CABY Integrated Regional Water Management Plan
Proposition 84, Round 2 Implementation Grant

1 Camptonville Water System Improvement Project

ATTACHMENTS

1. Camptonville Water System Improvement Project

The following attachments are provided in PDF form as supplemental materials to this proposal:

- In the online package reference documents are grouped into a single PDF uploaded as part of Attachment 7, entitled **Att7_IG2_TechJust_1CamptRefs_2of12.pdf**.
- In the hard copy package all documents are provided on DVD as separate PDFs in the folder entitled **"1 - Camptonville Project."**

REFERENCES

A. Camptonville Community Services District, 2012, "Request for Proposals for the Camptonville Water System Improvement Project"

B. CCSD, 2013, "Camptonville: History, Description and Organizations"

C. CCSD, 2013, "Processed Plant Data 2009-2012"

D. GEI Consultants Inc., December 2012, "Camptonville Water System Evaluation and Improvement Study"

E. Plumas Geohydrology, March 2013, "Potential well drilling sites for the Town of Camptonville, Yuba County, California"

F. Sauers Engineering Inc., March 2013, "Public Health Compliance Evaluation Report"

G. Sauers Engineering Inc., March 2013, "Camptonville Water System Improvement Project – 30% Drawings"

H. Walters Engineering, 1992, "Camptonville Water System 1991 Project – Record Drawings"

I. Yuba County Environmental Health, September 2012, "Small Water System Inspection Report"

MAPS

J. Project Map

K. Map 1 – CA Project Locator

L. Map 2 – Local Project Locator

M. Map 3 – Detailed Project Map

PHOTOS

N. Photo Descriptions

O. Photo 1

P. Photo 2

Q. Photo 3

R. Photo 4

BUDGET SUPPORTING DOCUMENTS

S. Budget Detail Exhibits

Request for Proposals
For
Camptonville Water System Improvement Project
Camptonville Community Service District, California

PART I - GENERAL INFORMATION

A. Introduction

The Camptonville Community Services District is seeking Professional Engineering services to plan and prepare various documents in support of an ongoing grant application which will fund construction of the project.

This Request for Proposals (RFP) delineates tasks necessary for the development of Grant Application Documents, CEQA documents and Conceptual Design Documents required by the Camptonville Community Service District (CCSD) for the "Camptonville Water System Improvement Project".

Prospective parties shall have five years or more of experience in the work outlined in this document, and shall be experienced developing projects under very tight fiscal constraints as will be the case for this California DWR/DPH funded project.

B. Background

The Camptonville Community Services District (CCSD) is responsible for the oversight of the water system serving the community of Camptonville (water system # 5800924) , an unincorporated area consisting of roughly 700 dwellings, a public school, and three businesses. Camptonville is located in the Tahoe National Forest about 45 miles northeast of Marysville, 20 miles north of Grass Valley and just east of New Bullards Bar Reservoir in the eastern portion of Yuba County.

The primary source of water supply for the town is the perennial stream in Campbell Gulch. Water from the stream is diverted through a concrete check structure. The diversion structure conveys water to the treatment plant via a 6 inch pipe. The potable water system also includes two standby groundwater wells, one untapped groundwater well at the plant, a treatment plant with five slow-sand filters and a chlorinator, one 64,000-gallon storage tank, and the distribution system. The two stand-by wells are used for short periods that can produce up to 20,000 gallons a day (14 gpm). These wells are not used except in extreme emergencies due to high iron and manganese levels and reliability issues.

The most recent water source, treatment plant, and distribution system modifications were built in 1991. The treatment plant is operational but has treatment, storage and monitoring issues, and portions of the plant are in need of repair and replacement, most notably including sediment pre-filter tanks and roofing. The bolted steel panel storage tank has been inspected, maintained and recently renovated but may not meet current standards for clear well treatment, possibly including inadequate contact time and monitoring log equipment. The diversion structure on Campbell Gulch has suffered from high winter flows and over-growth and needs repairs to the gate structure, the access road and stream-side landing. The water distribution system has 72 connections, which includes a public school and three businesses. The project would include distribution system work including replacement valve and meters. Currently, measured flow at the user connections falls differs substantially from

measured plant outflows.

Camptonville's water system during critical, high fire hazard and late summer high water usage times is inadequate to meet the needs of the community. Water in Campbell Gulch decreases substantially in volume, typically in late summer, decreasing supplies. Drought cycles have occurred five times in the last 30 years causing severe shortages. The water source supply, treatment plant and storage tank do not meet the requirements of Title 22 maximum daily demand nor provide for wild-fire demands in the summer.

The Camptonville Community Service District is seeking grant funds to develop additional water sources, repair, update and bring the treatment plant into Department of Public Health compliance, add additional water storage capacity and upgrade portions of the distribution system. Grant sources may include an $800,000.00 Proposition 84 IRWM (Integrated Regional Water Management) grant to be submitted by CABY on March 29, 2013, and a possible second source of funds from the California Department of Public Health, and a possible third source of funds from financing or other grant sources.

C. Goals and Selection

The work described under this RFP is intended to 1) Develop a conceptual design of all needed plant improvements, hereinafter referred to as the "30% Design" and 2) develop a written "Work Plan", "Budget" and "Schedule" for a portion of the needed improvements, not to exceed $800,000.00 in total project costs, to be used in the CABY/DWR grant application documents.

Final design is not included in this RFP, however, it is intended that the selected Consultant and team will be the designated engineer(s) of record for final design.

The Consultant and/or consultant's team shall be experienced in well production analysis, land surveying, environmental permitting, cost estimating, engineering designs and specifications and construction administration for the type of work required under this contract. Interested offeror's will submit written proposals to CCSD as directed in Part III of this RFP.

D. Reference Documents

The following documents are available from CCSD upon request and shall be reviewed and referenced as part of consultant's proposal:

1. *Camptonville Water System Evaluation and Improvement Study* by GEI Consultants, December 2012
2. *Camptonville Community Services District 1990 Water Project* (Record Drawings dated Feb 1992) by Walters Engineering, Civil Engineering Consultants. *As-built plans of the current plant are not available.*
3. *Proposed Camptonville Waterworks* (Preliminary Engineering Report for Camptonville Community Services District) by Walters Engineering, dated November 1988.

4. *Proposal Solicitation Package, Integrated Regional Water Management Proposition 84 Round 2* by The California Water Resources Agency, dated November 2012.

PART II - SCOPE OF SERVICES

A. General

The consultants under this RFP shall obtain topographical information, resolve the existing facility right-of-way limits (only where improvements are forecast), prepare exhibits for real estate coordination if necessary, coordinate and facilitate well testing and water source development, coordinate and facilitate all required permits, prepare various grant and permit related documents and prepare complete construction documents for the project as described herein and in the *Camptonville Water System Improvement Study* by GEI Consultants, November 2012.

Upon notice of available grant funds, the project may eventually need to be divided into multiple construction phases, due to budgetary restrictions. Consultant acknowledges that such may occur and shall prepare documents that can readily be annotated with two or more phases of construction, should such be necessary.

B. Services

General. The term "Consultant" refers to the primary lead consultant and all sub-consultants. The lead consultant shall ensure that all sub-consultants understand the scope of their role up to the 30% submittal to avoid premature start of "final design" level work. Collection of design criteria and data elements will be the responsibility of the Consultant. As noted above, the scope of the services under the initial contract is limited. Work under the initial contract will be completed up to the 30% level only. Work described herein that is beyond the 30% level is provided for information only. Work beyond the 30% milestone would commence at an unknown date following the October 2013 grant award notifications.

Public Health Compliance Evaluation. Provide a comprehensive analysis of the water treatment and distribution system identifying all improvements needed to bring the system into compliance with local, state and federal requirements. The results of this investigation shall be presented with the 30% documents.

Water Source and Well Production Analysis. The Consultant shall prepare a field analysis evaluating all potential water sources needed to fulfill Title 22 requirements, including the existing check structure and existing well #1 (Fire Station Property @ 15410 Mill St.), with recommendations for rehabilitation if appropriate, and the proposed location of additional water sources, if necessary. Consultant shall work closely with CCSD staff to derive the most effective approach for analysis and recommendation. At Briefing Meeting No. 1 (see below), the Consultant shall discuss geologic and well investigations needed to begin assessment of the existing wells and/ or determine new well sites. The Consultant shall summarize the geology and investigation requirements that were agreed to at the meeting in a letter to CCSD.

Upon approval by CCSD, the Consultant shall perform all work necessary to perform the geology and well investigations. The results of these investigations shall be presented in a Geology and Well Investigation Report (GWIR), submitted with the 30% documents.

Land Surveying. The Consultant will confirm all relevant property boundaries, elevations, locations, sizes and other information as needed for his use in the development of the designs. This survey will be used as the basis for facility design and land acquisition, as needed. The Consultant shall prepare a base topographic survey for work limits within the project. If aerial topography is utilized, the Consultant will be required to provide periodic transects for tie-ins and verification. Included within this work will be resolution of location of existing property and right-of-way locations and definition of the existing CCSD facilities as well as the location of pertinent structures within the system, as defined within the Improvement Study.

Geotechnical Engineering. The Consultant will provide a written preliminary geotechnical report in conformance with the California Building Code for all structures to be constructed.

Permitting. The Consultant shall define all required environmental, right-of-way, and regulatory permits, as specified, but not limited to, those itemized with the Improvement Study in order to facilitate planning and construction. The work shall be reported in the 30% submittal.

Environmental Permits (CEQA): It is anticipated that this project will only require a Negative Declaration, possibly mitigated. The County of Yuba will be the lead agency preparing the CEQA documents. The Consultant shall develop language for the "Project Description", and any technical analysis and/or needed mitigation plans for use by the lead agency in preparing the CEQA documents. The lead agency will not commence the CEQA process until the Consultant is confident the project description is complete, and the lead agency's CEQA process may extend beyond consultants completion of this project.

Cost Estimating. The consultant shall obtain cost estimates at each phase of the design with clearly itemized project costs including but not limited to cost categories for permitting, design, testing, construction, inspections, general conditions, overhead and profit, public works labor requirements, quality assurance, and close-out. The estimates should reflect an increasing degree of accuracy as the design process moves forward starting at feasibility level reaching Engineer’s Estimate level prior to bidding. The 30% version of the cost estimate will be the basis of the grant application and must include appropriate, explicit contingencies for design, permitting and construction. All contingencies shall be explicit and shall not hidden in unit costs or quantity take-offs. The estimate shall include appropriate inflation allowances given the project timeline. CCSD will prepare the final grant submittal document using the 30% estimate, and CCSD will supply the "Direct Administration" budget values. The 30% Budget shall include a detailed estimate of engineering, testing and inspection fees as well as capital costs.

CABY/DWR Grant Related Information: The CABY/DWR grant, if awarded, will be

limited to $800,000.00, including indirect expenses and design. Prior to the 30% milestone, the Consultant shall assist CCSD in preparation of grant application documents (Work Plan, Budget and Schedule) to be submitted to CABY in final form on February 4, 2013. Failure to meet this deadline will result in CCSD being dropped from the application. The 30% Design Documents will be prepared in a form suitable for the DWR Grant and will be included as an attachment to the application if time permits.

~~Should the CABY grant be awarded to CCSD, the consultant shall assist CCSD in the preparation of the following documents (required in fulfillment of DWR grant requirements): A Project Assessment and Evaluation Plan (PAEP); A Monitoring Plan (MP), a Quality Assurance Project Plan (QAPP), and a Storm Water Pollution Prevention Plan (SWPPP). The Consultant will provide all necessary technical input specific to the Camptonville facilities and project, in accordance with DWR standards. CCSD will be responsible for publishing the approved documents.~~

California Department of Public Health Grant Related Information: An application has been filed, and CCSD's ranking is unknown at this time. It is hoped that a CDPH grant will fund the remainder of the project, that is fund the work beyond what *may* be covered by the CABY/DWR grant. Consultant's work in this conceptual phase shall be prepared in compliance with CDPH standards and expectations, as best known, to minimize re-work where possible. Consultant shall seek CDPH assistance in defining CDPH expectations during this project. It is expected that Consultant's 30% Design package would inform the application for a CDPH planning grant.

Construction Testing and Inspection Plan. The Consultant shall prepare a written document outlining 1) all Special Inspections required under the governing California Building Code, and 2) any additional Consultant recommended construction-phase testing and inspection/observation activities. This document will eventually be used by CCSD to prepare an RFP to procure an independent testing and inspection agency and shall clearly define the scope of all necessary tests and inspections.

Conceptual Design. The Consultant shall prepare conceptual plans and specifications illustrating the scope of the project in sufficient detail to enable the grant application to be written with a "ready-to-implement" level of detail. Final design will be considered part of the implementation. The conceptual design shall assess multiple alternatives and evaluate the capital, maintenance and operating costs of each alternative so that the least cost option is properly selected.

~~*Final Design.* The Consultant shall prepare final designs, drawings, and technical specifications for all civil, mechanical, structural and electrical features associated with the project, using the design criteria developed over the course of this contract. All designs will comply with current Building Standards, OSHA requirements, and any specific requirements imposed by a prevailing jurisdiction which a CCSD facility may cross, influence or be influenced by. The design documents will include all mitigation measures identified in the environmental permitting process. The design process in described in Section C below. All drawings issued for permit and for construction shall be signed by a professional engineer or land surveyor registered in the State of~~

~~California.~~

~~*Design Review*. Consultant shall thoroughly review and coordinate the construction documents to minimize change orders during construction. Consultant shall cooperate with all reviewing agencies and revise the documents as required to comply with all statutory and regulatory requirements.~~

~~*Construction Administration*. While the CCSD Project Manager will be the primary contact for the contractor, the Consultant will provide normal construction administration services including shop drawing review, response to contractor questions, attend constructions meetings when requested, provide required construction observation and/or inspections per the approved Quality Assurance Project Plan, and document design changes as they occur for jurisdictional review.~~

~~*Construction Closeout*. Consultant will prepare as-built drawings of the completed project and issue these to CCSD. As-built drawings shall include all aspects of the current facility that will remain in service. Consultant will prepare a designer's operations and maintenance manual for all new equipment and structures.~~

Meetings. Consultant and Consultant's team as necessary, will be required to attend "briefing meetings". The CCSD Project Manager will be available to attend "coordination meetings" at a place of mutual agreement not more than 2 hours travel time from Camptonville, as agreed, with 48 hours notice, as requested by the Consultant.

Reproductions. Consultant will provide electronic and printed documents at each phase of design as described in Section C below.

Direction. Consultant shall communicate with and work under the direction of the CCSD Project Manager. The CCSD Board of Directors has the ultimate authority of direction and significant decisions will be made in form of written board decisions. Consultant shall not make agreements regarding project scope without CCSD review and approval.

Deliverables. For the 30% phase, deliverables include:

- CABY/DWR Grant Work Plan, Budget & Schedule
- Public Health Compliance Evaluation & Report
- Geology and Well Investigation Report
- Preliminary Geotechnical Report
- Project Description and Recommended Mitigation Analysis (CEQA)
- Estimate of Cost (30%)
- Construction Testing and Inspection Plan
- Project Permitting Report
- 30% Design Drawings and Outline Specifications

C. Project Schedule

Briefing Meeting No. 1. The Consultant and Consultant's team as necessary will attend an initial kick-off meeting, to establish project communications, confirm milestone dates, and establish project direction. CCSD will chair the meeting.

CABY/DWR Grant Application Assistance: Provide written documents to the CCSD project manager. Final language is due in CABY's hands by February 4, 2013. Consultant shall work closely with the CCSD project manager to ensure application-ready language is completed in time for that deadline.

30% Conceptual Design. Provide: Completed project design criteria. Completed Geology and Well Investigation Report (GWIR) and Ground Water Monitoring Plan (GWMP). Completed analysis of all permitting needs. Completed analysis of all right of way issues and land needs. A comprehensive schematic-level design drawing package documenting proposed ground water source development and renovations, proposed plant repairs, additions and alterations, and proposed water storage structures. Outline specification sufficient to form a rational opinion of cost. An estimate of project cost. Consultant's written recommendations regarding overall project scope. Consultant shall submit two (2) printed copies and an electronic PDF format version of all documents to CCSD Project Manager two (2) business days before Briefing Meeting No. 2.

Briefing Meeting No. 2. Consultants will present their findings and recommendations to the CCSD Project Manager and Board. Following the meeting, CCSD will have three (3) business days to provide written direction to the Consultant regarding any unresolved issues and/or comments on the submitted work product.

It is essential for the Consultant to understand that the 30% Design will form the basis of possibly several grant applications. The work will be reviewed by CCSD and it's appointed review panel. Consultant will revise the documents as needed and determined following Briefing Meeting No. 2 so these documents may be attached to the grant application as exhibits. Consultant will have three (3) business days to revise and publish final 30% documents for CCSD's use in the Grant Applications process.

Project Hold: Once the 30% documents are submitted, the Consultant shall stop work.

~~*60% Design Development.* This is not meant to be a major milestone, only a checkpoint to assure the Consultant and CCSD that project scope and estimated costs are remaining within the project parameters. Provide: Incorporated CCSD comments. Update the design criteria as needed. A completed geotechical report. Develop the designs to the point necessary to completely define the scope and cost of the project but without full details needed to construct. Provide an updated cost estimate. Publish a draft *Construction Testing and Inspection Plan*. Consultant shall submit two (2) printed copies and an electronic PDF format version of all documents to CCSD Project Manager five (5) business days before Briefing Meeting No. 3.~~

~~*Briefing Meeting No. 3*. Consultants will present their findings and recommendations to the CCSD Project Manager and Board. Following the meeting, CCSD will have five (5) business days to provide written direction to the Consultant regarding any unresolved issues and/or comments on the submitted work product.~~

~~*100% Design for Review.* Complete all construction documents and permit applications and submit for review. Provide a complete *Construction Testing and Inspection Plan*. Provide final recommendations for DWR Grant-related PAED, MP,~~

~~QAPP and SWPPP documents. Provide an updated cost estimate. Consultant shall also submit two (2) printed copies and an electronic PDF format version of all documents to CCSD Project Manager. CCSD will issue written comments within twenty (20) business days of receipt.~~

~~*100% Design for Construction*. Resolve all outstanding permit and CCSD comment issues. Revise the drawing and specifications as necessary to close all comments. Prepare the documents for public bid. Provide an updated cost estimate. These documents shall be complete and ready for construction with a minimum of change orders and amendments and shall be thoroughly reviewed by the Consultant. Consultant shall submit two (2) printed copies and an electronic PDF format version of all documents to CCSD Project Manager. CCSD will prepare printed versions for bidders.~~

~~*Additional Deliverables:* Following final permit approval, a CD ROM containing all electronic source files for drawings, specifications, calculations, analyses, et cetera. shall be transmitted to CCSD for project archives. These files shall be source files, not "print" versions, that is files that can be opened and edited using the requisite software.~~

~~The contractor shall be allowed the use of select source drawing files, subject to Consultant's limitations of use. A recommendation by the Consultant Design Team of drawings that may be made available in electronic medium to bidders shall be developed by the Consultant and drawing files shall be transmitted to CCSD prior to the start of bidding.~~

~~*Construction*. Consultant shall provide construction administration services.~~

PART III - SELECTION PROCESS AND CONSULTANTS PROPOSAL

A. Selection Process

Consultant shall review all referenced documents and shall send at least one representative to a facility tour and briefing. See Section C below for dates.

Consultant shall submit a written proposal to CCSD defining Consultant's interest in the project, the names of all sub-consultant's and firms participating in this project and the experience and qualifications of each. This proposal shall include Consultant's estimated fee's for the 30% project, itemized by Consultant. The proposal shall also include a sample of the Consultant's preferred agreement. This RFP shall become an exhibit of the final agreement.

A CCSD Board appointed panel will review the proposals, interview potential firms, select the successful engineering firm, and negotiate a final scope of work and agreement. Director Richard Dickard, Plant Manager Mike Hines and Project Manager Mark Jokerst comprise this committee.

B. Contacts

The Consultant shall designate a Project Manager for all activities under this delivery order who shall serve as the primary contact between the CCSD and the Consultant's

Design Team. All inquiries to CCSD pertaining to this RFP shall be directed as follows:

CCSD Water Project Manager, attn: Mark Jokerst
P.O. Box 163, Camptonville, CA 95922
mjokerst@me.com, 530-288-9320

CCSD Project Administrator, attn: Rita Ortega
Camptonville Community Partnership
P.O. Box 218, Camptonville, CA 95922
ccp@cville.k12.ca.us, 530-288-9355

C. Milestones

Milestone	Date
Consultant Agreement Completed	January 21, 2013
Briefing Meeting No. 1	T.B.D.
CABY/DWR Grant Application Documents	February 3, 2013
30% Schematic Design (Draft)	March 13, 2013
Briefing Meeting No. 2	March 15, 2013
CCSD Board Review	March 18, 2013
CCSD Comments Due	March 19, 2013
30% Schematic Design (Final)	March 25, 2013

History and Description

The town of Camptonville sprang into being in the same way as all Sierra Foothill "Gold Country" towns in the early days of the 1850's as placer gold mining activity dominated the region. In the hey day of the late 1800's, this was a busy community of miners, farms and foresters and the town sported many hotels, saloons and commercial ventures. Anyone traveling from San Francisco via Marysville to Downieville/Truckee/Virginia City passed through Camptonville, a lively stop on the turnpike. It was here in Camptonville, where the "Pelton Wheel" was invented.

Following a century of mining, farming and logging, the town of Camptonville today thrives as a small vibrant community of 188 people and remains the hub of a much larger community of 700 homes and businesses. In Camptonville today you will find some 70 residences, an active K-8 school, a post-office, an all-volunteer staffed fire station, a USFS fire station, a Mason Hall and one lone surviving saloon from the turn of the 19th century, the "Mayo".

Camptonville Community Services District

Serving this wider community of 700 is The Camptonville Community Services District (CCSD), a California Special District formed by Yuba County LAFCO in 1987. The district oversees three public agencies: the "Camptonville Volunteer Fire Department", providing Fire and Emergency Medical Services to over 56 square miles of Sierra Foothill territory, the Camptonville Cemetery, a historic and beautiful gold-rush era cemetery, and the Camptonville Water System, a 72-connection water treatment plant and distribution system serving the historic town site of Camptonville. The CCSD board of directors meets monthly to manage these three agencies. In 2008, CCSD oversaw a complete overhaul of fire department management and organization which as a result today provides competent and reliable service to the community and highly valued mutual aid to surrounding counties and the US Forest Service. With that success under their belt, CCSD is now in the process of improving the management, operations and reliability of water system.

CCSD does not have the revenue base to support office staff and office facilities. Fully one-hundred percent of district revenues go to providing fire, water and cemetery services. Nonetheless, the district and the community has a solid history of responsible grant fund management and long history of successful grant-funded project development. Grant-funded projects of notable size managed by CCSD include:

- FEMA funded purchase of a fully stocked Type II Fire Engine, Structural Fire-fighting turnout ensembles, and Self Contained Breathing Apparatus (SCBA) in 2005, 2006 and 2007, totaling approximately $300,000.00;
- Yuba County Water Agency funded construction of three 10,000 gallon fire-suppression water storage tanks strategically located to serve both remote residential enclaves and the Bullard's Bar Reservoir watershed, in 2012, totaling approximately $92,000.00;

- Yuba County Water Agency funded purchase of equipment and training for Technical low and high angle rope rescue operations, in 2012, totaling approximately $12,000.00;
- Federally-funded/State Managed annual 50-50 matching grants of various amounts for the purchase of fire-fighting equipment from 2008 to the present, totaling approximately $32,321.00.
- Yuba County Water Agency funded loan for the construction of the Camptonville Water System in 1992, totaling approximately $532,000.00, paid in full in 2011.

The Camptonville Community Partnership (CCP)

When a project demands office, fiduciary and administrative support, CCSD frequently partners with a local non-profit organization, the "Camptonville Community Partnership" (CCP). The Camptonville Community Partnership (CCP) was formed in 1995 to promote the well being of local children, families and community, and today, with their proven track record of fiscal management, CCP has branched out to provide fiduciary and administrative support for CCSD and the Yuba County Fire Safe Council. From the website, www.Camptonville.com, CCP's top 100 accomplishments includes:

- 1997 All America Cities and Communities Finalist
- Ten Year Community Partnership for Healthy Children Initiative
- One of the first family resources centers in Yuba County
- Preschool, After-School, In-School education and health programs
- Multiple community out-reach programs
- Proposed Camptonville Biomass Facility project sponsor
- Project Manager and Administrator for CCSD Fire Water Storage Tank Project
- Fiduciary for the Yuba Watershed Protection and Fire Safe Council

The Camptonville Community Partnership's many programs and projects are all grant-funded endeavors. With an permanent office space located at the "Resource Center" at the Camptonville School, CCP staff seek, apply and negotiate grants, and provide all office and accounting support for these projects. The CCP Board of Directors meets monthly to manage the affairs of the organization. CCP has a proven track record of managing grants and projects in association with:

- Americorps
- Yuba Watershed Alliance
- Yuba County CalWORKs
- California Humanities
- Head Start
- UC Medical Center
- California Rural Health
- 123 Grow
- US Forest Service
- Yuba County Health and Human Services
- Sierra Health Foundation
- Rural School and Community Trust
- The California Endowment
- The James Irvine Foundation

The CCSD/CCP Project Manager

Mark Jokerst is a registered Civil and Structural Engineer, licensed in the State of California, with 29 years of engineering and construction experience. Mark is a resident of Camptonville where his engineering practice has been established since 1999. Prior to 1999, Mark was a Principal with the Structural Engineering firm, Forell/Elsesser Engineers, Inc. of San Francisco and maintains an active role in the company to this day. Mark's 29 years of experience includes as many years of Project Manager experience on a multitude of small-to-large scale residential, commerical and institutional building projects throughout California and the west. Mark's responsibilities have included engineering, project management, construction management and construction administration.

Mark was the Project Manager for the Yuba County Water Agency funded, USFS-TNF assisted, CCSD sponsored, CCP administered Fire Water Storage Tank project wherein three, 10,000 gallon steel water tanks were purchased and installed on concrete foundations on private and public lands in Camptonville.

Summary

Together, CCSD, the Fire Department, the Water Department, the Cemetery, and Camptonville School and the Camptonville Community Partnership all strive with wondrous cooperative spirit to keep Camptonville healthy, safe and vigorous. This community spirit solves problems with modern, knowledgeable professional people, and has a proven track record of converting public funds to their intended use. The capabilities present in the active members of this community that will be brought to bear on this project include:

- Open, honest communications
- Quick-books capable project accounting
- Licensed Water System operators
- Licensed Civil and Structural Engineer
- Experienced large scale Project Management experience
- Fully integrated on-line office support
- Finally, all members of the proposed Project Team have experience working together.

Notes on Digitized Plant Records

This file contains data for 2009, 2011 and 2012. The year 2010 is not included as the plant record is incomplete.

The purpose of this data is to establish a more meaningful record of "use". Since the current plant over-produces and returns much water to waste, a casual inspection of the record will give an inaccurate picture of actual water use.

In the following tables, the plant data is transcribed digitally. On days when the tank level recorded is over the outlet elevation of 15.5 feet, the "use" is set to zero, i.e. the data is discarded.

For the remaining lines of data, the water used in a 24 hour period is computed based on a pro-rated amount for the measurement period (generally not a 24 hour period). From this 24-hour data, the max daily and average daily demands are computed.

A secondary estimate of plant compliance is made: Based on Sauers 2013 "Public Health Compliance Evaluation Report", when the tank volume falls below 30,000 gallons, it is likely that the required chlorine contact time is not sufficient. This volume is conservatively taken as Tank Level of 10 feet.

Camptonville Water System - Daily Readings Log

Transcribed by m jokerst, 2/12/2013, from the handwritten logs

Annual Use	9,428,900 gal	18 GPM
Max Daily Demand	61,481 gal	43 GPM
Average Daily Demand	20,439 gal	14 GPM
Day tank is wasting	94 days	
DaysTank Level below Critical	2 days	

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2009	1	1	13	30	14.8	267		1/1/09 13:30	26,700	0	0	~	~	~
2009	1	2	12		14.8	169		1/2/09 12:00	16,900	0	0	16,900	12.5	18,027
2009	1	3	10		14.2	163		1/3/09 10:00	16,300	0	0	16,300	12.3	17,782
2009	1	4	17		14.7	268		1/4/09 17:00	26,800	0	0	26,800	14.4	20,748
2009	1	5	16		13.5	101		1/5/09 16:00	10,100	0	0	10,100	7.3	10,539
2009	1	6	15		13.7	161		1/6/09 15:00	16,100	0	0	16,100	11.7	16,800
2009	1	7	12		14.2	172		1/7/09 12:00	17,200	0	0	17,200	13.7	19,657
2009	1	8	13		14.0	174		1/8/09 13:00	17,400	0	0	17,400	11.6	16,704
2009	1	9	15		13.6	178		1/9/09 15:00	17,800	0	0	17,800	11.4	16,431
2009	1	10	12		13.6	181		1/10/09 12:00	18,100	0	0	18,100	14.4	20,686
2009	1	11	11		14.3	184		1/11/09 11:00	18,400	0	0	18,400	13.3	19,200
2009	1	12	11		14.2	172		1/12/09 11:00	17,200	0	0	17,200	11.9	17,200
2009	1	13	11		13.8	160		1/13/09 11:00	16,000	0	0	16,000	11.1	16,000
2009	1	14	11		14.4	171		1/14/09 11:00	17,100	0	0	17,100	11.9	17,100
2009	1	15	10		14.4	172		1/15/09 10:00	17,200	0	0	17,200	12.5	17,948
2009	1	16	9		14.8	163		1/16/09 9:00	16,300	0	0	16,300	11.8	17,009
2009	1	17	9		14.8	130		1/17/09 9:00	13,000	0	0	13,000	9.0	13,000
2009	1	18	14	30	14.6	151		1/18/09 14:30	15,100	0	0	15,100	8.5	12,285
2009	1	19	15	30	14.1	166		1/19/09 15:30	16,600	0	0	16,600	11.1	15,936
2009	1	20	15		13.9	152		1/20/09 15:00	15,200	0	0	15,200	10.8	15,523
2009	1	21	8		14.4	153		1/21/09 8:00	15,300	0	0	15,300	15.0	21,600
2009	1	22	11	6	14.2	158		1/22/09 11:06	15,800	0	0	15,800	9.7	13,993
2009	1	23	15	30	14.4	175		1/23/09 15:30	17,500	0	0	17,500	10.3	14,789

Camptonville Community Services District

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	1	24	15		14.2	143		1/24/09 15:00	14,300	0	0	14,300	10.1	14,604
2009	1	25	12		13.9	112		1/25/09 12:00	11,200	0	0	11,200	8.9	12,800
2009	1	26	10		14.4	161		1/26/09 10:00	16,100	0	0	16,100	12.2	17,564
2009	1	27	11		14.1	152		1/27/09 11:00	15,200	0	0	15,200	10.1	14,592
2009	1	28	8		14.2	149		1/28/09 8:00	14,900	0	0	14,900	11.8	17,029
2009	1	29	8		13.9	153		1/29/09 8:00	15,300	0	0	15,300	10.6	15,300
2009	1	30	8		14.0	155		1/30/09 8:00	15,500	0	0	15,500	10.8	15,500
2009	1	31	8		14.1	194		1/31/09 8:00	19,400	0	0	19,400	13.5	19,400
2009	2	1	12		13.9	185		2/1/09 12:00	18,500	0	0	18,500	11.0	15,857
2009	2	2	8		14.4	202		2/2/09 8:00	20,200	0	0	20,200	16.8	24,240
2009	2	3	10		14.0	193		2/3/09 10:00	19,300	0	0	19,300	12.4	17,815
2009	2	4	10		14.1	174		2/4/09 10:00	17,400	0	0	17,400	12.1	17,400
2009	2	5	10		13.9	152		2/5/09 10:00	15,200	0	0	15,200	10.6	15,200
2009	2	6	10		14.0	150		2/6/09 10:00	15,000	0	0	15,000	10.4	15,000
2009	2	7	10		14.4	158		2/7/09 10:00	15,800	0	0	15,800	11.0	15,800
2009	2	8	10	30	14.6	206		2/8/09 10:30	20,600	0	0	20,600	14.0	20,180
2009	2	9	10		14.0	164		2/9/09 10:00	16,400	0	0	16,400	11.6	16,749
2009	2	10	10		14.2	158		2/10/09 10:00	15,800	0	0	15,800	11.0	15,800
2009	2	11	10		14.4	168		2/11/09 10:00	16,800	0	0	16,800	11.7	16,800
2009	2	12	10		13.8	193		2/12/09 10:00	19,300	0	0	19,300	13.4	19,300
2009	2	13	10		13.9	220		2/13/09 10:00	22,000	0	0	22,000	15.3	22,000
2009	2	14	10		15.0	263		2/14/09 10:00	26,300	0	0	26,300	18.3	26,300
2009	2	15	14	30	14.9	372		2/15/09 14:30	37,200	0	0	37,200	21.8	31,326
2009	2	16	12		15.0	223		2/16/09 12:00	22,300	0	0	22,300	17.3	24,893
2009	2	17	11		14.9	201		2/17/09 11:00	20,100	0	0	20,100	14.6	20,974
2009	2	18	10		14.8	193		2/18/09 10:00	19,300	0	0	19,300	14.0	20,139
2009	2	19	12		14.0	204		2/19/09 12:00	20,400	0	0	20,400	13.1	18,831
2009	2	20	15		14.8	205		2/20/09 15:00	20,500	0	0	20,500	12.7	18,222
2009	2	21	15		14.2	182		2/21/09 15:00	18,200	0	0	18,200	12.6	18,200
2009	2	22	13		14.6	231		2/22/09 13:00	23,100	0	0	23,100	17.5	25,200

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2009	2	23	14		14.0	194		2/23/09 14:00	19,400	0	0	19,400	12.9	18,624
2009	2	24	13		9.0	81		2/24/09 13:00	8,100	0	1	8,100	5.9	8,452
2009	2	25	16	30	10.7	240		2/25/09 16:30	24,000	0	0	24,000	14.5	20,945
2009	2	26	16		13.8	243		2/26/09 16:00	24,300	0	0	24,300	17.2	24,817
2009	2	27	16		15.0	217		2/27/09 16:00	21,700	0	0	21,700	15.1	21,700
2009	2	28	13		14.6	142		2/28/09 13:00	14,200	0	0	14,200	11.3	16,229
2009	2	28	23	59	0.0	0	Not a leap year	2/28/09 23:59	0	0	1	0	0.0	0
2009	3	1	13	30	15.1	158		3/1/09 13:30	15,800	0	0	15,800	10.7	15,478
2009	3	2	13		15.2	146		3/2/09 13:00	14,600	0	0	14,600	10.4	14,911
2009	3	3	15		14.4	142		3/3/09 15:00	14,200	0	0	14,200	9.1	13,108
2009	3	4	12	30	14.0	113		3/4/09 12:30	11,300	0	0	11,300	8.8	12,614
2009	3	5	13		14.6	133		3/5/09 13:00	13,300	0	0	13,300	9.0	13,029
2009	3	6	14		15.1	141		3/6/09 14:00	14,100	0	0	14,100	9.4	13,536
2009	3	7	14		15.4	136		3/7/09 14:00	13,600	0	0	13,600	9.4	13,600
2009	3	8	13		14.0	144		3/8/09 13:00	14,400	0	0	14,400	10.4	15,026
2009	3	9	12		14.2	142		3/9/09 12:00	14,200	0	0	14,200	10.3	14,817
2009	3	10	12	30	14.7	141		3/10/09 12:30	14,100	0	0	14,100	9.6	13,812
2009	3	11	13		14.8	134		3/11/09 13:00	13,400	0	0	13,400	9.1	13,127
2009	3	12	10		15.1	133		3/12/09 10:00	13,300	0	0	13,300	10.6	15,200
2009	3	13	12		14.6	172		3/13/09 12:00	17,200	0	0	17,200	11.0	15,877
2009	3	14	13		14.8	174		3/14/09 13:00	17,400	0	0	17,400	11.6	16,704
2009	3	15	10		15.0	163		3/15/09 10:00	16,300	0	0	16,300	12.9	18,629
2009	3	16	9	30	14.9	175		3/16/09 9:30	17,500	0	0	17,500	12.4	17,872
2009	3	17	10		15.0	154		3/17/09 10:00	15,400	0	0	15,400	10.5	15,086
2009	3	18	9	30	15.1	148		3/18/09 9:30	14,800	0	0	14,800	10.5	15,115
2009	3	19	9	30	14.8	151		3/19/09 9:30	15,100	0	0	15,100	10.5	15,100
2009	3	20	12		14.6	153		3/20/09 12:00	15,300	0	0	15,300	9.6	13,857
2009	3	21	13		14.9	144		3/21/09 13:00	14,400	0	0	14,400	9.6	13,824
2009	3	22	10		14.4	148		3/22/09 10:00	14,800	0	0	14,800	11.7	16,914
2009	3	23	9	30	15.0	150		3/23/09 9:30	15,000	0	0	15,000	10.6	15,319

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	3	24	9		15.1	153		3/24/09 9:00	15,300	0	0	15,300	10.9	15,626
2009	3	25	9		14.9	166		3/25/09 9:00	16,600	0	0	16,600	11.5	16,600
2009	3	26	13	30	14.8	175		3/26/09 13:30	17,500	0	0	17,500	10.2	14,737
2009	3	27	9	30	14.9	140		3/27/09 9:30	14,000	0	0	14,000	11.7	16,800
2009	3	28	10		14.6	178		3/28/09 10:00	17,800	0	0	17,800	12.1	17,437
2009	3	29	11		14.0	172		3/29/09 11:00	17,200	0	0	17,200	11.5	16,512
2009	3	30	10		14.4	175		3/30/09 10:00	17,500	0	0	17,500	12.7	18,261
2009	3	31	10		14.1	173		3/31/09 10:00	17,300	0	0	17,300	12.0	17,300
2009	4	1	10		13.9	174		4/1/09 10:00	17,400	0	0	17,400	12.1	17,400
2009	4	2	11		14.2	170		4/2/09 11:00	17,000	0	0	17,000	11.3	16,320
2009	4	3	14		14.0	178		4/3/09 14:00	17,800	0	0	17,800	11.0	15,822
2009	4	4	11		14.4	144		4/4/09 11:00	14,400	0	0	14,400	11.4	16,457
2009	4	5	12		14.1	151		4/5/09 12:00	15,100	0	0	15,100	10.1	14,496
2009	4	6	10		14.7	140		4/6/09 10:00	14,000	0	0	14,000	10.6	15,273
2009	4	7	12		14.8	142		4/7/09 12:00	14,200	0	0	14,200	9.1	13,108
2009	4	8	12		14.6	141		4/8/09 12:00	14,100	0	0	14,100	9.8	14,100
2009	4	9	11		14.1	146		4/9/09 11:00	14,600	0	0	14,600	10.6	15,235
2009	4	10	10		14.4	153		4/10/09 10:00	15,300	0	0	15,300	11.1	15,965
2009	4	11	10		14.2	148		4/11/09 10:00	14,800	0	0	14,800	10.3	14,800
2009	4	12	11		14.4	139		4/12/09 11:00	13,900	0	0	13,900	9.3	13,344
2009	4	13	11		14.8	124		4/13/09 11:00	12,400	0	0	12,400	8.6	12,400
2009	4	14	9	30	14.2	84		4/14/09 9:30	8,400	0	0	8,400	6.2	8,960
2009	4	15	10		14.6	146		4/15/09 10:00	14,600	0	0	14,600	9.9	14,302
2009	4	16	10		15.0	153		4/16/09 10:00	15,300	0	0	15,300	10.6	15,300
2009	4	17	13		14.4	160		4/17/09 13:00	16,000	0	0	16,000	9.9	14,222
2009	4	18	13		14.6	183		4/18/09 13:00	18,300	0	0	18,300	12.7	18,300
2009	4	19	14		14.8	189		4/19/09 14:00	18,900	0	0	18,900	12.6	18,144
2009	4	20	14		15.0	242		4/20/09 14:00	24,200	0	0	24,200	16.8	24,200
2009	4	21	14		14.9	212		4/21/09 14:00	21,200	0	0	21,200	14.7	21,200
2009	4	22	13		14.6	204		4/22/09 13:00	20,400	0	0	20,400	14.8	21,287

