Community Services District

Public Water System No. 0910006

Plan Prepared by:

State Water Resources Control Board
Division of Drinking Water
Drinking Water Field Operations Branch
Sacramento District Office

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1. EXECUTIVE SUMMARY

The Caldor fire burned and destroyed the majority of the Grizzly Flats Community Services District (hereinafter, District) public water system (PWS No. 0910006) on August 16 and 17, 2021. This Water Quality Monitoring Plan (hereinafter, Plan) provides information on the District and establishes measures for returning the District to service.

Before the fire, the District served approximately 620 service connections from a singular surface water treatment source. The distribution system is predominantly served via gravity from the water treatment plant that is located at the eastern end of the system. A small number of customers are served via pump stations.

The damage assessment is on-going; however, the maps included in the appendices to this Plan provides an overview of the damage known to date. Figure 1 shows the service area and Figure 2 shows the Cal Fire Incident map which has the known damage as of August 26, 2021.

Generally, most of the eastern portion (higher elevation) of the service area was destroyed. The water treatment plant is located at the eastern end and survived the fire with some damage that is still being assessed.

The fire initially moved through the area rapidly, but hot spots remained for a number of days after the initial fire activity. The quick pace of the fire and the timely response from fire crews to address lingering hot spots played a role in the extent of the damage.

Prior to evacuating, the District filled their reservoirs and left the Water Treatment Plant (WTP) operational. The generator was reportedly operating when fire crews entered the area. Some of the distribution system was de-pressurized. It is believed the water in the distribution system provided a level of protection against high temperatures and air intrusion.

The distribution system can generally be broken up into three areas. As shown on Figure 1, the three areas are well looped and separated by two pipelines. The majority of the customers that survived the fire are on the westerly third of the water system, which is at the lowest elevation. It is anticipated that the District will focus on restoring service to that area first, while potentially isolating other sections of the service area.

Once repairs are made, the distribution system will be flushed until the water is clear and a pre-determined chlorine residual is established. Flushing will occur in a uni-directional manner from the WTP at the highest elevation to the lowest portion of the system. Flushing can be conducted to move water systematically through the looping in each area, through the piping connecting each area, and then finally through the lowest portions of the water system. This blanket approach will also allow disinfection of the system from top to bottom. Turbidity at the WTP will be closely monitored to assess any changes in water quality over time.

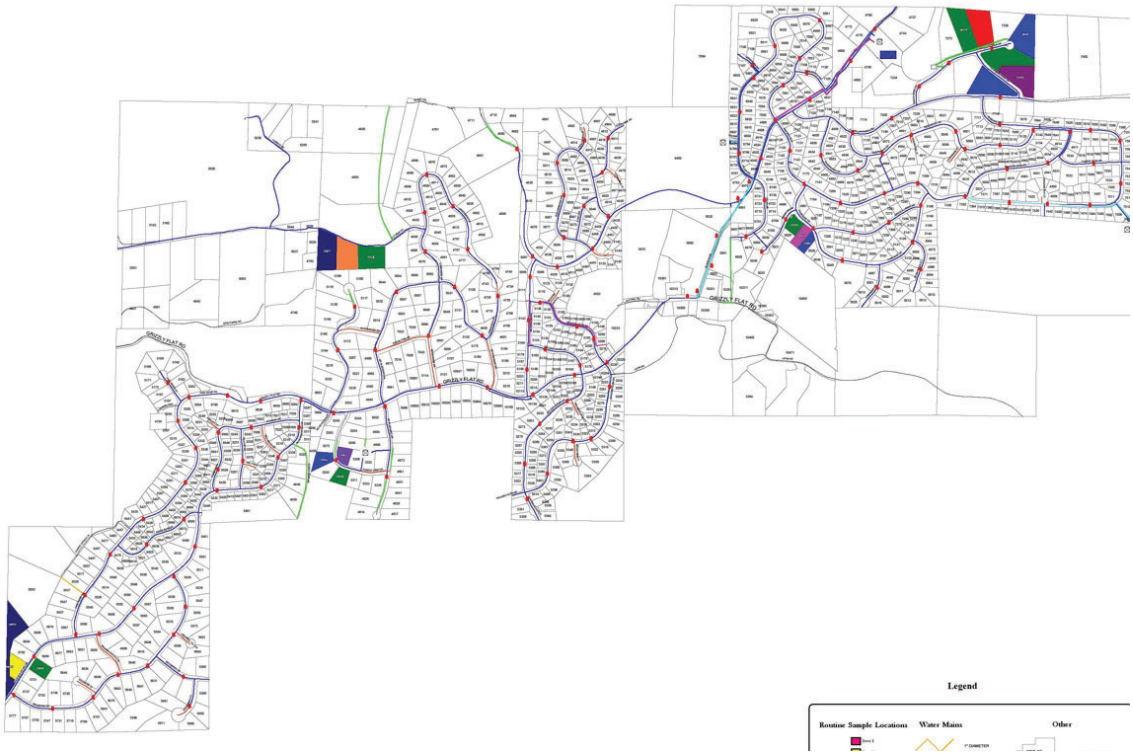


Figure 1 - Grizzly Flats Community Services District Service Area

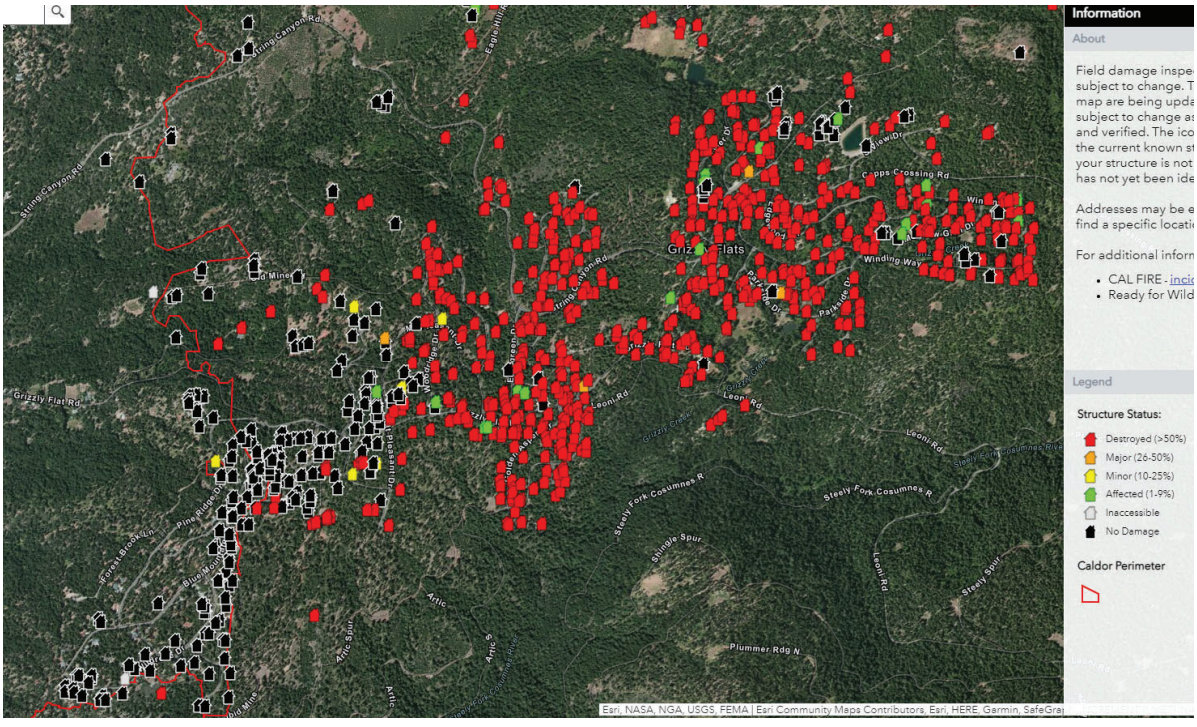


Figure 2 - Preliminary Damage Assessment Map (as of 8/26/2021)

Bacteriological monitoring and targeted water quality monitoring will take place at strategic locations twenty-four hours after flushing takes place. The samples will be collected from inside homes, when available, or other sample locations as determined in the field. Repeat sampling, if necessary, will be conducted. As the isolated areas return to service the same procedure will take place. Because the distribution system operates off of gravity, is effectively divided into three areas, and contains significant looping, targeted water quality monitoring will provide valuable insight into the location of any contamination, if present.

Sections 1-3 of this Plan provide general information about the District reflective of the pre-fire operations. Section 4 provides detailed information on the water quality monitoring approach.