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2009	4	23	13		14.2	196		4/23/09 13:00	19,600	0	0	19,600	13.6	19,600
2009	4	24	13		14.8	214		4/24/09 13:00	21,400	0	0	21,400	14.9	21,400
2009	4	25	15		14.4	207		4/25/09 15:00	20,700	0	0	20,700	13.3	19,108
2009	4	26	15		14.6	178		4/26/09 15:00	17,800	0	0	17,800	12.4	17,800
2009	4	27	13		14.2	182		4/27/09 13:00	18,200	0	0	18,200	13.8	19,855
2009	4	28	11		15.0	174		4/28/09 11:00	17,400	0	0	17,400	13.2	18,982
2009	4	29	11		14.8	176		4/29/09 11:00	17,600	0	0	17,600	12.2	17,600
2009	4	30	11		14.1	180		4/30/09 11:00	18,000	0	0	18,000	12.5	18,000
2009	5	1	16		14.8	174		5/1/09 16:00	17,400	0	0	17,400	10.0	14,400
2009	5	2	16		14.2	187		5/2/09 16:00	18,700	0	0	18,700	13.0	18,700
2009	5	3	16		14.4	133		5/3/09 16:00	13,300	0	0	13,300	9.2	13,300
2009	5	4	8		14.8	115		5/4/09 8:00	11,500	0	0	11,500	12.0	17,250
2009	5	5	9		14.9	118		5/5/09 9:00	11,800	0	0	11,800	7.9	11,328
2009	5	6	6		14.6	129		5/6/09 6:00	12,900	0	0	12,900	10.2	14,743
2009	5	7	14		14.2	110		5/7/09 14:00	11,000	0	0	11,000	5.7	8,250
2009	5	8	14		14.5	174		5/8/09 14:00	17,400	0	0	17,400	12.1	17,400
2009	5	9	14		14.4	193		5/9/09 14:00	19,300	0	0	19,300	13.4	19,300
2009	5	10	14		14.8	201		5/10/09 14:00	20,100	0	0	20,100	14.0	20,100
2009	5	11	14		14.0	202		5/11/09 14:00	20,200	0	0	20,200	14.0	20,200
2009	5	12	14		14.1	196		5/12/09 14:00	19,600	0	0	19,600	13.6	19,600
2009	5	13	17		13.9	198		5/13/09 17:00	19,800	0	0	19,800	12.2	17,600
2009	5	14	17		14.2	204		5/14/09 17:00	20,400	0	0	20,400	14.2	20,400
2009	5	15	14		14.4	202		5/15/09 14:00	20,200	0	0	20,200	16.0	23,086
2009	5	16	8		13.8	198		5/16/09 8:00	19,800	0	0	19,800	18.3	26,400
2009	5	17	10		13.7	247		5/17/09 10:00	24,700	0	0	24,700	15.8	22,800
2009	5	18	10		14.0	404		5/18/09 10:00	40,400	0	0	40,400	28.1	40,400
2009	5	19	10		15.1	258		5/19/09 10:00	25,800	0	0	25,800	17.9	25,800
2009	5	20	8		13.8	346		5/20/09 8:00	34,600	0	0	34,600	26.2	37,745
2009	5	21	10		14.4	400		5/21/09 10:00	40,000	0	0	40,000	25.6	36,923
2009	5	22	11		13.8	384		5/22/09 11:00	38,400	0	0	38,400	25.6	36,864

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	5	23	10		14.2	376		5/23/09 10:00	37,600	0	0	37,600	27.2	39,235
2009	5	24	11		14.6	390		5/24/09 11:00	39,000	0	0	39,000	26.0	37,440
2009	5	25	11		14.0	374		5/25/09 11:00	37,400	0	0	37,400	26.0	37,400
2009	5	26	10		14.3	366		5/26/09 10:00	36,600	0	0	36,600	26.5	38,191
2009	5	27	10		13.6	321		5/27/09 10:00	32,100	0	0	32,100	22.3	32,100
2009	5	28	15	30	14.3	416		5/28/09 15:30	41,600	0	0	41,600	23.5	33,844
2009	5	29	18	30	14.2	370		5/29/09 18:30	37,000	0	0	37,000	22.8	32,889
2009	5	30	18		14.2	400		5/30/09 18:00	40,000	0	0	40,000	28.4	40,851
2009	5	31	17		14.3	406		5/31/09 17:00	40,600	0	0	40,600	29.4	42,365
2009	6	1	10		13.8	323		6/1/09 10:00	32,300	0	0	32,300	31.7	45,600
2009	6	2	10		14.1	331		6/2/09 10:00	33,100	0	0	33,100	23.0	33,100
2009	6	3	10		13.5	342		6/3/09 10:00	34,200	0	0	34,200	23.8	34,200
2009	6	4	15	30	15.7	330		6/4/09 15:30	33,000	1	0	0	0.0	0
2009	6	5	15		15.0	232		6/5/09 15:00	23,200	0	0	23,200	16.5	23,694
2009	6	6	10		14.6	206		6/6/09 10:00	20,600	0	0	20,600	18.1	26,021
2009	6	7	10		15.2	243		6/7/09 10:00	24,300	0	0	24,300	16.9	24,300
2009	6	8	10	30	14.8	223		6/8/09 10:30	22,300	0	0	22,300	15.2	21,845
2009	6	9	11	30	14.1	235		6/9/09 11:30	23,500	0	0	23,500	15.7	22,560
2009	6	10	10		14.4	362		6/10/09 10:00	36,200	0	0	36,200	26.8	38,613
2009	6	11	10		13.8	343		6/11/09 10:00	34,300	0	0	34,300	23.8	34,300
2009	6	12	10		14.2	404		6/12/09 10:00	40,400	0	0	40,400	28.1	40,400
2009	6	13	10	30	14.6	339		6/13/09 10:30	33,900	0	0	33,900	23.1	33,208
2009	6	14	10		14.1	381		6/14/09 10:00	38,100	0	0	38,100	27.0	38,911
2009	6	15	10		13.8	364		6/15/09 10:00	36,400	0	0	36,400	25.3	36,400
2009	6	16	10	30	13.1	371		6/16/09 10:30	37,100	0	0	37,100	25.2	36,343
2009	6	17	10	30	13.4	375		6/17/09 10:30	37,500	0	0	37,500	26.0	37,500
2009	6	18	10	30	13.6	373		6/18/09 10:30	37,300	0	0	37,300	25.9	37,300
2009	6	19	10		13.8	400		6/19/09 10:00	40,000	0	0	40,000	28.4	40,851
2009	6	20	15		14.1	413		6/20/09 15:00	41,300	0	0	41,300	23.7	34,179
2009	6	21	16		14.1	399		6/21/09 16:00	39,900	0	0	39,900	26.6	38,304

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	6	22	12		13.8	371		6/22/09 12:00	37,100	0	0	37,100	30.9	44,520
2009	6	23	10		14.1	353		6/23/09 10:00	35,300	0	0	35,300	26.7	38,509
2009	6	24	10		14.2	360		6/24/09 10:00	36,000	0	0	36,000	25.0	36,000
2009	6	25	9	30	14.4	312		6/25/09 9:30	31,200	0	0	31,200	22.1	31,864
2009	6	26	7		14.6	408		6/26/09 7:00	40,800	0	0	40,800	31.6	45,544
2009	6	27	7		14.1	416		6/27/09 7:00	41,600	0	0	41,600	28.9	41,600
2009	6	28	7		14.4	433		6/28/09 7:00	43,300	0	0	43,300	30.1	43,300
2009	6	29	7		14.1	413		6/29/09 7:00	41,300	0	0	41,300	28.7	41,300
2009	6	30	7		14.2	416		6/30/09 7:00	41,600	0	0	41,600	28.9	41,600
2009	7	1	7		14.4	408		7/1/09 7:00	40,800	0	0	40,800	28.3	40,800
2009	7	2	7		14.1	423		7/2/09 7:00	42,300	0	0	42,300	29.4	42,300
2009	7	3	7		14.6	411		7/3/09 7:00	41,100	0	0	41,100	28.5	41,100
2009	7	4	11		14.4	615		7/4/09 11:00	61,500	0	0	61,500	36.6	52,714
2009	7	5	13	30	14.5	635		7/5/09 13:30	63,500	0	0	63,500	39.9	57,509
2009	7	6	10		13.5	380		7/6/09 10:00	38,000	0	0	38,000	30.9	44,488
2009	7	7	10		13.9	493		7/7/09 10:00	49,300	0	0	49,300	34.2	49,300
2009	7	8	12		13.7	374		7/8/09 12:00	37,400	0	0	37,400	24.0	34,523
2009	7	9	11		13.9	337		7/9/09 11:00	33,700	0	0	33,700	24.4	35,165
2009	7	10	10		13.8	432		7/10/09 10:00	43,200	0	0	43,200	31.3	45,078
2009	7	11	10		13.8	404		7/11/09 10:00	40,400	0	0	40,400	28.1	40,400
2009	7	12	11		14.2	416		7/12/09 11:00	41,600	0	0	41,600	27.7	39,936
2009	7	13	11		13.8	421		7/13/09 11:00	42,100	0	0	42,100	29.2	42,100
2009	7	14	10		13.9	414		7/14/09 10:00	41,400	0	0	41,400	30.0	43,200
2009	7	15	10		13.9	430		7/15/09 10:00	43,000	0	0	43,000	29.9	43,000
2009	7	16	10		14.1	441		7/16/09 10:00	44,100	0	0	44,100	30.6	44,100
2009	7	17	10		13.8	376		7/17/09 10:00	37,600	0	0	37,600	26.1	37,600
2009	7	18	10		14.5	493		7/18/09 10:00	49,300	0	0	49,300	34.2	49,300
2009	7	19	10		14.0	476		7/19/09 10:00	47,600	0	0	47,600	33.1	47,600
2009	7	20	10		14.4	484		7/20/09 10:00	48,400	0	0	48,400	33.6	48,400
2009	7	21	10		13.8	501		7/21/09 10:00	50,100	0	0	50,100	34.8	50,100

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2009	7	22	10		13.8	464		7/22/09 10:00	46,400	0	0	46,400	32.2	46,400
2009	7	23	10		14.0	468		7/23/09 10:00	46,800	0	0	46,800	32.5	46,800
2009	7	24	10		14.1	502		7/24/09 10:00	50,200	0	0	50,200	34.9	50,200
2009	7	25	10		14.4	486		7/25/09 10:00	48,600	0	0	48,600	33.8	48,600
2009	7	26	10		14.4	487		7/26/09 10:00	48,700	0	0	48,700	33.8	48,700
2009	7	27	10		14.2	503		7/27/09 10:00	50,300	0	0	50,300	34.9	50,300
2009	7	28	10		14.3	489		7/28/09 10:00	48,900	0	0	48,900	34.0	48,900
2009	7	29	10		14.0	463		7/29/09 10:00	46,300	0	0	46,300	32.2	46,300
2009	7	30	10		14.3	477		7/30/09 10:00	47,700	0	0	47,700	33.1	47,700
2009	7	31	10		14.5	411		7/31/09 10:00	41,100	0	0	41,100	28.5	41,100
2009	8	1	10		14.6	363		8/1/09 10:00	36,300	0	0	36,300	25.2	36,300
2009	8	2	10		14.2	365		8/2/09 10:00	36,500	0	0	36,500	25.3	36,500
2009	8	3	10		13.9	357		8/3/09 10:00	35,700	0	0	35,700	24.8	35,700
2009	8	4	10		14.8	358		8/4/09 10:00	35,800	0	0	35,800	24.9	35,800
2009	8	5	9	30	14.6	364		8/5/09 9:30	36,400	0	0	36,400	25.8	37,174
2009	8	6	8		14.2	368		8/6/09 8:00	36,800	0	0	36,800	27.3	39,253
2009	8	7	8	30	14.4	351		8/7/09 8:30	35,100	0	0	35,100	23.9	34,384
2009	8	8	9		14.2	357		8/8/09 9:00	35,700	0	0	35,700	24.3	34,971
2009	8	9	10	30	13.8	363		8/9/09 10:30	36,300	0	0	36,300	23.7	34,165
2009	8	10	10		14.1	364		8/10/09 10:00	36,400	0	0	36,400	25.8	37,174
2009	8	11	10		14.2	363		8/11/09 10:00	36,300	0	0	36,300	25.2	36,300
2009	8	12	9		14.1	362		8/12/09 9:00	36,200	0	0	36,200	26.2	37,774
2009	8	13	9		14.3	353		8/13/09 9:00	35,300	0	0	35,300	24.5	35,300
2009	8	14	9	30	14.0	348		8/14/09 9:30	34,800	0	0	34,800	23.7	34,090
2009	8	15	9		14.1	361		8/15/09 9:00	36,100	0	0	36,100	25.6	36,868
2009	8	16	10		13.9	352		8/16/09 10:00	35,200	0	0	35,200	23.5	33,792
2009	8	17	8		13.9	350		8/17/09 8:00	35,000	0	0	35,000	26.5	38,182
2009	8	18	9		14.3	351		8/18/09 9:00	35,100	0	0	35,100	23.4	33,696
2009	8	19	8		14.1	348		8/19/09 8:00	34,800	0	0	34,800	25.2	36,313
2009	8	20	8		14.3	362		8/20/09 8:00	36,200	0	0	36,200	25.1	36,200

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2009	8	21	9		14.1	403		8/21/09 9:00	40,300	0	0	40,300	26.9	38,688
2009	8	22	9		13.8	374		8/22/09 9:00	37,400	0	0	37,400	26.0	37,400
2009	8	23	9	30	13.9	371		8/23/09 9:30	37,100	0	0	37,100	25.2	36,343
2009	8	24	8		13.8	385		8/24/09 8:00	38,500	0	0	38,500	28.5	41,067
2009	8	25	8	30	14.1	383		8/25/09 8:30	38,300	0	0	38,300	26.1	37,518
2009	8	26	9		14.4	384		8/26/09 9:00	38,400	0	0	38,400	26.1	37,616
2009	8	27	9	30	14.2	387		8/27/09 9:30	38,700	0	0	38,700	26.3	37,910
2009	8	28	9	30	13.9	383		8/28/09 9:30	38,300	0	0	38,300	26.6	38,300
2009	8	29	10		14.4	389		8/29/09 10:00	38,900	0	0	38,900	26.5	38,106
2009	8	30	9	30	14.1	381		8/30/09 9:30	38,100	0	0	38,100	27.0	38,911
2009	8	31	9		14.0	385		8/31/09 9:00	38,500	0	0	38,500	27.3	39,319
2009	9	1	9	30	13.8	427		9/1/09 9:30	42,700	0	0	42,700	29.0	41,829
2009	9	2	8	30	13.9	378		9/2/09 8:30	37,800	0	0	37,800	27.4	39,443
2009	9	3	9		14.1	376		9/3/09 9:00	37,600	0	0	37,600	25.6	36,833
2009	9	4	10	30	14.4	374		9/4/09 10:30	37,400	0	0	37,400	24.4	35,200
2009	9	5	11		13.8	400		9/5/09 11:00	40,000	0	0	40,000	27.2	39,184
2009	9	6	10	30	13.6	357		9/6/09 10:30	35,700	0	0	35,700	25.3	36,460
2009	9	7	10		14.1	369		9/7/09 10:00	36,900	0	0	36,900	26.2	37,685
2009	9	8	10		14.3	374		9/8/09 10:00	37,400	0	0	37,400	26.0	37,400
2009	9	9	11		14.0	375		9/9/09 11:00	37,500	0	0	37,500	25.0	36,000
2009	9	10	11	30	14.5	394		9/10/09 11:30	39,400	0	0	39,400	26.8	38,596
2009	9	11	11	30	14.6	375		9/11/09 11:30	37,500	0	0	37,500	26.0	37,500
2009	9	12	11		14.6	368		9/12/09 11:00	36,800	0	0	36,800	26.1	37,583
2009	9	13	10	30	14.8	364		9/13/09 10:30	35,800	0	0	35,800	25.4	36,562
2009	9	14	10	30	14.6	358		9/14/09 10:30	35,300	0	0	35,300	24.5	35,300
2009	9	15	11		14.1	353		9/15/09 11:00	35,000	0	0	35,000	23.8	34,286
2009	9	16	11	30	14.8	350		9/16/09 11:30	35,000	0	0	35,000	23.8	34,286
2009	9	17	10	30	15.0	348		9/17/09 10:30	34,800	0	0	34,800	25.2	36,313
2009	9	18	11		15.1	344		9/18/09 11:00	34,400	0	0	34,400	23.4	33,698
2009	9	19	10		15.4	342		9/19/09 10:00	34,200	0	0	34,200	24.8	35,687

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	9	20	10		15.4	337		9/20/09 10:00	33,700	0	0	33,700	23.4	33,700
2009	9	21	10		15.6	312		9/21/09 10:00	31,200	1	0	0	0.0	0
2009	9	22	11	30	15.8	335		9/22/09 11:30	33,500	1	0	0	0.0	0
2009	9	23	11		15.8	331		9/23/09 11:00	33,100	1	0	0	0.0	0
2009	9	24	11		15.4	327		9/24/09 11:00	32,700	0	0	32,700	22.7	32,700
2009	9	25	11	30	15.8	325		9/25/09 11:30	32,500	1	0	0	0.0	0
2009	9	26	12		15.1	301		9/26/09 12:00	30,100	0	0	30,100	20.5	29,486
2009	9	27	10		15.9	283		9/27/09 10:00	28,300	1	0	0	0.0	0
2009	9	28	11		15.1	275		9/28/09 11:00	27,500	0	0	27,500	18.3	26,400
2009	9	29	10	30	15.1	271		9/29/09 10:30	27,100	0	0	27,100	19.2	27,677
2009	9	30	10		15.8	254		9/30/09 10:00	25,400	1	0	0	0.0	0
2009	10	1	10		15.1	253		10/1/09 10:00	25,300	0	0	25,300	17.6	25,300
2009	10	2	10	30	15.1	232		10/2/09 10:30	23,200	0	0	23,200	15.8	22,727
2009	10	3	11		16.1	203		10/3/09 11:00	20,300	1	0	0	0.0	0
2009	10	4	10		16.0	207		10/4/09 10:00	20,700	1	0	0	0.0	0
2009	10	5	12		16.1	211		10/5/09 12:00	21,100	1	0	0	0.0	0
2009	10	6	10	30	16.0	208		10/6/09 10:30	20,800	1	0	0	0.0	0
2009	10	7	11	30	16.1	210		10/7/09 11:30	21,000	1	0	0	0.0	0
2009	10	8	11		16.5	208		10/8/09 11:00	20,800	1	0	0	0.0	0
2009	10	9	10	30	16.5	213		10/9/09 10:30	21,300	1	0	0	0.0	0
2009	10	10	10		16.3	211		10/10/09 10:00	21,100	1	0	0	0.0	0
2009	10	11	10	30	16.5	204		10/11/09 10:30	20,400	1	0	0	0.0	0
2009	10	12	11		16.2	206		10/12/09 11:00	20,600	1	0	0	0.0	0
2009	10	13	11		16.0	205		10/13/09 11:00	20,500	1	0	0	0.0	0
2009	10	14	11	30	16.1	223		10/14/09 11:30	22,300	1	0	0	0.0	0
2009	10	15	12		16.4	221		10/15/09 12:00	22,100	1	0	0	0.0	0
2009	10	16	11	30	16.4	218		10/16/09 11:30	21,800	1	0	0	0.0	0
2009	10	17	10	30	16.1	222		10/17/09 10:30	22,200	1	0	0	0.0	0
2009	10	18	10		16.6	220		10/18/09 10:00	22,000	1	0	0	0.0	0
2009	10	19	10		16.4	198		10/19/09 10:00	19,800	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	10	20	11		16.3	196		10/20/09 11:00	19,600	1	0	0	0.0	0
2009	10	21	11		16.0	201		10/21/09 11:00	20,100	1	0	0	0.0	0
2009	10	22	11		16.1	197		10/22/09 11:00	19,700	1	0	0	0.0	0
2009	10	23	11		16.5	196		10/23/09 11:00	19,600	1	0	0	0.0	0
2009	10	24	10	30	16.4	202		10/24/09 10:30	20,200	1	0	0	0.0	0
2009	10	25	12		16.6	199		10/25/09 12:00	19,900	1	0	0	0.0	0
2009	10	26	11		16.5	201		10/26/09 11:00	19,800	1	0	0	0.0	0
2009	10	27	10		16.4	198		10/27/09 10:00	19,700	1	0	0	0.0	0
2009	10	28	10		16.1	197		10/28/09 10:00	19,300	1	0	0	0.0	0
2009	10	29	10		16.5	193		10/29/09 10:00	20,000	1	0	0	0.0	0
2009	10	30	10		16.5	200		10/30/09 10:00	19,300	1	0	0	0.0	0
2009	10	31	10		16.6	193		10/31/09 10:00	19,900	1	0	0	0.0	0
2009	11	1	11		16.2	199		11/1/09 11:00	19,900	1	0	0	0.0	0
2009	11	2	11		16.4	202		11/2/09 11:00	20,200	1	0	0	0.0	0
2009	11	3	11		16.3	197		11/3/09 11:00	19,700	1	0	0	0.0	0
2009	11	4	11		16.6	198		11/4/09 11:00	19,800	1	0	0	0.0	0
2009	11	5	12		16.4	201		11/5/09 12:00	20,100	1	0	0	0.0	0
2009	11	6	11	30	16.6	198		11/6/09 11:30	19,800	1	0	0	0.0	0
2009	11	7	12		16.6	199		11/7/09 12:00	19,900	1	0	0	0.0	0
2009	11	8	12		16.7	203		11/8/09 12:00	20,300	1	0	0	0.0	0
2009	11	9	12	30	16.7	215		11/9/09 12:30	21,500	1	0	0	0.0	0
2009	11	10	12	30	16.6	202		11/10/09 12:30	20,200	1	0	0	0.0	0
2009	11	11	12	30	16.6	184		11/11/09 12:30	18,400	1	0	0	0.0	0
2009	11	12	12	30	16.6	192		11/12/09 12:30	19,200	1	0	0	0.0	0
2009	11	13	12		16.7	193		11/13/09 12:00	19,300	1	0	0	0.0	0
2009	11	14	12		16.7	192		11/14/09 12:00	19,200	1	0	0	0.0	0
2009	11	15	12		16.6	195		11/15/09 12:00	19,500	1	0	0	0.0	0
2009	11	16	12		16.7	194		11/16/09 12:00	19,400	1	0	0	0.0	0
2009	11	17	11		16.6	193		11/17/09 11:00	19,300	1	0	0	0.0	0
2009	11	18	12	30	16.6	196		11/18/09 12:30	19,600	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	11	19	12		16.7	195		11/19/09 12:00	19,500	1	0	0	0.0	0
2009	11	20	12	30	16.4	193		11/20/09 12:30	19,300	1	0	0	0.0	0
2009	11	21	12		16.6	193		11/21/09 12:00	19,300	1	0	0	0.0	0
2009	11	22	12		16.7	195		11/22/09 12:00	19,500	1	0	0	0.0	0
2009	11	23	12	30	16.7	197		11/23/09 12:30	19,700	1	0	0	0.0	0
2009	11	24	11	30	16.7	194		11/24/09 11:30	19,400	1	0	0	0.0	0
2009	11	25	12	30	16.6	192		11/25/09 12:30	19,200	1	0	0	0.0	0
2009	11	26	12		16.7	193		11/26/09 12:00	19,300	1	0	0	0.0	0
2009	11	27	12		16.6	196		11/27/09 12:00	19,600	1	0	0	0.0	0
2009	11	28	12	30	16.6	194		11/28/09 12:30	19,400	1	0	0	0.0	0
2009	11	29	12	30	16.4	195		11/29/09 12:30	19,500	1	0	0	0.0	0
2009	11	30	12	30	16.6	197		11/30/09 12:30	19,700	1	0	0	0.0	0
2009	12	1	10		16.3	195		12/1/09 10:00	19,500	1	0	0	0.0	0
2009	12	2	10		16.7	193		12/2/09 10:00	19,300	1	0	0	0.0	0
2009	12	3	10		16.6	202		12/3/09 10:00	20,200	1	0	0	0.0	0
2009	12	4	10		16.5	253		12/4/09 10:00	25,300	1	0	0	0.0	0
2009	12	5	10		16.5	208		12/5/09 10:00	20,800	1	0	0	0.0	0
2009	12	6	10		16.4	202		12/6/09 10:00	20,200	1	0	0	0.0	0
2009	12	7	10	30	16.6	201		12/7/09 10:30	20,100	1	0	0	0.0	0
2009	12	8	10	30	16.6	203		12/8/09 10:30	20,300	1	0	0	0.0	0
2009	12	9	10		16.6	201		12/9/09 10:00	20,100	1	0	0	0.0	0
2009	12	10	10		16.5	203		12/10/09 10:00	20,300	1	0	0	0.0	0
2009	12	11	11		16.4	201		12/11/09 11:00	20,100	1	0	0	0.0	0
2009	12	12	12		16.6	198		12/12/09 12:00	19,800	1	0	0	0.0	0
2009	12	13	10		16.5	197		12/13/09 10:00	19,700	1	0	0	0.0	0
2009	12	14	11	30	13.8	503		12/14/09 11:30	50,300	0	0	50,300	32.9	47,341
2009	12	15	11		14.0	602		12/15/09 11:00	60,200	0	0	60,200	42.7	61,481
2009	12	16	11		14.8	284		12/16/09 11:00	28,400	0	0	28,400	19.7	28,400
2009	12	17	11		15.5	203		12/17/09 11:00	20,300	1	0	0	0.0	0
2009	12	18	11		16.3	204		12/18/09 11:00	20,400	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2009	12	19	11		16.6	197		12/19/09 11:00	19,700	1	0	0	0.0	0
2009	12	20	11		16.7	198		12/20/09 11:00	19,800	1	0	0	0.0	0
2009	12	21	11		16.5	196		12/21/09 11:00	19,600	1	0	0	0.0	0
2009	12	22	11		16.4	194		12/22/09 11:00	19,400	1	0	0	0.0	0
2009	12	23	10		16.5	195		12/23/09 10:00	19,500	1	0	0	0.0	0
2009	12	24	10	30	16.6	196		12/24/09 10:30	19,600	1	0	0	0.0	0
2009	12	25	10		16.5	197		12/25/09 10:00	19,700	1	0	0	0.0	0
2009	12	26	11		16.4	195		12/26/09 11:00	19,500	1	0	0	0.0	0
2009	12	27	11		16.6	196		12/27/09 11:00	19,600	1	0	0	0.0	0
2009	12	28	11		16.6	195		12/28/09 11:00	19,500	1	0	0	0.0	0
2009	12	29	11		16.7	197		12/29/09 11:00	19,700	1	0	0	0.0	0
2009	12	30	10		16.5	198		12/30/09 10:00	19,800	1	0	0	0.0	0
2009	12	31	10		16.4	195		12/31/09 10:00	19,500	1	0	0	0.0	0

Camptonville Water System - Daily Readings Log

Transcribed by m jokerst, 2/12/2013, from the handwritten logs

Annual Use	14,571,810 gal	28 GPM
Max Daily Demand	84,056 gal	58 GPM
Average Daily Demand	4,932 gal	3 GPM
Day tank is wasting	326 days	
DaysTank Level below Critical	16 days	