2. INTRODUCTION

2.1 PURPOSE OF PLAN

Between August 16 and 20, 2021, the Caldor Fire burned the majority of the Grizzly Flats Community Services District (hereinafter, District) public water system (PWS No. 0910006). This Plan proposes the water quality sampling plan necessary to demonstrate the water meets drinking water standards prior to repopulation of the water system.

2.2 BACKGROUND INFORMATION

The Grizzly Flats Community Services District is located in the foothills of the Sierra Nevada, south-east of Placerville, CA. The service area abuts the El Dorado National Forest. The District has the responsibility of providing treated water for domestic use and fire protection to the residents within its service area.

The District obtains its water supply by direct diversion of stream flows from North Canyon and Big Canyon Creeks which are tributaries to the North Fork Cosumnes River. Flows are diverted through the Eagle Ditch pipeline and are pursuant to water rights dating back to the 1850's.

Diversions through Eagle Ditch pipeline terminate in a 31-acre-foot High Density Polyethylene (HDPE) lined raw water reservoir (PS Code CA0910006_001_001), which serves as the headworks to the water treatment plant (PS Code CA0910006_002_002) where water is fully treated to meet drinking water standards.

The District has four employees: Kim Gustafson (Office Facilitator), Ken Hooley (Maintenance Technician), Jodi Lauther (General Manager) and Andy Vicars (Maintenance Technician) and is currently under contract to receive operational support from a company named H2O Urban Solutions, Inc. The District has a five-member Board of Directors who oversees the District.

The District reports that the distribution system primarily consists of 95 percent Asbestos Cement (AC), and five percent Ductile Iron Pipe (DIP) ranging in diameter between 2 and 12-inches. However, the District has recognized in the past that their records are not complete, and the information is not exact.

A full water supply permit (Water Supply Permit No. 01-09-21-PER-007) was issued by the State Water Resources Control Board Division of Drinking Water (hereinafter, Division) to the Grizzly Flats Community Services District on May 7, 2021.

2.3 BRIEF DESCRIPTION OF THE WATER SYSTEM

The District is located between the North Fork and the Steely Fork of the Cosumnes River, about 21 miles southeast of Placerville in El Dorado County. The sphere of influence includes some 9,200 acres. The current service area (District boundaries) includes 1,115 acres which are divided into 1,225 parcels of which 1,156 lots are within Grizzly Park Subdivision. The remaining 96 parcels are larger perimeter properties around the subdivision. The District's office is located at 4765 Sciaroni Road, Grizzly Flats, CA 95636.

According to the District's 2021 annual report (for the year 2020) there were 621 metered active service connections serving an estimated population of 1,300 people. There were no unmetered services in 2020. The total water produced in 2020 was 43 million gallons and the maximum month demand for 2020 occurred in July and was 5.5 million gallons.

The treatment plant is classified as "T2" water treatment systems. The distribution system is classified as a "D2" system.

The District has two conventional package treatment plants that are designed to treat 200 gallons per minute. Water is distributed to customers through the piped distribution system mainly by gravity. Due to the varying terrain, pumping is required in limited areas to maintain adequate service pressures. The water system pressure ranges between 50 to 150 psi.

There are five reservoirs in the water system including the raw water reservoir and the clearwell. The water system has six pressure zones and four pump stations. There are no emergency interties with other public water systems.

2.4 AREA SERVED

The Water System serves residential and commercial/institutional customers in the unincorporated areas of El Dorado County in the El Dorado National Forest. Historical growth was minimal; there were only 50 new service connections over the last ten years.

Elevations within the district range from 3,600 feet to 4,100 feet with rainfall averaging about 42 inches per year and snowfall averaging 3 feet per year.

The climate is characterized by hot dry summers and cold winters with moderate precipitation and snowfall. Precipitation and snowfall typically occur in the months between October and April.

2.5 PRODUCTION DATA

The District obtains its water supply by direct diversion of stream flows from North Canyon and Big Canyon Creeks which are tributaries to the North Fork

Cosumnes River. The Water Treatment Plant is designed to produce 400 gpm using two separate conventional packaged treatment trains.

2.6 FACILITIES

The District has two conventional package treatment plants, Plant 1 (white) and Plant 2 (blue). Water from the raw water holding reservoir flows into the treatment plant via gravity. The water is treated with a coagulant, Polymer 8809, and Sodium Hypochlorite for disinfection. No other chemicals are added to the water. Water can be pulled directly from Eagle Ditch pipeline if the reservoir is out of service for some reason. After treatment, the water flows to a 200,000-gallon clearwell by gravity for contact time treatment. From there, water flows to the distribution system via gravity.

There are three storage tanks in the distribution system that are filled via system pressure including a 200,000-gallon tank on Tyler Drive (Tyler Tank), and two 100,000-gallon tanks (one on Winding Way and one on Forest View Drive). The water is conveyed from the Clearwell tank into the distribution system through two pipes; a six-inch asbestos cement (AC) pipe that was original to the system and a twelve-inch ductile iron pipe that was installed in 2011 to help meet system demands.

The Tyler Tank is centrally located in the higher elevation of the service area and acts as the main distribution tank. It is equipped with a pump station and hydropneumatic tank which is designed to maintain system pressure in the areas of town that are close to the same elevation as the plants and Clearwell. The electric pumps are backed up by a propane operated generator which supplies power to the pumps during power outages.

The majority of the distribution system is gravity fed. Water is diverted by topography into an eastern section and a western section of the service area. The eastern section is served first and then water is conveyed to the western section through 1,800-feet of six-inch AC main pipe. The eastern unit is Grizzly Park Estates 1, and Grizzly Park units 2, 3 and 4. The Clearwell, Tyler and Winding Way tanks are located in this area. The western section consists of Grizzly Park units 5, 6, 7, and 9. Forest View Tank is located in this area.

Tyler, Winding Way, and Forest View tanks are all plumbed alike. On the gravity portion of the system, water from the six-inch main enters and leaves the tank through the same pipeline which is located one foot above the tank bottom. The pump stations at each tank are plumbed to pull water from the tank and boost the pressure using the hydropneumatic tanks at each site. The pump station and hydropneumatic tanks serve local customers on a pressurized pipeline that is plumbed separately from the gravity portion of the distribution system. Pressure is maintained between 60 and 80 psi leaving the tank. Normal operational levels maintained in all tanks are between 16 and 24-feet.

The existing fire suppression system consists of 150 dry barrel fire hydrants. All hydrants are connected to the treated water system.

There are no interties with other public water systems.

The distribution system has six pressure zones maintained at a pressure range between 20 and 150 psi. The distribution system consists of Asbestos Cement, Ductile Iron Pipe, and Polyvinyl Chloride pipe materials ranging in diameter between 2 and 12-inches. There are some small localized pressure zones as well. According to the 2020 annual report to the Division, there are no lead or unknown material service connections or fittings in the distribution system.

2.7 SOURCES OF INFORMATION

The information presented in this Plan was obtained from the records submitted to the Division by the District, permits, compliance inspections of the water system, site visits, and correspondence with the District.

3. ADDITIONAL INFORMATION

3.1 SOURCES OF SUPPLY

3.1.1 Surface Water Sources

The District surface water source of supply is a 31-acre-foot reservoir (PS Code CA0910006_001_001). The reservoir is filled via the Eagle Ditch pipeline by water diverted from two mountain streams, Big Canyon Creek and North Canyon Creek. The Eagle Ditch Pipeline is 10-inches in diameter and approximately three miles long and was placed in the historical Eagle Ditch that supplied water to the community of Grizzly Flats during the Gold Rush and through the twentieth century.

The water that supplies the District is diverted from two small dams; one in Big Canyon Creek and one in North Canyon Creek. Water is diverted into the Eagle Ditch pipeline from each diversion through a specially designed splitter box, which can be set to divert 75 percent of the water in wet years and 85 percent in dry years, when more water is needed to supply the community. In extended dry periods, water may cease to flow freely in Big Canyon Creek, during such times North Canyon Creek is typically more dependable.

While Big Canyon Creek is primarily fed by snow melt, North Canyon Creek is fed from the historical Bendorff Spring and other unnamed springs along its course. Above the points of diversion, the watershed is within the El Dorado National Forest. Private land holdings within the watershed are on the perimeter of the watershed with private development (houses) outside of the watershed. The watershed tributaries that flow to the Eagle Ditch encompass approximately 2,835 acres; 1,120 acres in North Canyon, and 1,715 acres in Big Canyon.