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	1	1	19		16.0	417		1/1/11 19:00	41,700	1	0	~	~	~
2011	1	2	19		16.0	399		1/2/11 19:00	39,900	1	0	0	0.0	0
2011	1	3	19		16.0	300		1/3/11 19:00	30,000	1	0	0	0.0	0
2011	1	4	19		16.0	281		1/4/11 19:00	28,100	1	0	0	0.0	0
2011	1	5	19		16.0	336		1/5/11 19:00	33,600	1	0	0	0.0	0
2011	1	6	19		16.0	424		1/6/11 19:00	42,400	1	0	0	0.0	0
2011	1	7	19		16.0	510		1/7/11 19:00	51,000	1	0	0	0.0	0
2011	1	8	19		16.0	356		1/8/11 19:00	35,600	1	0	0	0.0	0
2011	1	9	19		16.0	401		1/9/11 19:00	40,100	1	0	0	0.0	0
2011	1	10	19		16.0	770		1/10/11 19:00	77,000	1	0	0	0.0	0
2011	1	11	19		16.0	494		1/11/11 19:00	49,400	1	0	0	0.0	0
2011	1	12	19		16.0	505		1/12/11 19:00	50,500	1	0	0	0.0	0
2011	1	13	19		16.0	67		1/13/11 19:00	6,700	1	0	0	0.0	0
2011	1	14	19		16.0	694		1/14/11 19:00	69,400	1	0	0	0.0	0
2011	1	15	19		16.0	800		1/15/11 19:00	80,000	1	0	0	0.0	0
2011	1	16	19		16.0	389		1/16/11 19:00	38,900	1	0	0	0.0	0
2011	1	17	19		16.0	691		1/17/11 19:00	69,100	1	0	0	0.0	0
2011	1	18	19		16.0	671		1/18/11 19:00	67,100	1	0	0	0.0	0
2011	1	19	19		16.0	312		1/19/11 19:00	31,200	1	0	0	0.0	0
2011	1	20	19		16.0	303		1/20/11 19:00	30,300	1	0	0	0.0	0
2011	1	21	19		16.0	219		1/21/11 19:00	21,900	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2011	1	22	19		16.0	386		1/22/11 19:00	38,600	1	0	0	0.0	0
2011	1	23	19		16.0	355		1/23/11 19:00	35,500	1	0	0	0.0	0
2011	1	24	19		16.0	449		1/24/11 19:00	44,900	1	0	0	0.0	0
2011	1	25	19		16.0	488		1/25/11 19:00	48,800	1	0	0	0.0	0
2011	1	26	19		16.0	214		1/26/11 19:00	21,400	1	0	0	0.0	0
2011	1	27	19		16.0	314		1/27/11 19:00	31,400	1	0	0	0.0	0
2011	1	28	19		16.0	220		1/28/11 19:00	22,000	1	0	0	0.0	0
2011	1	29	19		16.0	121		1/29/11 19:00	12,100	1	0	0	0.0	0
2011	1	30	19		16.0	401		1/30/11 19:00	40,100	1	0	0	0.0	0
2011	1	31	19		16.0	385		1/31/11 19:00	38,500	1	0	0	0.0	0
2011	2	1	17		16.0	263		2/1/11 17:00	26,300	1	0	0	0.0	0
2011	2	2	15	30	16.0	255.6		2/2/11 15:30	25,560	1	0	0	0.0	0
2011	2	3	17		16.0	326.5		2/3/11 17:00	32,650	1	0	0	0.0	0
2011	2	4	14		16.0	246.8		2/4/11 14:00	24,680	1	0	0	0.0	0
2011	2	5	17		16.0	309.7		2/5/11 17:00	30,970	1	0	0	0.0	0
2011	2	6	14		16.0	300		2/6/11 14:00	30,000	1	0	0	0.0	0
2011	2	7	17		16.0	360		2/7/11 17:00	36,000	1	0	0	0.0	0
2011	2	8	16		16.0	312		2/8/11 16:00	31,200	1	0	0	0.0	0
2011	2	9	16	15	16.0	308		2/9/11 16:15	30,800	1	0	0	0.0	0
2011	2	10	16	45	16.0	266		2/10/11 16:45	26,600	1	0	0	0.0	0
2011	2	11	15	45	16.0	238		2/11/11 15:45	23,800	1	0	0	0.0	0
2011	2	12	16	30	16.0	265		2/12/11 16:30	26,500	1	0	0	0.0	0
2011	2	13	17		16.0	284		2/13/11 17:00	28,400	1	0	0	0.0	0
2011	2	14	16	25	16.0	255		2/14/11 16:25	25,500	1	0	0	0.0	0
2011	2	15	17		16.0	266		2/15/11 17:00	26,600	1	0	0	0.0	0
2011	2	16	17	15	16.0	254		2/16/11 17:15	25,400	1	0	0	0.0	0
2011	2	17	16	45	16.0	247		2/17/11 16:45	24,700	1	0	0	0.0	0
2011	2	18	16	30	16.0	266		2/18/11 16:30	26,600	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	2	19	16		16.0	269		2/19/11 16:00	26,900	1	0	0	0.0	0
2011	2	20	13		16.0	216		2/20/11 13:00	21,600	1	0	0	0.0	0
2011	2	21	20	30	16.0	269		2/21/11 20:30	26,900	1	0	0	0.0	0
2011	2	22	17		16.0	250		2/22/11 17:00	25,000	1	0	0	0.0	0
2011	2	23	17	30	16.0	274		2/23/11 17:30	27,400	1	0	0	0.0	0
2011	2	24	14	30	16.0	270		2/24/11 14:30	27,000	1	0	0	0.0	0
2011	2	25	17		16.0	0	Power Out	2/25/11 17:00	0	1	0	0	0.0	0
2011	2	26	17		16.0	0	Power Out	2/26/11 17:00	0	1	0	0	0.0	0
2011	2	27	17		16.0	0	Power Out	2/27/11 17:00	0	1	0	0	0.0	0
2011	2	28	18		16.0	0	Power Out	2/28/11 18:00	0	1	0	0	0.0	0
2011	2	28	23	59	0.0	0	Not a leap year	2/28/11 23:59	0	0	1	0	0.0	0
2011	3	1	18	15	16.0	0	Power Out	3/1/11 18:15	0	1	0	0	0.0	0
2011	3	2	17		12.5	325		3/2/11 17:00	32,500	0	0	32,500	23.8	34,286
2011	3	3	15		13.0	283		3/3/11 15:00	28,300	0	0	28,300	21.4	30,873
2011	3	4	15		14.8	327		3/4/11 15:00	32,700	0	0	32,700	22.7	32,700
2011	3	5	15	30	16.0	275		3/5/11 15:30	27,500	1	0	0	0.0	0
2011	3	6	15	30	16.0	246		3/6/11 15:30	24,600	1	0	0	0.0	0
2011	3	7	15	30	16.0	271		3/7/11 15:30	27,100	1	0	0	0.0	0
2011	3	8	16		16.0	246		3/8/11 16:00	24,600	1	0	0	0.0	0
2011	3	9	17	30	16.0	289		3/9/11 17:30	28,900	1	0	0	0.0	0
2011	3	10	17	20	16.0	289		3/10/11 17:20	28,900	1	0	0	0.0	0
2011	3	11	17	10	16.0	275		3/11/11 17:10	27,500	1	0	0	0.0	0
2011	3	12	15		16.0	269		3/12/11 15:00	26,900	1	0	0	0.0	0
2011	3	13	16		16.0	266		3/13/11 16:00	26,600	1	0	0	0.0	0
2011	3	14	18		16.0	300		3/14/11 18:00	30,000	1	0	0	0.0	0
2011	3	15	18	10	16.0	323		3/15/11 18:10	32,300	1	0	0	0.0	0
2011	3	16	16		16.0	233		3/16/11 16:00	23,300	1	0	0	0.0	0
2011	3	17	17		16.0	300		3/17/11 17:00	30,000	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	3	18	16	45	16.0	286		3/18/11 16:45	28,600	1	0	0	0.0	0
2011	3	19	18	15	16.0	302		3/19/11 18:15	30,200	1	0	0	0.0	0
2011	3	20	17	15	16.0	300		3/20/11 17:15	30,000	1	0	0	0.0	0
2011	3	21	19		16.0	273		3/21/11 19:00	27,300	1	0	0	0.0	0
2011	3	22	18	15	16.0	273		3/22/11 18:15	27,300	1	0	0	0.0	0
2011	3	23	17		16.0	276		3/23/11 17:00	27,600	1	0	0	0.0	0
2011	3	24	16	15	16.0	259		3/24/11 16:15	25,900	1	0	0	0.0	0
2011	3	25	16			0	Power Out	3/25/11 16:00	0	0	1	0	0.0	0
2011	3	26	16			0	Power Out	3/26/11 16:00	0	0	1	0	0.0	0
2011	3	27	16			0	Power Out	3/27/11 16:00	0	0	1	0	0.0	0
2011	3	28	19	15	16.0	96		3/28/11 19:15	9,550	1	0	0	0.0	0
2011	3	29	20	30	16.0	284		3/29/11 20:30	28,400	1	0	0	0.0	0
2011	3	30	19	30	16.0	261		3/30/11 19:30	26,100	1	0	0	0.0	0
2011	3	31	19		16.0	247		3/31/11 19:00	24,700	1	0	0	0.0	0
2011	4	1	19		16.0	266		4/1/11 19:00	26,600	1	0	0	0.0	0
2011	4	2	16		16.0	271		4/2/11 16:00	27,100	1	0	0	0.0	0
2011	4	3	18		16.0	287		4/3/11 18:00	28,700	1	0	0	0.0	0
2011	4	4	18	30	16.0	300		4/4/11 18:30	30,000	1	0	0	0.0	0
2011	4	5	18		16.0	257		4/5/11 18:00	25,700	1	0	0	0.0	0
2011	4	6	18		16.0	290		4/6/11 18:00	29,000	1	0	0	0.0	0
2011	4	7	18	15	16.0	296		4/7/11 18:15	29,600	1	0	0	0.0	0
2011	4	8	14		16.0	202		4/8/11 14:00	20,200	1	0	0	0.0	0
2011	4	9	18		16.0	287		4/9/11 18:00	28,700	1	0	0	0.0	0
2011	4	10	19		16.0	276		4/10/11 19:00	27,600	1	0	0	0.0	0
2011	4	11	15		16.0	260		4/11/11 15:00	26,000	1	0	0	0.0	0
2011	4	12	17		16.0	303		4/12/11 17:00	30,300	1	0	0	0.0	0
2011	4	13	16		16.0	260		4/13/11 16:00	26,000	1	0	0	0.0	0
2011	4	14	18		16.0	308		4/14/11 18:00	30,800	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	4	15	23		16.0	173		4/15/11 23:00	17,300	1	0	0	0.0	0
2011	4	16	17		16.0	344		4/16/11 17:00	34,400	1	0	0	0.0	0
2011	4	17	12		16.0	214		4/17/11 12:00	21,400	1	0	0	0.0	0
2011	4	18	14		16.0	295		4/18/11 14:00	29,500	1	0	0	0.0	0
2011	4	19	17	30	16.0	285		4/19/11 17:30	28,500	1	0	0	0.0	0
2011	4	20	17	30	16.0	304		4/20/11 17:30	30,400	1	0	0	0.0	0
2011	4	21	18		16.0	297		4/21/11 18:00	29,700	1	0	0	0.0	0
2011	4	22	16		16.0	196		4/22/11 16:00	19,600	1	0	0	0.0	0
2011	4	23	17		16.0	330		4/23/11 17:00	33,000	1	0	0	0.0	0
2011	4	24	18		16.0	279		4/24/11 18:00	27,900	1	0	0	0.0	0
2011	4	25	18	45	16.0	303		4/25/11 18:45	30,300	1	0	0	0.0	0
2011	4	26	18		16.0	297		4/26/11 18:00	29,700	1	0	0	0.0	0
2011	4	27	15	30	16.0	223		4/27/11 15:30	22,300	1	0	0	0.0	0
2011	4	28	18		16.0	290		4/28/11 18:00	29,000	1	0	0	0.0	0
2011	4	29	18		16.0	266		4/29/11 18:00	26,600	1	0	0	0.0	0
2011	4	30	14		16.0	271		4/30/11 14:00	27,100	1	0	0	0.0	0
2011	5	1	18		16.0	307		5/1/11 18:00	30,700	1	0	0	0.0	0
2011	5	2	18		16.0	325		5/2/11 18:00	32,500	1	0	0	0.0	0
2011	5	3	17		16.0	305		5/3/11 17:00	30,500	1	0	0	0.0	0
2011	5	4	23		16.0	277		5/4/11 23:00	27,700	1	0	0	0.0	0
2011	5	5	17		16.0	306		5/5/11 17:00	30,600	1	0	0	0.0	0
2011	5	6	18		16.0	300		5/6/11 18:00	30,000	1	0	0	0.0	0
2011	5	7	18	30	16.0	303		5/7/11 18:30	30,300	1	0	0	0.0	0
2011	5	8	17	30	16.0	296		5/8/11 17:30	29,600	1	0	0	0.0	0
2011	5	9	16	30	16.0	313		5/9/11 16:30	31,300	1	0	0	0.0	0
2011	5	10	18		16.0	306		5/10/11 18:00	30,600	1	0	0	0.0	0
2011	5	11	23	30	16.0	218		5/11/11 23:30	21,800	1	0	0	0.0	0
2011	5	12	16		16.0	296		5/12/11 16:00	29,600	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	5	13	17	30	16.0	305		5/13/11 17:30	30,500	1	0	0	0.0	0
2011	5	14	18		16.0	303		5/14/11 18:00	30,300	1	0	0	0.0	0
2011	5	15	18		16.0	316		5/15/11 18:00	31,600	1	0	0	0.0	0
2011	5	16	18	45	16.0	336		5/16/11 18:45	33,600	1	0	0	0.0	0
2011	5	17	18	40	16.0	306		5/17/11 18:40	30,600	1	0	0	0.0	0
2011	5	18	20	10	16.0	297		5/18/11 20:10	29,700	1	0	0	0.0	0
2011	5	19	18	20	16.0	299		5/19/11 18:20	29,900	1	0	0	0.0	0
2011	5	20	19		16.0	312		5/20/11 19:00	31,200	1	0	0	0.0	0
2011	5	21	19	15	16.0	309		5/21/11 19:15	30,900	1	0	0	0.0	0
2011	5	22	20		16.0	296		5/22/11 20:00	29,600	1	0	0	0.0	0
2011	5	23	19		16.0	237		5/23/11 19:00	23,700	1	0	0	0.0	0
2011	5	24	18		16.0	276		5/24/11 18:00	27,600	1	0	0	0.0	0
2011	5	25	17	40	16.0	269		5/25/11 17:40	26,900	1	0	0	0.0	0
2011	5	26	16		16.0	283		5/26/11 16:00	28,300	1	0	0	0.0	0
2011	5	27	18		16.0	286		5/27/11 18:00	28,600	1	0	0	0.0	0
2011	5	28	15		16.0	265		5/28/11 15:00	26,500	1	0	0	0.0	0
2011	5	29	20		16.0	296		5/29/11 20:00	29,600	1	0	0	0.0	0
2011	5	30	18		16.0	287		5/30/11 18:00	28,700	1	0	0	0.0	0
2011	5	31	19		16.0	392		5/31/11 19:00	39,200	1	0	0	0.0	0
2011	6	1	17		16.0	285		6/1/11 17:00	28,500	1	0	0	0.0	0
2011	6	2	18	15	16.0	285		6/2/11 18:15	28,500	1	0	0	0.0	0
2011	6	3	19		16.0	286		6/3/11 19:00	28,600	1	0	0	0.0	0
2011	6	4	18		16.0	292		6/4/11 18:00	29,200	1	0	0	0.0	0
2011	6	5	19		16.0	286		6/5/11 19:00	28,600	1	0	0	0.0	0
2011	6	6	19		16.0	277		6/6/11 19:00	27,700	1	0	0	0.0	0
2011	6	7	16		16.0	278		6/7/11 16:00	27,800	1	0	0	0.0	0
2011	6	8	18		16.0	286		6/8/11 18:00	28,600	1	0	0	0.0	0
2011	6	9	14		16.0	265		6/9/11 14:00	26,500	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	6	10	11	15	16.0	421		6/10/11 11:15	42,100	1	0	0	0.0	0
2011	6	11	18		16.0	336		6/11/11 18:00	33,600	1	0	0	0.0	0
2011	6	12	18	30	16.0	303		6/12/11 18:30	30,300	1	0	0	0.0	0
2011	6	13	19		16.0	324		6/13/11 19:00	32,400	1	0	0	0.0	0
2011	6	14	19	30	16.0	317		6/14/11 19:30	31,700	1	0	0	0.0	0
2011	6	15	19	30	16.0	327		6/15/11 19:30	32,700	1	0	0	0.0	0
2011	6	16	17		16.0	335		6/16/11 17:00	33,500	1	0	0	0.0	0
2011	6	17	17	30	16.0	302		6/17/11 17:30	30,200	1	0	0	0.0	0
2011	6	18	18		16.0	299		6/18/11 18:00	29,900	1	0	0	0.0	0
2011	6	19	10		15.0	366		6/19/11 10:00	36,600	0	0	36,600	38.1	54,900
2011	6	20	18		16.0	446		6/20/11 18:00	44,600	1	0	0	0.0	0
2011	6	21	18	30	16.0	428		6/21/11 18:30	42,800	1	0	0	0.0	0
2011	6	22	16	30	16.0	437		6/22/11 16:30	43,700	1	0	0	0.0	0
2011	6	23	15	30	16.0	425		6/23/11 15:30	42,500	1	0	0	0.0	0
2011	6	24	18	30	15.0	524		6/24/11 18:30	52,400	0	0	52,400	32.3	46,578
2011	6	25	19		16.0	507		6/25/11 19:00	50,700	1	0	0	0.0	0
2011	6	26	20		16.0	546		6/26/11 20:00	54,600	1	0	0	0.0	0
2011	6	27	19	15	16.0	526		6/27/11 19:15	52,600	1	0	0	0.0	0
2011	6	28	18		16.0	322		6/28/11 18:00	32,200	1	0	0	0.0	0
2011	6	29	19		16.0	359		6/29/11 19:00	35,900	1	0	0	0.0	0
2011	6	30	20		16.0	326		6/30/11 20:00	32,600	1	0	0	0.0	0
2011	7	1	19		16.0	362		7/1/11 19:00	36,200	1	0	0	0.0	0
2011	7	2	17		16.0	301		7/2/11 17:00	30,100	1	0	0	0.0	0
2011	7	3	18	30	16.0	341		7/3/11 18:30	34,100	1	0	0	0.0	0
2011	7	4	17	45	16.0	455		7/4/11 17:45	45,500	1	0	0	0.0	0
2011	7	5	13		16.0	455		7/5/11 13:00	45,500	1	0	0	0.0	0
2011	7	6	13		15.8	442		7/6/11 13:00	44,200	1	0	0	0.0	0
2011	7	7	13		16.0	463		7/7/11 13:00	46,300	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	7	8	13		16.0	451		7/8/11 13:00	45,100	1	0	0	0.0	0
2011	7	9	13		16.0	444		7/9/11 13:00	44,400	1	0	0	0.0	0
2011	7	10	13		16.0	461		7/10/11 13:00	46,100	1	0	0	0.0	0
2011	7	11	10		14.5	468		7/11/11 10:00	46,800	0	0	46,800	37.1	53,486
2011	7	12	18	30	16.0	597		7/12/11 18:30	59,700	1	0	0	0.0	0
2011	7	13	18	45	16.0	595		7/13/11 18:45	59,500	1	0	0	0.0	0
2011	7	14	18		16.0	504		7/14/11 18:00	50,400	1	0	0	0.0	0
2011	7	15	19		16.0	563		7/15/11 19:00	56,300	1	0	0	0.0	0
2011	7	16	18	30	1.0	442		7/16/11 18:30	44,200	0	1	44,200	31.3	45,140
2011	7	17	18	30	1.0	263		7/17/11 18:30	26,300	0	1	26,300	18.3	26,300
2011	7	18	18	30	1.0	191		7/18/11 18:30	19,100	0	1	19,100	13.3	19,100
2011	7	19	11		5.0	121		7/19/11 11:00	12,100	0	1	12,100	12.2	17,600
2011	7	20	11		6.0	200		7/20/11 11:00	20,000	0	1	20,000	13.9	20,000
2011	7	21	12		0.0	553		7/21/11 12:00	55,300	0	1	55,300	36.9	53,088
2011	7	22	8		3.5	640		7/22/11 8:00	64,000	0	1	64,000	53.3	76,800
2011	7	23	11		8.0	907		7/23/11 11:00	90,700	0	1	90,700	56.0	80,622
2011	7	24	11		12.0	648		7/24/11 11:00	64,800	0	0	64,800	45.0	64,800
2011	7	25	11		16.0	592		7/25/11 11:00	59,200	1	0	0	0.0	0
2011	7	26	10	30	16.0	541		7/26/11 10:30	54,100	1	0	0	0.0	0
2011	7	27	8		12.0	753		7/27/11 8:00	75,300	0	0	75,300	58.4	84,056
2011	7	28	12	20	15.0	430		7/28/11 12:20	43,000	0	0	43,000	25.3	36,424
2011	7	29	9	30	16.0	879		7/29/11 9:30	87,900	1	0	0	0.0	0
2011	7	30	10		16.0	557		7/30/11 10:00	55,700	1	0	0	0.0	0
2011	7	31	11		15.0	552		7/31/11 11:00	55,200	0	0	55,200	36.8	52,992
2011	8	1	13		15.0	365		8/1/11 13:00	36,500	0	0	36,500	23.4	33,692
2011	8	2	17	30	10.0	768		8/2/11 17:30	76,800	0	1	76,800	44.9	64,674
2011	8	3	16		14.0	625		8/3/11 16:00	62,500	0	0	62,500	46.3	66,667
2011	8	4	22		16.0	761		8/4/11 22:00	76,100	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2011	8	5	17		16.0	612		8/5/11 17:00	61,200	1	0	0	0.0	0
2011	8	6	18	30	16.0	555		8/6/11 18:30	55,500	1	0	0	0.0	0
2011	8	7	17		14.0	452		8/7/11 17:00	45,200	0	0	45,200	33.5	48,213
2011	8	8	18		16.0	574		8/8/11 18:00	57,400	1	0	0	0.0	0
2011	8	9	21		16.0	644		8/9/11 21:00	64,400	1	0	0	0.0	0
2011	8	10	14		15.0	471		8/10/11 14:00	47,100	0	0	47,100	46.2	66,494
2011	8	11	17	30	16.0	748		8/11/11 17:30	74,800	1	0	0	0.0	0
2011	8	12	18		16.0	626		8/12/11 18:00	62,600	1	0	0	0.0	0
2011	8	13	19		16.0	664		8/13/11 19:00	66,400	1	0	0	0.0	0
2011	8	14	16		16.0	629		8/14/11 16:00	62,900	1	0	0	0.0	0
2011	8	15	22		16.0	352		8/15/11 22:00	35,200	1	0	0	0.0	0
2011	8	16	18		16.0	527		8/16/11 18:00	52,700	1	0	0	0.0	0
2011	8	17	19		16.0	601		8/17/11 19:00	60,100	1	0	0	0.0	0
2011	8	18	12		15.5	509		8/18/11 12:00	50,900	1	0	0	0.0	0
2011	8	19	17		16.0	569		8/19/11 17:00	56,900	1	0	0	0.0	0
2011	8	20	16		16.0	542		8/20/11 16:00	54,200	1	0	0	0.0	0
2011	8	21	18		16.0	564		8/21/11 18:00	56,400	1	0	0	0.0	0
2011	8	22	12		16.0	569		8/22/11 12:00	56,900	1	0	0	0.0	0
2011	8	23	7		16.0	609		8/23/11 7:00	60,900	1	0	0	0.0	0
2011	8	24	20	15	16.0	717		8/24/11 20:15	71,700	1	0	0	0.0	0
2011	8	25	20		15.0	564		8/25/11 20:00	56,400	0	0	56,400	39.6	56,994
2011	8	26	19		15.0	526		8/26/11 19:00	52,600	0	0	52,600	38.1	54,887
2011	8	27	20	45	7.0	612		8/27/11 20:45	61,200	0	1	61,200	39.6	57,041
2011	8	28	19		9.0	619		8/28/11 19:00	61,900	0	1	61,900	46.4	66,769
2011	8	29	15	30	5.5	605		8/29/11 15:30	60,500	0	1	60,500	49.2	70,829
2011	8	30	19		12.0	230		8/30/11 19:00	23,000	0	0	23,000	13.9	20,073
2011	8	31	20	20	16.0	1,317		8/31/11 20:20	131,700	1	0	0	0.0	0
2011	9	1	20		16.0	639		9/1/11 20:00	63,900	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2011	9	2	20		16.0	627		9/2/11 20:00	62,700	1	0	0	0.0	0
2011	9	3	19	15	16.0	1,266		9/3/11 19:15	126,600	1	0	0	0.0	0
2011	9	4	20		16.0	653		9/4/11 20:00	65,300	1	0	0	0.0	0
2011	9	5	19		14.0	629		9/5/11 19:00	62,900	0	0	62,900	45.6	65,635
2011	9	6	21		14.5	664		9/6/11 21:00	66,400	0	0	66,400	42.6	61,292
2011	9	7	18	30	15.0	569		9/7/11 18:30	56,900	0	0	56,900	44.1	63,516
2011	9	8	19	15	16.0	543		9/8/11 19:15	54,300	1	0	0	0.0	0
2011	9	9	20		16.0	625		9/9/11 20:00	62,500	1	0	0	0.0	0
2011	9	10	21		16.0	636		9/10/11 21:00	63,600	1	0	0	0.0	0
2011	9	11	20		16.0	653		9/11/11 20:00	65,300	1	0	0	0.0	0
2011	9	12	22		16.0	502		9/12/11 22:00	50,200	1	0	0	0.0	0
2011	9	13	21		16.0	563		9/13/11 21:00	96,400	1	0	0	0.0	0
2011	9	14	20	45	16.0	964		9/14/11 20:45	65,900	1	0	0	0.0	0
2011	9	15	19	30	16.0	659		9/15/11 19:30	47,100	1	0	0	0.0	0
2011	9	16	15	30	16.0	471		9/16/11 15:30	47,100	1	0	0	0.0	0
2011	9	17	18		16.0	626		9/17/11 18:00	62,600	1	0	0	0.0	0
2011	9	18	18	15	16.0	600		9/18/11 18:15	60,000	1	0	0	0.0	0
2011	9	19	19		16.0	602		9/19/11 19:00	60,200	1	0	0	0.0	0
2011	9	20	18	30	16.0	593		9/20/11 18:30	59,300	1	0	0	0.0	0
2011	9	21	18		16.0	602		9/21/11 18:00	60,200	1	0	0	0.0	0
2011	9	22	19		16.0	596		9/22/11 19:00	59,600	1	0	0	0.0	0
2011	9	23	20		15.0	758		9/23/11 20:00	75,800	0	0	75,800	50.5	72,768
2011	9	24	20		16.0	653		9/24/11 20:00	65,300	1	0	0	0.0	0
2011	9	25	19		16.0	679		9/25/11 19:00	67,900	1	0	0	0.0	0
2011	9	26	20	30	16.0	669		9/26/11 20:30	66,900	1	0	0	0.0	0
2011	9	27	20		16.0	709		9/27/11 20:00	70,900	1	0	0	0.0	0
2011	9	28	19	30	16.0	712		9/28/11 19:30	71,200	1	0	0	0.0	0
2011	9	29	15		16.0	406		9/29/11 15:00	40,600	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	9	30	18		16.0	616		9/30/11 18:00	61,600	1	0	0	0.0	0
2011	10	1	18	45	16.0	602		10/1/11 18:45	60,200	1	0	0	0.0	0
2011	10	2	20		16.0	665		10/2/11 20:00	66,500	1	0	0	0.0	0
2011	10	3	19		16.0	604		10/3/11 19:00	60,400	1	0	0	0.0	0
2011	10	4	17	30	16.0	740		10/4/11 17:30	74,000	1	0	0	0.0	0
2011	10	5	18	30	16.0	623		10/5/11 18:30	62,300	1	0	0	0.0	0
2011	10	6	18		16.0	597		10/6/11 18:00	59,700	1	0	0	0.0	0
2011	10	7	19		16.0	609		10/7/11 19:00	60,900	1	0	0	0.0	0
2011	10	8	18	45	16.0	615		10/8/11 18:45	61,500	1	0	0	0.0	0
2011	10	9	19	30	16.0	614		10/9/11 19:30	61,400	1	0	0	0.0	0
2011	10	10	18	15	16.0	596		10/10/11 18:15	59,600	1	0	0	0.0	0
2011	10	11	18	45	16.0	642		10/11/11 18:45	64,200	1	0	0	0.0	0
2011	10	12	19		16.0	569		10/12/11 19:00	56,900	1	0	0	0.0	0
2011	10	13	18	30	16.0	658		10/13/11 18:30	65,800	1	0	0	0.0	0
2011	10	14	19	30	16.0	325		10/14/11 19:30	32,500	1	0	0	0.0	0
2011	10	15	18		16.0	312		10/15/11 18:00	31,200	1	0	0	0.0	0
2011	10	16	18	45	16.0	329		10/16/11 18:45	32,900	1	0	0	0.0	0
2011	10	17	18		16.0	312		10/17/11 18:00	31,200	1	0	0	0.0	0
2011	10	18	19		16.0	335		10/18/11 19:00	33,500	1	0	0	0.0	0
2011	10	19	18		16.0	326		10/19/11 18:00	32,600	1	0	0	0.0	0
2011	10	20	18	30	16.0	308		10/20/11 18:30	30,800	1	0	0	0.0	0
2011	10	21	19		16.0	322		10/21/11 19:00	32,200	1	0	0	0.0	0
2011	10	22	17		16.0	314		10/22/11 17:00	31,400	1	0	0	0.0	0
2011	10	23	19		16.0	325		10/23/11 19:00	32,500	1	0	0	0.0	0
2011	10	24	19	30	16.0	315		10/24/11 19:30	31,500	1	0	0	0.0	0
2011	10	25	20	45	16.0	375		10/25/11 20:45	37,500	1	0	0	0.0	0
2011	10	26	19		16.0	301		10/26/11 19:00	30,100	1	0	0	0.0	0
2011	10	27	19	30	16.0	324		10/27/11 19:30	32,400	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	10	28	18	30	16.0	314		10/28/11 18:30	31,400	1	0	0	0.0	0
2011	10	29	18		16.0	316		10/29/11 18:00	31,600	1	0	0	0.0	0
2011	10	30	18		16.0	308		10/30/11 18:00	30,800	1	0	0	0.0	0
2011	10	31	14		16.0	283		10/31/11 14:00	28,300	1	0	0	0.0	0
2011	11	1	19		16.0	324		11/1/11 19:00	32,400	1	0	0	0.0	0
2011	11	2	18		16.0	296		11/2/11 18:00	29,600	1	0	0	0.0	0
2011	11	3	17	45	16.0	229		11/3/11 17:45	22,900	1	0	0	0.0	0
2011	11	4	19		16.0	246		11/4/11 19:00	24,600	1	0	0	0.0	0
2011	11	5	23		16.0	307		11/5/11 23:00	30,700	1	0	0	0.0	0
2011	11	6	16		16.0	329		11/6/11 16:00	32,900	1	0	0	0.0	0
2011	11	7	18		16.0	3,365		11/7/11 18:00	336,500	1	0	0	0.0	0
2011	11	8	17	15	16.0	379		11/8/11 17:15	37,900	1	0	0	0.0	0
2011	11	9	19		16.0	325		11/9/11 19:00	32,500	1	0	0	0.0	0
2011	11	10	18	30	16.0	317		11/10/11 18:30	31,700	1	0	0	0.0	0
2011	11	11	19	15	16.0	332		11/11/11 19:15	33,200	1	0	0	0.0	0
2011	11	12	19	30	16.0	324		11/12/11 19:30	32,400	1	0	0	0.0	0
2011	11	13	20		16.0	368		11/13/11 20:00	36,800	1	0	0	0.0	0
2011	11	14	18	30	15.0	302		11/14/11 18:30	30,200	0	0	30,200	22.4	32,213
2011	11	15	19		15.0	318		11/15/11 19:00	31,800	0	0	31,800	21.6	31,151
2011	11	16	20	30	16.0	321		11/16/11 20:30	32,100	1	0	0	0.0	0
2011	11	17	21		14.0	382		11/17/11 21:00	38,200	0	0	38,200	26.0	37,420
2011	11	18	20	15	16.0	316		11/18/11 20:15	31,600	1	0	0	0.0	0
2011	11	19	21	30	16.0	320		11/19/11 21:30	32,000	1	0	0	0.0	0
2011	11	20	19		16.0	304		11/20/11 19:00	30,400	1	0	0	0.0	0
2011	11	21	15		16.0	233		11/21/11 15:00	23,300	1	0	0	0.0	0
2011	11	22	18		16.0	316		11/22/11 18:00	31,600	1	0	0	0.0	0
2011	11	23	18		16.0	321		11/23/11 18:00	32,100	1	0	0	0.0	0
2011	11	24	18		16.0	322		11/24/11 18:00	32,200	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	11	25	17	15	16.0	304		11/25/11 17:15	30,400	1	0	0	0.0	0
2011	11	26	18	30	16.0	326		11/26/11 18:30	32,600	1	0	0	0.0	0
2011	11	27	18		16.0	376		11/27/11 18:00	37,600	1	0	0	0.0	0
2011	11	28	17		16.0	319		11/28/11 17:00	31,900	1	0	0	0.0	0
2011	11	29	16	30	16.0	306		11/29/11 16:30	30,600	1	0	0	0.0	0
2011	11	30	15	30	16.0	324		11/30/11 15:30	32,400	1	0	0	0.0	0
2011	12	1	17		16.0	331		12/1/11 17:00	33,100	1	0	0	0.0	0
2011	12	2	18		16.0	324		12/2/11 18:00	32,400	1	0	0	0.0	0
2011	12	3	13		16.0	265		12/3/11 13:00	26,500	1	0	0	0.0	0
2011	12	4	19		16.0	329		12/4/11 19:00	32,900	1	0	0	0.0	0
2011	12	5	18	30	16.0	315		12/5/11 18:30	31,500	1	0	0	0.0	0
2011	12	6	16	30	16.0	355		12/6/11 16:30	35,500	1	0	0	0.0	0
2011	12	7	17		16.0	316		12/7/11 17:00	31,600	1	0	0	0.0	0
2011	12	8	18		16.0	321		12/8/11 18:00	32,100	1	0	0	0.0	0
2011	12	9	19		16.0	326		12/9/11 19:00	32,600	1	0	0	0.0	0
2011	12	10	18	30	16.0	339		12/10/11 18:30	33,900	1	0	0	0.0	0
2011	12	11	18		16.0	334		12/11/11 18:00	33,400	1	0	0	0.0	0
2011	12	12	17	30	16.0	427		12/12/11 17:30	42,700	1	0	0	0.0	0
2011	12	13	15	30	16.0	357		12/13/11 15:30	35,700	1	0	0	0.0	0
2011	12	14	18	30	16.0	385		12/14/11 18:30	38,500	1	0	0	0.0	0
2011	12	15	18		16.0	396		12/15/11 18:00	39,600	1	0	0	0.0	0
2011	12	16	17		16.0	379		12/16/11 17:00	37,900	1	0	0	0.0	0
2011	12	17	18		16.0	379		12/17/11 18:00	37,900	1	0	0	0.0	0
2011	12	18	19		16.0	402		12/18/11 19:00	40,200	1	0	0	0.0	0
2011	12	19	18		16.0	396		12/19/11 18:00	39,600	1	0	0	0.0	0
2011	12	20	17		16.0	405		12/20/11 17:00	40,500	1	0	0	0.0	0
2011	12	21	15		16.0	350		12/21/11 15:00	35,000	1	0	0	0.0	0
2011	12	22	18		16.0	321		12/22/11 18:00	32,100	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2011	12	23	17		16.0	426		12/23/11 17:00	42,600	1	0	0	0.0	0
2011	12	24	21		16.0	463		12/24/11 21:00	46,300	1	0	0	0.0	0
2011	12	25	17		16.0	388		12/25/11 17:00	38,800	1	0	0	0.0	0
2011	12	26	21		16.0	392		12/26/11 21:00	39,200	1	0	0	0.0	0
2011	12	27	18		16.0	403		12/27/11 18:00	40,300	1	0	0	0.0	0
2011	12	28	19		16.0	396		12/28/11 19:00	39,600	1	0	0	0.0	0
2011	12	29	19	30	16.0	408		12/29/11 19:30	40,800	1	0	0	0.0	0
2011	12	30	19		16.0	386		12/30/11 19:00	38,600	1	0	0	0.0	0
2011	12	31	19	15	16.0	402		12/31/11 19:15	40,200	1	0	0	0.0	0
					15.5					326				

Camptonville Water System - Daily Readings Log

Transcribed by m jokerst, 2/12/2013, from the handwritten logs

Annual Use	15,560,600 gal	30 GPM
Max Daily Demand	139,104 gal	97 GPM
Average Daily Demand	17,558 gal	12 GPM
Day tank is wasting	228 days	
DaysTank Level below Critical	15 days	

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	1	1			16.0	286		1/1/12 14:00	28,600	1	0	~	~	~
2012	1	2			15.0	336		1/2/12 19:00	33,600	0	0	33,600	19.3	27,807
2012	1	3			15.0	342		1/3/12 19:30	34,200	0	0	34,200	23.3	33,502
2012	1	4			13.5	315		1/4/12 17:15	31,500	0	0	31,500	24.1	34,759
2012	1	5			14.0	312		1/5/12 18:00	31,200	0	0	31,200	21.0	30,255
2012	1	6			14.0	298		1/6/12 13:50	29,800	0	0	29,800	25.0	36,061
2012	1	7			14.0	556		1/7/12 18:00	55,600	0	0	55,600	32.9	47,375
2012	1	8			15.5	464		1/8/12 17:30	46,400	1	0	0	0.0	0
2012	1	9			16.0	483		1/9/12 18:00	48,300	1	0	0	0.0	0
2012	1	10			16.0	424		1/10/12 16:00	42,400	1	0	0	0.0	0
2012	1	11			16.0	426		1/11/12 18:00	42,600	1	0	0	0.0	0
2012	1	12			16.0	409		1/12/12 17:00	40,900	1	0	0	0.0	0
2012	1	13			16.0	419		1/13/12 18:00	41,900	1	0	0	0.0	0
2012	1	14			16.0	413		1/14/12 18:00	41,300	1	0	0	0.0	0
2012	1	15			16.0	408		1/15/12 17:00	40,800	1	0	0	0.0	0
2012	1	16			16.0	403		1/16/12 16:00	40,300	1	0	0	0.0	0
2012	1	17			16.0	436		1/17/12 21:00	43,600	1	0	0	0.0	0
2012	1	18			16.0	407		1/18/12 18:00	40,700	1	0	0	0.0	0
2012	1	19			16.0	413		1/19/12 19:00	41,300	1	0	0	0.0	0
2012	1	20			16.0	428		1/20/12 20:00	42,800	1	0	0	0.0	0
2012	1	21			16.0	412		1/21/12 19:00	41,200	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	1	22			16.0	355		1/22/12 18:00	35,500	1	0	0	0.0	0
2012	1	23			16.0	268		1/23/12 16:20	26,800	1	0	0	0.0	0
2012	1	24			16.0	304		1/24/12 16:30	30,400	1	0	0	0.0	0
2012	1	25			16.0	304		1/25/12 16:40	30,400	1	0	0	0.0	0
2012	1	26			16.0	288		1/26/12 18:00	28,800	1	0	0	0.0	0
2012	1	27			16.0	283		1/27/12 17:00	28,300	1	0	0	0.0	0
2012	1	28			16.0	253		1/28/12 18:00	25,300	1	0	0	0.0	0
2012	1	29			16.0	226		1/29/12 18:00	22,600	1	0	0	0.0	0
2012	1	30			16.0	368		1/30/12 16:15	36,800	1	0	0	0.0	0
2012	1	31			16.0	293		1/31/12 17:00	29,300	1	0	0	0.0	0
2012	2	1			16.0	287		2/1/12 17:15	28,700	1	0	0	0.0	0
2012	2	2			16.0	285		2/2/12 17:15	28,500	1	0	0	0.0	0
2012	2	3			16.0	283		2/3/12 18:00	28,300	1	0	0	0.0	0
2012	2	4			16.0	282		2/4/12 18:00	28,200	1	0	0	0.0	0
2012	2	5			16.0	288		2/5/12 18:30	28,800	1	0	0	0.0	0
2012	2	6			16.0	286		2/6/12 17:30	28,600	1	0	0	0.0	0
2012	2	7			16.0	292		2/7/12 19:00	29,200	1	0	0	0.0	0
2012	2	8			16.0	319		2/8/12 21:15	31,900	1	0	0	0.0	0
2012	2	9			16.0	296		2/9/12 19:00	29,600	1	0	0	0.0	0
2012	2	10			16.0	140		2/10/12 21:30	14,000	1	0	0	0.0	0
2012	2	11			16.0	316		2/11/12 20:00	31,600	1	0	0	0.0	0
2012	2	12			16.0	309		2/12/12 19:15	30,900	1	0	0	0.0	0
2012	2	13			16.0	312		2/13/12 21:00	31,200	1	0	0	0.0	0
2012	2	14			16.0	321		2/14/12 20:15	32,100	1	0	0	0.0	0
2012	2	15			16.0	275		2/15/12 19:00	27,500	1	0	0	0.0	0
2012	2	16			16.0	283		2/16/12 19:15	28,300	1	0	0	0.0	0
2012	2	17			16.0	274		2/17/12 21:00	27,400	1	0	0	0.0	0
2012	2	18			16.0	264		2/18/12 17:00	26,400	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	2	19			16.0	276		2/19/12 14:00	27,600	1	0	0	0.0	0
2012	2	20			16.0	221		2/20/12 15:00	22,100	1	0	0	0.0	0
2012	2	21			16.0	336		2/21/12 18:00	33,600	1	0	0	0.0	0
2012	2	22			16.0	322		2/22/12 18:45	32,200	1	0	0	0.0	0
2012	2	23			16.0	251		2/23/12 16:00	25,100	1	0	0	0.0	0
2012	2	24			16.0	285		2/24/12 19:00	28,500	1	0	0	0.0	0
2012	2	25			16.0	269		2/25/12 18:30	26,900	1	0	0	0.0	0
2012	2	26			16.0	34		2/26/12 19:45	3,400	1	0	0	0.0	0
2012	2	27			16.0	282		2/27/12 19:30	28,200	1	0	0	0.0	0
2012	2	28			16.0	288		2/28/12 19:45	28,800	1	0	0	0.0	0
2012	2	29			16.0	261		2/29/12 18:00	26,100	1	0	0	0.0	0
2012	3	1			16.6	276		3/1/12 17:00	27,600	1	0	0	0.0	0
2012	3	2			16.6	286		3/2/12 19:00	28,600	1	0	0	0.0	0
2012	3	3			16.6	293		3/3/12 20:00	29,300	1	0	0	0.0	0
2012	3	4			16.6	268		3/4/12 18:00	26,800	1	0	0	0.0	0
2012	3	5			16.6	292		3/5/12 20:00	29,200	1	0	0	0.0	0
2012	3	6			16.6	244		3/6/12 14:30	24,400	1	0	0	0.0	0
2012	3	7			16.6	336		3/7/12 19:00	33,600	1	0	0	0.0	0
2012	3	8			16.6	258		3/8/12 18:00	25,800	1	0	0	0.0	0
2012	3	9			16.6	273		3/9/12 15:30	27,300	1	0	0	0.0	0
2012	3	10			16.0	286		3/10/12 18:00	28,600	1	0	0	0.0	0
2012	3	11			16.6	296		3/11/12 18:00	29,600	1	0	0	0.0	0
2012	3	12			16.6	308		3/12/12 20:15	30,800	1	0	0	0.0	0
2012	3	13			16.6	181		3/13/12 12:30	18,100	1	0	0	0.0	0
2012	3	14			15.0	21		3/14/12 19:00	2,100	0	0	2,100	1.1	1,652
2012	3	15			14.5	186		3/15/12 19:00	18,600	0	0	18,600	12.9	18,600
2012	3	16			13.5	227		3/16/12 20:00	22,700	0	0	22,700	15.1	21,792
2012	3	17			11.0	0	Power Out	3/17/12 19:00	0	0	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	3	18			7.5	0	Power Out	3/18/12 12:00	0	0	1	0	0.0	0
2012	3	19			11.0	339		3/19/12 16:00	33,900	0	0	33,900	20.2	29,057
2012	3	20			14.0	362		3/20/12 18:00	36,200	0	0	36,200	23.2	33,415
2012	3	21			15.0	429		3/21/12 19:00	42,900	0	0	42,900	28.6	41,184
2012	3	22			16.6	563		3/22/12 20:30	56,300	1	0	0	0.0	0
2012	3	23			16.0	196		3/23/12 20:00	19,600	1	0	0	0.0	0
2012	3	24			16.0	203		3/24/12 20:00	20,300	1	0	0	0.0	0
2012	3	25			16.0	206		3/25/12 20:30	20,600	1	0	0	0.0	0
2012	3	26			16.0	199		3/26/12 20:00	19,900	1	0	0	0.0	0
2012	3	27			15.7	210		3/27/12 20:30	21,000	1	0	0	0.0	0
2012	3	28			13.0	192		3/28/12 20:00	19,200	0	0	19,200	13.6	19,609
2012	3	29			14.0	178		3/29/12 19:00	17,800	0	0	17,800	12.9	18,574
2012	3	30			15.0	197		3/30/12 20:00	19,700	0	0	19,700	13.1	18,912
2012	3	31			15.5	154		3/31/12 21:30	15,400	1	0	0	0.0	0
2012	4	1			16.0	243		4/1/12 19:45	24,300	1	0	0	0.0	0
2012	4	2			15.1	263		4/2/12 21:30	26,300	0	0	26,300	17.0	24,513
2012	4	3			15.1	237		4/3/12 18:30	23,700	0	0	23,700	18.8	27,086
2012	4	4			16.0	254		4/4/12 18:20	25,400	1	0	0	0.0	0
2012	4	5			16.0	196		4/5/12 19:45	19,600	1	0	0	0.0	0
2012	4	6			16.0	204		4/6/12 20:20	20,400	1	0	0	0.0	0
2012	4	7			16.0	405		4/7/12 21:30	40,500	1	0	0	0.0	0
2012	4	8			16.0	296		4/8/12 20:00	29,600	1	0	0	0.0	0
2012	4	9			16.0	128		4/9/12 14:00	12,800	1	0	0	0.0	0
2012	4	10			16.0	299		4/10/12 19:00	29,900	1	0	0	0.0	0
2012	4	11			16.0	262		4/11/12 17:00	26,200	1	0	0	0.0	0
2012	4	12			16.0	223		4/12/12 16:30	22,300	1	0	0	0.0	0
2012	4	13			16.0	312		4/13/12 19:00	31,200	1	0	0	0.0	0
2012	4	14			16.0	283		4/14/12 20:00	28,300	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	4	15			16.0	291		4/15/12 20:00	29,100	1	0	0	0.0	0
2012	4	16			16.0	69		4/16/12 12:00	6,900	1	0	0	0.0	0
2012	4	17			16.0	349		4/17/12 20:15	34,900	1	0	0	0.0	0
2012	4	18			15.0	126		4/18/12 14:30	12,600	0	0	12,600	11.5	16,570
2012	4	19			14.5	213		4/19/12 18:15	21,300	0	0	21,300	12.8	18,422
2012	4	20			15.0	298		4/20/12 15:30	29,800	0	0	29,800	23.4	33,656
2012	4	21			14.0	15		4/21/12 18:15	1,500	0	0	1,500	0.9	1,346
2012	4	22			13.8	246		4/22/12 19:00	24,600	0	0	24,600	16.6	23,855
2012	4	23			13.5	371		4/23/12 15:00	37,100	0	0	37,100	30.9	44,520
2012	4	24			15.0	412		4/24/12 18:00	41,200	0	0	41,200	25.4	36,622
2012	4	25			16.0	343		4/25/12 19:45	34,300	1	0	0	0.0	0
2012	4	26			16.0	353		4/26/12 21:30	35,300	1	0	0	0.0	0
2012	4	27			15.0	256		4/27/12 19:00	25,600	0	0	25,600	19.8	28,577
2012	4	28			16.0	294		4/28/12 21:00	29,400	1	0	0	0.0	0
2012	4	29			15.5	299		4/29/12 22:00	29,900	1	0	0	0.0	0
2012	4	30			15.0	170		4/30/12 21:30	17,000	0	0	17,000	12.1	17,362
2012	5	1			14.5	242		5/1/12 20:30	24,200	0	0	24,200	17.5	25,252
2012	5	2			16.0	276		5/2/12 21:00	27,600	1	0	0	0.0	0
2012	5	3			16.0	241		5/3/12 21:30	24,100	1	0	0	0.0	0
2012	5	4			16.0	135		5/4/12 22:30	13,500	1	0	0	0.0	0
2012	5	5			15.5	306		5/5/12 18:30	30,600	1	0	0	0.0	0
2012	5	6			16.0	279		5/6/12 19:00	27,900	1	0	0	0.0	0
2012	5	7			14.5	201		5/7/12 14:00	20,100	0	0	20,100	17.6	25,389
2012	5	8			12.0	321		5/8/12 20:00	32,100	0	0	32,100	17.8	25,680
2012	5	9			12.0	191		5/9/12 15:00	19,100	0	0	19,100	16.8	24,126
2012	5	10			15.0	358		5/10/12 22:30	35,800	0	0	35,800	18.9	27,276
2012	5	11			12.5	503		5/11/12 21:00	50,300	0	0	50,300	37.3	53,653
2012	5	12			13.5	372		5/12/12 21:00	37,200	0	0	37,200	25.8	37,200

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	5	13			14.0	361		5/13/12 20:30	36,100	0	0	36,100	25.6	36,868
2012	5	14			14.5	346		5/14/12 21:15	34,600	0	0	34,600	23.3	33,552
2012	5	15			14.0	368		5/15/12 21:00	36,800	0	0	36,800	25.8	37,187
2012	5	16			13.5	390		5/16/12 21:00	39,000	0	0	39,000	27.1	39,000
2012	5	17			14.0	377		5/17/12 21:30	37,700	0	0	37,700	25.6	36,931
2012	5	18			14.0	341		5/18/12 20:30	34,100	0	0	34,100	24.7	35,583
2012	5	19			13.5	362		5/19/12 20:00	36,200	0	0	36,200	25.7	36,970
2012	5	20			14.5	341		5/20/12 14:00	34,100	0	0	34,100	31.6	45,467
2012	5	21			14.0	523		5/21/12 20:00	52,300	0	0	52,300	29.1	41,840
2012	5	22			10.0	438		5/22/12 17:00	43,800	0	1	43,800	34.8	50,057
2012	5	23			13.0	526		5/23/12 18:00	52,600	0	0	52,600	35.1	50,496
2012	5	24			13.0	509		5/24/12 17:00	50,900	0	0	50,900	36.9	53,113
2012	5	25			14.0	479		5/25/12 16:00	47,900	0	0	47,900	34.7	49,983
2012	5	26			16.0	375		5/26/12 20:00	37,500	1	0	0	0.0	0
2012	5	27			15.0	379		5/27/12 19:30	37,900	0	0	37,900	26.9	38,706
2012	5	28			13.0	337		5/28/12 17:30	33,700	0	0	33,700	25.5	36,764
2012	5	29			10.5	431		5/29/12 21:00	43,100	0	0	43,100	26.1	37,615
2012	5	30			12.0	503		5/30/12 20:00	50,300	0	0	50,300	36.4	52,487
2012	5	31			14.0	529		5/31/12 21:15	52,900	0	0	52,900	34.9	50,281
2012	6	1			12.5	408		6/1/12 20:00	40,800	0	0	40,800	29.9	43,042
2012	6	2			12.0	420		6/2/12 20:30	42,000	0	0	42,000	28.6	41,143
2012	6	3			11.0	415		6/3/12 22:00	41,500	0	0	41,500	27.1	39,059
2012	6	4			13.0	360		6/4/12 18:00	36,000	0	0	36,000	30.0	43,200
2012	6	5			16.0	394		6/5/12 15:30	39,400	1	0	0	0.0	0
2012	6	6			16.0	438		6/6/12 17:00	43,800	1	0	0	0.0	0
2012	6	7			15.0	396		6/7/12 19:30	39,600	0	0	39,600	24.9	35,864
2012	6	8			15.5	382		6/8/12 20:00	38,200	1	0	0	0.0	0
2012	6	9			16.0	423		6/9/12 21:00	42,300	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2012	6	10			15.0	416		6/10/12 20:00	41,600	0	0	41,600	30.1	43,409
2012	6	11			12.0	195		6/11/12 12:00	19,500	0	0	19,500	20.3	29,250
2012	6	12			12.0	434		6/12/12 11:30	43,400	0	0	43,400	30.8	44,323
2012	6	13			11.5	524		6/13/12 16:00	52,400	0	0	52,400	30.6	44,126
2012	6	14			10.0	497		6/14/12 18:00	49,700	0	1	49,700	31.9	45,877
2012	6	15			7.0	492		6/15/12 20:00	49,200	0	1	49,200	31.5	45,415
2012	6	16			7.0	460		6/16/12 20:30	46,000	0	1	46,000	31.3	45,061
2012	6	17			6.0	485		6/17/12 20:00	48,500	0	1	48,500	34.4	49,532
2012	6	18			5.0	488		6/18/12 21:30	48,800	0	1	48,800	31.9	45,929
2012	6	19			7.5	588		6/19/12 21:00	58,800	0	1	58,800	41.7	60,051
2012	6	20			11.0	526		6/20/12 20:00	52,600	0	0	52,600	38.1	54,887
2012	6	21			11.0	648		6/21/12 16:00	64,800	0	0	64,800	54.0	77,760
2012	6	22			16.0	638		6/22/12 19:30	63,800	1	0	0	0.0	0
2012	6	23			16.0	269		6/23/12 11:15	26,900	1	0	0	0.0	0
2012	6	24			14.0	523		6/24/12 20:00	52,300	0	0	52,300	26.6	38,327
2012	6	25			12.0	472		6/25/12 19:30	47,200	0	0	47,200	33.5	48,204
2012	6	26			13.0	448		6/26/12 20:00	44,800	0	0	44,800	30.5	43,886
2012	6	27			13.0	407		6/27/12 20:00	40,700	0	0	40,700	28.3	40,700
2012	6	28			14.0	398		6/28/12 21:15	39,800	0	0	39,800	26.3	37,830
2012	6	29			14.0	553		6/29/12 20:00	55,300	0	0	55,300	40.5	58,338
2012	6	30			12.0	487		6/30/12 17:15	48,700	0	0	48,700	38.2	55,002
2012	7	1	18		13.0	648		7/1/12 18:00	64,800	0	0	64,800	43.6	62,836
2012	7	2	20		14.0	629		7/2/12 20:00	62,900	0	0	62,900	40.3	58,062
2012	7	3	21		15.0	636		7/3/12 21:00	63,600	0	0	63,600	42.4	61,056
2012	7	4	19		15.0	619		7/4/12 19:00	61,900	0	0	61,900	46.9	67,527
2012	7	5	21		16.0	636		7/5/12 21:00	63,600	1	0	0	0.0	0
2012	7	6	21	30	16.0	635		7/6/12 21:30	63,500	1	0	0	0.0	0
2012	7	7	20	30	14.0	628		7/7/12 20:30	62,800	0	0	62,800	45.5	65,530

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2012	7	8	21		14.0	603		7/8/12 21:00	60,300	0	0	60,300	41.0	59,069
2012	7	9	21		13.0	596		7/9/12 21:00	59,600	0	0	59,600	41.4	59,600
2012	7	10	20	30	13.5	607		7/10/12 20:30	60,700	0	0	60,700	43.0	61,991
2012	7	11	20	30	14.0	601		7/11/12 20:30	60,100	0	0	60,100	41.7	60,100
2012	7	12	21		13.0	602		7/12/12 21:00	60,200	0	0	60,200	41.0	58,971
2012	7	13	20	30	12.0	609		7/13/12 20:30	60,900	0	0	60,900	43.2	62,196
2012	7	14	20		12.5	611		7/14/12 20:00	61,100	0	0	61,100	43.3	62,400
2012	7	15	21		14.0	609		7/15/12 21:00	60,900	0	0	60,900	40.6	58,464
2012	7	16	20	30	13.0	623		7/16/12 20:30	62,300	0	0	62,300	44.2	63,626
2012	7	17	20	30	13.0	615		7/17/12 20:30	61,500	0	0	61,500	42.7	61,500
2012	7	18	20	30	14.0	610		7/18/12 20:30	61,000	0	0	61,000	42.4	61,000
2012	7	19	21		16.0	609		7/19/12 21:00	60,900	1	0	0	0.0	0
2012	7	20	21		16.0	612		7/20/12 21:00	61,200	1	0	0	0.0	0
2012	7	21	20		14.0	624		7/21/12 20:00	62,400	0	0	62,400	45.2	65,113
2012	7	22	19		13.0	613		7/22/12 19:00	61,300	0	0	61,300	44.4	63,965
2012	7	23	19		13.0	592		7/23/12 19:00	59,200	0	0	59,200	41.1	59,200
2012	7	24	19		14.0	663		7/24/12 19:00	66,300	0	0	66,300	46.0	66,300
2012	7	25	20		14.0	614		7/25/12 20:00	61,400	0	0	61,400	40.9	58,944
2012	7	26	21		15.5	715		7/26/12 21:00	71,500	1	0	0	0.0	0
2012	7	27	20	30	14.0	598		7/27/12 20:30	59,800	0	0	59,800	42.4	61,072
2012	7	28	19		12.0	574		7/28/12 19:00	57,400	0	0	57,400	42.5	61,227
2012	7	29	15		13.0	561		7/29/12 15:00	56,100	0	0	56,100	46.7	67,320
2012	7	30	17		14.0	528		7/30/12 17:00	52,800	0	0	52,800	33.8	48,738
2012	7	31	21	30	15.0	626		7/31/12 21:30	62,600	0	0	62,600	36.6	52,716
2012	8	1	19		7.0	365		8/1/12 19:00	36,500	0	1	36,500	28.3	40,744
2012	8	2	20	30	8.0	466		8/2/12 20:30	46,600	0	1	46,600	30.5	43,859
2012	8	3	20		7.0	536		8/3/12 20:00	53,600	0	1	53,600	38.0	54,740
2012	8	4	11	25	5.0	546		8/4/12 11:25	54,600	0	1	54,600	59.0	84,999

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	8	5	21		11.0	982		8/5/12 21:00	98,200	0	0	98,200	48.7	70,178
2012	8	6	22	30	13.0	938		8/6/12 22:30	93,800	0	0	93,800	61.3	88,282
2012	8	7	22		12.0	726		8/7/12 22:00	72,600	0	0	72,600	51.5	74,145
2012	8	8	21		12.0	766		8/8/12 21:00	76,600	0	0	76,600	55.5	79,930
2012	8	9	20	15	11.0	785		8/9/12 20:15	78,500	0	0	78,500	56.3	81,032
2012	8	10	21		12.0	732		8/10/12 21:00	73,200	0	0	73,200	49.3	70,982
2012	8	11	21	30	13.0	724		8/11/12 21:30	72,400	0	0	72,400	49.3	70,922
2012	8	12	20	15	13.0	746		8/12/12 20:15	74,600	0	0	74,600	54.7	78,699
2012	8	13	20	30	12.0	736		8/13/12 20:30	73,600	0	0	73,600	50.6	72,841
2012	8	14	21		14.0	718		8/14/12 21:00	71,800	0	0	71,800	48.8	70,335
2012	8	15	19		15.0	352		8/15/12 19:00	35,200	0	0	35,200	26.7	38,400
2012	8	16	21		14.0	593		8/16/12 21:00	59,300	0	0	59,300	38.0	54,738
2012	8	17	19		12.0	569		8/17/12 19:00	56,900	0	0	56,900	43.1	62,073
2012	8	18	18	30	8.0	569		8/18/12 18:30	56,900	0	1	56,900	40.4	58,111
2012	8	19	21		0.0	603		8/19/12 21:00	60,300	0	1	60,300	37.9	54,611
2012	8	20	20		5.0	423		8/20/12 20:00	42,300	0	1	42,300	30.7	44,139
2012	8	21	21		14.0	1,449		8/21/12 21:00	144,900	0	0	144,900	96.6	139,104
2012	8	22	21	30	16.0	765		8/22/12 21:30	76,500	1	0	0	0.0	0
2012	8	23	21		16.0	272		8/23/12 21:00	27,200	1	0	0	0.0	0
2012	8	24	20		16.0	748		8/24/12 20:00	74,800	1	0	0	0.0	0
2012	8	25	20		16.0	723		8/25/12 20:00	72,300	1	0	0	0.0	0
2012	8	26	19		15.0	741		8/26/12 19:00	74,100	0	0	74,100	53.7	77,322
2012	8	27	21		16.0	793		8/27/12 21:00	79,300	1	0	0	0.0	0
2012	8	28	21		16.0	873		8/28/12 21:00	87,300	1	0	0	0.0	0
2012	8	29	19		15.0	628		8/29/12 19:00	62,800	0	0	62,800	47.6	68,509
2012	8	30	21		16.0	641		8/30/12 21:00	64,100	1	0	0	0.0	0
2012	8	31	20		16.0	615		8/31/12 20:00	61,500	1	0	0	0.0	0
2012	9	1	19		14.0	643		9/1/12 19:00	64,300	0	0	64,300	46.6	67,096

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2012	9	2	21		16.0	632		9/2/12 21:00	63,200	1	0	0	0.0	0
2012	9	3	18		15.0	586		9/3/12 18:00	58,600	0	0	58,600	46.5	66,971
2012	9	4	22		16.0	764		9/4/12 22:00	76,400	1	0	0	0.0	0
2012	9	5	23		16.0	609		9/5/12 23:00	60,900	1	0	0	0.0	0
2012	9	6	20	30	16.0	812		9/6/12 20:30	81,200	1	0	0	0.0	0
2012	9	7	20		16.0	763		9/7/12 20:00	76,300	1	0	0	0.0	0
2012	9	8	21		16.0	749		9/8/12 21:00	74,900	1	0	0	0.0	0
2012	9	9	19	45	14.5	728		9/9/12 19:45	72,800	0	0	72,800	53.3	76,800
2012	9	10	20	30	16.0	695		9/10/12 20:30	69,500	1	0	0	0.0	0
2012	9	11	20		16.0	713		9/11/12 20:00	71,300	1	0	0	0.0	0
2012	9	12	20		16.0	689		9/12/12 20:00	68,900	1	0	0	0.0	0
2012	9	13	21		16.0	670		9/13/12 21:00	67,000	1	0	0	0.0	0
2012	9	14	20		16.0	563		9/14/12 20:00	56,300	1	0	0	0.0	0
2012	9	15	20	30	16.0	597		9/15/12 20:30	59,700	1	0	0	0.0	0
2012	9	16	22		16.0	607		9/16/12 22:00	60,700	1	0	0	0.0	0
2012	9	17	21		16.0	683		9/17/12 21:00	68,300	1	0	0	0.0	0
2012	9	18	21		16.0	770		9/18/12 21:00	77,000	1	0	0	0.0	0
2012	9	19	19		16.0	627		9/19/12 19:00	62,700	1	0	0	0.0	0
2012	9	20	19	30	16.0	631		9/20/12 19:30	63,100	1	0	0	0.0	0
2012	9	21	20		16.0	648		9/21/12 20:00	64,800	1	0	0	0.0	0
2012	9	22	19		16.0	641		9/22/12 19:00	64,100	1	0	0	0.0	0
2012	9	23	18		16.0	563		9/23/12 18:00	56,300	1	0	0	0.0	0
2012	9	24	19		16.0	529		9/24/12 19:00	52,900	1	0	0	0.0	0
2012	9	25	20	30	16.0	616		9/25/12 20:30	61,600	1	0	0	0.0	0
2012	9	26	16	30	16.0	532		9/26/12 16:30	53,200	1	0	0	0.0	0
2012	9	27	18		16.0	555		9/27/12 18:00	55,500	1	0	0	0.0	0
2012	9	28	18	30	16.0	572		9/28/12 18:30	57,200	1	0	0	0.0	0
2012	9	29	19		16.0	574		9/29/12 19:00	57,400	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	9	30	19	30	16.0	561		9/30/12 19:30	56,100	1	0	0	0.0	0
2012	10	1	16	30	16.0	568		10/1/12 16:30	56,800	1	0	0	0.0	0
2012	10	2	18		16.0	542		10/2/12 18:00	54,200	1	0	0	0.0	0
2012	10	3	13		16.0	535		10/3/12 13:00	53,500	1	0	0	0.0	0
2012	10	4	17		16.0	596		10/4/12 17:00	59,600	1	0	0	0.0	0
2012	10	5	18		16.0	612		10/5/12 18:00	61,200	1	0	0	0.0	0
2012	10	6	21		16.0	639		10/6/12 21:00	63,900	1	0	0	0.0	0
2012	10	7	19	30	16.0	598		10/7/12 19:30	59,800	1	0	0	0.0	0
2012	10	8	20		16.0	612		10/8/12 20:00	61,200	1	0	0	0.0	0
2012	10	9	21		16.0	641		10/9/12 21:00	64,100	1	0	0	0.0	0
2012	10	10	22		16.0	426		10/10/12 22:00	42,600	1	0	0	0.0	0
2012	10	11	21		16.0	451		10/11/12 21:00	45,100	1	0	0	0.0	0
2012	10	12	20		16.0	426		10/12/12 20:00	42,600	1	0	0	0.0	0
2012	10	13	21		16.0	472		10/13/12 21:00	47,200	1	0	0	0.0	0
2012	10	14	19	30	16.0	445		10/14/12 19:30	44,500	1	0	0	0.0	0
2012	10	15	20		16.0	438		10/15/12 20:00	43,800	1	0	0	0.0	0
2012	10	16	20		16.0	455		10/16/12 20:00	45,500	1	0	0	0.0	0
2012	10	17	20		16.0	478		10/17/12 20:00	47,800	1	0	0	0.0	0
2012	10	18	21	30	16.0	450		10/18/12 21:30	45,000	1	0	0	0.0	0
2012	10	19	20		16.0	426		10/19/12 20:00	42,600	1	0	0	0.0	0
2012	10	20	19		16.0	432		10/20/12 19:00	43,200	1	0	0	0.0	0
2012	10	21	19	30	16.0	436		10/21/12 19:30	43,600	1	0	0	0.0	0
2012	10	22	18		16.0	431		10/22/12 18:00	43,100	1	0	0	0.0	0
2012	10	23	19		16.0	452		10/23/12 19:00	45,200	1	0	0	0.0	0
2012	10	24	19		16.0	463		10/24/12 19:00	46,300	1	0	0	0.0	0
2012	10	25	20		16.0	436		10/25/12 20:00	43,600	1	0	0	0.0	0
2012	10	26	20		16.0	421		10/26/12 20:00	42,100	1	0	0	0.0	0
2012	10	27	21		16.0	525		10/27/12 21:00	52,500	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above Elev 15.5 ft	Flag = 1 If Tank Level Below Critical Tank Level @ Elev 10.0 ft	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank			gallons	Outflow, GPM	Daily Demand
2012	10	28	19		16.0	468		10/28/12 19:00	46,800	1	0	0	0.0	0
2012	10	29	20		16.0	447		10/29/12 20:00	44,700	1	0	0	0.0	0
2012	10	30	19		16.0	449		10/30/12 19:00	44,900	1	0	0	0.0	0
2012	10	31	17	30	16.0	410		10/31/12 17:30	41,000	1	0	0	0.0	0
2012	11	1	17	30	16.0	463		11/1/12 17:30	46,300	1	0	0	0.0	0
2012	11	2	16		16.0	476		11/2/12 16:00	47,600	1	0	0	0.0	0
2012	11	3	20		16.0	449		11/3/12 20:00	44,900	1	0	0	0.0	0
2012	11	4	22		16.0	48		11/4/12 22:00	4,800	1	0	0	0.0	0
2012	11	5	16		16.0	473		11/5/12 16:00	47,300	1	0	0	0.0	0
2012	11	6	19		16.0	487		11/6/12 19:00	48,700	1	0	0	0.0	0
2012	11	7	21		16.0	504		11/7/12 21:00	50,400	1	0	0	0.0	0
2012	11	8	18		16.0	223		11/8/12 18:00	22,300	1	0	0	0.0	0
2012	11	9	12		16.0	344		11/9/12 12:00	34,400	1	0	0	0.0	0
2012	11	10	20		16.0	386		11/10/12 20:00	38,600	1	0	0	0.0	0
2012	11	11	19		16.0	615		11/11/12 19:00	61,500	1	0	0	0.0	0
2012	11	12	19		16.0	486		11/12/12 19:00	48,600	1	0	0	0.0	0
2012	11	13	21		16.0	868		11/13/12 21:00	86,800	1	0	0	0.0	0
2012	11	14	21		16.0	571		11/14/12 21:00	57,100	1	0	0	0.0	0
2012	11	15	20		16.0	481		11/15/12 20:00	48,100	1	0	0	0.0	0
2012	11	16	19		16.0	326		11/16/12 19:00	32,600	1	0	0	0.0	0
2012	11	17	18		16.0	415		11/17/12 18:00	41,500	1	0	0	0.0	0
2012	11	18	21	30	16.0	386		11/18/12 21:30	38,600	1	0	0	0.0	0
2012	11	19	20		16.0	464		11/19/12 20:00	46,400	1	0	0	0.0	0
2012	11	20	19	30	16.0	472		11/20/12 19:30	47,200	1	0	0	0.0	0
2012	11	21	21		16.0	473		11/21/12 21:00	47,300	1	0	0	0.0	0
2012	11	22	20		16.0	489		11/22/12 20:00	48,900	1	0	0	0.0	0
2012	11	23	18		16.0	475		11/23/12 18:00	47,500	1	0	0	0.0	0
2012	11	24	17		16.0	486		11/24/12 17:00	48,600	1	0	0	0.0	0

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	11	25	18		16.0	509		11/25/12 18:00	50,900	1	0	0	0.0	0
2012	11	26	20	15	16.0	168		11/26/12 20:15	16,800	1	0	0	0.0	0
2012	11	27	19	30	16.0	166		11/27/12 19:30	16,600	1	0	0	0.0	0
2012	11	28	21		16.0	825		11/28/12 21:00	82,500	1	0	0	0.0	0
2012	11	29	14		16.0	177		11/29/12 14:00	17,700	1	0	0	0.0	0
2012	11	30	18	30	16.0	289		11/30/12 18:30	28,900	1	0	0	0.0	0
2012	12	1	19		16.0	283		12/1/12 19:00	28,300	1	0	0	0.0	0
2012	12	2	19		14.5	236		12/2/12 19:00	23,600	0	0	23,600	16.4	23,600
2012	12	3	14	45	12.5	83		12/3/12 14:45	8,300	0	0	8,300	7.0	10,086
2012	12	4	22	30	10.5	202		12/4/12 22:30	20,200	0	0	20,200	10.6	15,269
2012	12	5	20		14.5	446		12/5/12 20:00	44,600	0	0	44,600	34.6	49,786
2012	12	6	21		16.0	206		12/6/12 21:00	20,600	1	0	0	0.0	0
2012	12	7	16		16.0	206		12/7/12 16:00	20,600	1	0	0	0.0	0
2012	12	8	19		16.0	258		12/8/12 19:00	25,800	1	0	0	0.0	0
2012	12	9	19		16.0	268		12/9/12 19:00	26,800	1	0	0	0.0	0
2012	12	10	19		16.0	234		12/10/12 19:00	23,400	1	0	0	0.0	0
2012	12	11	18		16.0	277		12/11/12 18:00	27,700	1	0	0	0.0	0
2012	12	12	18	45	16.0	239		12/12/12 18:45	23,900	1	0	0	0.0	0
2012	12	13	21		16.0	241		12/13/12 21:00	24,100	1	0	0	0.0	0
2012	12	14	20		16.0	263		12/14/12 20:00	26,300	1	0	0	0.0	0
2012	12	15	18	30	16.0	297		12/15/12 18:30	29,700	1	0	0	0.0	0
2012	12	16	22		16.0	239		12/16/12 22:00	23,900	1	0	0	0.0	0
2012	12	17	21		16.0	245		12/17/12 21:00	24,500	1	0	0	0.0	0
2012	12	18	20		16.0	239		12/18/12 20:00	23,900	1	0	0	0.0	0
2012	12	19	12		14.0	239		12/19/12 12:00	23,900	0	0	23,900	24.9	35,850
2012	12	20	17	30	14.0	306		12/20/12 17:30	30,600	0	0	30,600	17.3	24,895
2012	12	21	18		14.5	268		12/21/12 18:00	26,800	0	0	26,800	18.2	26,253
2012	12	22	20		11.5	268		12/22/12 20:00	26,800	0	0	26,800	17.2	24,738

Plant Record - Data Entry (Transcribed from the hand-written plant records)								Daily Readings (Daily Readings converted for calculations)		Flag = 1 If Producing to Waste (tank level above	Flag = 1 If Tank Level Below Critical Tank Level @	Water Use (Set to zero if tank is wasting) (Daily demand for a 24 hour period, prorated)		
Year	Mo.	Day	Hour	Min	Tank	Use/100	Note	Date Code	Flow into Tank	Elev 15.5 ft	Elev 10.0 ft	gallons	Outflow, GPM	Daily Demand
2012	12	23	19		15.0	416		12/23/12 19:00	41,600	0	0	41,600	30.1	43,409
2012	12	24	20		16.0	432		12/24/12 20:00	43,200	1	0	0	0.0	0
2012	12	25	21	30	16.0	387		12/25/12 21:30	38,700	1	0	0	0.0	0
2012	12	26	21		16.0	298		12/26/12 21:00	29,800	1	0	0	0.0	0
2012	12	27	21		16.0	295		12/27/12 21:00	29,500	1	0	0	0.0	0
2012	12	28	21		16.0	279		12/28/12 21:00	27,900	1	0	0	0.0	0
2012	12	29	20		16.0	324		12/29/12 20:00	32,400	1	0	0	0.0	0
2012	12	30	16		16.0	293		12/30/12 16:00	29,300	1	0	0	0.0	0
2012	12	31	18		16.0	312		12/31/12 18:00	31,200	1	0	0	0.0	0

Camptonville Water System Evaluation and Improvement Study

Camptonville Community Service District

December 2012

Contents

Section 1: Community Description 4
Introduction and System Description 4
1.2 Objectives 7
1.3 California Regulations 7
1.4 Connections 7
1.5 Current System Demands 7
1.6 Future Demands 8
Section 2: Water Source Supply 8
2.1 Requirements 8
2.2 Surface Water Capabilities 9
2.3 Groundwater-Well Capabilities 9
2.4 Improvements 10
Section 3: Distribution System 10
3.1 Requirements 10
3.2 Current Capabilities 13
3.3 Condition Assessment 13
3.4 Identify Improvements 13
Section 4: Storage 13
4.1 Requirements 13
4.2 Current Capabilities 15
4.3 Condition Assessment 15
4.4 Identify Improvements 15
Section 5: Treatment 15
5.1 Requirements 15
5.2 Current Capabilities 16
5.3 Condition Assessment 17
5.4 Identify Improvements 17
Section 6: Implementation 17
6.1 Recommended Improvements 17
6.2 Environmental Compliance 18
6.3 Land 19

6.4 Engineering Design/ Bidding 19
6.5 Construction 19
6.6 Cost Estimate 19
6.7 Schedule 20

List of Tables

Table 1: Average System Demand and Fire Flow Demand 7
Table 2: Well Depth, Yield, and Status 8
Table 3: Current Well Source Capacity 9
Table 4: Title 22 Treatment Level Requirements 14
Table 5: 1988 Groundwater Quality Results 14
Table 6: Estimated Itemized Costs 17

List of Figures

Figure 1: Vicinity Map 4
Figure 2: Site Map 5
Figure 3A: System Plan 10
Figure 3B: System Plan 11
Figure 4: Site Plan 13
Figure 5: Proposed Camptonville Water System Improvement Schedule 20

Appendix A: Supporting Data 21
Appendix B: Water Rights 28

Section 1: Community Description

Introduction and System Description

The Camptonville Community Services District (CCSD) is responsible for the oversight of the water system serving the community of Camptonville (water system # 5800924) , an unincorporated area consisting of about 81 single-family dwellings, a public school, and three businesses. Camptonville is located in the Tahoe National Forest about 45 miles northeast of Marysville and just east of New Bullards Bar Reservoir in the eastern portion of Yuba County, see Figure 1 for location.

The primary source of water supply for the town is the perennial stream in Campbell Gulch. Water from the stream is diverted through a concrete check structure. The diversion structure conveys water to the treatment plant via a 6 inch pipe. The existing pipe in Campbell Gulch, can deliver up to 216,000 gallons of water per day (gpd), or 150 gallons per minute (gpm), to the treatment plant. However, drought cycles have occurred five times in the last 30 years causing shortages. Typically in the late summer, flows in Campbell Gulch decreases substantially in volume.

A secondary source of water supply are the two stand-by wells used for short periods, that can produce up to 20,000 gallons a day (14 gpm). These wells are not used except in extreme emergencies due to high iron and manganese levels and reliability issues.

The potable water system consists of surface water diversion works in Campbell Gulch, three groundwater wells, treatment plant and chlorinator, one 64,000 gal storage tank, and the distribution system. The diversion works brings water from Campbell Gulch to the treatment plant. The treatment plant consists of five (5) slow sand filters. Treated water is stored in the storage tank adjacent to the treatment plant. During periods of low flow conditions in Campbell Gulch the groundwater wells are used to supplement surface water. Figure 2 is a site map showing the location and features of the Camptonville water system.

The most recent water source, treatment plant and distribution system modifications were built in 1991. The plant has five slow sand filters, a chlorinator, and a 64,000 gallon storage tank. The water distribution system has 72 connections, which includes a public school and three businesses. The bolted steel panel storage tank has been inspected and maintained. The existing treatment plant has a maximum capacity of 93, 600 gpd (65 gpm).

CCSD owns the property upon which the water system is located. Pipe lines are predominately located within the public right of way. Assessor's parcel numbers are shown on figures 3 and 4. Parcel information is summarized and located in Appendix A.

In summary, Camptonville's water system during critical, high fire hazard and high water usage times is inadequate to meet the needs of the community. The treatment plant and storage tank are sub-standard to meet demands. Although the treatment plant provides water that meets public health standards, it does not meet the requirements of Title 22 maximum daily demand or fire demands in the summer. The Camptonville Community Service District does not have the funds to repair and bring the system into compliance to meet appropriate standards.

Figure 1: Vicinity Map

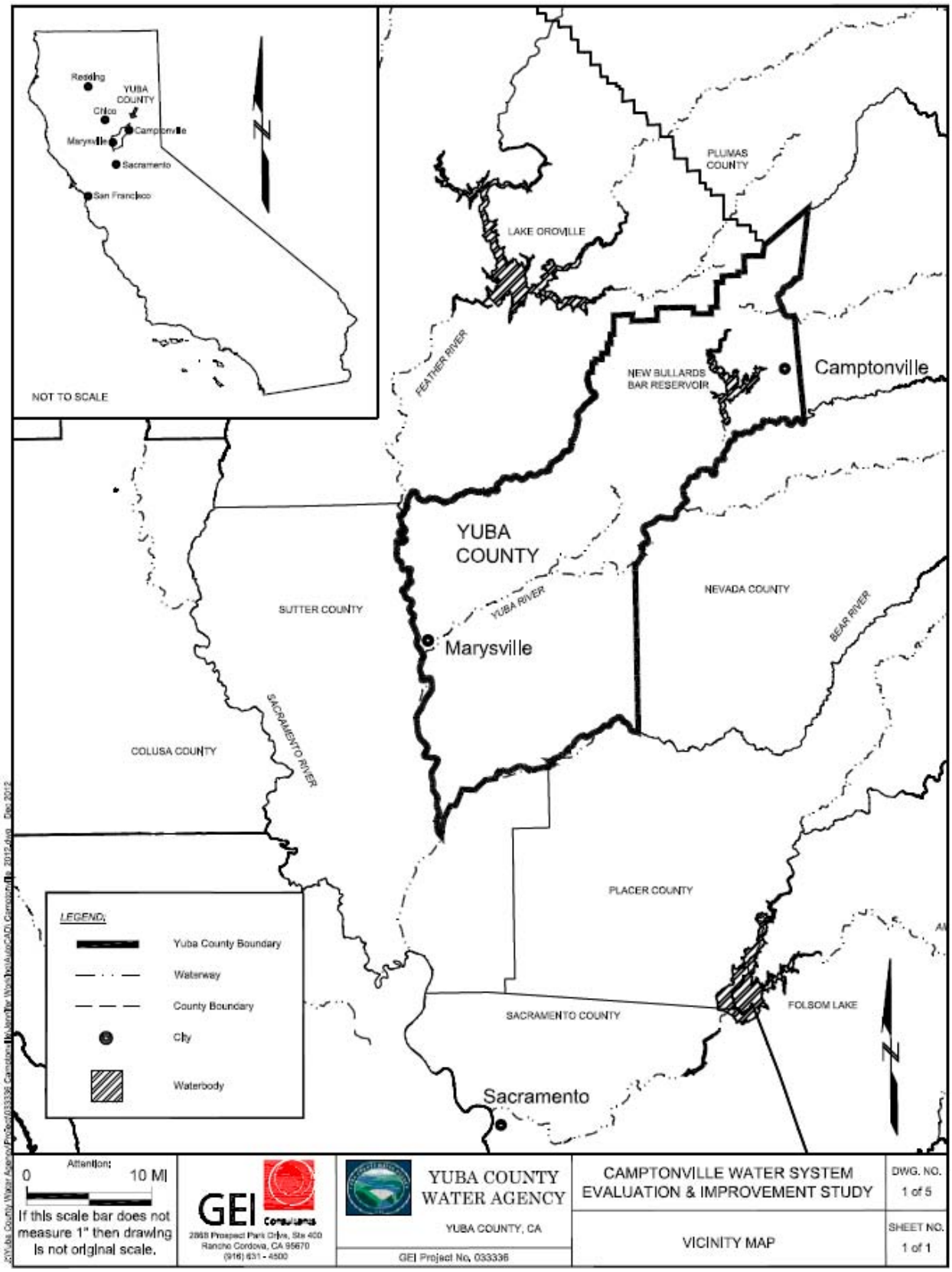
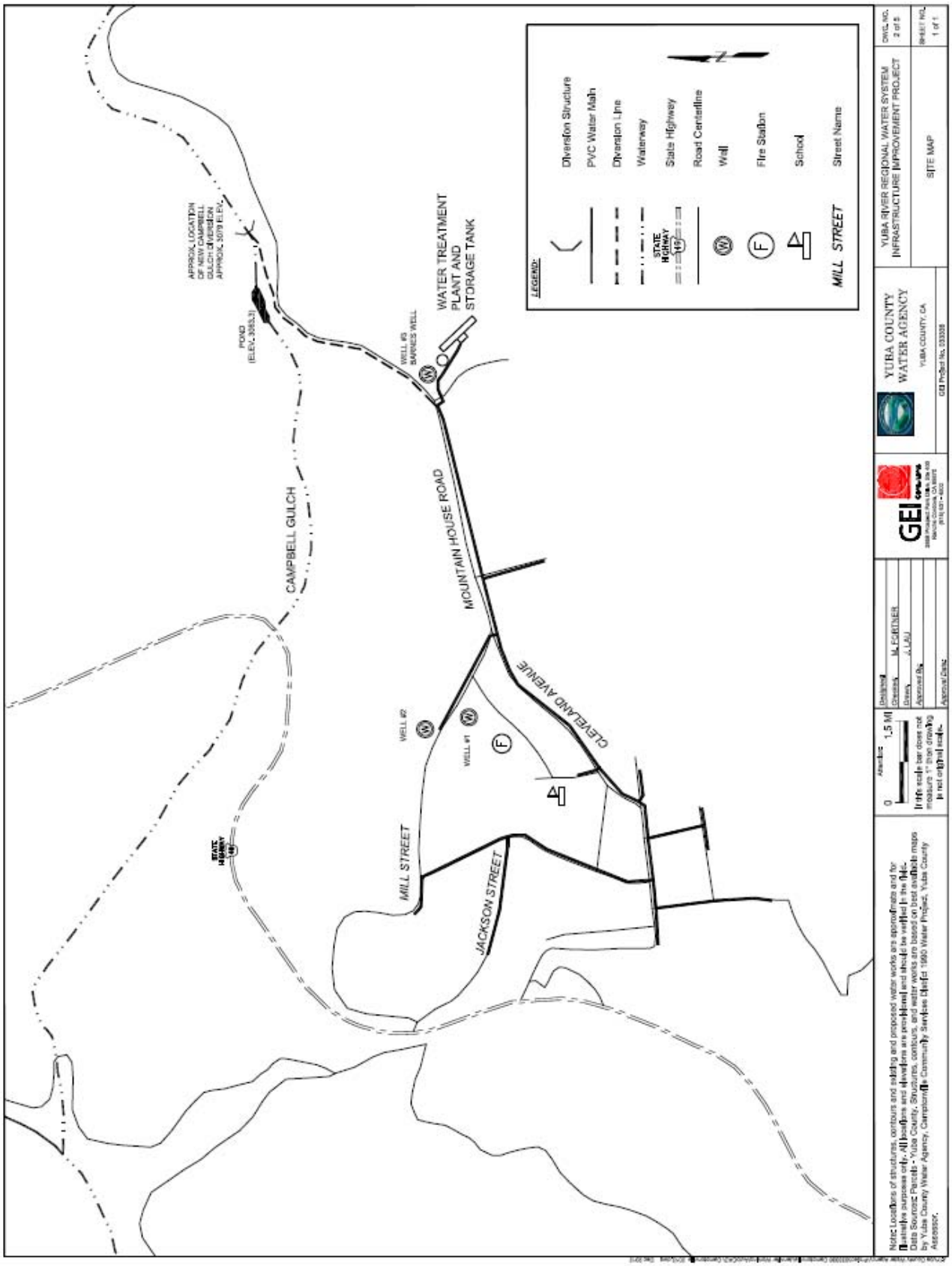


Figure 2: Site Map



1.2 Objectives

The objective of this study is to describe the existing water system, evaluate the system compared to current demands, and develop a plan to bring the system into compliance to the appropriate standards.

1.3 California Regulations

The CCSD is regulated by the California Department of Public Health. Rules and regulations governing the water system include:

- California Health and Safety Code
- California Code of regulations, Title 22, Chapter 15,Domestic Water Quality
- California Code of Regulations, Title 22, Chapter 16, Waterworks Standards
- California Code of Regulations, Title 22, Chapter 17, Surface Water Treatment

1.4 Connections

Camptonville has approximately 81 single-family residents serviced by 68 residential connections, three commercial connections, a public school connection and 12 wharf fire hydrants.

1.5 Current System Demands

Section 116555 of the California Health and Safety Code requires that a public water system provide a reliable supply of pure, healthful, potable water at all times. A technical evaluation of the physical features and operation of the system is essential in order to assess the capacity of the system. The technical evaluation will also assess the need for additional facilities to accommodate growth over the next ten years.

Definition of Demands

Domestic water demands are typically reported as average day demand, maximum day demand, and peak hour demand:

- Average Day Demand (ADD) – Typically used to develop water resource plans.
- Maximum Day Demand (MDD) – Typically occurring during extended hot periods of the summer and around summer holidays, MDD refers to the highest 24-hour average flow, usually reported in gallons per minute (gpm).
- Peak Hour Demand (PHD) - Typically occurring during an extended hot period of the summer, PHD refers to the highest 60-minute water use, usually reported in gpm.

Water System Demand

Water availability conditions experienced by the CCSD water system can be framed into two operating conditions. These conditions are defined as normal water availability, and water emergency. During normal water operations the ADD for CCSD's water system is about 500 gpd/residential dwelling (Appendix A). As outlined in the California Code of Regulations Title 22, Water Works Standards (Title

22), the MDD can be estimated as 2.25 times the ADD and the PHD can be estimated as 1.5 times the MDD.

During water emergency conditions, CCSD reduces the base usage to meet minimum community demands without irrigation. Under this condition, rationing of water and an increased tiered water rate are in place to minimize usage.

Based on these conditions and Camptonville's population, CCSD water demands are summarized in Table 1.

Table 1: Average System Demand and Fire Flow Demand

	Flow, gpd	Flow, gpm
Normal Water Availability		
ADD	43,200	30
MDD	108,000	75
PHD	162,000	113
Water Emergency		
ADD*	18,144	13
MDD*	40,320	32
PHD*	68,040	47
Fire Flow (for 2 hours)	-	500

* Estimated as 42% of normal demands

Water for emergency fire suppression (fire flow) must be available to fire hydrants within the service area. For residential areas, the fire flow requirement is 500 gpm for two hours.

1.6 Future Demands

Water demands are typically divided into domestic (residential, commercial, and industrial non-fire) demands of water customers and fire suppression needs. There are no industrial connections identified in Camptonville.

According to the Yuba County General Plan Update, there is little to no planned growth for the unincorporated areas of Yuba County. As a result, for the purposes of this report, no significant planned growth is anticipated over the next ten years.

Section 2: Water Source Supply

2.1 Requirements

Title 22 requires that the water supply be capable of sustaining the maximum daily flow at all times. As described in Section 1, the MDD for this system is equal to 75 gpm with normal water availability. Having the water supply meet MDD allows the system to meet demand during the maximum daily conditions without a reduction in system storage.

2.2 Surface Water Capabilities

The community of Camptonville is primarily served by surface water from Campbell Gulch. The water is diverted from a small check structure on Campbell Gulch about 0.4 miles upstream from the community. Water supply from the Campbell Gulch Diversion is variable and experiences periods of low flows during the late summer. The existing pipe from Campbell Gulch Creek can deliver up to 216,000 gallons of water per day (150 gpm) to the treatment plant, which has a maximum daily capacity of 93,600 gallons a day[1].

Records for stream flow in Campbell Gulch Creek are limited. Based on observation from CCSD in dry periods flow in the creek is minimal. These observation correlate with dry year or critical dry classifications for water year type forecasted by DWR. It is assumed that for late summer and source supply analysis that the stream has no flow for the months of September, October, and November, or about 100 days, during low flow conditions. Total supplemental water needed during a drought is about 33 acre-feet.

A review of the area shows that there are no other public water systems within one mile of CCSD system. Yuba County Water Agency (YCWA) operates several surface water diversions within the basin. Log Cabin Dam, on Oregon Creek, is the closest diversion located approximately two miles distant and 1000 feet below Camptonville.

Willow Creek drains into New Bullards Bar Reservoir and passes within ¾ of a mile of Camptonville, but does not have a readily available diversion. Further investigation with YCWA or Nevada Irrigation District (NID) should be initiated to explore other surface water source

2.3 Groundwater-Well Capabilities

The two stand-by wells serving Camptonville are unreliable and are not used except in extreme emergencies due to high iron and manganese levels. These wells are over 25years old and their condition needs further investigation. For short periods these wells can produce up to 20,000 gallons a day. The 1988 expected yield from these wells is tabulated below.

Table 2: Well Depth, Yield, and Status

Well	Status	Well Depth ft.	Static Water Level ft.	Well Seal ft.	Yield, gpm
Well No. 1	Standby	400	NA	NA	12
Well No. 2	Standby	350	NA	NA	37

CCSD has reported that actual long term pumping from all of its wells is approximately 14 gpm.

Title 22 requires capability to meet MDD with the highest-capacity source off line. The maximum surface water flows, well production capacities, and the required capacity are listed in Table 3.

[1] Based on 1990 proposed waterworks

Table 3: Current Well Source Capacity

Source	Capacity, gpm
Campbell Gulch Diversion	150
Well #1	12
Well #2	37
Water Demand and Capacity	
Maximum Day Demand (MDD)	75
Total Capacity w/Highest Source Off Line	14
Capacity Deficit	61

2.4 Improvements

Dry or critically dry cycles have occurred five times in the last 30 years. In the late summer, during dry cycles, Camptonville's water sources decrease substantially in volume. Climate change may increase periods of dry and a low water source volume. There are documented episodes of so little water available that water rationing was needed. There are multiple improvements that would aid in addressing the supply shortfall. These include existing well evaluation and rehabilitation, and evaluation of new well or surface water identification and development.

Section 3: Distribution System

The water system contains a total of 6,500 linear feet of distribution piping. The system is made up of predominantly 6-inch diameter pipe with the remainder being 4-inch and 8-inch. The system has 12 fire hydrants used for fire suppression. Water meters are located at each service connection. These meters are over 20 years old and in many cases need replacement. Figures 3A and 3B show the distribution system plan with pipe and service locations.

3.1 Requirements

Title 22 prescribes minimum requirements for public water systems. In general, Title 22 requires that the distribution system has adequate hydraulic capacity to maintain a minimum operation pressure of 20 pounds per square inch (psi) at all service connections during the peak hour demand and during average day demand plus design fire flow. The minimum pressure is required to be only 5 psi at areas without service connections, and may be less for short lengths of pipe adjacent to storage reservoirs.