The watershed is heavily forested with mostly conifers and some hardwood. The soils are moderately permeable, well drained, with significant water holding capacity, all factors which are suited to support mixed conifer forests. In their natural vegetated state, they are not highly subject to erosion. However, road cuts and other disturbed surfaces are highly subject to erosion.

The land in the watershed is used for logging, hunting, hiking, fishing, and some limited off-road vehicle use. There are no organized campgrounds within the watershed. Based on the 2020 update to the Watershed Sanitary Survey, which investigated a number of contaminating activities, the untreated water (raw water) available to the District is of excellent quality except during heavy storm conditions. This degradation in quality is offset by the availability of raw water from the storage reservoir which provides for settling out of higher turbidity. With the watershed in the ownership of the US Forest Service, future land use and watershed conditions are likely to remain as they are at present and will not threaten degradation of future water quality.

Historical data regarding precipitation and stream flows for North and Big Canyon watershed is limited. As presented in the 2020 update to the Watershed Sanitary Survey, runoff estimates range widely based on seasonality and drought conditions. According to the Sanitary Survey, total water demand at build out has been estimated to be about 313 acre-feet per year. The current estimated safe yield is 165 acre-feet of water. The estimate therefore indicates a projected deficit at build out of 148 acre-feet per year.

The District reservoir is located on the fenced and secured District property just above the office and treatment plant. The reservoir holds 31-acre-feet of water and is lined with 60 mil High Density Polyethylene (HPDE) to prevent water loss from seepage. When full, the water from the reservoir overflows and is conveyed to the historical course of the Eagle Ditch through town. Within the reservoir, there is a 3 x 3 x 9-foot intake screen over an 8-inch intake pipe and gate valve. There is also an 8-inch drainpipe with gate valve. Both of the valves in the reservoir are opened and closed by control rods that are secured at the top of the dam.

3.1.2 Purchased Treated Surface Water

The District does not purchase treated surface water.

3.1.3 Groundwater Sources

The District does not use groundwater.

3.1.4 Auxiliary Sources and Interconnections with other Water Systems

There are not interconnections with other water systems.

3.1.5 Non-Potable Water

The District does not use, purchase, sell, or produce non-potable water.

3.2 TREATMENT

The District's WTP is located at 4765 Sciaroni Road, Grizzly Flats, CA. Water from the on-site raw water reservoir flows into the treatment plant utilizing hydraulic head (i.e. gravity). The treatment units and chemical supply are located inside a lockable building that deters unauthorized access. The water is dosed with ANSI/NSF 60 certified chemicals Sterling 8809 for coagulation and Sodium Hypochlorite for disinfection. No other chemicals are used. Water can be pulled directly from Eagle Ditch pipeline if the reservoir is out of service for some reason. The District last updated their Operation and Maintenance Plan in August 2020.

There are two separate packaged water treatment plants that operate in parallel. Both treatment trains are considered "Model R-200" and were purchased from Rescue Engineering in Diamond Springs, California. The first train was purchased and installed in 1991 and the second one was procured in 2000. They are referred to as Plant 1 (White) and Plant 2 (Blue) based on the exterior color of the unit. Both reportedly have a water production design capacity of 200 gpm; however, the actual maximum production capacity is generally less (approximately 150-170 gpm each) due to inefficiencies in the WTP as a whole. Propeller meters are used to measure the flow rate at each treatment train.

3.2.1 Packaged Water Treatment Plant

The packaged water treatment plants utilize rapid mixing, flocculation, coagulation, sedimentation (with tube settlers), filtration, and disinfection prior to discharging water into the clearwell for contact time treatment (PS Code 0910006-002).

Section 64652(a), Article 2, Chapter 17, Division 4, Title 22 of the CCR stipulates that water treatment plants that are required to filter surface water must provide multi-barrier treatment consisting of filtration and disinfection to achieve at least 99.9 percent (3-log) reduction in Giardia lamblia cysts and 99.99 percent (4-log) reduction in viruses and filtration to achieve at least 99 percent (2-log) removal of Cryptosporidium oocysts. Inactivation is achieved chemically via disinfection and removal is achieved physically via filtration.

In accordance with Section 64653, Article 2, Chapter 17, Division 4, Title 22 of the CCR, the District utilizes conventional filtration treatment. When meeting the operating criteria and performance standards in Section 64660 and 64653, Title 22 of the CCR, the plant qualifies under Section 64653.a, Article 2, Chapter 17, Division 4, Title 22 of the CCR for filtration removal credits of 2.5-log for Giardia lamblia cysts and 2-log for virus. The filtration system is also given credit for 99

percent (2-log removal) of cryptosporidium. Therefore, the disinfection component of the plant's multi-barrier approach must achieve, through sufficient chlorine contact time (CT), a 0.5-log inactivation of Giardia lamblia cysts and a 2.0-log inactivation of viruses.

In accordance with Section 64660(b)(1), Article 4, Chapter 17, Division 4, Title 22 of the CCR, Conventional filtration treatment plants shall be operated at filtration rates not to exceed 6.0 gpm/sq. ft. for mixed media filters under gravity flow conditions.

The dimensions and other characteristics of the plants are presented in Table 1 and in the Filtration Plant Data Sheets.

From the raw water reservoir intake pipeline, water flows through a four-inch propeller flow meter prior to entering the packaged water treatment plant trains in the rapid mix chamber. The coagulant is added just downstream of the flow meter and prior to the rapid mix chamber. The chamber is configured as part of the flocculation basin and utilizes Dayton Industrial Motors for the mixing. After mixing, water enters the flocculation chamber where it is mixed by a vertical shaft single paddle. Water flows below a weir between the flocculation and sedimentation basins. Settling tubes are used to settle coagulated flocculant. After settling water flows over v-notch weir launderers and into the filter basin. Disinfection is added prior to the filters in the launderers. The filter bed consists of 12-inches of anthracite coal, 15-inches of filter sand, 6-inches of crushed garnet, and 11-inches of gravel. Filtered water drains to the clearwell for contact time treatment.

Table 1 - Water Treatment Plant Dimensions and Flow Characteristics

Description	Plant 1	Plant 2
Flocculation Basin		
Length (ft)	6	6
Width (ft)	9	9
Avg Depth (ft)	7	8
Volume (CF)	378	432
Retention Time at 200 gpm (min)	14	16
Sedimentation Basin		
Length (ft)	9	9
Width (ft)	9	9
Avg Depth (ft)	7	8
Volume (CF)	567	648
Retention Time at 200 gpm (min)	21	24
Filter Basin		
Length (ft)	9	9
Width (ft)	4	4
Area (SF)	36	36
Surface Loading Rate (gpm/SF)	5.56	5.56

The two water treatment plants are controlled by one standard Programmable Logic Controller (PLC) that uses programmable ladder logic type software. The PLC automatically controls the plant processes. The PLC is isolated from the internet. All of the standard operational parameters of the PLC can be changed using the Digital Operator Interface on the front of the control panel located on Plant 2. The interface is old and starting to fail. A new interface should be procured now.

There are three process turbidimeters; 1 Hach 1720c for Raw, 1 Hach 1720c for finished water Plant 1, and 1 1720d for finished water Plant 2.

The treatment plants both have a Streaming Current Controller (SCC) installed that measures the electrical conductance of the raw water. Based on preset standards and jar testing, the SCC is set to the electrical charge that produces the optimum water quality. The SCC continuously measures the charge and adjusts the chemical feed rate to the best dose, based on the optimum charge determined by extensive jar testing.

Plant 1 is equipped with a Wallace and Tiernan Depox 3 Chlorine Analyzer with a visible flow cell. Plant 2 is equipped with a Hach Cl-17 Chlorine Analyzer that uses chemical reagents to test the chlorine residual in the water.

There are Circle Chart Recorders located on Plant 2 that record finished turbidity, chlorine residual, flow rate and SCC charge. The charts are changed weekly on the same day each week. Before new charts are placed in the recorders they are labeled with the chart description. Old charts are marked with the date they are removed from the recorder under the chart title information for record keeping purposes.

All of the chemicals for both plants are fed using Watson Marlow (WM) and Cole-Parmer Masterflex L/S peristaltic pumps. The capacity of the pumps is 240 ml/min (3.8 gph).

The coagulant is mixed to a five percent solution strength, or for ease of mixing, a 19 to 1 mixing ratio (Example: 19 gallons water to 1 gallon 8809 = 20 gallons 5 percent solution strength for day tank). There is approximately 12 gallons on site at any time, which provides roughly 3 months of treatment.