In accordance with generally accepted engineering practice, pipelines are typically sized so that internal flow velocities during the maximum day flow conditions do not exceed 5 feet per second (fps). Velocities may exceed 10 fps during fire flow conditions if the minimum pressure is maintained.

Figure 3A: System Plan

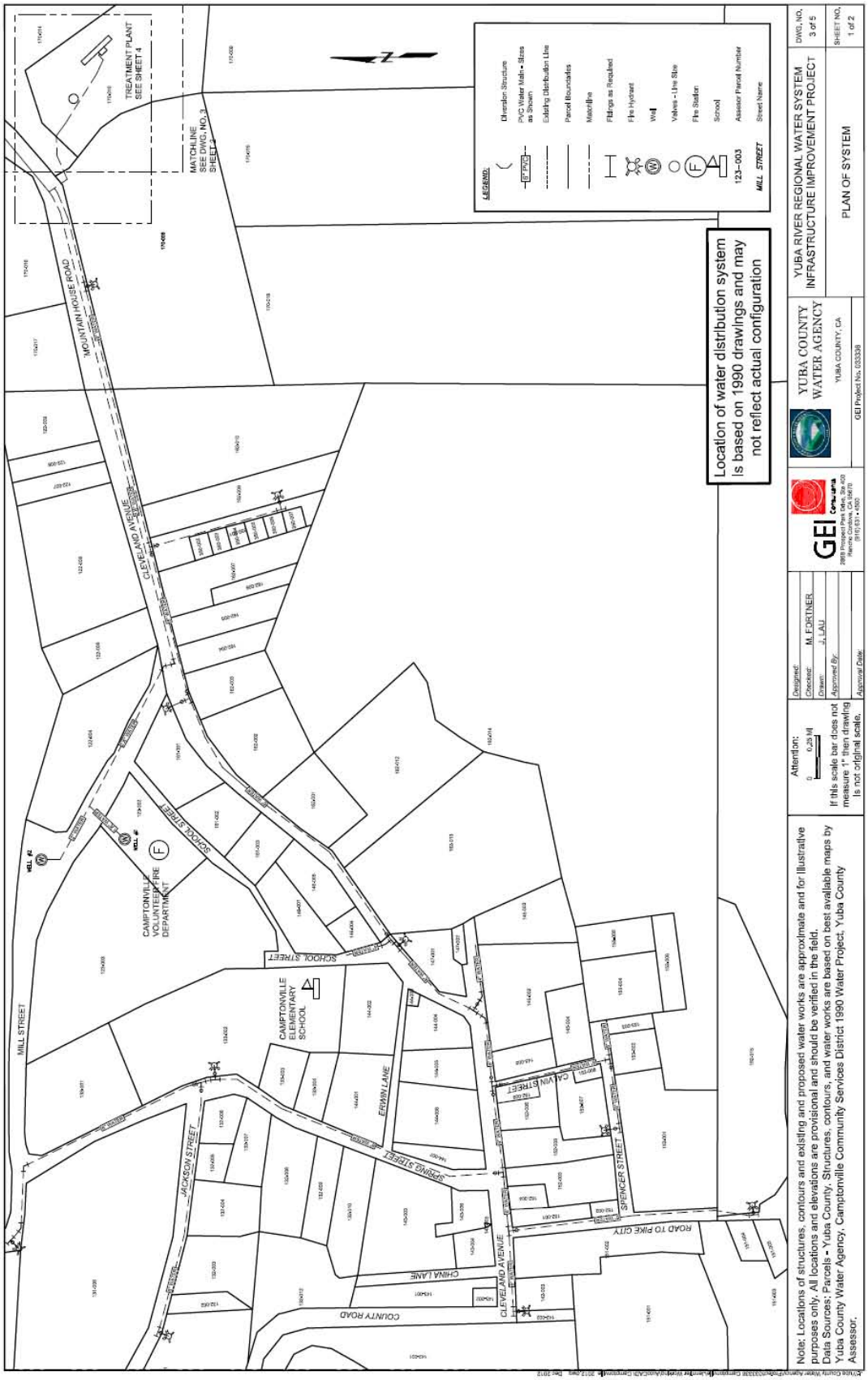
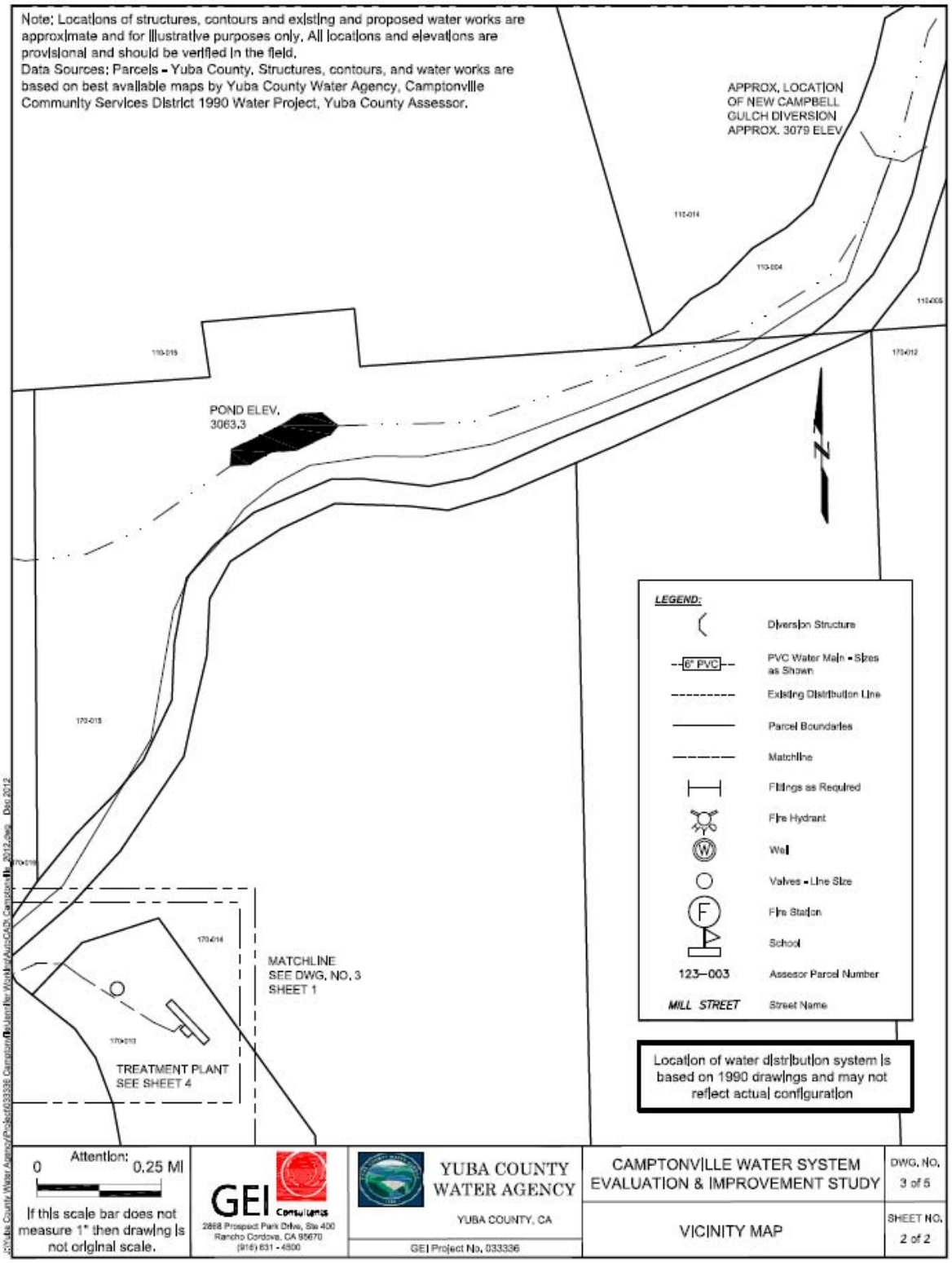


Figure 3B: System Plan



3.2 Current Capabilities

As discussed previously, the fire flow demand is 500 gpm for two hours (60,000 gallons). The only fire flow supply is from the 64,000 gallon storage tank. Pressure results at hydrant locations are not available but based on elevation (head) comparisons, from the storage tank to the fire hydrants, there is adequate pressure.

3.3 Condition Assessment

Overall the condition of distribution pipes and hydrants is adequate and meets standards. Meters in the community are reportedly in despair and require replacement. In addition, backflow prevention valves and cleanouts are needed.

3.4 Identify Improvements

Conduct pressure tests at hydrants to verify adequate pressure. Assess meters and identify scope of replacement. Install backflow prevention devices and inspect the four dead-end cleanout valves. The system should be mapped to locate valves, meters, and other distribution system water works.

Section 4: Storage

The potable water system has one storage tank with a capacity of 64,000 gallons. This tank is located near the treatment plant, see Figure 4.

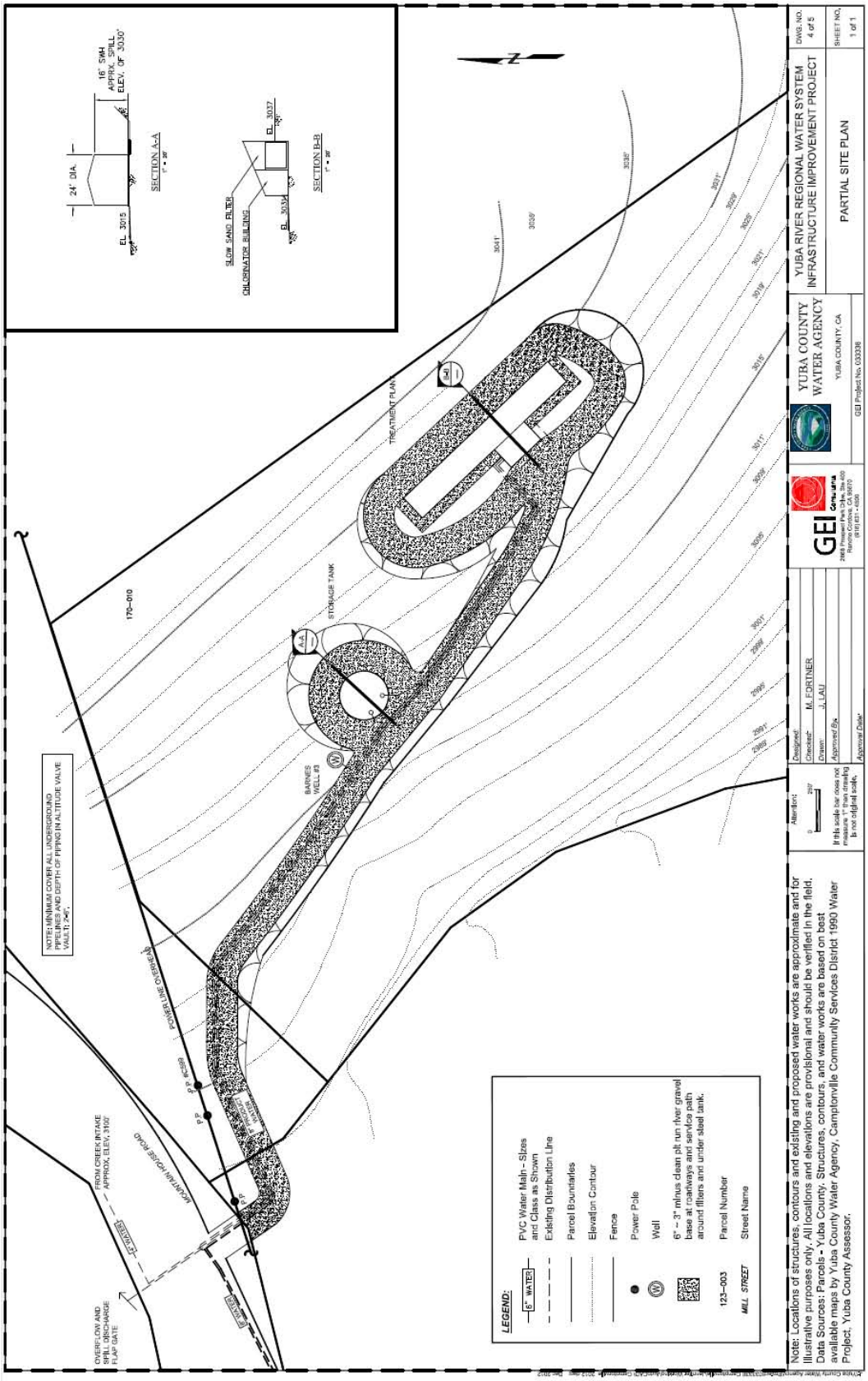
4.1 Requirements

Storage is typically used to provide for the difference between peak demand and maximum day demand (operational storage), and to provide for the fire flow and emergency needs.

As outlined in Section 64554 of the Water Works Standards (Title 22), "*a system with less than 1,000 service connections shall have storage capacity equal to or greater than MDD, unless the system can demonstrate that it has an additional source of supply or has an emergency source connection that can meet the MDD requirement*." Peak hour demand need not be met for a system with less than 1,000 service connections. The MDD during normal water demand is 108,000 gallons per day.

The system must also provide storage for fire flow conditions, which in this case is 500 gpm for 2 hours which equals 60,000 gallons. In order to comply with Title 22, the water system must store a minimum total of 168, 000 gallons, which is equal to the MDD plus fire suppression.

Figure 4: Site Plan



4.2 Current Capabilities

The storage tank is located about 100 feet northeast of the treatment plant east of Camptonville off of Cleveland Avenue. Construction plans for the 1991 Water Project indicate that the 64,000 gallon storage tank is a bolted steel tank. This was verified during a visual inspection. The tank sits on a concrete pad with an elevation of approximately 3,015 feet, roughly 200 feet above the community of Camptonville. According to CCSD the tank has a diameter of 35 feet and a maximum water level of 16 feet, equating to 64,000 gallons of storage capacity.

The 64,000 gallon storage tank has been inadequate to handle the maximum day demand during late summer months during dry or critically dry years. Several times during a dry summer, water users report lack of water. The existing storage is much less than the required storage of 168,000 gallons and therefore does not meet Title 22 requirements.

4.3 Condition Assessment

The 64,000 gallon bolted storage tank has been inspected and maintained. It is currently serviceable but will eventually need to be replaced. Total minimum needed storage is 168, 000 gallons. The existing tank does not have level controllers or an auto dial alert.

4.4 Identify Improvements

Given the current fire flow requirements along with MDD water usage an additional storage tank is needed and should be at least 120,000 gallons.

It is recommended that an additional storage tank should be installed adjacent to the existing tank. The construction plans for the 1991 Water Project indicates that at the time of construction of the original water storage tank and treatment plant, space was left available for future construction of an additional storage tank. The new storage tank will be 120,000 gallons, which will provide enough storage capacity to address the Title 22 requirements during peak fire season. Moreover, the new tank will provide enough storage to allow for the 64,000 gallon tank to be brought off-line for retrofit or replacement.

Section 5: Treatment

5.1 Requirements

Chapter 17 of Title 22 Standards states that "*Each supplier using an approved surface water shall provide multibarrier treatment necessary to reliably protect users from the adverse health effects of microbiological contaminants…*" The water system shall also provide disinfection treatment to ensure a total of 99.9 percent reduction of *Giardia lamblia* cysts and viruses through filtration and disinfection. Title 22 also specifies that the disinfection system is required to have redundant components to ensure disinfection and an automatic shut-off of delivery whenever there is insufficient residual disinfectant concentration in the water. Under Title 22, water suppliers are required to monitor the turbidity level, total coliform, fecal coliform, and *E. coli*. Table 4 summarizes the Title 22 treatment requirements.

Table 4: Title 22 Treatment Level Requirements

Treatment Method	Measurement	Limit

Slow sand filtration	Turbidity	< 1.0 NTU in 95% of measurements taken each month
		< 5.0 NTU at any time
Disinfection	Residual of disinfection in system	> 0.2 mg/L for more than 4 hours in 24 hours
		Detectable in 95% of samples taken each month, or HPC < 500 colony forming units/mL

Title 22 also gives Maximum Contaminant Levels (MCLs) for organic and inorganic chemicals, and radioactivity, as well as Secondary MCLs.

5.2 Current Capabilities

The water treatment plant has five slow sand filters, a chlorinator and a 64,000 gallon storage tank and has a maximum capacity of 93,600 gallons per day (65gpm). The 1990 design included six slow sand filters with a maximum capacity of 115,200 gpd (80gpm). During water delivery from Campbell Gulch the plant has had minimal water quality issues delivering adequate water to the Camptonville community. In times of dry conditions decreases in surface water have necessitated water rationing and trucking in extra water.

There is a lack of control and metering on water flows through the water treatment plant which makes it difficult to insure adequate disinfection of the water. In addition, there is inadequate water treatment capacity in the slow sand filters for filtering more than a recommended 65 gpm of raw water.

The two stand-by wells connected to the treatment plant and are unreliable. They are used only in extreme emergencies due to high iron and manganese levels. In 1988, and 2011 water sample results of the groundwater water quality for secondary contaminants were evaluated and are provided in Table 5.

Table 5: 1988 Groundwater Quality Results

Well	Nitrate (ppm)	*Iron mg/L	*Manganese mg/L	*Arsenic mg/L	Elec. Cond. (EC) micromhos/cm @ 25° C	Remarks
Christian 8/10/1988	6.6	< 0.05	0.04	< 0.01	970	does have filter - sample apparently taken after treatment
Pittman 7/30/1988	0.4	< 0.05	< 0.01	< 0.01	41	
Well B 6/13/2011	NA	14.2	0.41	NA	350	Sample not tested for nitrate & Arsenic
Title 22 Standards	**45**	**0.3**	**0.05**	**0.05**	**--**	

Some of the data in table 5 is over 20 years old and reevaluation with more recent water quality samples is warranted.

5.3 Condition Assessment

Camptonville's water treatment plant was built in 1991 and now requires expansion and improvements to parts of the water treatment system to maintain current California state water quality standards and recommended quantities of water.

5.4 Identify Improvements

As discussed above, the water treatment plant has a maximum capacity to treat 93,600 gallons per day (65gpm). The original design of the treatment plant had 6 slow sand filters; due to budget constraints at the time the plant was built with, only five (5) slow sand filters. The water treatment plant's capacity should be expanded to provide up to 115,200 gallons per day (80gpm). During average conditions the plant will treat 43,200 gpd. The expansion beyond the current 93,600 gallon per day capacity would be from construction of one additional 216 square foot (max.15 gpm) slow sand filter, and bring plant maximum slightly above the estimated MDD of 75 gpm.

Iron and manganese are regulated by Secondary MCLs, a standard established to address issues of aesthetics, not health concerns. Per Title 22, the consumer acceptance contaminant levels are 300 micrograms per liter (µg/L) for iron and 50 µg/L for manganese. Amounts of iron and manganese in excess of the recommended limit can cause metallic tastes, rust-colored (iron) or brackish (manganese) stains on plumbing and utensils, and dingy laundry. A green sand filter could be installed to remove iron and manganese from the well water. However, more information is needed to know what the wells can reliable produce and concentrations for treatment. Blending of surface water and well water is another option. Based on the April 1 forecast CCSD can anticipate water shortages in dry or critically dry years and plan accordingly.

Adequate space exists at the site for a new storage tank, slow sand filter, and green sand filter. The additional slow sand filter box will need to be enclosed and added on to the existing water plant structure. The existing plant is in need of repairs including chlorinator relocation, repair of cracks the sand settling tanks and roof repairs. A space already exists for a green sand filter. New filters can be plumbed into the existing distribution system. A new, reliable water source will be developed and connected to the treatment plant.

Section 6: Implementation

Implementation of improvements by CCSD depends on deficiencies of the existing system, cost of improvements, and priority of improvements. This section summarizes recommendations for addressing the improvements listed throughout the report and provides implementation guidance.

6.1 Recommended Improvements

Recommend improvements for implementation are proposed below. Some of these improvements may take longer to implement depending on alternative analysis. Improvements goals incorporate implementation components that will provide relatively immediate capacity and water quality improvement for the community. The recommended improvements are as follows.

- Add an additional 216 square feet of slow sand filter to the treatment plant.
- Add an additional 120,000 gal storage tank to meet MDD and fire flow capacity requirements.

- Add a level controller and automatic dial alert for the existing 64,000 gallon storage tank.
- Add new turbidity meter and 6 flow meters at the treatment plant.
- Rehabilitate the two existing CCSD wells to improve groundwater conditions and increase pumping capacity.
- Repair and modernize treatment plant including controls.
- Repair storm damage at diversion check structure and access.
- Conduct an analysis of additional surface water sources. This may include NID, YCWA, PG&E or other surface sources to supplement water supply during water shortages.
- Conduct an analysis of additional ground water sources, either existing or new wells to supplement water supply during water shortages. Depending on results, conduct well testing, water quality sampling for additional wells for supplemental water.
- Based on the groundwater quality analysis add additional water quality treatment for secondary contaminants
- Install new water meters as required
- Map the distribution system
- Develop a written operations and maintenance plan

6.2 Environmental Compliance

State water programs require compliance with the California Environmental Quality Act (CEQA). If federal funding is involved in the project National Environmental Policy Act (NEPA) compliance is also required. At this time it is anticipated that NEPA compliance will not be necessary for the project.

The Camptonville Community Services District can act as the Lead Agency under CEQA or request that Yuba County act as the Lead Agency. An Initial Study must be conducted by the Lead Agency to determine if the project will have any potentially significant effects on the environment. This involves completing a CEQA check list and my also include contacting the appropriate regulatory agencies to initiate comments. If the agencies have concerns an Environmental Assessment may be needed. Acceptable mitigation can likely be included in the project to make a finding resulting in a Negative Declaration (Finding of No Significant Impacts, NEPA).

If the Environmental Assessment shows there is a potential for more significant environmental impacts, the Lead Agency may consider completing an Environmental Impact Report (EIR). This takes considerably more time and cost than a Negative Declaration.

Preliminarily there are no known environmental factors, such as wetlands, floodplains, or waterways associated with the planned improvements. The proposed improvements are needed for health and safety compliance, and are not growth inducing. Unique plant or animal communities , or other fish and wildlife habitats will be evaluated through the CEQA process as well as historic, cultural , archeological ,

traffic and air quality impacts that could be affected by the proposed water system improvements. The CEQA process should be completed prior to construction and therefore should begin as quickly as possible. It is anticipated that the CEQA process will take about 4 months.

6.3 Land

There are no additional land requirements for planned improvements. If additional water sources are needed improvements may require additional land or easements depending on the location of those water sources. This will be evaluated further during the design process.

6.4 Engineering Design/ Bidding

Engineering for the improvements can begin once project features have been approved by CCSD and significant progress has been made in the CEQA process. The CCSD can advertise a Request for Proposals from qualified engineering firms to perform the final design for the described work. This process will take about two months to select a design firm. Once a civil engineering firm has been selected it is anticipated that the design for the improvement plans will take about two months.

Subsequent to final improvement plan preparation CCSD can advertise for construction companies to build the project. The bidding process will take about a month to advertise and award the project. Construction is estimated to take about two and a half months.

6.5 Construction

The bidding process for construction will take about a month to advertise and award the project. Actual construction is estimated to take about two and a half months.

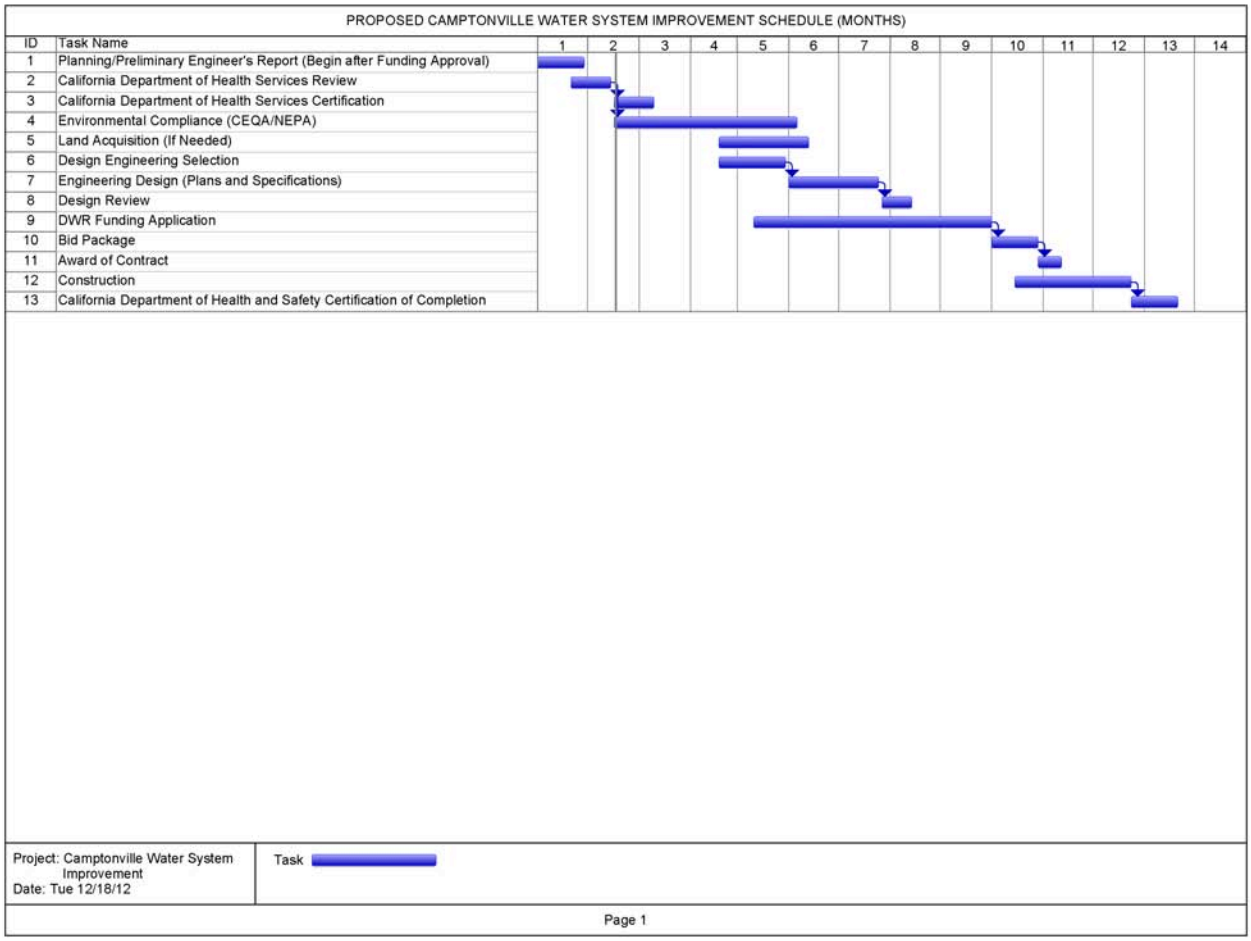
6.6 Cost Estimate

Table 6: Estimated Itemized Capitol Costs

Description	Cost, $
Mobilization/demobilization	$5,000
Earthwork, roadway & site preparation	$60,000
Forms/concrete	$12,000
Sand filter media	$7,500
Greensand filter system (final design TBD)	$25,000
3” to 6” PVC piping	$5,500
6- Valves in treatment plant	$6,500
Roof extension	$7,000
120,000 gal Steel Storage tank	$180,000
Well Rehabilitation	$120,000
Distribution meters & anti-siphon	$74,000
Modernization & repair of treatment plant	$23,700
Repair of diversion check structure	$25,000
Inspections	$5,000
Total Capital Cost	**$556,200**

6.7 Schedule

Figure 5: Proposed Camptonville Water System Improvement Schedule



Appendix A: Supporting Data

Camptonville Community Service District Property

http://www.co.yuba.ca.us/services/parcel%20search/

Water Diversion Dam Property
Assessor ID Number: 064 110 004 000
Assessee: CAMPTONVILLE COMMUNITY SERVICE DISTRICT
Last Recording Date: 3/20/1991
Acres: 4.00
Land Use: OTHER NON-TAXABLE PROPERTY
Assessment Description: PTN SEC 1 TWP 18 RGE 8
Assessment Status: ACTIVE

Water Treatment Plant – Well #3
Assessor ID Number: 064 170 010 000
Assessee: CAMPTONVILLE COMMUNITY SERVICES DISTRICT
Last Recording Date: 10/16/1990
Acres: 3.90
Land Use: OTHER NON-TAXABLE PROPERTY
Assessment Description: PT P-2 PM-79-90
Assessment Status: ACTIVE

Fire Station – Wells #1,2
Assessor ID Number: 064 123 002 000
Assessee: CAMPTONVILLE COMMUNITY SERVICES DISTRICT
Last Recording Date: 1/9/1989
Acres: 1.00
Land Use: OTHER NON-TAXABLE PROPERTY
Assessment Description: VARIEL LN-CMPT- PT L-1 BL-4
Assessment Status: ACTIVE

Camptonville Average Daily water use by Month

Notes:

Average is based on 2 years of record

For planning, use 43,500 gpd based on original 500 gpd per residential dwelling

2011 Consumer Confidence Report

Water System Name: **CAMPTONVILLE CSD** PWS #: **5800924**

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: SURFACE WATER WITH GROUNDWATER BACK-UP SUPPLY

Name & location of source(s): PRIMARY SOURCE – CAMPBELL'S GULCH

SECONDARY SOURCES – WELL A & WELL B

Drinking Water Source Assessment information: CAMPBELL'S GULCH IS A NATURAL STREAM THAT GETS DIVERTED ONE MILE ABOVE THE TOWN OF CAMPTONVILLE.

Time and place of regularly scheduled board meetings for public participation:

For more information, contact: Phone:

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (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.

Maximum Residual Disinfectant Level Goal (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.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

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

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

Variances and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (ug/L)

ppt: parts per trillion or nanograms per liter (ng/L)

ppq: parts per quadrillion or picogram per liter (pg/L)

pCi/L: picocuries per liter (a measure of radiation)

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.

Contaminants that may be present in source water include:

- *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, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, that 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, the USEPA and the state Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, 7, and 8 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The Department allows us to monitor for certain

contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	**Highest No. of Detections**	**No. of months in violation**	*MCL*	**MCLG**	**Typical Source of Bacteria**
Total Coliform Bacteria	(In a mo.) 1	0	More than 1 sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or *E. coli*	(In the year) 0	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or *E. coli*	0	Human and animal fecal waste

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	**No. of samples collected**	**90th percentile level detected**	**No. sites exceeding AL**	**AL**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	5	3.7	0	15	2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	5	0.16	0	1.3	0.17	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Sodium (ppm)	12/3/03	2.9	N/A	none	none	Salt present in the water and is generally naturally occurring
Hardness (ppm)	12/3/03	32	N/A	none	none	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided later in this report.

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
Total Trihalomethanes (TTHMs) (ppb)	8/19/11	8.1	N/A	80	N/A	By-product of drinking water disinfection.
Haloacetic Acids (ppb)	8/19/11	6	N/A	60	N/A	By-product of drinking water disinfection.

Chlorine (ppm) Storage Tank	Daily	0.33	0.18-0.60	[4.0 (as Cl_2)]	[4.0 (as Cl_2)]	Drinking water disinfectant added for treatment.

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	*Typical Source of Contaminant*
Manganese (ppb) Well B	6/13/11	410*	N/A	50	N/A	Leaching from natural deposits.
Zinc (ppm) Well B	6/13/11	0.10	N/A	5	N/A	Runoff/leaching from natural deposits; industrial wastes.
Copper (ppm) Well B	6/13/11	0.02	N/A	1	N/A	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Color (Units) Well B	6/13/11	6	N/A	15	N/A	Naturally-occurring organic materials.
Specific Conductance (uS/cm) Well B	6/13/11	350	N/A	1600	N/A	Substances that form ions when in water; seawater influence.
Chloride (ppm) Well B	6/13/11	5	N/A	500	N/A	Runoff/leaching from natural deposits; seawater influence.
Total Dissolved Solids (TDS) (ppm) Well B	6/13/11	210	N/A	1000	N/A	Runoff/leaching from natural deposits.
Iron (ppb) Well B	6/13/11	14200*	N/A	300	N/A	Leaching from natural deposits; industrial wastes.

TABLE 6 – DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	Notification Level	Health Effects Language
None					

******Any violation of an MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.*

Additional General Information on 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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

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. USEPA/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 Drinking Water Hotline (1-800-426-4791).

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 service lines and home plumbing.
Bullard's Bar

Recreation Facility is responsible for providing high quality drinking water, but cannot control the variety of materials used in
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 http://www.epa.gov/safewater/lead.

For Systems Providing Surface Water as a Source of Drinking Water

TABLE 8 - SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES	
Treatment Technique [(a)] (Type of approved filtration technology used)	SLOW SAND FILTERS
Turbidity Performance Standards [(b)] (that must be met through the water treatment process)	Turbidity of the filtered water must: 1 – Be less than or equal to 1.0 NTU in 95% of measurements in a month. 2 – Not exceed 5.0 NTU at any time.
Lowest monthly percentage of samples that met Turbidity Performance Standard No. 1.	Standard No. 1 was met every month of 2011.
Highest single turbidity measurement during the year	MARCH = 0.50
Number of violations of any surface water treatment requirements	Failure to initiate LT2 testing requirements

(a) A required process intended to reduce the level of a contaminant in drinking water.
(b) Turbidity (measured in NTU) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results which meet performance standards are considered to be in compliance with filtration requirements.

** Any violation of a TT is marked with an asterisk. Additional information regarding the violation is provided below.*

Summary Information for Violation of a Surface Water TT

VIOLATION OF A SURFACE WATER TT				
TT Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**
None				

Summary Information for Operating a Surface Water Source

We filter and disinfect surface water from Campbell's Creek & 2 groundwater wells as back up water supply.
All water is run through several slow sand filters to decrease turbidity & reduce the level of contaminants in your
drinking water.

Appendix B: Water Rights

Attachment **8**

Legal Opinion Regarding the Validity
of the Water Rights of the Camptonville
Water Works.

The old diversion and appropriation of water from the drainage of Campbell's Gulch to the town of Camptonville goes back to about 1852 when a man named Conklin ran a ditch about a mile to supply water power to operate a mill at the upper end of the town-site. According to W.R. "Bull" Meek's published "Reminiscences", excess waters were distributed to the town and various miners below the town.

It was soon discovered that a deep gold bearing channel led through the lower portion of the hill where the town had been located and much more water would be needed to work it. Therefore the Gold Ridge Ditch Company was formed by N.A. Watson, Aaron Calvin, David Calvin and two others, to bring additional water in three ditche and flume lines five and seven miles in length from Oregon Creek. These lines took several years to complete.

According to Thompson & West's "History of Yuba Co.", published in 1879, one Sanford Hall brought water by flume from a large spring 2½ miles east of town in 1857 to supply a plank tank with a capacity of 12,000 gals. Hall spent over $15,000 and had a flume several hundred feet long running from the tank, over the tops of the houses to the diggings. Water was drawn off in supply pipes down to the houses for the use of the citizens. ("Daily Alta Calif." November 8, 1887).

In 1859 Sanford Hall sold out to J.D. Andrews. These water businesses were worth something, two years previously N.A. Watson's one seventh share in the Gold Ridge Ditch Company sold for $18,000.

In 1860 still another flume was built from a spring on Oregon Creek by Everett, McClellan & Elwell. Mr. Elwell had ben active in the Mining Committee since 1852 and this group was probably connected with the Gold Ridge Ditch Company. They laid 1200' of six inch main pipe in the town and 800' of supply pipe and furnished four fire plugs. At that time this group was apparently utilizing the Campbell Gulch waters developed by Conklin as well as their Oregon Creek diversions.

In 1861 Everett, McClellon & Elwell bought out J.D. Andrews ans consolidated the water business. By 1879 it was all owned by J.P. Brown. These various sources of water would have been combined and used primarily in the Hydraulic mining at the lower end of town where Chinatown had to be moved and an entire hill was washed away.

Campbell Gulch was the first of these diversions because it was the nearest and cheapest to develope. Also, it was never abandoned because it could be maintained at less expense than the others. Also, Campbell Gulch waters would have had greater elevation and were more apt to be confined to pipes in order to

obtain water under pressure.

About this time the famous and very important invention of the Pelton Wheel was made in Camptonville, utilizing water under pressure in pipes to power a sewing machine at the Groves residence at the corner of Spring & Mill Streets. In those days many pipes were wooden and pipes of this nature are still discovered under the streets of the town.

After the hydraulic mining was made illegal because of excessive sedimentation in California's navigable rivers and bays in the 1880's, and most of the good gold bearing strata at Camptonville had been washed away, large amounts of water were no longer needed. The longer ditches and flumes from Oregon Creek were expensive to maintain and were therefore abandoned.

Camptonville's mining industry declined, but a smaller population stayed on in a more diversified economy. So the water system became a domestic water works instead of an industrial water supply by this time. After the turn of the century B.W. Calvin owned the water system. It should be noted that Aaron Calvin and David Calvin were some of the founders of the Gold Ridge Ditch Company and B.W. Calvin was probably a son of one of the founders.

At any rate, there is ample evidence that water was being diverted from Campbell's Gulch prior to 1914. At this time the diversion may have been by ditch and flume from Campbell Gulch to wooden tanks uphill from the corner of Main and Mill Streets, and pipes then distributed the water from the tanks to the town.

The Railroad Commission, the forerunner of the Public Utilities Commission, controlled the management of the Camptonville Water Works early in this century and in Decision Number 6772 the Commission notes that the water was diverted from Campbell Gulch and Worley Creek. However, the Worley Creek diversion was abandoned and its location is unknown.

In 1919, after the death of B.W. Calvin, the water rights were transferred to F.S. Labadie who operated a hotel in town. About 1930 the owner of a nearby log cabin diverted water from Campbell's Gulch to his own premesis. Labadie objected and finally personally pulled out the offending pipes. They were replaced so Labadie blew up the new diversion with dynamite. It was not replaced the second time. The log cabin now has a large well in the yard.

Acton Cleveland purchased the Water Works in 1943 from Labadie's widow. It was in a delapidated condition so Acton made several improvements, including a dam impounding a small reservoir. He purchased a half acre for the site of the dam and reservoir but unfortunatly the survey was inaccurate. Most of the dam and reservoir are on the neighboring lands of Ned Kissig.

In 1966 Cleveland filed a statement of diversion, number S 36, with the State Water Rights Board, and for several years thereafter he and his successor Mr. Groves filed their required tri-annual statement of water use. However, no such statement has been filed for several years by the present owner, Gladys Groves, widow of Mr. Groves. Since this is a pre-1914 water right, and the use has been obvious and continuous for those years, this neglect would not operate to extinguish the water right.

Cleveland sold the Water Works to Bill Groves in 1969, and his widow owns the Water Works today, in 1989, along with her son Leroy Groves. Bill Groves was well known for his diligent operation of the system, up until his death about 1978. The family has managed it since then. Several hundred feet of six inch pipe were installed from the Ness residence to Ned Kissig's property in 1982 and annually many leaks are repaired.

The town has always used what water it needs, and in dry weather this amounts to all of the water in the creek. Every year, in hot weather there is not quite enough water to supply the town, so these rights should be considered to be for an indeterminant amount, for as much as is needed or availiable.

These rights are senior to any other water use in the creek. There is one recent recordation, of an appropriatiom nearby, of a spring for the benefit of the before mentioned log cabin, by Pencik. This junior appropriation could be encroaching upon the Water Works Right, In times of insufficient water, the waters from the spring should be allowed to flow into Campbell Gulch for the benefit of Camptonville.

Incidentall, the water rights mentioned in Exhibit "A" attached to the grant deed pertaining to the Groves property in Campbell Gulch and recorded in Book 489, Page 192, Yuba County, refer to only riparian rights, and not to the water rights of the Camptonville Water Works under discussion here. The water rights of the water works are not appurtanent to the property mentioned in the grant deed, but are dependant upon the old diversion and continuous use described in this opinion.

There is sufficient evidence in historical documents, in the memory of residents of the town, in remaining artifacts and the physical and natural conditions of availiability of water, its location and elevation, to show that these waters have been continuously diverted for the benefit of the owners of the diversion since early times.