Backwash is scheduled based on run time. The maximum backwash rate is 16.5 gpm/sq-ft and the backwash runs for 10 min. Surface wash is used at a flow rate of 123 gpm and runs for seven minutes. Water used to conduct the backwash and filter to waste comes from the distribution system. The backwash and filter to waste water is sent to a 55,000-gallon backwash tank for intermediate settling prior to being sent to two settling ponds. Water in the ponds is removed via percolation and evaporation.

3.2.2 Disinfection

Sodium hypochlorite is received at a solution strength of 12.5 percent. The disinfectant is mixed with water in a day tank to a solution concentration of 3.5 percent. There are two 50-gallon day tanks, one for each treatment train. Both tanks have secondary containment. A minimum of 80 gallons of the 12.5 percent solution are kept as stock on hand. The sodium hypochlorite is NSF/ANSI 60 approved.

Two (one for each treatment train) Watson Marlow 323 chemical feed pumps are used to pump the sodium hypochlorite from the day tanks to the treatment trains. The pumps are peristaltic type pumps with a capacity of 240 ml/min. Extra parts and repair kits are available at the WTP.

Operators visually inspect the equipment daily with more thorough inspections occurring quarterly.

Sodium hypochlorite is discharged from small diameter plastic tubing into the water at the sedimentation basin weirs. The mixing occurs as water flows through the weir and into the filtration basin and then in the piping between the filter effluent and clearwell. Tubing replacements should be NSF/ANSI 61 certified.

Chlorine residuals are measured at the filter effluent, clearwell influent and effluent, and in the distribution system. Hach pocket colorimeters, Hach CI17, and Tiernan Depolox 3 analyzers are used to measure the chlorine residual in the water. Equipment calibrations occur as recommended by the manufacturer.

3.3 DISTRIBUTION SYSTEM

The distribution system consists of six pressure zones that operate between 30 and 150 psi.

3.3.1 Distribution Lines

The distribution system consists of AC, PVC, and DIP pipelines. Asbestos Cement pipe accounts for approximately 95 percent of the pipe material. The operating pressures range between 30 to 150 psi. Reportedly, the minimum pipe diameter is 6-inches and the largest pipe diameter is 12-inches. Most of the pipe was installed in the late 1960’s. The service connections are reportedly about half PVC and half PE.

The District reports that there is an adequate number of valves to isolate work areas without shutting off large portions of the distribution system. The District has about 240 isolation valves and 40 dead-end blowoff valves.

The District reportedly complies with Title 22 regulations with regards to water main separation requirements. The District requests waivers when water main

separation parameters cannot be met. The District reportedly follows AWWA standards for flushing and disinfecting water mains after a main break.

Reportedly, there are no lead pipes, joints, or solder used in the distribution system.

3.3.2 Transmission Lines

There are no transmission lines in the system.

3.3.3 Cross Connection Program

The District adopted their Cross-Connection Control Ordinance No. 88-1 on September 13, 1998. The District reports that there are no backflow preventers in the service area.

3.4 FINISHED WATER STORAGE

There are four tanks in the service area including the clearwell as summarized in Table 2.

Table 2 - Water Storage Summary

Name	Type	Capacity (MG)	Comments
Clearwell	Bolted Steel	0.20	- SO, DR, See comments below
Tyler Tank	Welded Steel	0.20	- SO (none), DR (none), See comments below
Winding Way Tank	Bolted Steel	0.10	- DR (none), See comments below
Forest View Tank	Bolted Steel	0.10	- SO (none), DR (none) - a bypass pipeline was added to isolate the bi-directional altitude valve. - See comments below

Legend:
SRV/SSV = Screened Roof Vent/Screened Side Vent
SO = Screened Overflow
DR (locate) = Drain to Grade/Storm Drain
SAH = Sealed Access Hatch

The Tyler Tank is located at 6795 Tyler Drive, Grizzly Flats, CA 95636. The tank site is 0.15 acres and is secured with a chain link fence and barbed wire. The tank was constructed in 1995. The tank is a ground level welded steel tank with a nominal storage capacity of 200,000 gallons. There is a common inlet/outlet pipe. The tank has a screened vent at the top. There is a second outlet used to fill the hydropneumatic tank on the site. The site has a propane generator.

The Winding Way Tank is located at 7508 Winding Way, Grizzly Flats, CA 95636. The tank site is 0.34 acres and does not have any fencing. The tank was constructed in 1995. The tank is a ground level bolted steel galvanized steel tank. There is a screened vent at the top of the tank. There is a common

inlet/outlet pipe. There is a second outlet used to fill the hydropneumatic tank on the site.

The Forest View Tank is located at 5274 Forest View Drive, Grizzly Flats, CA 95636. The tank site is 0.08 acres and is not fenced. The tank was constructed in 1996. The tank is a ground level bolted galvanized steel tank. There is a common inlet/outlet pipe. The tank has a screened vent at the top. There is a second outlet used to fill the hydropneumatic tank on the site.

3.5 PUMP, PUMP FACILITIES, AND CONTROLS

There are five pump stations in the service area as summarized in Table 3.

Table 3 - Pump Station Summary

Station	Status	From Zone	To Zone	Capacity
Tyler Tank BPS	Active	Zone 1	Zone 5 and 6	1 4 hp @ 110 gpm 1 30 hp @ 550 gpm
Winding Way Tank BPS	Active	Zone 1	Zone 5	1 2 hp @ 50 gpm
Forest View Tank BPS	Active	Zone 2	Zone 4	1 8 hp @ 200 gpm
South View BPS	Active	Zone 5	Zone 6	1 15 hp @ 300 gpm

The Tyler pump station is located at 6795 Tyler Drive, Grizzly Flats, CA 95636. The pump station is housed in a wood building. The pump station is used to fill the hydropneumatic tank that provides water to a small number of customers in the area. The pump station is also used for fire flow. The small pump can produce approximately 100 gpm and the larger pump can produce about 550 gpm. The small pump is a VFD pump that is designed to keep up with normal demand. The larger pump is designed to come on via a mercoid switch when pressure reach a low operator-controlled set point.

The Winding Way pump station is located at 7508 Winding Way, Grizzly Flats, CA 95636. The pump station is housed in a wood building. The pump station is used to fill the hydropneumatic tank that provides water to a small number of customers in the area. The pump can produce approximately 50 gpm. The pump is a VFD pump that is designed to keep up with normal demand.

The Forest View pump station is located at 5274 Forest View Drive, Grizzly Flats, CA 95636. The pump station is housed in a wood building. The pump station is used to fill the hydropneumatic tank that provides water to a small number of customers in the area. The pump can produce approximately 200 gpm. The pump is a VFD pump that is designed to keep up with normal demand.

The South View pump station is located on District property adjacent to South View Drive, Grizzly Flats, CA 95636. The pump station is housed in a wood building. The pump station is used to fill nine hydropneumatic tanks that provide water to a small number of customers in the area. The pump can produce

approximately 300 gpm. The pump is a VFD pump that is designed to keep up with normal demand.

3.6 MONITORING, REPORTING, AND DATA VERIFICATION

The District submits monthly, quarterly, and annual water quality reports that include raw water and distribution system bacteriological monitoring, chlorine residuals, and disinfection byproducts among other things.

3.7 SYSTEM MANAGEMENT AND OPERATIONS

The minimum chief water treatment operator grade requirement is a T2. The chief water distribution operator requirement is a D2. According to the 2020 annual report, the Water System employed 4 contract operators. All 4 are certified distribution system and treatment plant operators. The highest certified operator was a T4 and D3.

4. PROPOSED WATER QUALITY MONITORING PLAN

This Plan was developed to ensure the District can demonstrate they have established a potable water supply that meets all drinking water standards.

The distribution system is predominantly served via gravity from the water treatment plant that is located at the eastern end of the system. A small number of customers are served via pump stations. The majority of the pipelines are constructed from asbestos cement pipe. A small percentage of the pipes are PVC and Ductile Iron Pipe.

The distribution system can generally be broken up into three areas. As shown on Figure 1, the areas are well looped and separated by two pipelines. The majority of the residences that survived the fire are on the westerly third of the water system, which is at the lowest elevation. It is anticipated that the District will focus on restoring service to that area first, while potentially isolating other sections of the service area.