Therefore, it is my opinion that Gladys Groves does own the water rights of the Camptonville Water Works, in joint tenancy with her son Leroy, for as much water as is needed by the town of Camptonville and is availiable in Campbell Gulch, and that these rights are from a diversion previous to 1914.

John S. Buchter

July 10,1989

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Potential well drilling sites for the Town of Camptonville, Yuba County, California

Preliminary Report, March 20, 2013

Burkhard Bohm, Hydrogeologist, CA Lic. 337

Prepared for

Dean Marsh
Sauers Engineering, Inc., 440A Lower Grass Valley Road
Nevada City, CA 95959

This report is a summary of findings made during an investogation of potential well drilling sites for the town of Camptonville. A preliminary on-site visit under guidance from Mr. Mark Jokerst of the Camptonville Community Services District (CCSD) was conducted on March 4, 2013. This investigation focused mostly on areas that are currently accessible for the District. Drilling recommendations are made at the end of this report.

1. Data used

1) **Geologic maps**: the database of the CA Geological Survey (CGS) was queried for detailed geological maps. According to an inquiry at the California Geological Survey, no detailed geologic maps are available for the project area. The only useful map available is the Chico “2 degree sheet” (Saucedo and Wagner, 1992), which, at a scale of 1:250,000 does not show the kind of detail desirable for this effort. A copy (cut-out) from this map covering Camptonville and its immediate surroundings is included in the attachment.
2) **Topographic maps** obtained from the “Terrain Navigator” computerized topographic maps.
3) **Stereographic color aerial photos** obtained from the US Forest Service, Downieville Office.
4) **Well drilling reports** from the town and the nearby areas have been requested from DWR by CCSD but were not yet available to be included in this preliminary report. Whatever conclusions that are derived from interpreting these well data will be included in a follow-up. It is anticipated that some of this information may reveal certain zones of increased well productivity that may substantiate the fracture zones identified by aerial photos.

2. Data analysis

Topographical setting

The area is characterized by significant topographical elevation differences which affect the ground water hydrology at the town site and northeast of town.

The town of Camptonville is located on a flat ridge (an area of about 3000-by-3000 ft), sloping about 8% to the west. To the east it is connected to a ridge that separates the watersheds of Campbell Gulch in the north and Oregon Creek in the south. The topographical relief from east to west is more than 1100 ft within a distance of 2.25 miles. The bottom of the ravine north of town is at 2500 ft elevation where Campbell Gulch meets Willow Creek and 2200 ft at the bottom of Oregon Creek Canyon, with the town site in-between at an elevation of 2800 ft. in other words, the town area is located between two steep ravines, one about 300 ft deep in the north, and one about 500 ft deep in the south.

Geologic formations

According to the geological map the area of interest is underlain by Paleozoic and Mesozoic rocks. The map description provides a vaguely defined description indicating “metasedimentary rocks”, and ultramafic rocks. In the field this looks mostly like “shale”. Typically such formations make poor aquifers, requiring drilling in or near fracture zones associated with faults. Usually water pumped from wells in such formations is characterized by elevated iron and manganese levels.

Aquifer properties

With no pumping test data available at this time the discussion includes only the very general aquifer properties. Well yields in these type of bedrock aquifers are typically variable depending on the number of fractures intersected, which itself depends on proximity to recurrent faults. Recurrent faulting depends on seismic activity - a feature that is certainly not lacking in this part of the Sierra Nevada. However, the physical properties of these formations (“shale”) do not lend themselves very well for holding open fractures and joints, resulting typically in low yield wells – unless a well intercepts an open fracture near a fault zone. It is to be expected that in this area bedrock wells need to be at least 450 ft deep to intercept enough fractures to assure adequate yields and to provide enough available drawdown (‘pump-chamber’) even during a prolonged drought when static well water levels (SWL) are deeper. Greater well depths are required at higher elevation sites where depth to SWL is greater.

If a well just does not yield enough water, drilling at an alternative nearby location can sometimes yield better results, if the site is close to a fault.

Well drillers reports

Well drillers reports have been requested from DWR. Once available results of our analyses will be added to this report.

Structural geology: Fracture trace analysis

A fracture trace analysis was conducted using a set of color stereographic aerial photos obtained from the US Forest Service. The photos were examined with a WILD mirror stereoscope to map lineaments as indicators of faults.

The objective was to identify lineaments in the landscape that could indicate the existence of fracture zones in bedrock, typically associated with faults.

Photo lineaments were traced on a Mylar overlay sheet using indelible fine point color felt tip pens. The criterion for identifying lineaments was to look for continuing, albeit not always connected, linear topographical features in the landscape. Such features are often associated with streams and other drainage features. The following assumptions were made to identify faults on the land surface:

1. Fault motion in bedrock leads to quasi-linear stream channels (trellis patterns) in bedrock areas, where fault related permeability enhances ground water flow, weathering, and erosion, leading to the formation of stream channels and valleys. This is supported by the observation that in this climate stream flow is typically dependent on ground water flow.
2. Strike-slip Faults can lead to horizontal offsets of stream channels in alluvium and bedrock areas.
3. Fault motion triggers formation slumps, if not minor landslides which form “bowls” and other similar features in alluvial slope sediments.

The mapped lineaments adhere to at least two consistent trends (NW and NE). The repeated occurrence of these trends is a strong indication that these lineaments indicate fault traces:

I. A set of NW striking lineaments is interpreted to be associated with strike-slip (horizontal motion) fault elements.
II. A set of NE striking lineaments is interpreted to be associated with normal (vertical) fault movement.

While the lineaments are usually discontinuous some can be traced over long distances, sometimes up to several miles. In our experience the more productive well drilling sites in bedrock aquifers are typically associated with the NE trend, in particular where it intersects the NW trend.

It is important to understand that, while a fracture trace analysis can very effectively identify favorable drilling sites, it is difficult to place the drill site exactly on the fault trace without employing geophysical methods. In our experience good results can be achieved by employing a number of geophysical methods (including VLF, resistivity, and shallow electromagnetics). The district may want to consider these methods, however, due to

topography (narrow ravines, steep slopes) these methods are only of limited utility in this kind of terrain.

3. Drilling site recommendations

All sites that are currently accessible for the CCSD were visited on March 4. Our hydrogeologic analysis focused mostly on these areas since access is first prerequisite for drilling. The sites are indicated on the topographic map as yellow triangles, and marked with capital letters (A, B, C, D … etc.).

Most preferred sites

A. The area, indicated as "A" on the topo map, is near the current surface water intake in Cambell Gulch canyon, less than a mile NE of town:
    a. This part of the stream course is apparently associated with a NNE striking lineament that points to a particularly productive residential well about 1000 feet to the NNE. Reportedly this well was rated at 60 gpm (Mark Jokestr, pers. Communic).
    b. A spring located at the edge of the floodplain about 250 ft south of the intake is interpreted as suporting evidence for a fracture zone in this area.
    c. A good drilling site would be on a small meadow(floodplain area) immediately downgradient of the intake. It is easily accessible for drilling equipment.
    d. This site is particularly advantageous due to its close proximity to the water distribution system.

B. Open area below the water treatment plant (site "B"), about 0.5 mile east of town:
    a. This site was chosen due to its close proximity to the intersection of two lineaments, one striking NE and one striking NW.
    b. The disadvantage is that it is located on a hill side, more than 200 ft above Campbell Gulch about 900 ft to the north, which will probably require a deeper than usual well.
    c. An advantage is that it is located on land owned by the District, and hookup to the water distribution system ought be failrly easy.

C. A wet area indicated as "C" on the topo map:
    a. This site is apparently located in an EW directed shallow "draw" which reportedly is "swampy" in the early season of the year (M. Jokerst, pers. Communic.), most of which is now covered by fill.
    b. The "swampy" area could be an indiction of a fracture zone supporting shallow ground water flow. On the other hand the EW direction of this apparent lineament casts some doubt on the significance of this area.
    c. An advantage is that it is located in town making it easier to provide power supply, simplifying the hookup to the water distribution system.
    d. Site access would have to be negotiated with either the School District or the adjacent private landowner.

Other sites, less preferred:

D. The two parcels on which the existing two District wells are located ("D" on the map):
    a. Although the existing wells' yields are not overly impressive, the advantage is that these sites are already accessible.
    b. Given the low yield that is typical for these formations it is expected that the District will have to rely on several low yield wells to meet its ground water supply needs.
    c. Another option for consideration is to investigate the feasibility of increasing these wells' yield by well rehabilitation.

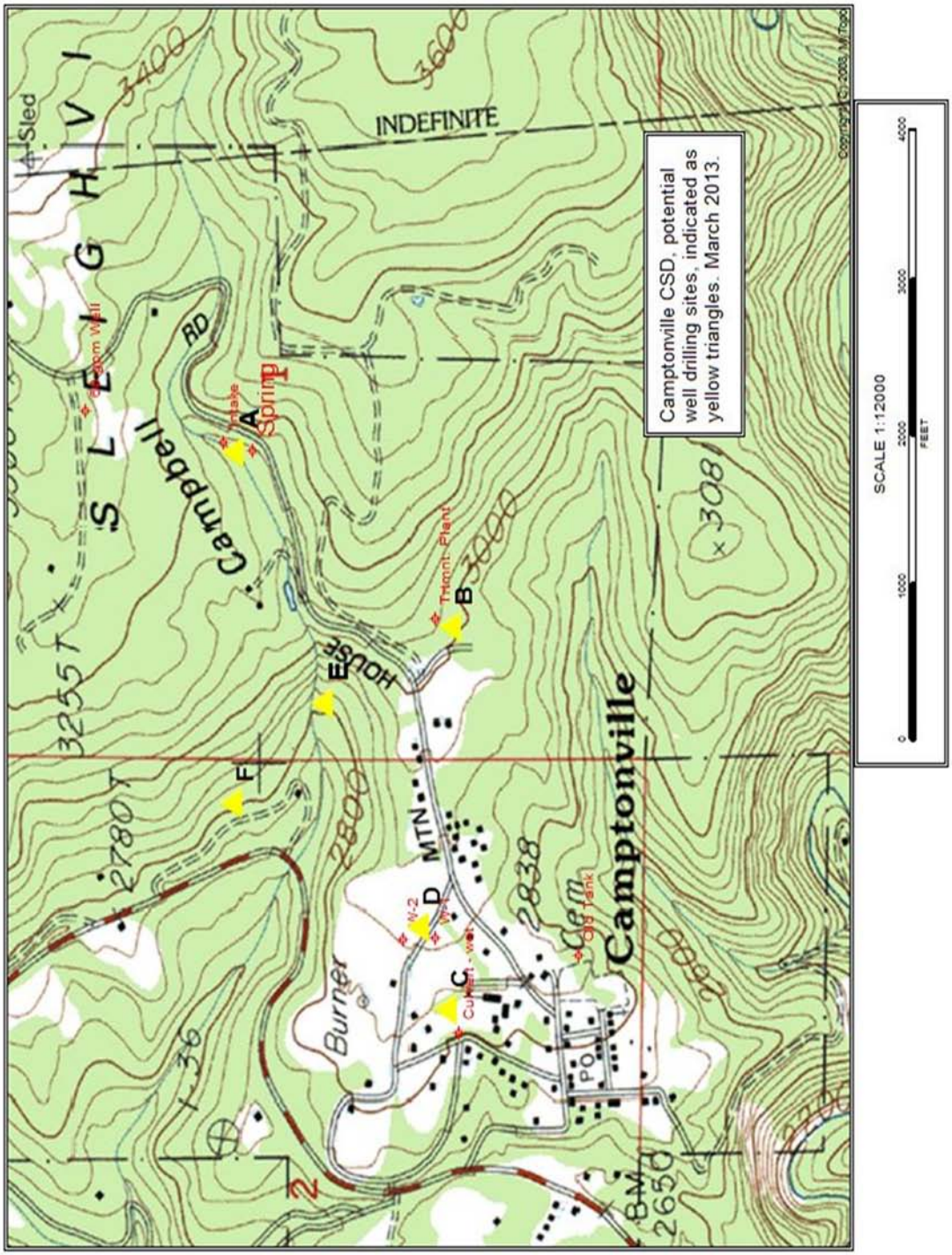
Other sites with favorable geology, but currently not accessible:

E. Site "E", located between Mtn. House Road" and Campbell Gulch:
    a. At this location a NE lineaments intersects a NW lineament, which could be a promising drilling dite.
    b. Problematic is the locatiobn on a steep northfacing slope with no existing road access.
F. Site "F", located on the SW facing hillslope east of Highway 49:
    a. As in the preceding site, here too, two lineaments intersect.
    b. The topographic map idicates close access via small road.

4. Bibliography

Saucedo and Wagner, 1992. Geologic map of the Chico quadrangle, 1:250,000. CA Div. of Mines and Geology.

5. Attachment - Maps


Camptonville CSD, potential well drilling sites, indicated as yellow triangles. March 2013.
SCALE 1:12000
0
1000
2000
3000
4000
FEET
INDEFINITE
Campbell
RD
HOUSE
MTN
Burner
Camptonville
Gem
Old Tank
Trtmnt. Plant
Intake
Spring
A
B
C
D
E
F
W-2
W-1
Cuttern - well
Gem well
Sled
3400
3600
3000
2800
2838
2780
3255
2650
BM
PO
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Camptonville
Community Services District

Public Health Compliance Evalution Report

March 21, 2013

Prepared by:

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Section 1 Executive Summary

This Public Health Compliance Evaluation has been prepared for Camptonville Community Services District in an effort to identify improvements necessary to bring the public water system facilities into compliance with local, state and federal regulatory requirements. The primary focus of the report will be to evaluate system components for compliance with California Water Works Standards detailed in Title 22 of California Code of Regulations. Components evaluated will be divided into four categories. Categories include source, treatment, storage, and distribution system.

The report finds violations of Title 22 standards which must be addressed through capital improvements. Violations relate to source capacity, surface water treatment regulations, and water storage requirements. Recommended capital improvements include the construction of a new well with possible iron and manganese treatment to add additional source capacity, improvements to the slow sand filtration system to improve plant monitoring and flow control, and the construction of a new water storage tank.

Section 2 Background

The Camptonville Community Services District (CCSD) operates a public water system (#58000924) in the Sierra Foothill community of Camptonville. Camptonville is located in the Tahoe National Forest about 45 miles northeast of Marysville, 20 miles north of Grass Valley and just east of New Bullards Bar Reservoir in the eastern portion of Yuba County.

The Camptonville Community Services District (CCSD) water system consists of a surface water diversion, a slow sand water filtration system, a 65,000 gallon bolted steel storage tank, two wells, and a distribution system. The distribution system has approximately 81 single-family residents served by 68 residential connections, three commercial connections, and a public school connection. 12 water hydrants exist throughout the distribution system.

Section 3 Source

3.1 Surface Water Diversion

The primary water supply for CCSD is through a surface water diversion in Campbell Gulch. Water from Campbell Gulch is diverted to the raw water supply pipeline through a masonry block diversion structure. The diversion structure is located about 0.4 miles upstream from the community. The current water right allows for the diversion of up to 10,000,000 gal/year from Campbell Gulch.

Although the condition of the existing diversion is in a deteriorated state and in need of rehabilitation, no known public health compliance issues exist relative to the physical facilities associated with the surface water diversion.

Future maintenance activities are anticipated to correct needed physical deficiencies. Currently, there is no way to clean out accumulated rock and debris from behind the diversion structure without removing all of the stop logs and dewatering the diversion. Current methods are time

consuming and can result in extended raw water outages at the plant. CCSD is considering the installation of a sluice gate and bypass to allow more efficient cleaning and maintenance of the diversion.

The raw water supply pipeline consists of a 6" PVC C900 pipe from the point of diversion to the site of the water treatment facility. This pipeline was installed as part of the improvements in the early 90's and should have many years of useful life remaining.

3.1.1 Water Right

The existing water right allows for the diversion of up to 10 million gallons per year from Campbell Gulch. Due to the manner in which the system operates (diverting water on a continuous basis), the community often exceeds the annual allotment. Better system controls at the water treatment plant are needed to reduce the annual volume of water diverted through the plant and bring the system into compliance with the water right limitations.

3.1.2 Water Availability

Although limited records exist for flow in Campbell Gulch, CCSD Treatment Plant records indicate that during the fall months of extremely dry years, the available water in Campbell Gulch is insufficient to meet the maximum day demand (MDD) of the community. During such times, the community must reduce water consumption and count on other water sources to supplement the water supply.

3.2 Water Well

As a backup water supply, CCSD operates Well #1 adjacent to the local fire house on Mill Street. The pump in Well #1 produces approximately 12 gpm. During normal operation, the capacity of the pump exceeds the capability of the well. If the pump is operated for extended periods, the operator must manually cycle the pump to allow the well to recover and to avoid damage to the pump from running dry.

The physical facilities associated with Well #1 appear to meet current water works standards in that the well includes:

- A 50 ft sanitary seal
- A flow meter
- The ability to pump to waste
- A screened casing vent
- A Sample port

Water from Well #1 does not meet current secondary standards defined in Title 22 for iron and manganese. Current operational strategies include pumping the well water to the treatment plant headworks in an attempt to utilize the slow sand filters to reduce iron and manganese prior to the distribution system. However, experience shows that using the slow sand filters in this manner clogs the filters prematurely and creates significant operation and maintenance

challenges.

The 2011 Consumer Confidence Report for CCSD show iron and manganese concentrations as follows:

Constituent	Level Detected	Secondary MCL
Manganese	410 ppb	50 ppb
Iron	14,200 ppb	300 ppb

These levels of iron and manganese not only exceed the current standards defined by Title 22, but the water is not drinkable at these concentrations due to the undesirable taste and odor. Manganese concentrations are approximately 8 times the Secondary MCL while iron concentrations are close to 50 times the Secondary MCL. Furthermore, treatment for water with iron and manganese levels this high can often be difficult.

Section 4 Treatment

Water from the surface water diversion is transported through the 6 inch raw water pipeline to the surface water treatment plant. Chapter 17 of Title 22 states that "Each supplier using an approved surface water shall provide multibarrier treatment necessary to reliably protect users from the adverse health effects of microbiological contaminants..." The CCSD surface water treatment system generally meets this objective although a few compliance issues do exist.

The water treatment plant consists of a slow sand filtration system with of approximately 1,000 sq ft of filter area divided into 5 filter cells. Slow sand filtration is defined as an approved technology for surface water treatment under Section 64653 of Title 22.

A recent public health inspection report highlighted several compliance issues related to the slow sand filtration system. Issues that may require capital improvements in order to bring the treatment system into compliance with current standards defined in Title 22, Chapter 17 of the California Code of Regulations are as follows:

4.1 Turbidity

Title 22 defines turbidity limitations for slow sand filtrations as follows:

- <1.0 NTU in 95% of measurements taken each month
- < 5.0 NTU at any time

The existing treatment plant is not equipped with any on-line turbidity monitoring equipment which would verify the system's compliance with these standards on a continual basis. Current operational strategies include daily turbidity monitoring with grab samples by the operator.

The latest inspection report from Yuba County Environmental Health requires the addition of an on-line turbidimeter for the combined filter effluent. California Department of Public Health

typically requires turbidimeters on all surface water treatment plants. The turbidimeter is considered a reliability feature as defined in Section 64659 of the Water Works Standards.

In addition to the turbidimeter needed to monitor the treated water, an additional reliability feature recommended for slow sand filters is a raw water turbidimeter. The raw water turbidimeter is installed with associated valves and control features that prevent excessively turbid water from clogging the sensitive filter beds. When the raw water turbidimeter senses high turbidity in the raw water, it triggers a valve adjustment that diverts the water to waste until such time as the turbidity returns to normal levels. Raw water turbidimeters are useful during winter months when storm events can cause unusually high turbidity.

4.2 Disinfection

As previously indicated, Surface Water Treatment regulations require water to be treated with a multi-barrier approach. The multi-barrier approach uses at least two methods to achieve a defined log removal credit for specific pathogens. This multi-barrier approach requires not only the use of an acceptable filtration technology, but also the use of an appropriate disinfectant to achieve the full log removal credit. In the case of slow sand filtration, disinfection must achieve a minimum 1.0 log removal credit for giardia and 2.0 log removal for viruses.

Although the CCSD treatment system currently uses sodium hypochlorite as a disinfectant, the system lacks reliability features associated with the chlorination system required by current surface water treatment regulations. Title 22, Section 64659 requires that the system have the ability to continuously monitor chlorine residual along with the ability to shut the plant down and notify an operator in the event of a disinfection system failure.

In addition to the reliability features required as part of the disinfection system, adequate disinfection requires adequate chlorine contact time prior to reaching the first customer in the distribution system. Plant records indicate that conditions have occurred in the past where adequate chlorine contact time was not achieved. Chlorine contact time calculations shown in Figure 1 indicate that tank levels below 50% can lead to failure to meet contact time requirements. Compliance issues for chlorine contact time can be resolved through the addition of more storage capacity and through improved monitoring capabilities at the plant. The ability to monitor both tank levels and chlorine residual will assist operators with compliance with disinfection requirements.

4.3 Flow Control

Title 22, Section 64660 (b)(2) specifies that slow sand filters shall not exceed 0.1 gpm per square foot of filter area. The original design for the CCSD filtration system recommended 0.065 gpm/sq ft. Current filter valves and controls do not allow the operator to verify filter flow rates on an individual filter basis. Improvements must be made to the filtration system to correct this deficiency. Improvements will require flow regulating valves and flow meters on each individual filter cell.

Figure 1
Camptonville Community Services District
Chlorine Contact Time Calculations

By: DDM
Date: 01/24/13

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Volume Calculations

Component	Volume (Ft^3)	Volume (gal)
Pipe		0
Tank		30000

Winter Conditions

Flow Rate 40 **gpm**
Scenario = 0.5 Degrees C pH = 7.0 (33 deg F)
Log Inact. Req = 1.0

			CT Provided by Listed Volume			
			Pipe	Tank		
Cl Conc.		T10/T→	1	0.1		
(mg/l)	CTreq	Volume→	0	30000	Total CT Provided	
0.6	67		0	45	45	inadequate
0.8	68		0	60	60	inadequate
1	70		0	75	75	OK
1.2	72		0	90	90	OK
1.4	74		0	105	105	OK
1.6	75		0	120	120	OK

Spring/Fall

Flow Rate 65 **gpm**
Scenario = 5 Degrees C pH = 7.0 (41 deg F)
Log Inact. Req = 1.0

			CT Provided by Listed Volume			
			Pipe	Tank		
Cl Conc.		T10/T→	1	0.1		
(mg/l)	CTreq	Volume→	0	30000	Total CT Provided	
0.6	48		0	27.69	27.69	inadequate
0.8	49		0	36.92	36.92	inadequate
1	50		0	46.15	46.15	inadequate
1.2	51		0	55.38	55.38	OK
1.4	52		0	64.62	64.62	OK
1.6	53		0	73.85	73.85	OK

Summer Conditions

Flow Rate 65 **gpm**
Scenario = 10.0 Degrees C pH = 7 (50 deg F)
Log Inact. Req = 1.0

			CT Provided by Listed Volume			
			Pipe	Tank		
Cl Conc.		T10/T→	1	0.1		
(mg/l)	CTreq	Volume→	0	30000	Total CT Provided	
0.6	36		0	27.69	27.69	inadequate
0.8	37		0	36.92	36.92	inadequate
1	37		0	46.15	46.15	OK
1.2	38		0	55.38	55.38	OK
1.4	39		0	64.62	64.62	OK
1.6	40		0	73.85	73.85	OK

Summer Conditions

Flow Rate 65 **gpm**
Scenario = 15.0 Degrees C pH = 7 (59 deg F)
Log Inact. Req = 1.0

			CT Provided by Listed Volume			
			Pipe	Tank		
Cl Conc.		T10/T→	1	0.1		
(mg/l)	CTreq	Volume→	0	30000	Total CT Provided	
0.6	24		0	27.69	27.69	OK
0.8	24		0	36.92	36.92	OK
1	25		0	46.15	46.15	OK
1.2	25		0	55.38	55.38	OK
1.4	26		0	64.62	64.62	OK
1.6	26		0	73.85	73.85	OK

In addition to the flow regulating valves to be installed on each filter cell, the system currently lacks the automation that would allow the system to discontinue operation during periods when the plant capacity exceeds system demand which leads to a full tank. The addition of this capability will help the system to reduce water diversion and to comply with provisions of the water right on Campbell Gulch. The automation will also prevent the system from discharging treated water through the overflow of the water storage tank. Flow automation will improve efficiency and prevent chlorinated water from being discharged to the environment.

4.4 Treatment Capacity

The current filtration system has a design capacity of approximately 65 gpm or 93,600 gpd. This capacity is produced by 1000 sq ft of filter area operating at 0.065 gpm/sq ft.

Section 64554 of the Waterworks Standards requires that "*a public water system's water source(s) shall have the capacity to meet the system's maximum day demand (MDD)*". Due to the manner in which flow is currently monitored at the treatment plant, MDD is currently difficult to determine. However, records indicate that system demands exceed 90,000 gpd several times per year and have exceeded 100,000 gpd on a couple of occasions during the summers of 2011 and 2012. Anticipated improvements to the treatment plant will allow for more accurate monitoring of MDD in the future. However, for purposes of this analysis, MDD is estimated at 100,000 gpd which exceeds the permitted capacity of the existing treatment system.

The permitted capacity of the existing filtration system is unable to meet the systems current MDD. The inability of the system to meet MDD is a compliance issue that must be corrected by adding additional source capacity. Source capacity could be obtained by adding additional filtration area, by increasing the permitted maximum filtration rate on the existing filters, or by adding an additional well.

An improvement that could add to the system's filtration area is to convert the current cell where the raw water tanks to filter area. This improvement could add an additional 72 sq ft of filter area for a potential increase of approximately 5 gpm filtration capacity. This would raise the total capacity of the filters to just over 100,000 gallons per day which would meet the MDD requirements.

Unfortunately, during the fall months of dry years, additional filter area offers no benefit when insufficient water exists in Campbell Gulch. For this reason, the best long term solution to the source capacity issue may be found through the development of a reliable groundwater source. A new, reliable groundwater source would augment existing source capacity and provide critical source capacity during periods when Campbell Gulch runs low.

4.5 Iron and Manganese Treatment

The original design for the treatment system was configured to introduce well water to the slow sand filter beds. Systems were in place which allowed for the oxidation of iron and manganese

with sodium hypochlorite in the raw water holding tanks. As water would enter the raw water distribution manifold, sodium bisulfite would be injected as a dechlorination agent.

It is recommended that well water not be introduced to slow sand filter beds. Iron and manganese from well water has been found to foul the filters very quickly and the potential to damage the schmutzdecke with the introduction of chlorine is presents a significant risk to filter performance and public health.

Section 5 Storage

Available storage in the Camptonville system consists of 65,000 gallons in a bolted steel water tank. The tank was installed in 1990 and reports indicate that the tank is in fair condition. Although the interior of the tank has been rehabilitated with a liner, the remaining useful life of the tank is unknown.

Title 22, Section 64554 requires that systems with fewer than 1000 service connections have storage capacity equal to or greater than the system's Maximum Day Demand (MDD). Since MDD in Camptonville is estimated at approximately 100,000 gallons per day and the existing storage is only 65,000 gallons, the system does not meet current standards for storage.

Adding more storage volume would help the system comply with regulatory requirements related to storage along with previously discussed chlorine contact requirements. Although not a public health compliance issue, additional storage also provides for improved fire suppression capabilities in the community which translates to a public safety concern.

Section 6 Distribution System

Having been installed as part of the 1990 Water Project, the distribution system is relatively new and in good condition. The backbone of the system consists of 6 inch pvc pipe (CL 150 or CL 200 C900) with fire hydrants strategically placed throughout the service area. Pipe materials and sizes meet the standards defined in Section 64570 of the Water Works Standards. The system meets requirements of Section 64572 for Water Main Separation since no public sewer system exists and separation requirements for sewer mains are not an issue. Dead end mains include fire hydrants at the points of termination thus meeting requirements for flushing valves or blow-offs.

In addition to the physical requirements, Title 22, Section 64602 requires that the system be operated in a manner that assures that the minimum operating pressure in the water main at the user service line connection be not less than 20 psi at all times. This Section also requires that new distribution systems be designed to provide a minimum operating pressure throughout the distribution system of not less than 40 psi at all times excluding fire flow.

The CCSD distribution system appears to have a couple of customers which may experience pressures near the 20 psi minimum. Under normal operating conditions, these customers should still be in compliance with Title 22 standards even though they experience less than

desirable pressure.

Section 7 Summary of Recommendations

7.1 Source

The major compliance concerns related to water sources in the Camptonville CSD system are capacity related. During dry years, Campbell Gulch has insufficient water to meet the water demands of the community. The risk of not being able to meet system demands during these periodic events is a significant compliance and public health concern. The current strategy during these periods is for the community to minimize water use and supplement the water supply with well water. Unfortunately, the one available well has a relatively low capacity and poor water quality. The existing well is unable to adequately supplement the water supply during dry years.

7.1.1 New Well

Due to the limitations of Campbell Gulch, the community must establish a more reliable and robust groundwater supply that can supplement the available surface water during dry years. Without a groundwater source, the community may be unable to meet daily water demands during dry years and could be out of compliance with public health standards. Camptonville CSD must construct one or more water supply wells with as much capacity as can be achieved with what funds are available. If the District can construct a new well of adequate capacity and good water quality, Well #1 could be abandoned and no treatment for iron and manganese would be required. If the new well is found to have iron and manganese, both wells could potentially be treated with a single treatment system.

7.2 Treatment

Several public health compliance issues exist with the existing water treatment facility. Compliance issues primarily relate to the ability to monitor and control plant operations. Recommendations for improvements are as follows:

7.2.1 Convert existing raw water chamber to additional filter cell.
7.2.2 Install new flow control valves on each individual filter cell. The new control valves will allow operators to verify and maintain the permitted flow rate through each filter cell.
7.2.3 Install flow measuring devices on each individual filter cell. The new flow measuring devices will allow the operators to verify compliance with permitted filtration rates.
7.2.4 Install raw water turbidimeter. The new turbidimeter will provide the necessary reliability features such that highly turbid water will be diverted thus protecting the delicate schmutzdecke.
7.2.5 Install treated water turbidimeter. Complies with requirements established in Waterworks Standards. Improvement will allow plant to automatically detect filter problems, shut the plant down and alert an operator.
7.2.6 Install chlorine residual analyzer to monitor disinfection process. Analyzer will continuously monitor chlorine residual and provide for the ability to shut the plant down and

alert an operator in the event of disinfection system failure.

7.2.7 Install control equipment with the ability to start and stop plant flow based upon tank levels and plant alarm conditions. These control features will work in conjunction with the monitoring equipment to prevent system failure and to protect public health. This improvement will also eliminate the discharge to waste of excess water and reduce the total annual diversion from Campbell Gulch.

7.2.8 Add additional storage capacity so as to achieve chlorine contact time compliance.

7.3 Storage

The existing water system has insufficient storage volume. The existing volume does not meet current Water Works Standards for minimum recommended storage volume and periodically fails to meet minimum chlorine contact time requirements.

7.3.1 Add new storage reservoir. It is recommended that Camptonville CSD add a new welded steel water storage tank. The new storage tank will bring the system into compliance for domestic, diurnal, and emergency storage needs. The new tank will meet fire flow requirements for the community and add necessary chlorine contact time. The new storage reservoir should be approximately 220,000 gallons.

7.4 Distribution System

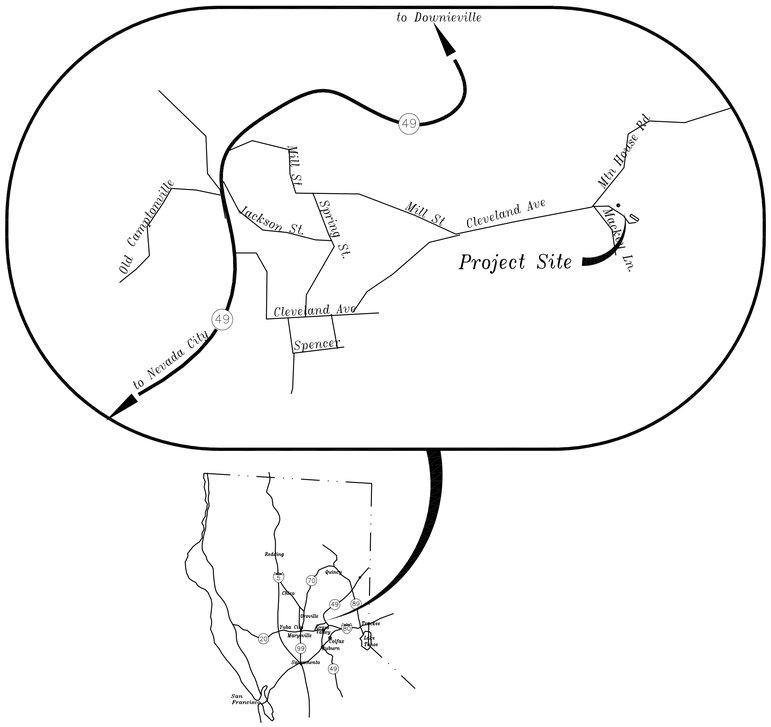
No recommendations are made for improvements to the distribution system at this time other than continuous monitoring to minimize unaccounted-for water. As a future operational measure, customer water meters should be periodically verified for accuracy and calibrated and/or replaced as necessary. Replacement of water meters has been proposed as a potential Phase II project for the community.

Camptonville Community Services District

Camptonville Water System Improvement Project

30% DRAWINGS

March, 2013



LOCATION MAP
OF
PROJECT AREAS

30% SHEET INDEX

1. COVER SHT

WATER STORAGE TANK

2. T1 TANK SITE PLAN
3. T2 TANK X-SECTIONS
4. T3 TANK DETAILS

TREATMENT PLANT

5. M1 PROCESS FLOW DIAGRAM

Prepared Under Direction Of:

Dean D. Marsh

Date

Approved By:

Date

Preliminary

Sauers Engineering, Inc.
Civil & Environmental Engineers
440A Lower Grass Valley Road, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

PROJECT TASK LIST

PHASE I

1. CONSTRUCT NEW 220,000 GALLON WATER STORAGE TANK
2. CONVERT RAW WATER CELL TO FILTER CELL
3. ADD FLOW CONTROL VALVES TO ALL FILTER CELLS
4. ADD FLOW METERS TO ALL FILTER CELLS
5. ADD CHLORINE RESIDUAL ANALYZER
6. ADD RAW WATER TURBIDIMETER
7. ADD FINISH WATER TURBIDIMETER
8. ADD AUTOMATIC SYSTEM CONTROL FOR PLANT START/STOP WITH SYSTEM ALARMS VIA AUTODIALER

PHASE 2

1. CONSTRUCT NEW WATER WELL
2. CONSTRUCT IRON AND MANGANESE TREATMENT SYSTEM
3. REPLACE WATER METERS AS REQUIRED
4. ADD BACKFLOW PREVENTION AT COMMERCIAL SERVICES
5. EMERGENCY POWER AT TREATMENT PLANT
6. OPERATIONS MANUAL UPDATES
7. ROOF REPAIRS AT WATER TREATMENT PLANT

PROJECT NOTES:

Permits:
As a Public Water Agency, Camptonville Community Services District is not required to obtain building permits through Yuba County Building Department for the proposed project. As a responsible Public Agency, CCSD will verify that all construction is in conformance with latest applicable codes defined in 2010 CBC, NEC, and applicable sections of AWWA standards. Anticipated permits for Phase I include:

1. Water Supply Permit Amendment through Yuba County Environmental Health
2. Well Abandonment Permit through Yuba County Environmental Health
3. California Environmental Quality Act (CEQA) Compliance

Anticipated permits for Phase II of the project include:

1. Well Construction Permit through Yuba County Environmental Health

Special Inspection Requirements

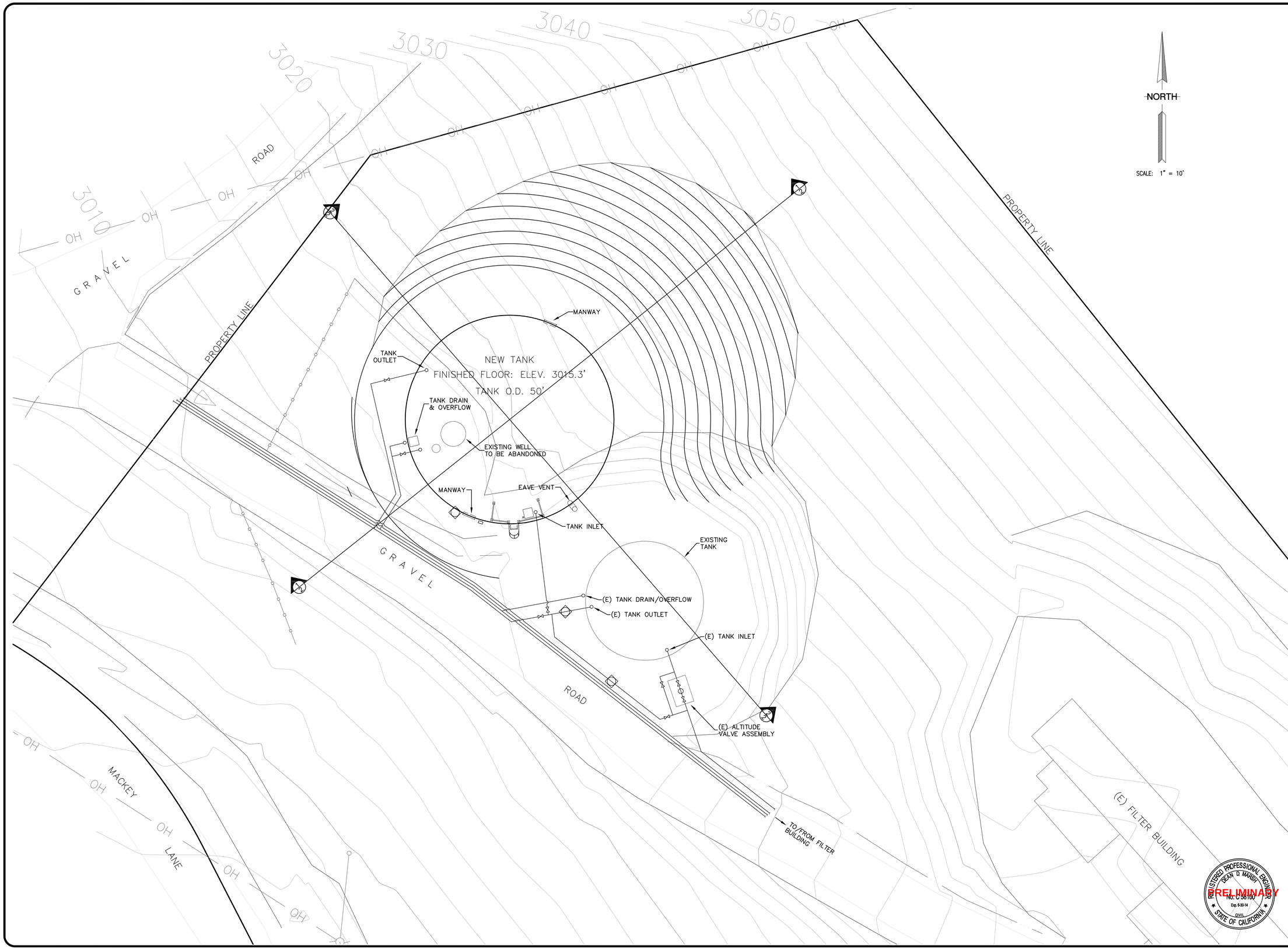
1. Special Inspections
   Pursuant to CBC 1704, special inspections may be applicable to concrete and reinforcing steel for the tank foundation.

2. Structural Observation
   Pursuant to CBC 1710, no specific structural observations are required for work related to the proposed project.

PRELIMINARY

Sheet 1 of 5

Drwg. No.
..



REV	DATE	REVISIONS	INITIAL

CAMPTONVILLE WATER SYSTEM IMPROVEMENT PROJECT

TANK SITE PLAN

YUBA COUNTY CALIFORNIA

CAMPTONVILLE COMMUNITY SERVICES DISTRICT

Sauers Engineering, Inc.
Civil & Environmental Engineers
440A Lower Grass Valley Road, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

REGISTERED PROFESSIONAL ENGINEER DEAN D MARSH No. C 58100 Exp. 6-30-14 CIVIL STATE OF CALIFORNIA

PRELIMINARY

0 1
BAR IS ONE INCH ON ORIG. DRAWING
IF BAR DOES NOT MEASURE ONE INCH, ADJUST SCALES ACCORDINGLY

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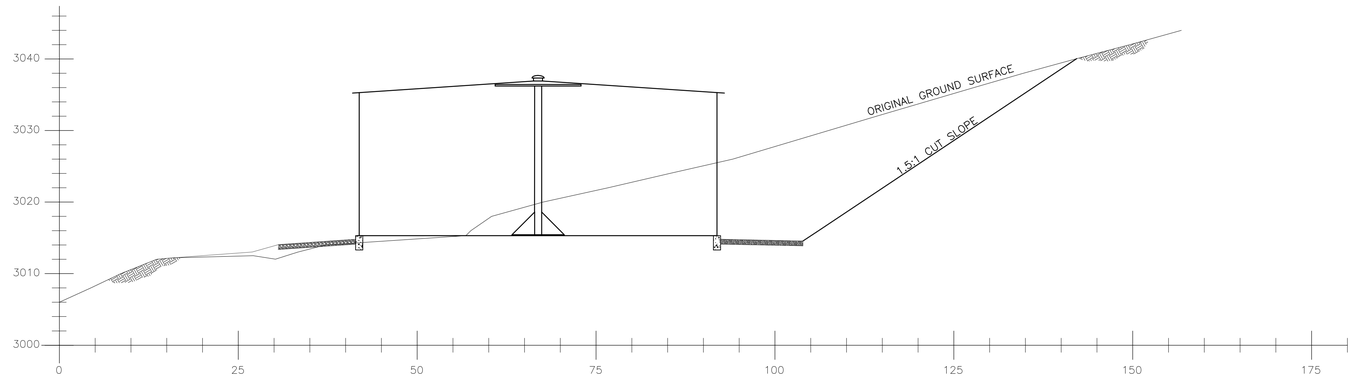
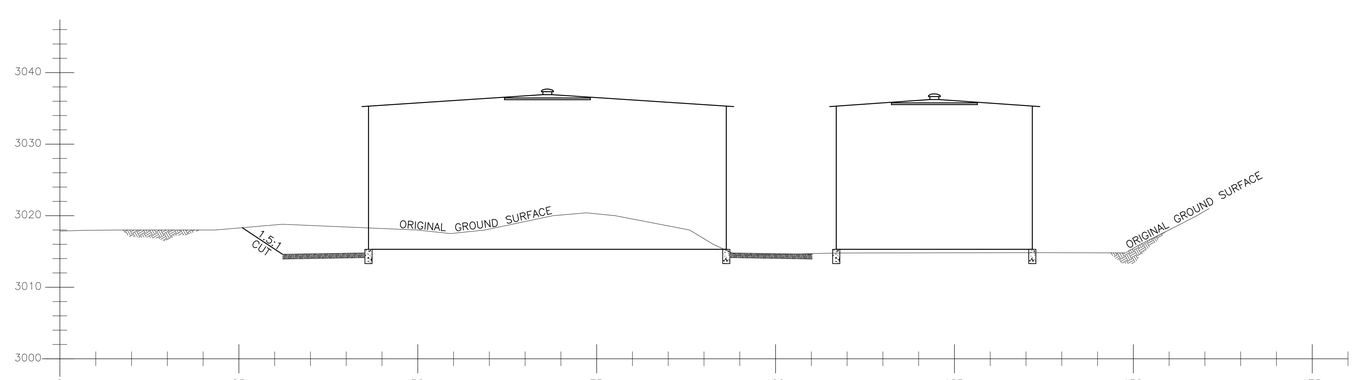
SURVEY DATE:	DDM
DESIGN BY:	DDM
DRAFTING BY:	..
CHECKED BY:	..
FILE PATH:	..
	..
DATE:	03/05/2012
SCALES: 1 in = 10 ft HORIZONTAL	T1
VERTICAL	SHEET: 2 of 5



1 / 2 Section 1



2 / 2 Section 2

REGISTERED PROFESSIONAL ENGINEER
DEAN D. MARSH
No. C 38100
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA
PRELIMINARY

REV	DATE	REVISIONS	INITIAL

CAMPTONVILLE WATER SYSTEM IMPROVEMENT PROJECT

TANK SITE X-SECTIONS

YUBA COUNTY CALIFORNIA

CAMPTONVILLE COMMUNITY SERVICES DISTRICT

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Civil & Environmental Engineers
440A Lower Grass Valley Road, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

0 1
BAR IS ONE INCH ON ORIG. DRAWING
IF BAR DOES NOT MEASURE ONE INCH,
ADJUST SCALES ACCORDINGLY

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SURVEY DATE:	NA
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DRAFTING BY:	KEM
CHECKED BY:	..
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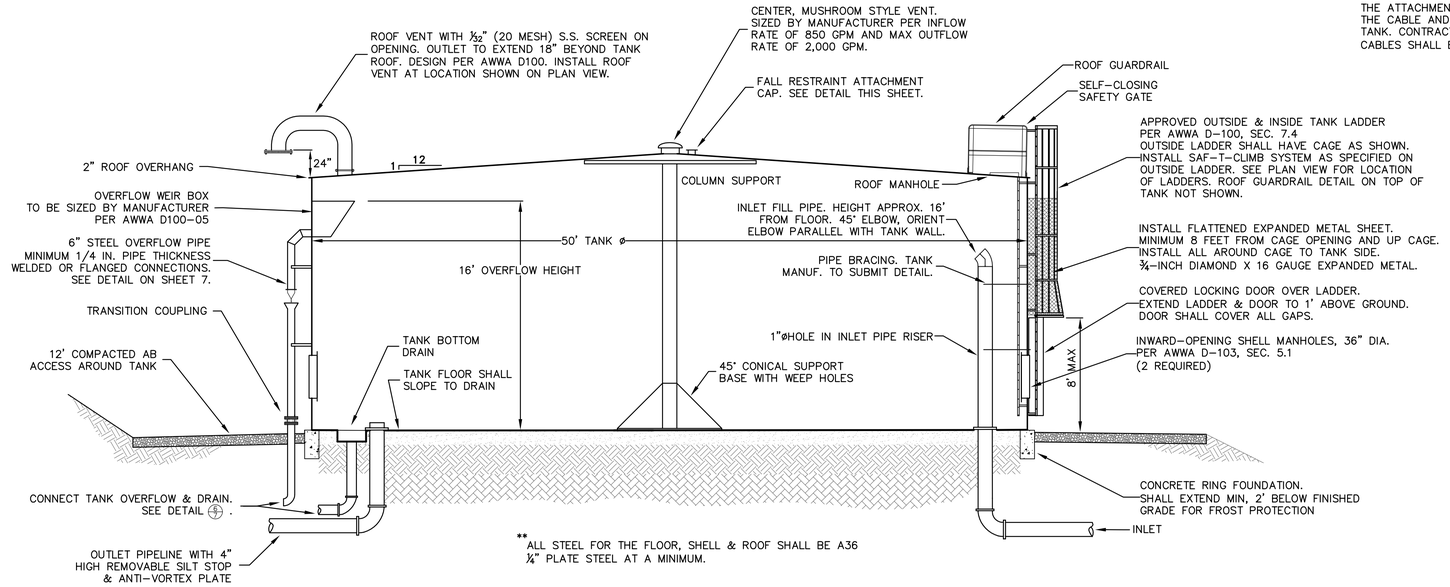
DATE:	03/05/2012
SCALES: HORIZONTAL	AS SHOWN
VERTICAL	
SHEET:	T2
	3 of 5

** CONTRACTOR SHALL INSTALL ROOF FALL RESTRAINT SYSTEM. SYSTEM SHALL INCLUDE 2, 5,000# TEST CLEAR VINYL COATED S.S. CABLES ATTACHED TO THE CENTER OF THE ROOF AROUND THE ATTACHMENT CAP, WITH S.S. CARABINER AT THE END OF THE CABLE AND CLIPPED TO AN EYE AT THE RAILING OF THE TANK. CONTRACTOR SHALL SUBMIT ON FALL RESTRAINT SYSTEM. CABLES SHALL EXTEND TO ANCHOR 4' FROM EDGE OF TANK ROOF.

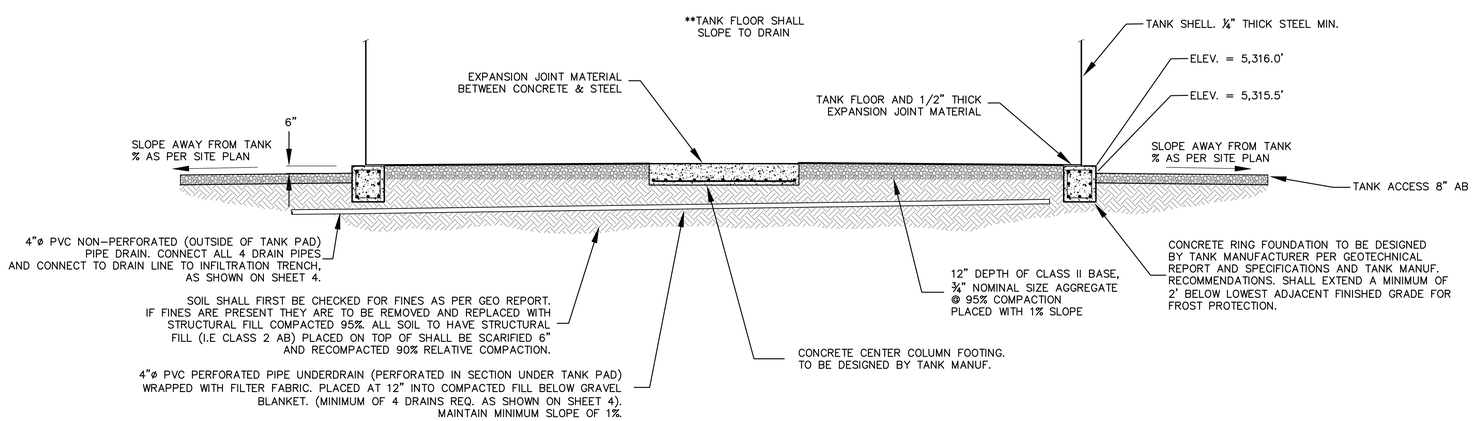


220,000 GALLON WORKING VOLUME WELDED STEEL TANK

SCALE: 1"=5'

** TANK MANUFACTURER SHALL PROVIDE DETAILS FOR LADDER, MANWAYS AND ALL TANK APPURTENANCES AS PART OF THE SHOP DRAWING SUBMITTALS.

**SEE SHEET 4 FOR PLAN VIEW OF ACTUAL LOCATION OF TANK APPURTENANCES.



1/5 TANK FOOTING & PAD DETAIL

SCALE: 1"=5'

PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER DEAN D MARSH No. C 56100 Exp. 6-30-14 CIVIL STATE OF CALIFORNIA

REV	DATE	REVISIONS	INITIAL

CAMPTONVILLE WATER SYSTEM IMPROVEMENT PROJECT

TANK DETAILS

YUBA COUNTY CALIFORNIA

CAMPTONVILLE COMMUNITY SERVICES DISTRICT

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Civil & Environmental Engineers
440A Lower Grass Valley Road, Nevada City, CA 95959
tel (530) 265-8021 www.sauerseng.com

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BAR IS ONE INCH ON ORIG. DRAWING IF BAR DOES NOT MEASURE ONE INCH, ADJUST SCALES ACCORDINGLY

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SURVEY DATE:	NA
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DRAFTING BY:	KEM
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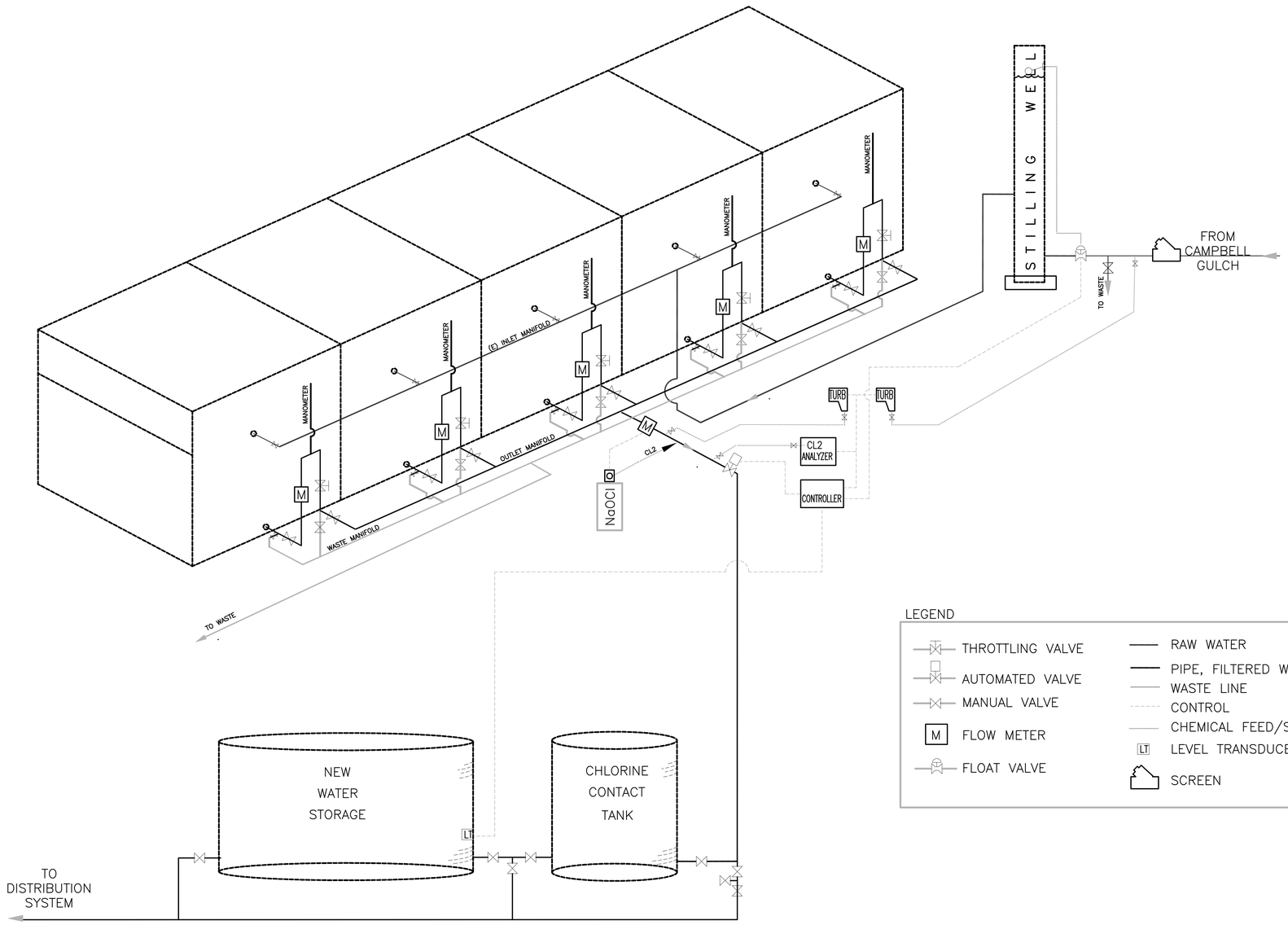
FILE PATH:	..
DATE:	03/05/2012
SCALES: AS SHOWN HORIZONTAL	T3
VERTICAL	SHEET: 4 of 5



LEGEND

- THROTTLING VALVE
- AUTOMATED VALVE
- MANUAL VALVE
- M FLOW METER
- FLOAT VALVE
- RAW WATER
- PIPE, FILTERED WATER
- WASTE LINE
- CONTROL
- CHEMICAL FEED/SAMPLE
- LT LEVEL TRANSDUCER
- SCREEN

REGISTERED PROFESSIONAL ENGINEER
DEAN D MARSH
No. C 38100
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA

PRELIMINARY

REV	DATE	REVISIONS	INITIAL

CAMPTONVILLE WATER SYSTEM IMPROVEMENT PROJECT

PROCESS FLOW DIAGRAM

YUBA COUNTY CALIFORNIA

CAMPTONVILLE COMMUNITY SERVICES DISTRICT

Sauers Engineering, Inc.
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tel (530) 265-8021 www.sauerseng.com

0 1
BAR IS ONE INCH ON ORIG. DRAWING
IF BAR DOES NOT MEASURE ONE INCH,
ADJUST SCALES ACCORDINGLY

PROJECT NUMBER:	..
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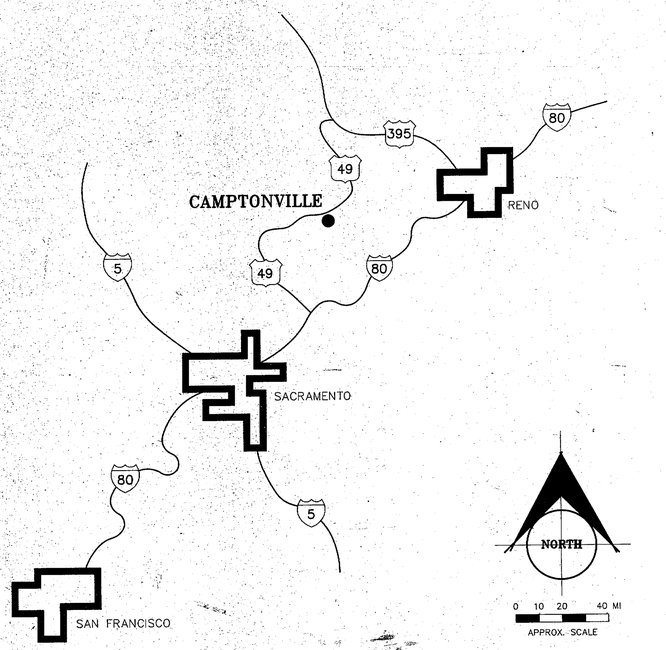
SURVEY DATE:	NA
DESIGN BY:	DDM
DRAFTING BY:	DDM
CHECKED BY:	..
FILE PATH:	..
DATE:	03/05/2012
SCALES: NO SCALE HORIZONTAL	M1
VERTICAL	SHEET: 5 of 5

CAMPTONVILLE COMMUNITY SERVICES DISTRICT

1990 WATER PROJECT

2 - 1992 RECORD DRAWINGS

VICINITY MAP



LEGEND

- 80 — U.S. INTERSTATE HIGHWAY
- 49 — STATE HIGHWAY, FEDERAL HIGHWAY

DESIGN CRITERIA

DIVERSION HYDRAULIC CAPACITY	150 GPM
TREATMENT	3 LOG CYST REMOVAL, 4 LOG VIRUS REMOVAL, REMOVE MANGANESE AND IRON FROM WELL WATER, AND DISINFECTION BY CHLORINATION (MIN. 0.2 MG/L RESIDUAL IN SYSTEM)
AVERAGE FILTER LOADING	40 GPM
MAXIMUM FILTER LOADING	80 GPM
FILTER AREA	1216 FT^2
AVERAGE FILTER LOADING	2.06 MG/ACRE/DAY 0.033 GPM/FT^2
FILTER HYDRAULIC CAPACITY	115 GPM

FILTER AND TANK CAN INDEPENDENTLY AND CONCURRENTLY OVERFLOW AND WASTE BACK TO CAMPBELL GULCH.

FILTER CAN BOTTOM FILL TO PREVENT AIR BINDING

COMMITTED SINGLE FAMILY RESIDENTIAL CUSTOMERS _____

INDEX TO DRAWINGS

SHEET NO.	DRAWING TITLE
–	PROJECT TITLE / VICINITY MAP / LOCATION MAP / DESIGN CRITERIA / INDEX TO DRAWINGS
1	PLAN OF SYSTEM
2	CAMPBELL GULCH INTAKE, RAW WATER TRANSMISSION MAIN AND LOCATION OF SLOW SAND FILTER AND 50,000 GALLON TANK
3	EQUIPPING OF MILL STREET WELL #1, MILL STREET AND WELL #2
4	PLAN OF SLOW SAND FILTER – PLAN SECTIONS AND DETAILS OF 50,000 GALLON TANK, SITE GRADING & DRAINAGE AND RAW WATER, PRODUCT WATER, TREATED WATER TRANSMISSION AND OVERFLOW AND SPILL PIPELINES SOUTH OF MOUNTAIN HOUSE RD.
5	SLOW SAND FILTER – PLAN, SECTIONS AND DETAILS
✳→6	SLOW SAND FILTER AND VALVE PIT ENCLOSURE
7	CAMPBELL GULCH DIVERSION STRUCTURE
8	POWER AND TELEMETRY PLANS

✳ 5A SLOW SAND FILTER – OUTSIDE FILTER PIPING

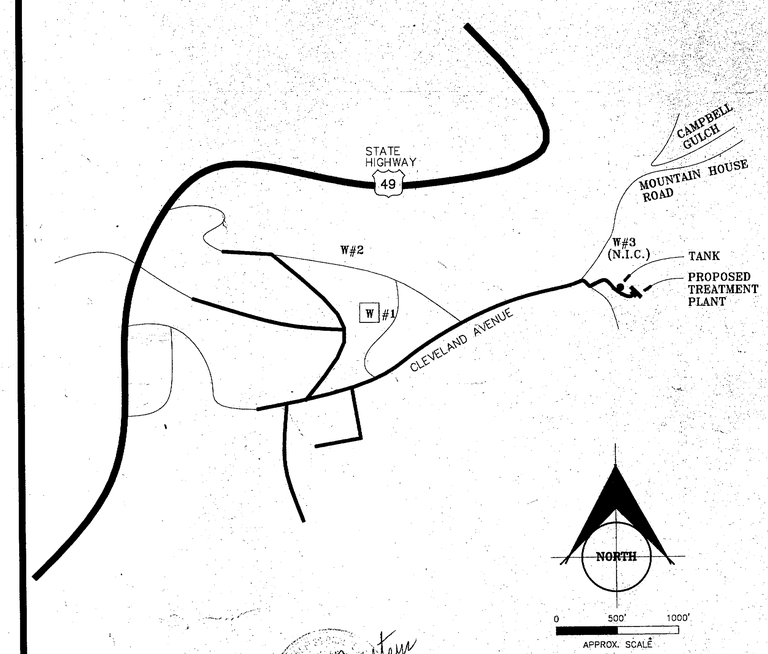
WALTERS ENGINEERING

– CIVIL ENGINEERING CONSULTANTS –

3680 GRANT DR. SUITE A RENO NV 89509

(702) 827-6546 FAX (702) 827-6928

LOCATION MAP



LEGEND

- W — EXISTING CCSD WELL – UNEQUIPPED
- W — EXISTING CCSD WELL – EQUIPPED
- ▬ — PROPOSED NEW WATER MAINS

DATE: 8-90

H20TITLE

CABY Headwaters Resilience and Adaptation Program, March 2023
Attachment 9 - Camptonville Project References

STATE HIGHWAY 49

CAMPBELL GULCH

MILL STREET

JACKSON STREET

CLEVELAND AVE.

MOUNTAIN HOUSE ROAD

SPRING STREET

ERWIN LANE

SPENCER STREET

VARIEL LANE

COUNTY ROAD

CROSS LANE

FLUSH VALVE ASSEMBLY (FVA)

WELL #2

WELL #1

APPROX. FIREHOUSE /COMMUNITY BLDG. SITE BOUNDARY

ROAD RIGHT OF WAY

MATCH LINE

1 DELETE 6-INCH MAIN AND 1-1/2 INCH WATER SERVICE ON MILL ST. NEAR CLEVELAND AVE.

Legend

- PVC WATER MAIN - SIZES AND CLASS AS SHOWN
- VALVES - LINE SIZE
- FITTINGS AS REQUIRED
- FIRE HYDRANT: F.H.
- REPORTED EXIST. WATER DIST. SYSTEM TO BE SEVERED AND ABANDONED IN PLACE
- Reported Sizes As Indicated
- AS BUILT

NOTE:
LOCATIONS OF STRUCTURES, CONTOURS AND EXISTING AND PROPOSED WATER WORKS ARE APPROXIMATE AND FOR ILLUSTRATIVE PURPOSES ONLY.

UNDERGROUND SERVICE ALERT (USA) 1-800-642-2444

RECORD DWGS. 2-1992

REVISIONS

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-CIVIL ENGINEERING CONSULTANTS-
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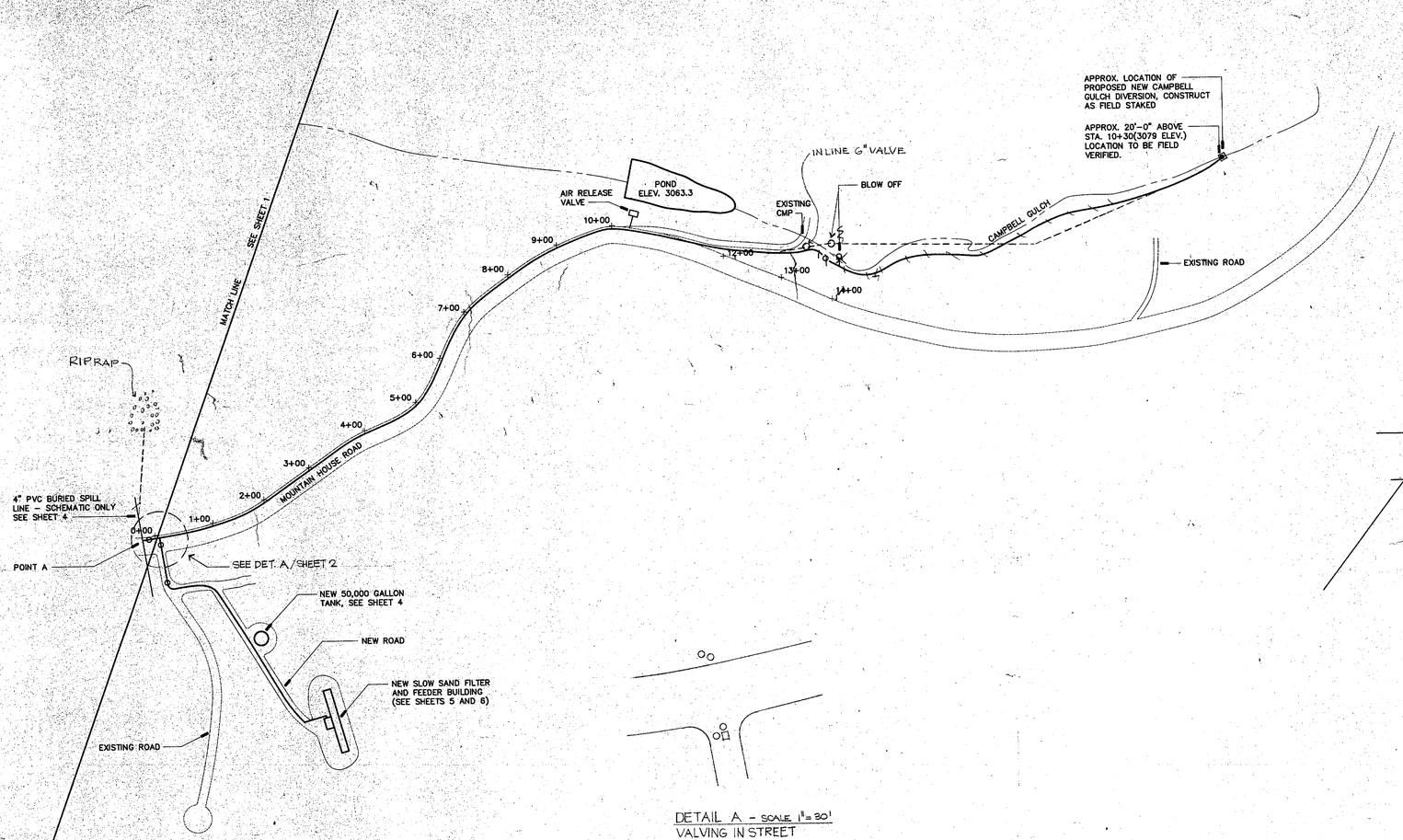
702 • 827 • 0336

CCSD 1990 WATER PROJECT

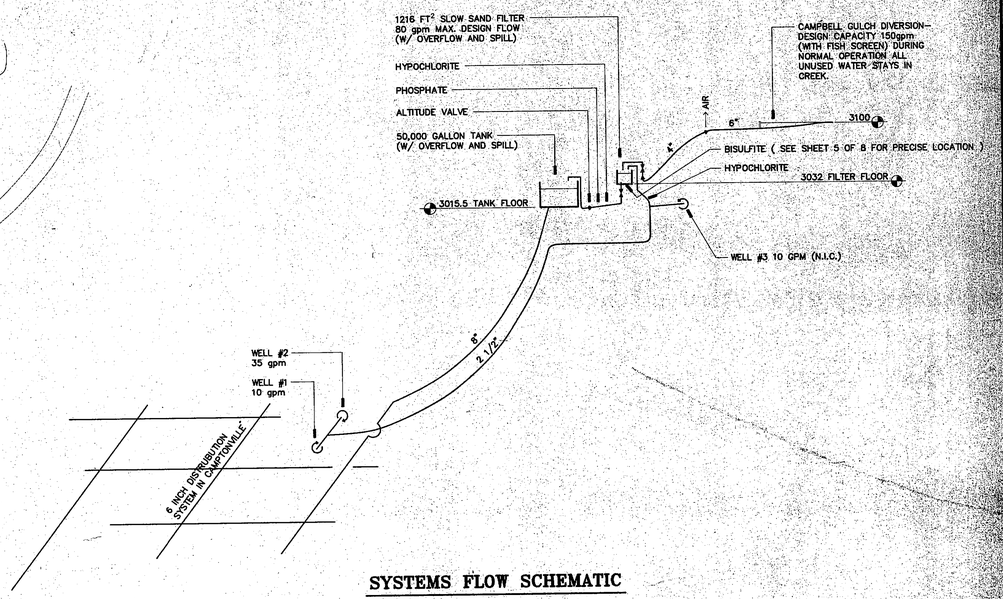
PLAN OF SYSTEM

DATE: 8-90

SHEET: 1 of 3

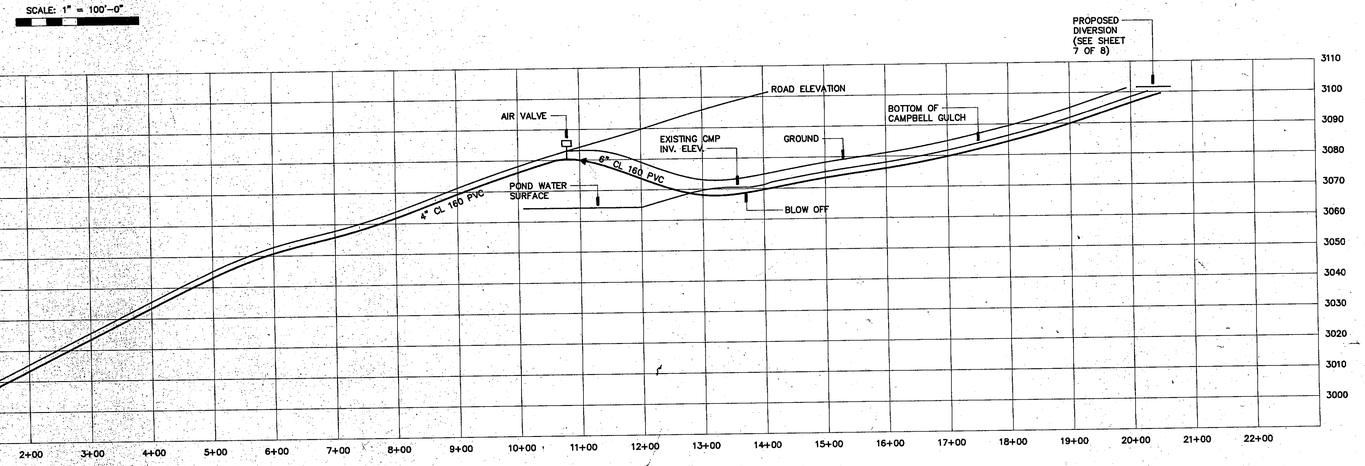


DETAIL A - SCALE 1" = 30'
VALVING IN STREET



SYSTEMS FLOW SCHEMATIC

N.T.S.



MOUNTAIN HOUSE ROAD AND CAMPBELL GULCH PROFILES

SCALE: VERTICAL 1" = 20'-0"
HORIZONTAL 1" = 100'-0"

REGISTERED PROFESSIONAL ENGINEER — STEVEN D. WALTERS — CIVIL — STATE OF CALIFORNIA — 11/9/90

RECORD DWGS. 2-1992

REVISIONS

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702 • 827 • 6546

CCSD 1990 WATER PROJECT

CAMPBELL GULCH INTAKE, RAW WATER TRANSMISSION MAIN AND LOCATION OF SLOW SAND FILTER AND 50,000 GALLON TANK

DATE	SHEET
12-90	2 of 8

1" = 100'-0" STFS-3

MILL STREET WELL #1

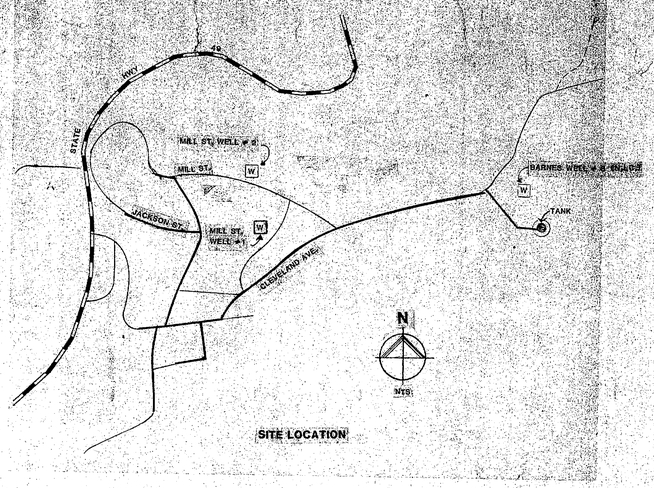
ITEM	DESCRIPTION	SIZE (INCHES)	REMARKS
1	CASING	6" PVC	EXISTING
2	COLUMN PIPING	1 1/4"	360' GALVANIZED WELL PIPE EXISTING
3	REDUCER	1" X 1 1/4"	SCHED. 40 GALV. EXISTING
4	COLUMN CHECK VALVE	1 1/4"	EXISTING
5	SUBMERSIBLE PUMP		12 GPM AT 540' TDH - GRUNDFOSS 16S30-24 - 3 HP. COMPLETE WITH OUTSIDE POST MOUNTED LOCKABLE STARTER BOX WITH HAND - OFF - AUTO CONTROL OR APPROVED EQUAL EXISTING
6	SHORT NIPPLES	1"	SCHED. 40 PVC
7	CHECK VALVE	1"	SEE SPEC. SECT. 15100
8	GATE VALVE	1"	SEE SPEC. SECT. 15100
9	METER	1"	INDICATOR AND TOTALIZER (GALLONS) - BADGER RECORDALL DISC METER MODEL 40L OR APPROVED EQUAL
10	TEE	1"	SCHED. 40 PVC
11	VAULT		APPROX. 3' X 2' X 3'-6" DEEP - FIBERGLASS METER BOX (NON TRAFFIC)
12	PRESSURE GAUGE WITH 1/4" SNUBBER VALVE	0-200 PSI	
13	HOSE BIB		1/2" X 1/4" NIP. X COMPRESSION ADAPTOR, AND 6'-1/4" COPPER REFR. TUBING WITH 1/4" COMPRESSION NEEDLE VALVE AS REQUIRED
14	VALVE AND "TREE" FOR GAUGE AND COCK	1/2"	AS REQUIRED
15	PITLESS ADAPTER	1" X 6"	MAAS JX1 PITLESS UNIT OR APPROVED EQUAL (NSF OR WATER SYSTEM COUNCIL APPROVED)
16	WELL CAP	6"	
17	BYPASS PIPE	1"	SCHED. 40 GALV. (2) 90 DEG. SCHED. 40 GALV. ELLS, NIPPLES
18	UNION	1"	SCHED. 40 PVC
19	STREET ELLS	1"	SCHED. 40 PVC
20	POWER CABLE		FOR EXISTING PUMP
21	PVC TO SERVICE	1 1/4"	SCHED. 40 PVC - CONNECTS TO 2 1/2" CL 160 PVC WELL EXPRESS LINE ON MILL STREET
22	THREADED STEEL WELL CASING	6"	
23	PLASTIC COUPLING	6"	THREADS BY SUP
24	EPOXY CEMENT PLASTIC CASING TO COUPLING		
25	PVC REDUCER	1" X 1 1/4"	SCHED. 40
26	HIGH PRESSURE CUT-OFF SWITCH		SEE ELECTRICAL SPEC. MERCOID SWITCH WITH TIME DELAY - "OFF" AT PRESSURE = 10 psi OVER STATIC

MILL STREET WELL #2

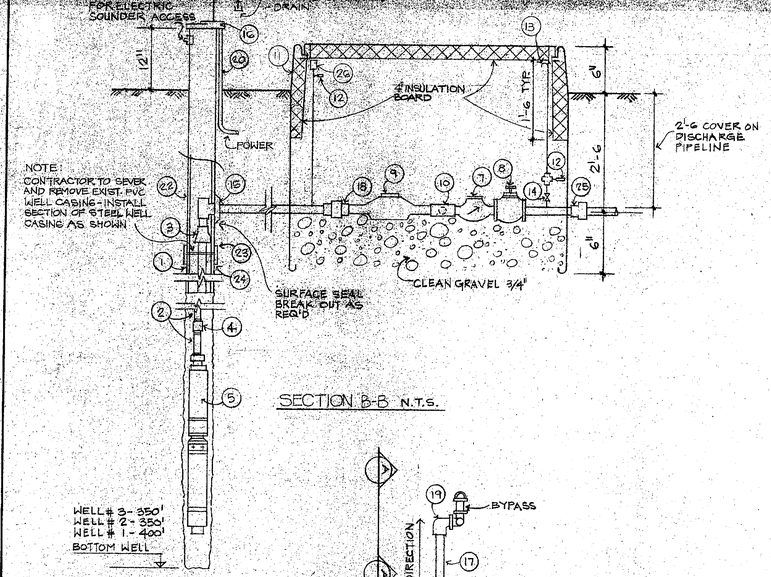
ITEM	DESCRIPTION	SIZE (INCHES)	REMARKS
1	CASING	6" PVC	EXISTING WELL DEPTH 350' 6" PVC TO 102'
2	COLUMN PIPE	2"	220' SCHED. 40 GALV.
3	REDUCER	1" X 1 1/4"	SCHED. 40 GALV.
4	COLUMN CHECK VALVE	1 1/2" X 2" 2"	FLOWMATIC - BRASS, SCREW X SCREW OR APPROVED EQUAL
5	SUBMERSIBLE PUMP	30 GPM AT 375' TDH	5 HP BERKELEY MODEL 4C40-50-17 STAGE OR APPROVED EQUAL
6	SHORT NIPPLES	1 1/2"	SCHED. 40 PVC
7	CHECK VALVE	1 1/2"	SEE SPEC. SECT. 15100
8	GATE VALVE	1 1/2"	SEE SPEC. SECT. 15100
9	METER	1 1/2"	INDICATOR AND TOTALIZER (GALLONS) - BADGER RECORDALL DISC METER MODEL 70, OR APPROVED EQUAL
10	TEE	1 1/2" X 1"	SCHED. 40 PVC
11	VAULT	3'L X 2'W X 3'-6" DEEP	INSULATED FIBERGLASS BOX - NON TRAFFIC
12	PRESSURE GAUGE WITH 1/4" SNUBBER VALVE	0-200 PSI	
13	HOSE BIB		SEE MILL ST. WELL #1
14	VALVE AND "TREE" FOR GAUGE AND COCK	1/2"	AS REQUIRED
15	PITLESS ADAPTER	1" X 6"	MAAS JX1 PITLESS UNIT OR APPROVED EQUAL (NSF OR WATER SYSTEM COUNCIL APPROVED)
16	WELL CAP	6"	
17	BYPASS PIPE	1"	
18	UNION	1 1/2"	
19	STREET ELLS	1"	
20	POWER CABLE		AS REQUIRED - SUBMERSIBLE TYPE
21	PVC TO 2 1/2" EXPRESS LINE	2"	SCHED. 40 PVC
22	THREADED STEEL WELL CASING	6"	
23	PLASTIC COUPLING - PIPE	6"	THREAD BY SUP
24	EPOXY CEMENT PLASTIC CASING TO COUPLING		
25	PVC REDUCER	1 1/2" X 2"	SCHED. 40
26	HIGH PRESSURE CUT-OFF SWITCH		SEE ELECTRICAL SPEC. MERCOID SWITCH WITH TIME DELAY - "OFF" AT PRESSURE = 10 psi OVER STATIC

BARNES WELL #3 (NOT IN CONTRACT)

ITEM	DESCRIPTION	SIZE (INCHES)	REMARKS
1	CASING	4", 6" PVC	EXISTING 6" TO 175', 4" FULL DEPTH FROM TOP TO 350'
2	COLUMN PIPE	1 1/4"	300' SCHED. 40 GALV.
3	REDUCER	1" X 1 1/4"	SCHED. 40 GALV.
4	COLUMN CHECK VALVE	1 1/4"	
5	SUBMERSIBLE PUMP	10 GPM AT 280' TDH	1 1/2 HP BERKELEY MODEL 4 AM-27 STAGE (4" MOTOR) SUBMERSIBLE PUMP WITH 1 1/4" DROP PIPE, OR APPROVED EQUAL
6	SHORT NIPPLES	1"	SCHED. 40 PVC
7	CHECK VALVE	1"	
8	GATE VALVE	1"	
9	METER	1"	INDICATOR AND TOTALIZER IN GALS. BADGER RECORDALL DISC METER MODEL 40L OR APPROVED EQUAL
10	TEE	1"	SCHED. 40 PVC
11	VAULT	3'L X 2'W X 3'-6" DEEP	INSULATED FIBERGLASS BOX - NON TRAFFIC
12	PRESSURE GAUGE WITH 1/4" SNUBBER VALVE	0-100 PSI	
13	HOSE BIB		
14	VALVE AND "TREE" FOR GAUGE AND COCK	1" X 6"	
15	PITLESS ADAPTER	6"	
16	WELL CAP	1"	
17	BYPASS PIPE	1"	
18	UNION	1"	
19	STREET ELLS	1"	
20	POWER CABLE		AS REQUIRED
21	PVC TO 2 1/2" EXPRESS LINE	1 1/4"	SCHED. 40 PVC
22	THREADED STEEL WELL CASING	6"	
23	PLASTIC COUPLING - PIPE	6"	THREADS ON ONE END ONLY
24	EPOXY CEMENT PLASTIC CASING TO COUPLING		
25	PVC REDUCER	1" X 1 1/4"	
26	HIGH PRESSURE CUT-OFF SWITCH		



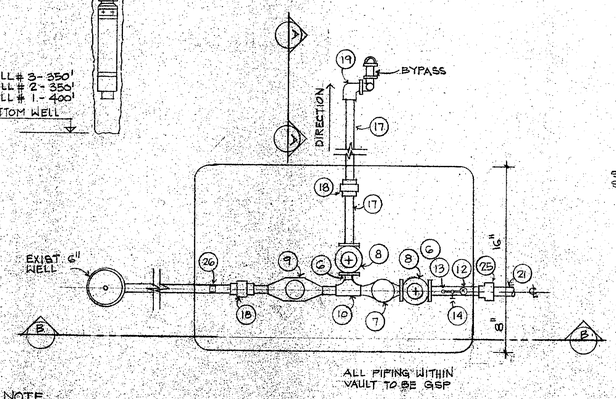
SITE LOCATION



SECTION B-B N.T.S.