Once repairs are made, the distribution system will be flushed until the water is clear and a pre-determined chlorine residual is established. Bacteriological monitoring and targeted water quality monitoring will take place at strategic locations twenty-four hours after the flushing concludes. The samples will be collected from inside homes, when available, or other sample locations as determined in the field and in coordination with the Division. Repeat sampling, if necessary, will be conducted. Some of the pressure zones are served by pump stations that were destroyed or damaged by the fires and cannot be served or sampled until those pump stations are rebuilt. As the isolated areas return to service the same procedure will take place. Turbidity at the WTP will be closely monitored to assess any changes in water quality over time.

The process to establishing service can be summarized as follows:

1. Evaluate the damage
2. Stop the leaks by isolating areas of the distribution system.
3. Make repairs to the raw water intakes, raw water piping, raw water reservoir infrastructure, and water treatment plant.
4. Make preliminary repairs to the distribution system that will allow service to specific portions of the service area.
5. Flush and disinfect the distribution system.
6. Monitor for bacteria, disinfectant, and contaminants.
7. Re-establish service to portions of the water system.
8. Conduct similar procedures to the isolated portions of the service area until all areas have been placed back in service.

The water in the distribution system shall be flushed in accordance with Division recommendations which include establishing clear water that retains a chlorine residual. The chlorine residual concentration will be set at the discharge of the WTP and is expected to degrade somewhat in the distribution but also reach a steady state that can be monitored over time. Once the steady state is reached, the monitoring can begin (a minimum of twenty-four hours after flushing occurs).

Flushing will occur in a uni-directional manner from the WTP at the highest elevation to the lowest portion of the system. Flushing should be conducted to move water systematically through the looping in each area, through the piping connecting each area, and then finally through the lowest portions of the water system. This blanket approach will also allow disinfection of the system from top to bottom.

The distribution system water shall be tested at the locations and frequencies shown in the attached appendices and in accordance with standard sampling methodologies appropriate for the contaminant. Bacteriological samples will also be collected and analyzed. Identical methodologies should occur as damaged portions of the service area are returned to operation and in coordination with the Division.

The first few rainfall events of the year have the potential to introduce a significant amount of debris into the raw water supply line and it is recommended the District protect their raw intakes prior to the first few rainfall events. If the intakes cannot be protected in a way that mitigates debris entering the pipeline, the District should consider closing the intakes until the source water has cleared. The raw water reservoir provides a detention basin upstream of the WTP intake and allows for the intakes to be closed for a short period of time. Debris that enters the reservoir may need to be removed by the District at some point.

Due to the rapid pace of the fire, the fact that water appeared to remain in portions of the distribution system during the majority of the initial fire activity, the pipeline materials, and the layout of the piping network, it is believed that targeted water quality monitoring measured at strategic locations will reflect the quality of the water throughout the service area after flushing has occurred.

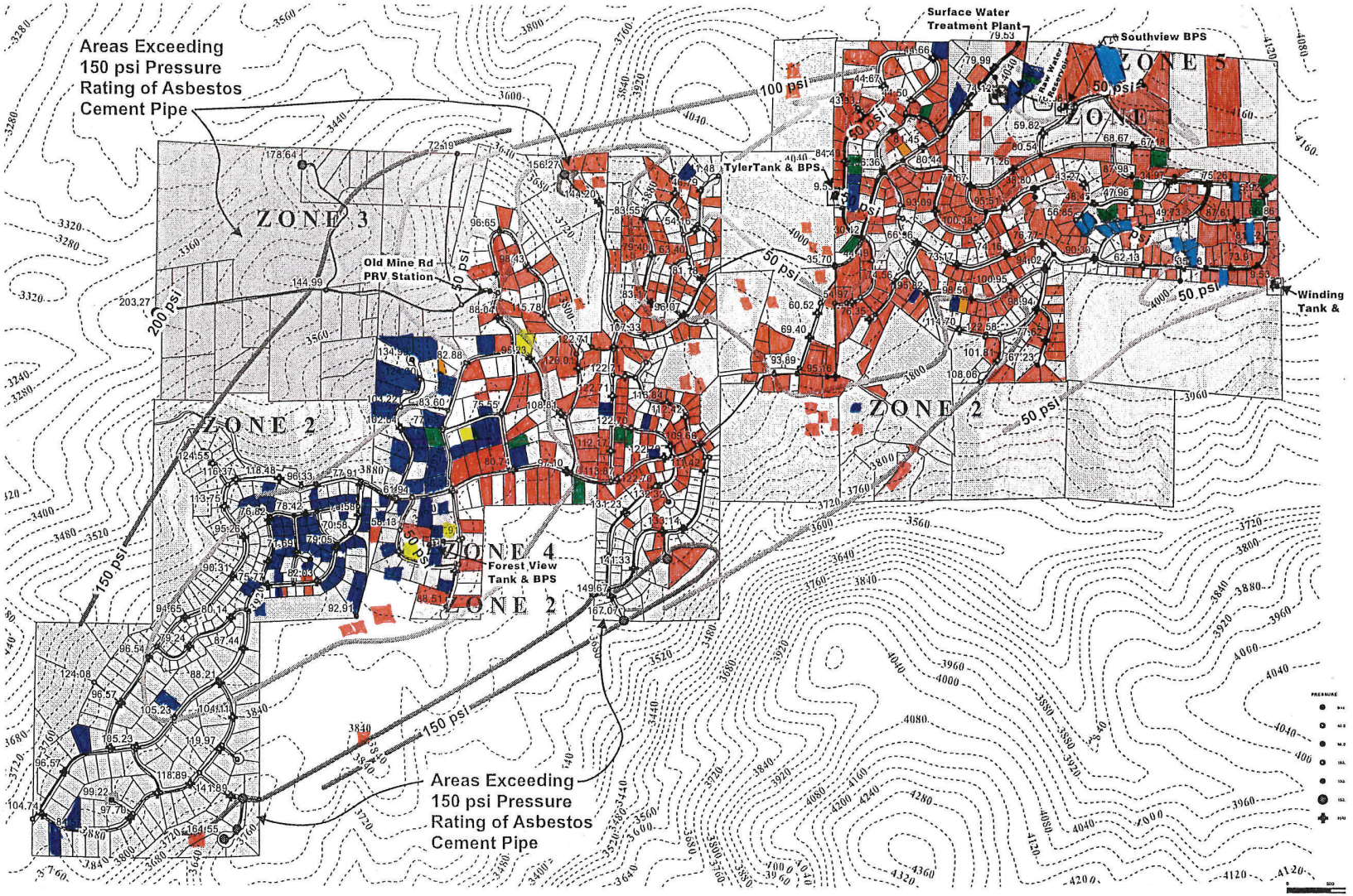
The sampling locations were selected based on the hydraulics of the distribution system. The system can be broken into three main areas that are separated by two connecting pipelines. Each area has good pipe looping which means water will generally flow evenly through the system. Targeted flushing points used for the uni-directional flushing of the pipelines should introduce fresh water that is dispersed evenly throughout the distribution system. Targeted water quality monitoring at specific locations should reflect water quality in the vicinity of the sampling.

Recent water quality monitoring by the District established a baseline for the Chapter 15, Title 22 contaminants. The contaminant monitoring schedule presented in the appendices of this Plan is believed to capture contaminants that may result from this fire event. The contaminants in Chapter 15 should be monitored at the effluent of the WTP once normal operation is established and prior to repopulation of the service area.

APPENDIX A

GRIZZLY FLAT COMMUNITY SERVICES DISTRICT WATER NETWORK

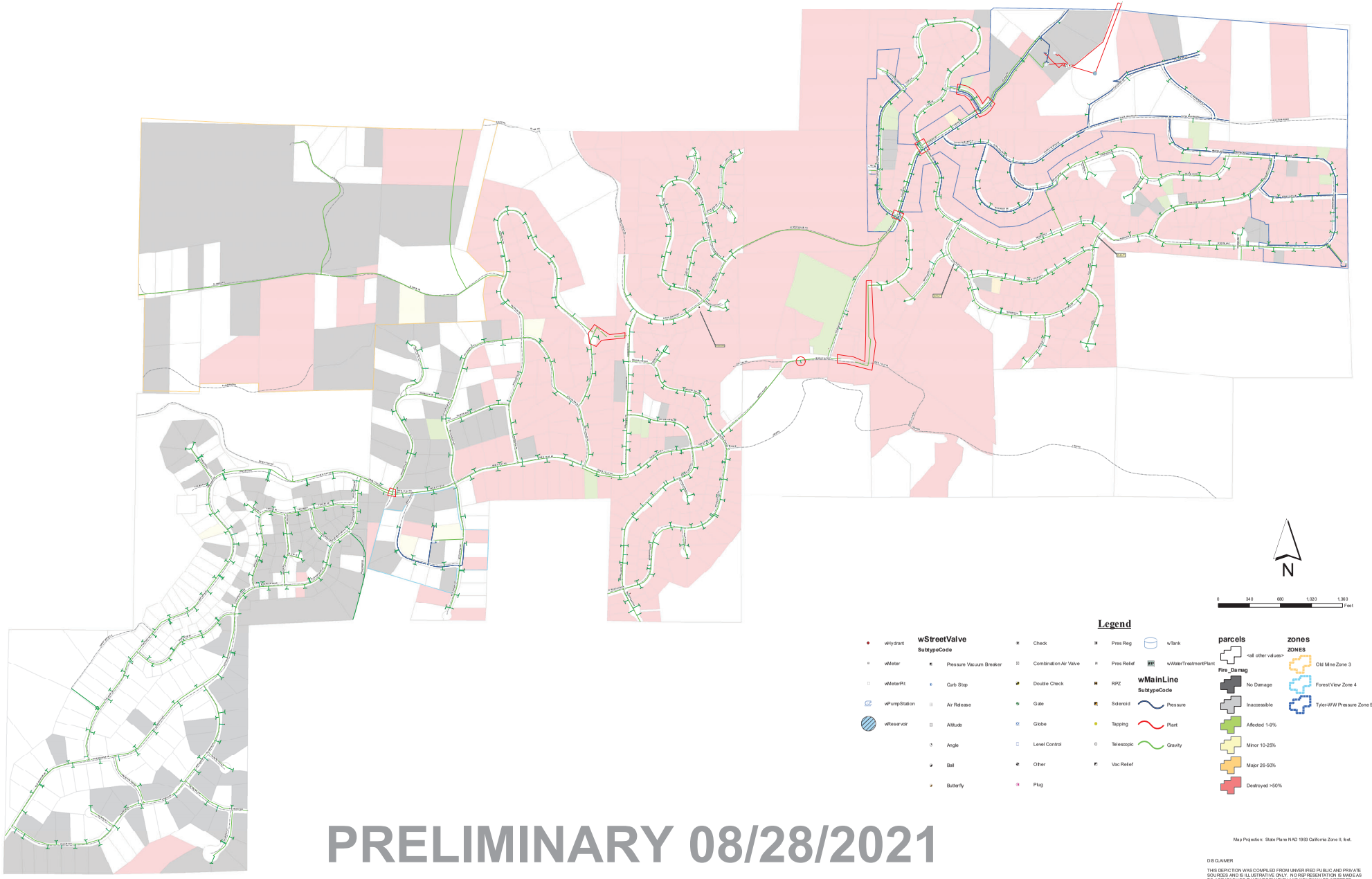
Hydraulic Water Model Pressure Contours



- Destroyed (>50%)
- Major (26-50%)
- Minor (10-25%)
- Affected (1-9%)
- No damage

GRIZZLY FLAT COMMUNITY SERVICES DISTRICT WATER NETWORK

Caldor Fire - Damage Assessment



PRELIMINARY 08/28/2021

BASED ON AVAILABLE INFORMATION

Map Projection: State Plane NAD 1983 California Zone II, feet.

DISCLAIMER

THIS DEPICTION WAS COMPILED FROM UNVERIFIED PUBLIC AND PRIVATE SOURCES AND IS ILLUSTRATIVE ONLY. NO REPRESENTATION IS MADE AS TO ACCURACY OF THAT INFORMATION AND NONE MAY BE INFERRED. THEREFORE USERS MAKE USE TO THAT INFORMATION AT THEIR OWN RISK.

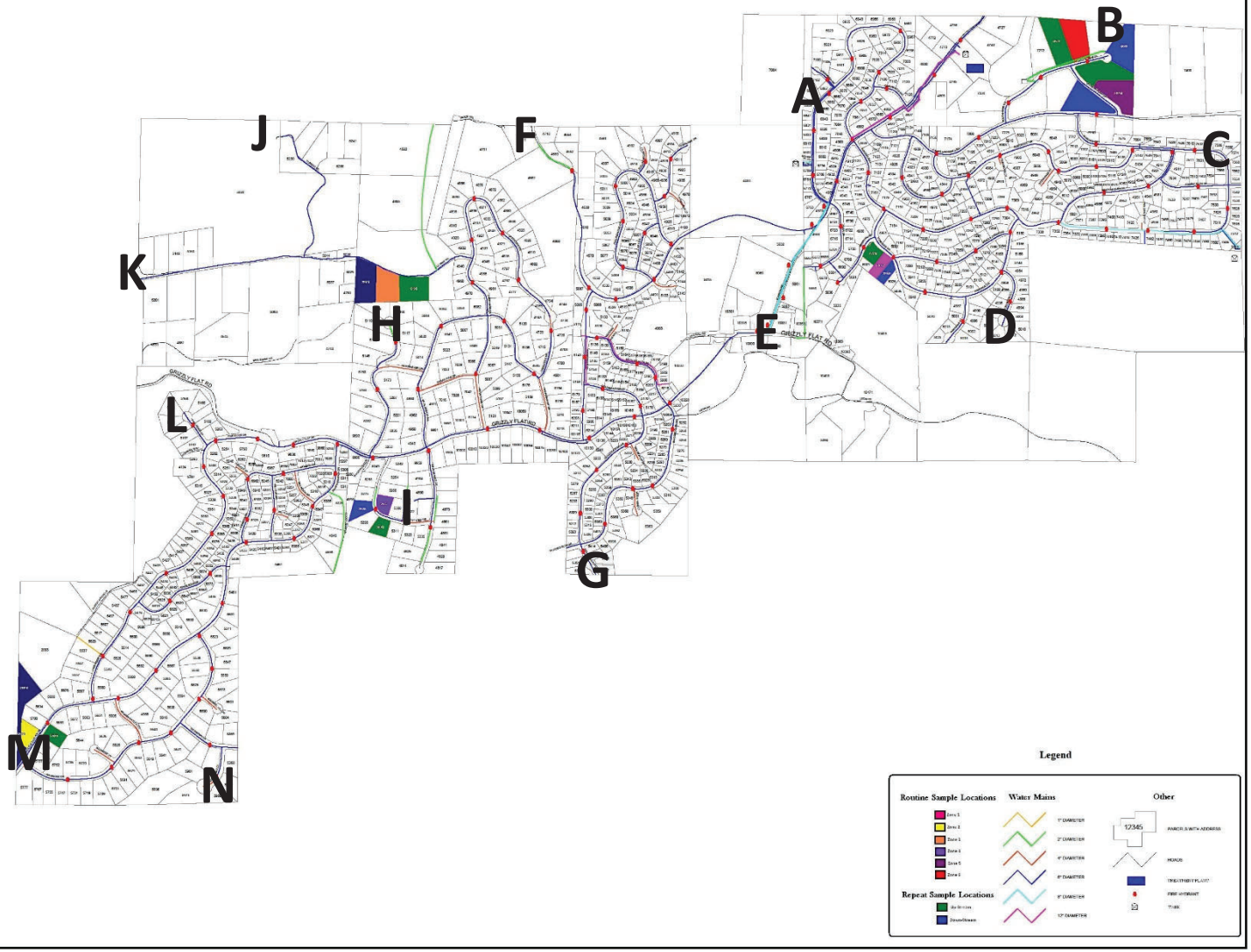
NOTES:

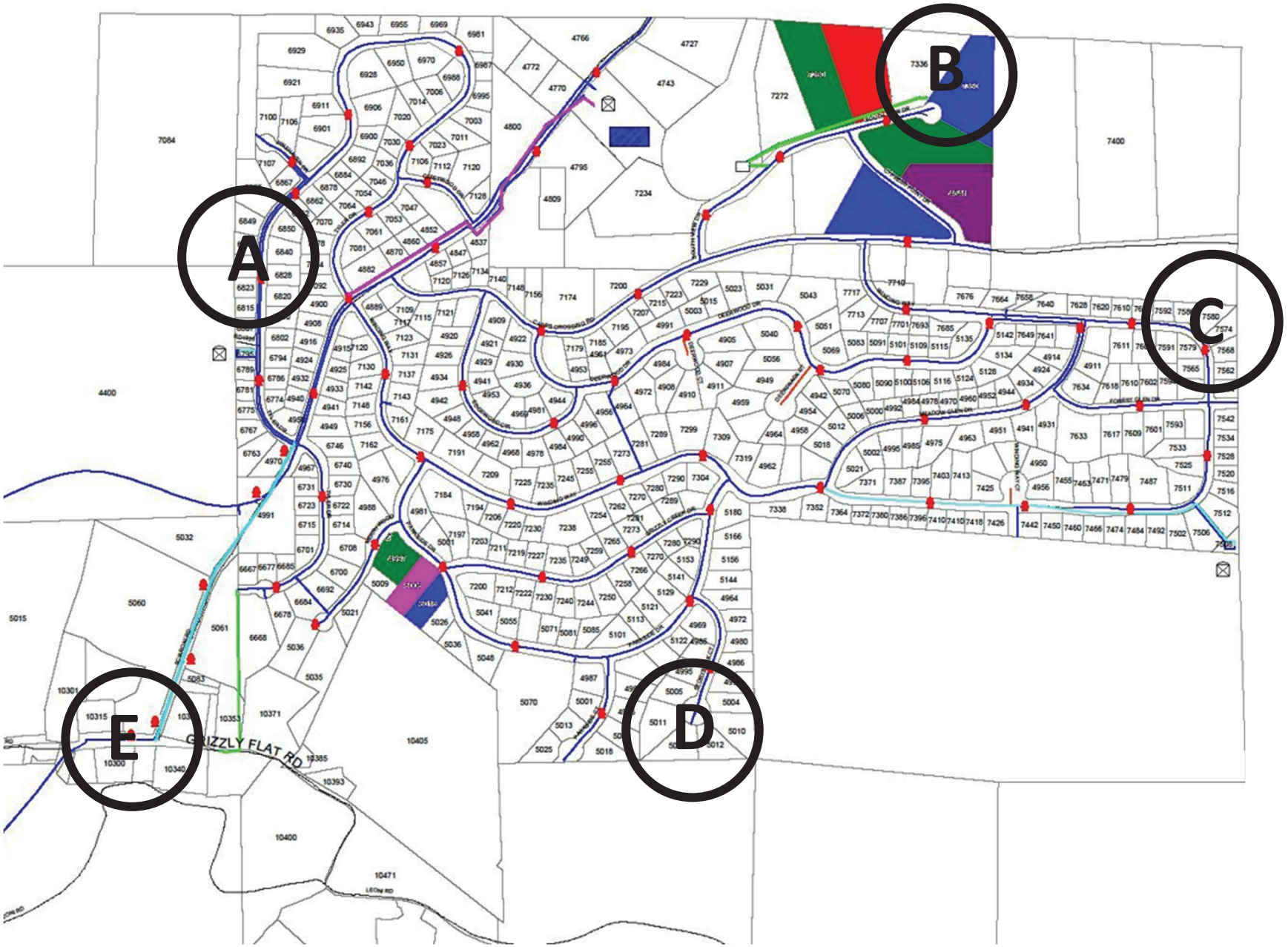
LAYER INFORMATION MAY COVER ADDITIONAL AREAS OUTSIDE OF THE DISPLAYED AREA.

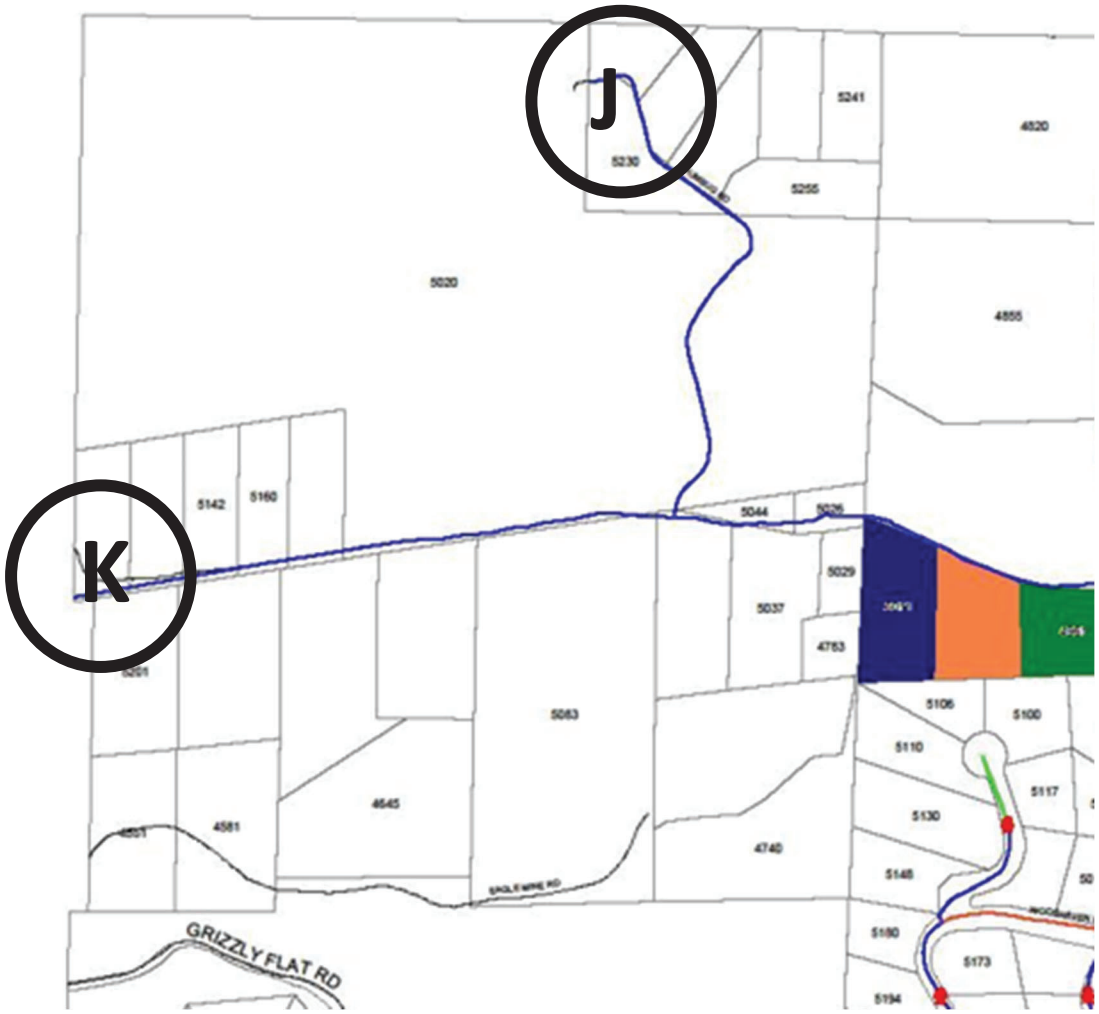
MAP PREPARED BY: SCOTT MYERS DATE: 8/23/2017

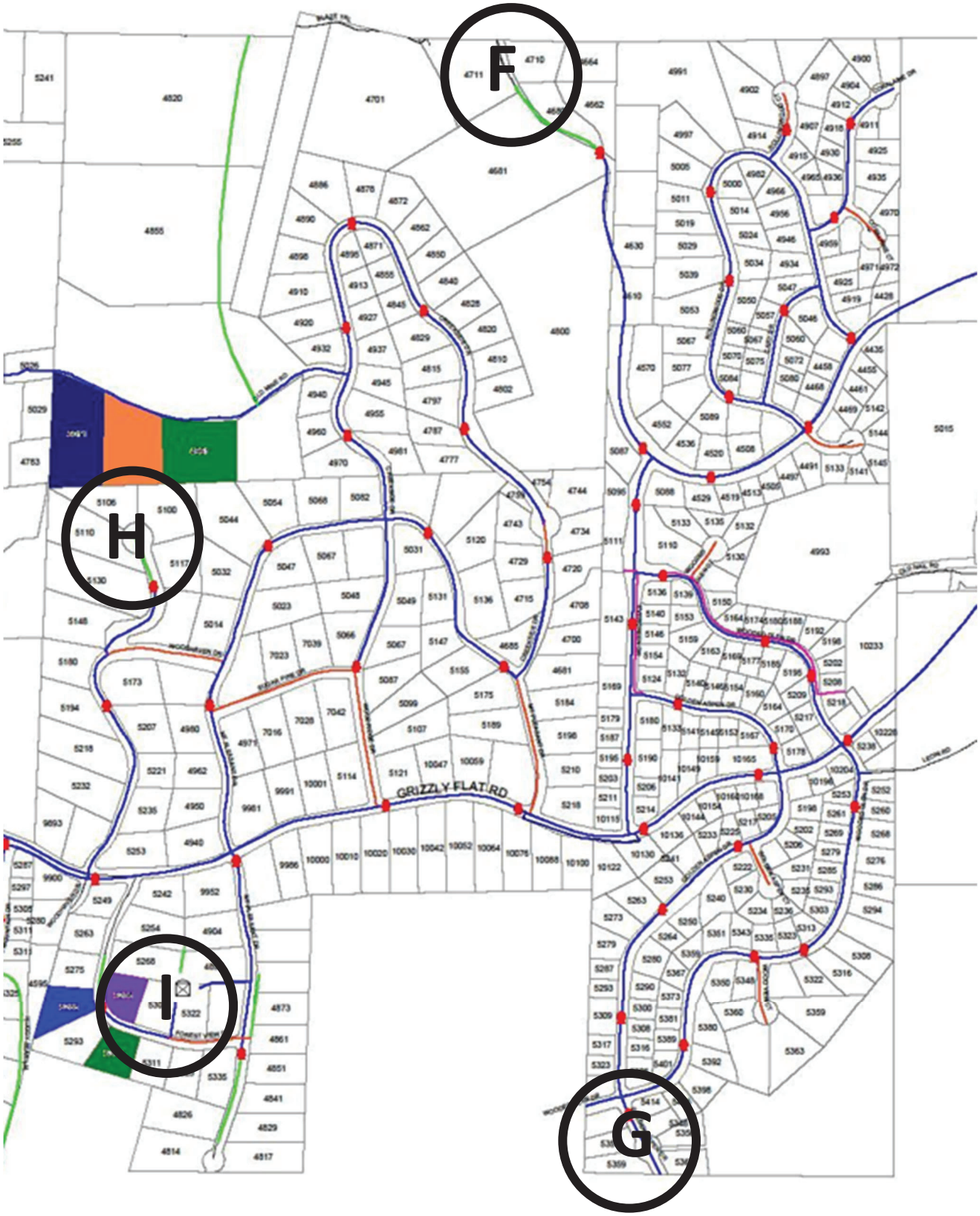
GIS BASE MAP DATA PROVIDED BY EL DORADO COUNTY SURVEYOR/G.I.S. DIVISION
G.I.S. PROJECT ID: 4630 RELATED REPORT: NO

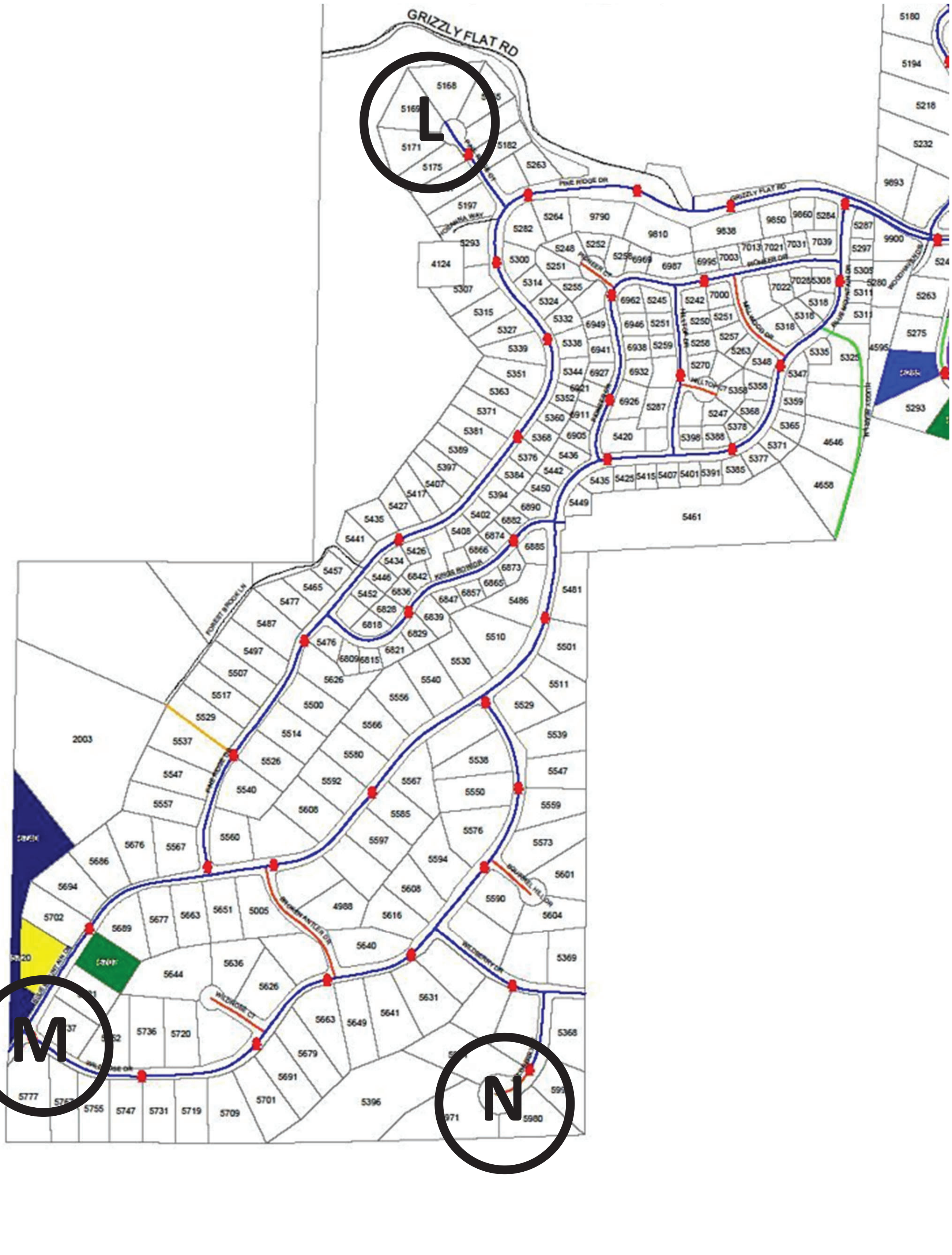
GRIZZLY FLAT COMMUNITY SERVICES DISTRICT WATER NETWORK




A
B
C
D
E
GRIZZLY FLAT RD


J
K
5241
4820
5230
5255
5020
4855
5142
5160
5044
5029
5037
4753
5106
5100
5110
5117
5130
5148
5180
5173
5194
5063
4645
4581
4740
GRIZZLY FLAT RD


F
H
I
G
GRIZZLY FLAT RD


GRIZZLY FLAT RD
L
M
N
PINE RIDGE DR
GRIZZLY FLAT RD
BROKEN ANTLER DR
WILDROSE CT
WILDBERRY DR

APPENDIX B

GRIZZLY FLATS WATER SYSTEM
PWS No. 0910006
Post Caldor Fire Sampling Schedule

NOTES:
1) Areas A, B, C, I, and N are served by pump stations.
2) Suite of Title 22 contaminants to be monitored at WTP effluent.
3) Monitoring to occur 24 hours after flushing.

Constituent	MCL	SAMPLE SITES													
		A	B	C	D	E	F	G	H	I	J	K	L	M	N
64421 and 64423.1 - Bacteriological Quality															
Total Coliforn and E. Coli		X	X	X	X	X	X	X	X	X	X	X	X	X	X
64432.2 - Asbestos	**(MFL)**														
Asbestos	7	X	X	X		X				X				X	X
Table 64444 -A (VOC)	**(mg/L)**														
Benzene	0.001	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Carbon Tetrachloride	0.0005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,2-Dichlorobenzene	0.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,4-Dichlorobenzene	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,1-Dichloroethane	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,2-Dichloroethane	0.0005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,1-Dichloroethylene	0.006	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cis-1,2-Dichloroethylene	0.006	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trans-1,2-Dichloroethylene	0.01	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dichloromethane	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,2-Dichloropropane	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,3-Dichloropropene	0.0005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ethylbenzene	0.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Methyl-tertiary-butyl-ether	0.013	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Monochlorobenzene	0.07	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Styrene	0.1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,1,2,2-Tetrachloroethane	0.001	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tetrachloroethylene	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Toluene	0.15	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,2,4-Trichlorobenzene	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,1,1-Trichloroethane	0.200	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1,1,2-Trichloroethane	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trichloroethylene (TCE)	0.005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trichlorofluoromethane	0.15	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trichlorotrifluoroethane	1.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vinyl Chloride	0.0005	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Xylenes (total)	1.750	X	X	X	X	X	X	X	X	X	X	X	X	X	X

APPENDIX C