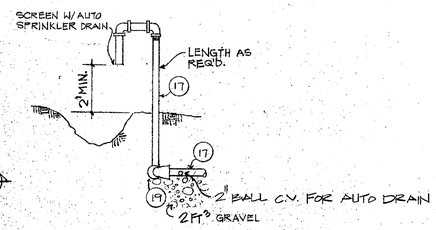
NOTES:

1. PROVIDE FOR OWNER INSTALLATION OF A CONTRACTOR FURNISHED CHLORINATOR PUMP AND 50-GALLON SOLUTION TANK. LIQUID METRONICS INC. MODEL A771-152, OR APPROVED EQUAL.



NOTE:
ALL MATERIALS MIN. 150 P.S.I. RATING

PLAN N.T.S.



SECTION A-A N.T.S.

REVISIONS

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EQUIPPING OF MILL STREET WELL #1, MILL STREET WELL #2 AND BARNES WELL #3(N.I.C.)
OCSD 1990 WATER PROJECT

DATE 8-90

RECORD DWGS. 2-1992

LEGEND

6" ~ 3" MINUS CLEAN PIT RUN RIVER GRAVEL BASE AT ROADWAYS AND SERVICE PATH AROUND FILTERS AND UNDER STEEL TANK. PIT SUBJECT TO APPROVAL BY ENGINEER.

• 38" ~ 3" MINUS CLEAN PIT RUN RIVER GRAVEL BASE UNDER FILTERS AND VALVE PIT SUBJECT TO APPROVAL BY ENGINEER.

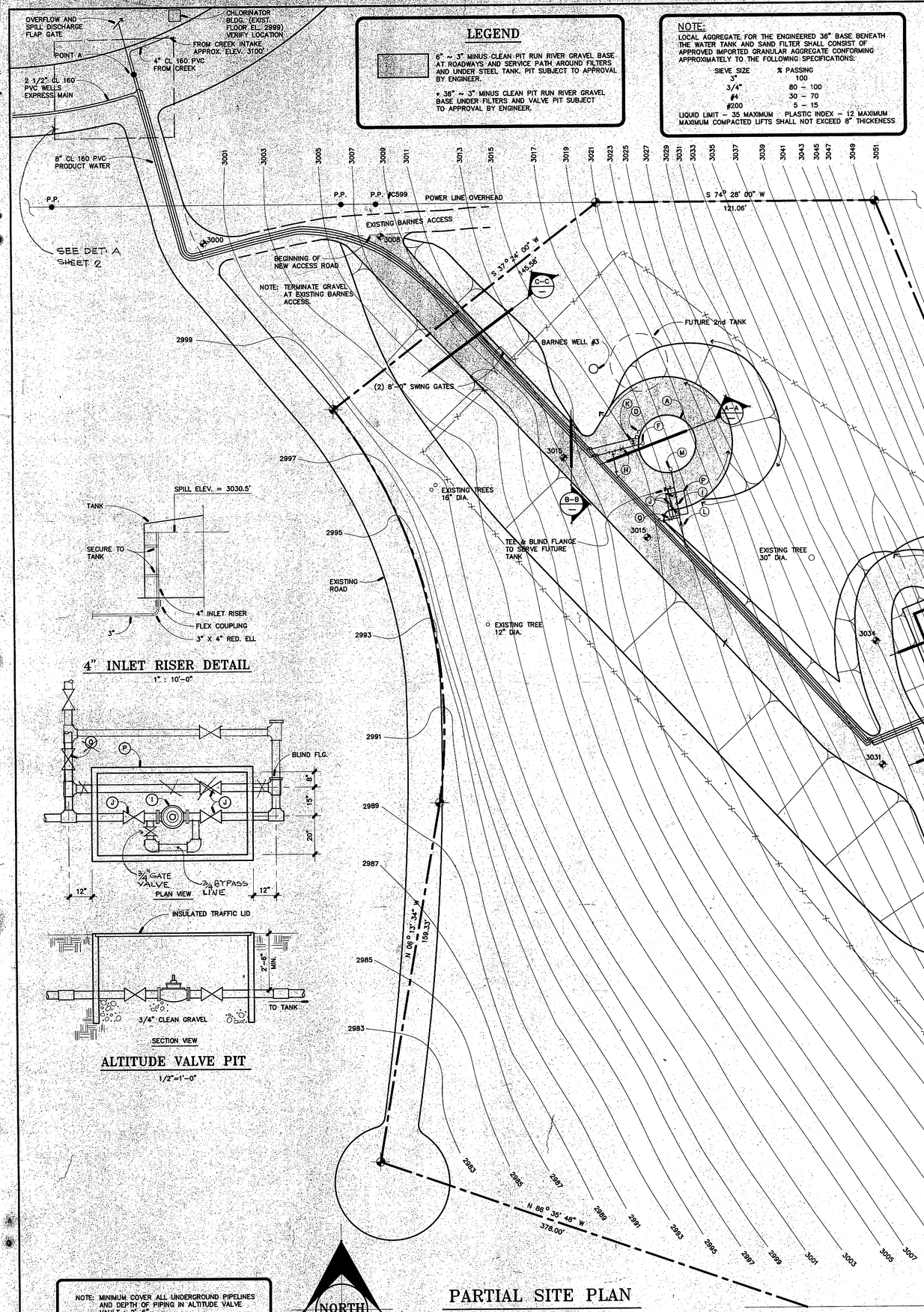
NOTE:

LOCAL AGGREGATE FOR THE ENGINEERED 36" BASE BENEATH THE WATER TANK AND SAND FILTER SHALL CONSIST OF APPROVED IMPORTED GRANULAR AGGREGATE CONFORMING APPROXIMATELY TO THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	% PASSING
3"	100
3/4"	80 – 100
#4	30 – 70
#200	5 – 15

LIQUID LIMIT – 35 MAXIMUM PLASTIC INDEX – 12 MAXIMUM
MAXIMUM COMPACTED LIFTS SHALL NOT EXCEED 8" THICKENESS

	ITEM DESCRIPTION	AMOUNT	REMARKS
A	50,000g APPRX. 24' DIA.x16' HIGH STEEL AWWA WATER TANK	1	
B	MANWAYS	3	2 IN SHELL, ONE ON DECK
C	OUTSIDE LADDER W/ CAGE/DECK	1	SAFETY RAIL 6'-0" EACH SIDE AT TOP LOCKABLE DOOR AT BOTTOM
D	GAGE BOARD & TARGET	1	FLOAT TYPE – ONE HALF TRAVEL
E	4" OVERFLOW, FLEX COUPLING	1 EACH	
F	8" OUTLET, FLEX COUPLING	1 EACH	
G	VENTS	1	SIZE FOR 3 CFS OUT. 3–6" EQUIDISTANT PERIMETER VENTS AND 1–8" CENTER VENT–PAN DECK OR MUSHROOM TYPE WITH 1/4" GALVANIZED HARDWARE CLOTH.
H	8" GATE VALVE WITH BOX, COVER	1	BURIED SVC
I	3" ONE WAY ALTITUDE VALVE	1	AMES MODEL A860, CLAVAL MODEL 210G–01, OR APPROVED EQUAL. MINIMUM DIFFERENTIAL OF 2 FT. REQUIRED. PROVIDE 3/4" BYPASS ON VALVE WITH 1/2" GLOBE VALVE (NORMALLY OPEN) TO ALLOW MINIMUM CONTINUOUS FLOW.
J	3" FL. BUTTERFLY VALVES OR PVC BALL VALVES	3	3 IN VAULT
K	4" GATE VALVE W/ BOX AND COVER	1	BURIED SVC
L	TRANSITION COUPLING–6" CL 160 PVC TO 3" SCHED. 40 PVC	1	
M	3"x4" SCHED 40 PVC 90° RED. ELL, 4" FLEX COUPLING, AND 4" SCHED. 40 INLET RISER IN TANK TO DISCHARGE AT SPILL ELEV.	1 EACH	
N	3" PVC TEES	2	
O	3" SCHED. 40 PVC IN BYPASS & VAULT		
P	ALTITUDE VALVE VAULT	1	4'x6'–6" JENSEN PRE–CAST #466–TA–I WITH INSULATED TRAFFIC LID OR EQUAL
Q	3" GATE VALVE W/ BOX AND COVER		

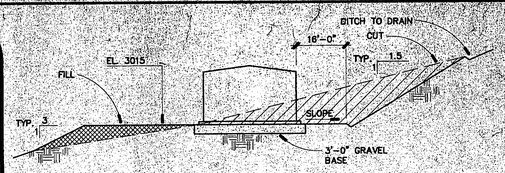


PARTIAL SITE PLAN
SCALE: 1" = 20'-0"

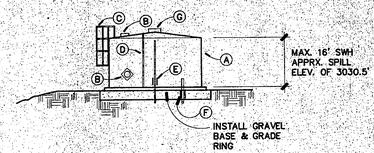
4" INLET RISER DETAIL
1" : 10'-0"

ALTITUDE VALVE PIT
1/2"=1'-0"

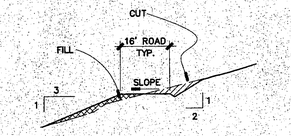
NOTE: MINIMUM COVER ALL UNDERGROUND PIPELINES AND DEPTH OF PIPING IN ALTITUDE VALVE VAULT : 2'-6".



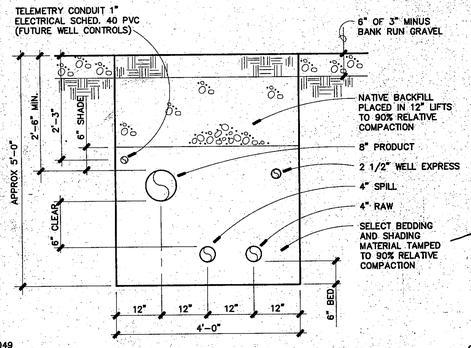
SECTION A–A
1" : 20'-0"



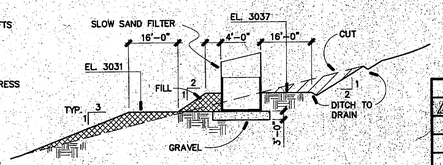
SECTION B–B
1" : 20'-0"



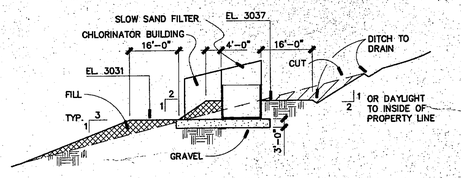
SECTION C–C
1" : 20'-0"



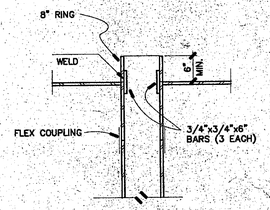
TRENCH AT SECTION C–C
FOR PRODUCT, SPILL, RAW, AND WELL EXPRESS WATER
NO SCALE



SECTION D–D
1" : 20'-0"



SECTION E–E
1" : 20'-0"



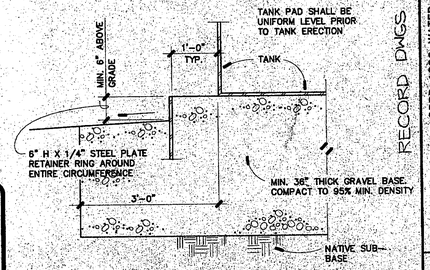
REMOVABLE SILT STOP AT 8" OUTLET
N.T.S.

NOTE:
LEAVE ALL PINE AND CEDAR TREES OVER 6" DIAMETER WHERE POSSIBLE.

NOTE:
INSTALL 1" ELECTRICAL SCHED. 40 PVC CONDUIT IN WATER LINE TRENCH FROM SLOW SAND FILTER TO WELL EXPRESS MAIN FOR FUTURE TELEMETRY AND CONTROL OF WELLS.

NOTE:
ALL BURIED STEEL PIPE TO BE CEMENT OR EPOXY LINED, AND IF NOT POLY ENCASED DUCTILE IRON, TO BE WRAPPED PER SPECIFICATION SECTION 15060,2.01,G.

NOTE:
EXCAVATE AND PLACE A 3 FEET DEPTH OF PIT RUN GRAVEL BENEATH THE FILTER AND TANK STRUCTURES EXTENDING 3 FEET OUT FROM THE EDGE OF THE STRUCTURES.



TANK PAD DETAIL
N.T.S.

RECORD DWGS 2-1992

REVISIONS
1 DELETE 4/10/91

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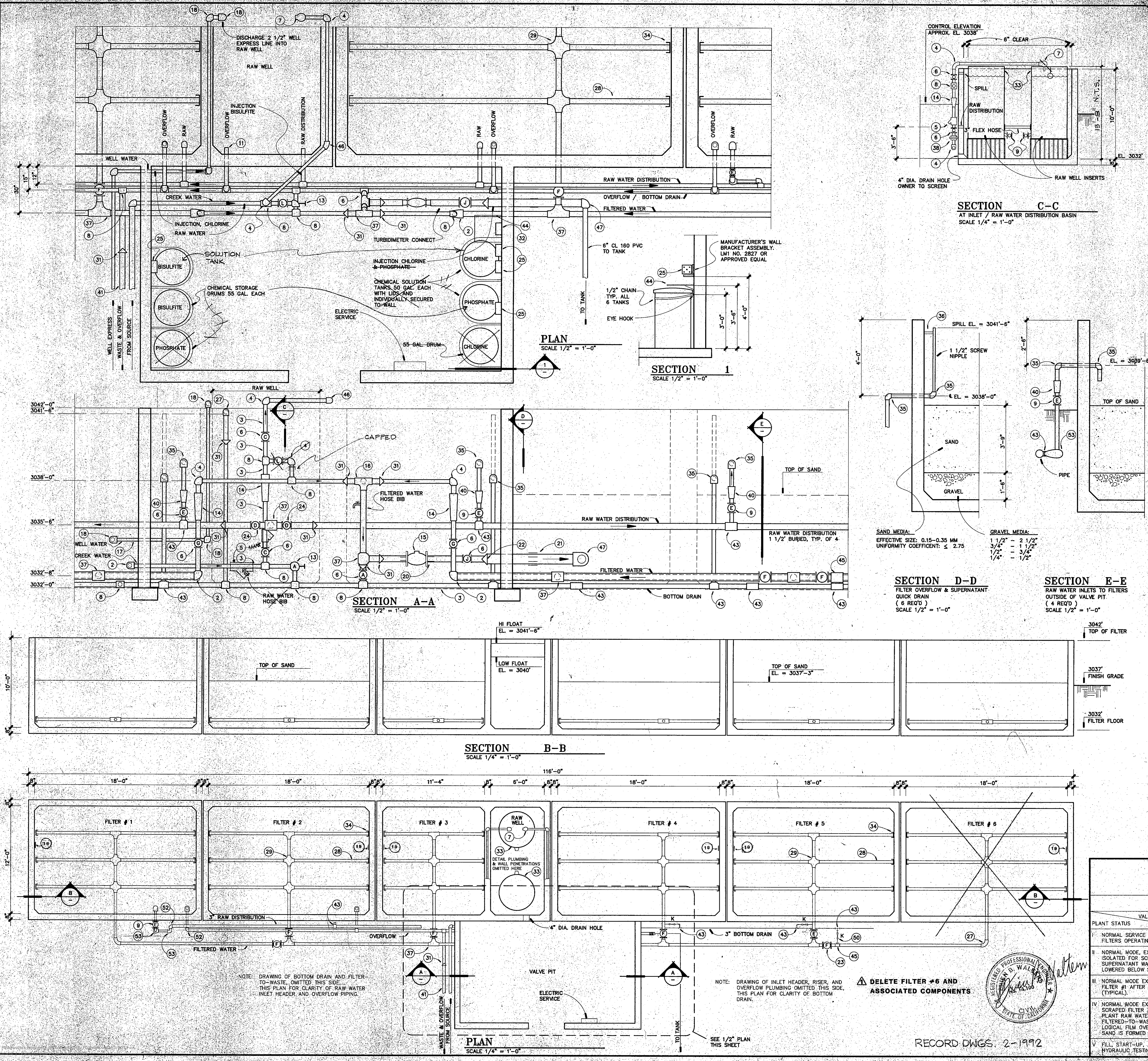
PLAN OF SLOW SAND FILTER – PLAN SECTIONS AND DETAILS OF 50,000 GALLON TANK, SITE GRADING & DRAINAGE AND RAW WATER, PRODUCT WATER, TREATED WATER TRANSMISSION AND OVERFLOW AND SPILL PIPELINES SOUTH OF MOUNTAIN HOUSE RD.

CCSD 1990 WATER PROJECT

DATE	SHEET
12–90	4 OF 9



ITEM	DESCRIPTION	REMARKS
	DIVERSION, FILTER, TANK & SPILLS	HYDRAULIC CAPAC. = 150 GPM
	TREATMENT CAPACITY	AVG. 40 GPM, MAX. 115 GPM
1	4" CL 160 PVC	
2	4" X 3" SCHED. 40 PVC. 90 DEG. RED. ELL	
3	3" SCHED. 40 PVC	
4	3" SCHED. 40 PVC 90 DEG. ELL	
5	3" BASKET STRAINER	GEORGE FISHCER 306 OR APPROVED EQUAL
6	3" PVC BALL VALVE	SEE SPEC. SEC. 15100.
7	3" FLOAT CONTROL VALVE	MODULATING – MAINTAINS CONSTANT INFLUENT WELL LEVEL
8	3" SCHED. 40 PVC TEE	
9	1 1/2" BALL VALVE	SEE SPEC. SECTION 15100. USE METAL VALVES WHERE EXPOSED TO SUNLIGHT.
10	(NOT USED)	
11	4" SCHED. 40 PVC	
12	18'L X 10'D X 12'W FILTER BOX INSIDE	PRECAST OR POURED IN PLACE FOR H20-S16 LOADING ON EARTH ADJACENT TO BOX AT 6'-0" HEIGHT
13	3" ANGLE VALVE	SEE SPEC. SECTION 15100
14	3" ROTAMETER, 0–100 GPM	BLUE-WHITE CF452, OR APPROVED EQUAL
15	3" PROPELLER METER	BADGER MODEL SGH WATER SPECIALTIES ML-03-5G, WITH SIGNAL HEAD, OR APPROVED EQUAL.
16	4" SCHED. 40 PVC SIDE OUTLET TEE	
17	2 1/2" CL 160 PVC	WELLS EXPRESS MAIN
18	2 1/2" SCHED 40 PVC 90 DEG. ELL	
19	8' LONG STAFF GAGE	GRADUATED IN TENTHS, MARK EVERY FOOT
20	6" SCHED 40 PVC	
21	TRANSITION 6" SCHED 40 PVC TO 6" CL 160 PVC	
22	6" X 3" SCHED. 40 PVC REDUCER	
23	4" PVC BALL VALVE	
24	4" BUTTERFLY VALVE	
25	CHEMICAL FEED PUMPS	CONSTANT FEED PRECHLORINATION, SODIUM BISULFITE DECHLORINATION, POST CHLORINATION AND PHOSPHATE METERING PUMPS – LMI MODEL A771-152 OR APPROVED EQUAL.
26	6" SCHED 40 PVC 45 DEG. ELL	
27	4" SCHED 40 PVC 90 DEG. ELL	
28	1 1/2" SCHED 40 PVC WITH 1/4" HOLES EA. SIDE AT 24" O.C.	CALIBRATED FOR UNIFORM FLOW THROUGH FILTER
29	4" X 1 1/2" SCHED 40 PVC CROSS	
30	8" CL 160 PVC TRANSMISSION MAIN	
31	4" X 3" SCHED 40 PVC REDUCER	
32	TURBIDIMETER	HACH 2100A OR APPROVED EQUAL, PLUMB TO SPILL & RAW DISTRIBUTION
33	4'D X 8'H HIGH DENSITY POLYETHYLENE TANK ON 29"H STAND W/ DRAIN FLANGE	COMPLETE WITH ACCESSORIES POLY CAL PLASTICS #758-0 OR APPROVED EQUAL
34	1 1/2" SCHED 40 PVC CAP	
35	1 1/2" 90 DEG. ELL	
36	PIPE HANGER, SUPPORTS, BRACKETS, CLAMPS, SADDLES, WALL MOUNTINGS	CONTRACTOR TO PROVIDE SHOP DRAWINGS DETAILING FIRM PIPE SUPPORT, UNISTRUT OR GRINNELL OR APPROVED EQUAL
37	4" SCHED 40 PVC TEE	
38	UNION	LINE SIZE
39	REDUCING FLANGED COUPLING ADAPTER	LINE SIZE(S)
40	1 1/2" ROTAMETER, 0–40 GPM	
41	4" CL 100 PVC	
42	3" SCHED 40 PVC 90 DEG. ELL	
43	3" X 1 1/2" TAP OR FITTING	
44	18"x18" WOOD SHELF	SET TURBIDIMETER ON
45	4" X 1 1/2" TAP OR FITTING	
46	3" SCHED 40 PVC 45 DEG. ELL	
47	6" SCHED 40 PVC 90 DEG. ELL	
48	4" SCHED 40 PVC 90 DEG. ELL SIDE OUTLET	
49	3" X 1 1/2" SCHED 40 PVC SIDE OUTLET TEE	
50	1 1/2" BALL VALVE	BURIED VALVE, FORD BALL VALVE OR APPROVED EQUAL.
51	1 1/2" TEE	
52	1 1/2" x 3" REDUCING ELL	
53	1 1/2" STREET ELL	

NOTES:

1. DIMENSIONS ARE NOT TO BE SCALED. THE APPROVED SHOP DRAWINGS WILL GOVERN FINAL ALIGNMENTS AND SPACINGS.
2. MATERIAL LISTS HEREIN ARE FOR DRAWING CLARITY AND NOT NECESSARITY REPRESENTATIVE OF EXACT QUANTITIES OF EQUIPMENT, PIPE, COUPLINGS, SUPPORTS, OR OTHER ACCESSORIES NEEDED FOR FINAL FIT.
3. OPERATION
   a. WATER FLOWS OUT OF TANK AND ALTITUDE VALVE OPENS.
   b. WATER FLOWS FROM FILTERS TO TANK.
   c. LOWERING OF WATER IN FILTERS, CAUSES RAW BASIN TO FLOW TO FILTERS AND SUBSEQUENT OPERATION OF RAW BASIN INTAKE FLOAT VALVE.
   d. WHEN TANK IS FULL ALTITUDE VALVE CLOSES, FLOW STOPS, AND PLANT WATER LEVELS BECOME EQUAL.
4. WALL PENETRATIONS (OPTIONAL) CONSTRUCTION VALVE PIT WALLS
   a. INITIALLY LEAVE THE EASTERLY 6' SEGMENT OF THE NORTH AND SOUTH WALLS UNCONSTRUCTED. ALSO DON'T INITIALLY BACKFILL THIS AREA (KEEP THE AREA WELL DRAINED).
   b. INSTALL AND TEST ALL OF THE PIPES, VALVES AND FITTINGS.
   c. INSTALL THE REMAINING 6' SEGMENT TAKING CARE TO NEATLY INFILL WITH BLOCK AND GROUT AROUND THE PIPES. INSURE THAT BLOCK RODS AND BOND BEAMS ARE IN PLACE AND CONTINUOUS.
   d. LIBERALLY CAULK AND DAMP-PROOF THE EXTERIOR (TO THE BACKFILLED AREAS) AROUND THE PIPE PENETRATIONS UNTIL "TIGHT" PRIOR TO BACKFILLING.
   e. TEST VIGOROUSLY WITH HOSE WATER UNDER PRESSURE, REPAIR ANY LEAKS, RETEST, ETC.
5. SCHEDULE 40 STEEL PIPE REQUIRED WHERE RAW WATER INLETS AND OVERFLOW PIPING ARE EXPOSED TO SUNLIGHT.
6. SEE DETAILS IN SPECIFICATION FOR WALL PENETRATIONS AND CHEMICAL FEED PUMP PLUMBING & INJECTION.
7. UNDERGROUND VALVES REQUIRE VALVE AND OR SERVICE BOXES, NON TRAFFIC LIDS, AND OPERATORS.
8. CONTRACTOR WILL DRILL TANK WALLS & USE EXPANDING ANCHOR BOLTS ONLY, FOR ANY ATTACHMENTS. DO NOT USE HILTI/RAMSET TYPE FASTENERS.
9. FILTER BOX SLAB, WALL AND BULKHEAD THICKNESS AS SHOWN ARE ILLUSTRATIVE ONLY. PRECAST & POURED IN PLACE OPTIONS WILL HAVE THICKNESSES NECESSARY FOR SPECIFIED DESIGN LOADS. ALL FINAL WALL THICKNESSES WILL BE PRECISELY DIMENSIONED ON THE APPROVED SHOP DRAWINGS.
10. STAFF GAGES TO BE STAINLESS STEEL BOLTED OR EPOXIED TO WALLS AND MADE OF MATERIAL SUITABLE IN POTABLE WATER.

REVISIONS
1 DELETE 4/16/91

VALVE STATUS FOR OPERATING MODES OF THE PLANT

VALVE IDENTIFICATION LOCATION AND STATUS (SEE PLANT ELEVATION THIS SHEET)
O = OPEN C = CLOSED T = THROTTLED

LOCATION	FILTER #1	FILTER #2	FILTER #3	VALVE PIT	FILTER #4	FILTER #5	FILTER #6
VALVE IDENTIFICATION / PLANT STATUS	E F K	E F K	E F K	A C D G H I J	E F K	E F K	E F K
I NORMAL SERVICE MODE – ALL FILTERS OPERATING.	T O C	T O C	T O C	C T O T C C T	T O C	T O C	T O C
II NORMAL MODE, EXCEPT FILTER #1 ISOLATED FOR SCRAPING AND SUPERNATANT WATER LEVEL LOWERED BELOW SAND (TYPICAL).	C C O	T O C	T O C	C T O T C C T	T O C	T O C	T O C
III NORMAL MODE EXCEPT FILLING FILTER #1 AFTER SCRAPING, (TYPICAL).	C O C	T O C	T O C	C T O T C C T	T O C	T O C	T O C
IV NORMAL MODE EXCEPT NEWLY SCRAPED FILTER #1 FILLED AND PLANT RAW WATER IS BEING FILTERED-TO-WASTE AS BIO-LOGICAL FILM OVER TOP OF SAND IS FORMED (TYPICAL).	T C O	T O C	T O C	C T O T C C T	T O C	T O C	T O C
V FILL, START-UP, AND HYDRAULIC TESTING.	FILL THROUGH VALVE L CROSS CONNECTION. VALVE L TO BE REMOVED FOR NORMAL OPERATION AND STUBS BLIND FLANGED.						

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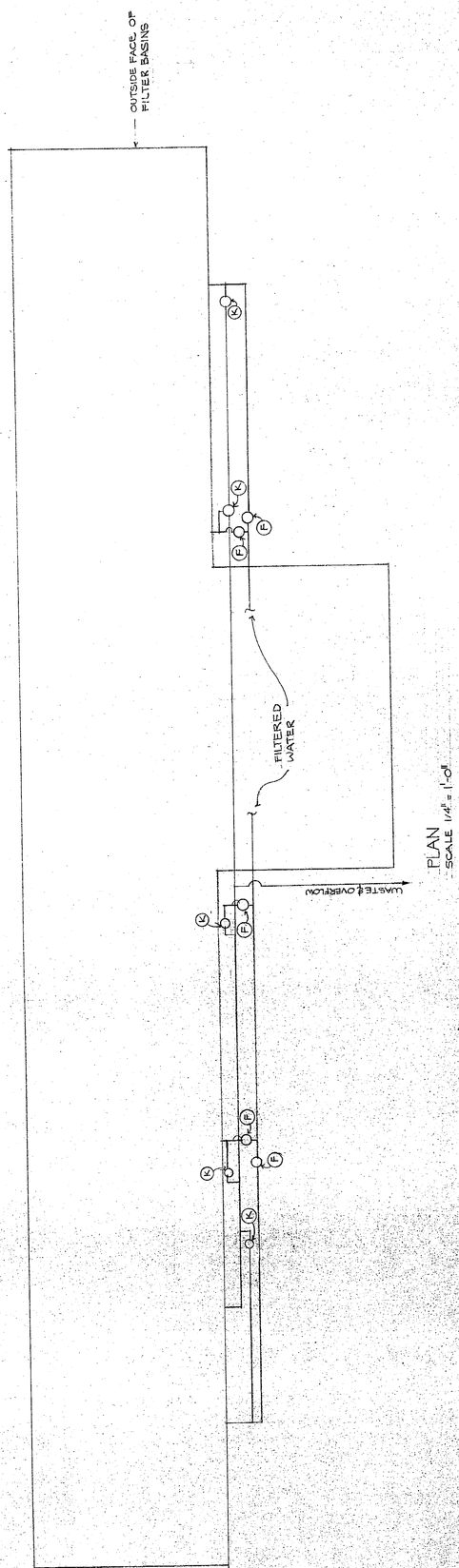
SLOW SAND FILTER – PLAN, SECTIONS & DETAILS

DATE	SHEET
12-90	5 OF 9



PLAN
SCALE 1/4" = 1'-0"

NOTE:
FOR MATERIAL DESCRIPTION SEE SHEET No 5

RECORD DWGS. 2-1992

DATE 2-92	CCSD 1990 WATER PROJECT	SLOW SAND FILTER - OUTSIDE FILTER PIPING	SHEET 5A OF 9

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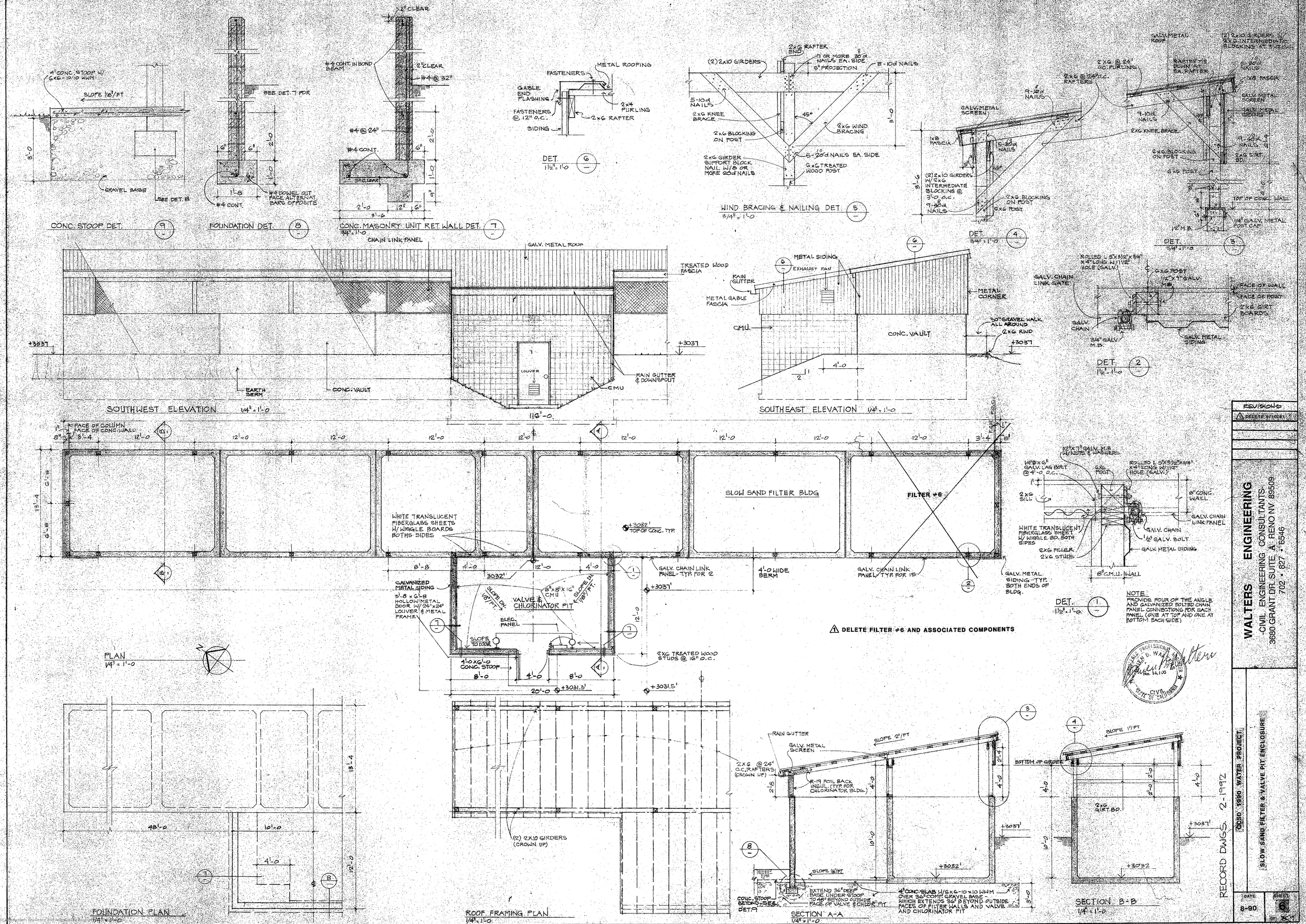
CONC. STOOP DET. 9
FOUNDATION DET. 8
CONC. MASONRY UNIT RET. WALL DET. 7
3/4" = 1'-0
DET. 1 1/2" = 1'-0 6
WIND BRACING & NAILING DET. 5
3/4" = 1'-0
DET. 3/4" = 1'-0 4
DET. 3/4" = 1'-0 3
DET. 1 1/2" = 1'-0 2
SOUTHWEST ELEVATION 1/4" = 1'-0
SOUTHEAST ELEVATION 1/4" = 1'-0
DET. 1 1/2" = 1'-0 1
SLOW SAND FILTER BLDG
FILTER #6
VALVE & CHLORINATOR PIT
WHITE TRANSLUCENT FIBERGLASS SHEETS W/ WIGGLE BOARDS BOTHS SIDES
GALVANIZED METAL SIDING
3'-8 x 6'-8 HOLLOW METAL DOOR W/ 24" x 24" LOUVER & METAL FRAME
4'-0 WIDE BERM
GALV. CHAIN LINK PANEL - TYP. FOR 2
GALV. CHAIN LINK PANEL - TYP. FOR 15
GALV. METAL SIDING - TYP. BOTH ENDS OF BLDG.
2x6 TREATED WOOD STUDS @ 16" O.C.
4'-0 x 6'-0 CONC. STOOP
PLAN 1/4" = 1'-0
FOUNDATION PLAN 1/4" = 1'-0
ROOF FRAMING PLAN 1/4" = 1'-0
(2) 2x10 GIRDERS (CROWN UP)
SECTION A-A 1/4" = 1'-0
SECTION B-B 1/4" = 1'-0
EXTEND 36" DEEP FOOTING UNDER STOOP TO 48" BEYOND OUTSIDE FACE OF VALVE & CHLORINATOR PIT
4" CONC. SLAB W/ 6x6-10x10 WWM OVER 36" COMP. GRAVEL BASE - WHICH EXTENDS 36" BEYOND OUTSIDE FACES OF FILTER WALLS AND VALVE AND CHLORINATOR PIT
DELETE FILTER #6 AND ASSOCIATED COMPONENTS
NOTE: PROVIDE FOUR OF THE ANGLE AND GALVANIZED BOLTED CHAIN PANEL CONNECTIONS FOR EACH PANEL (ONE AT TOP AND ONE AT BOTTOM EACH SIDE)
REVISIONS
DELETE FILTER #6
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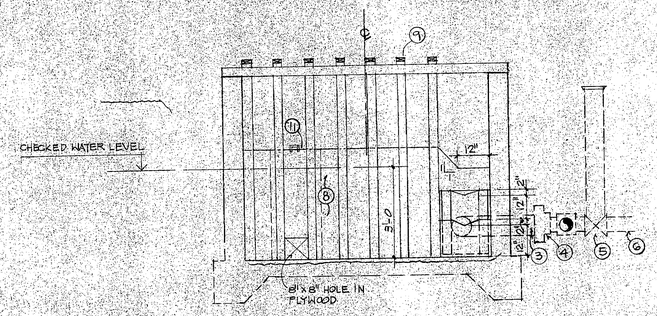
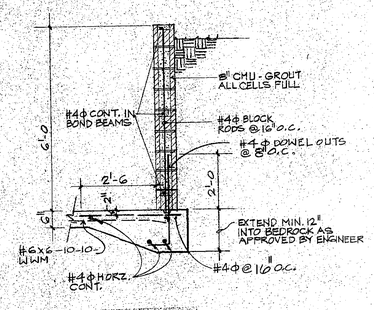
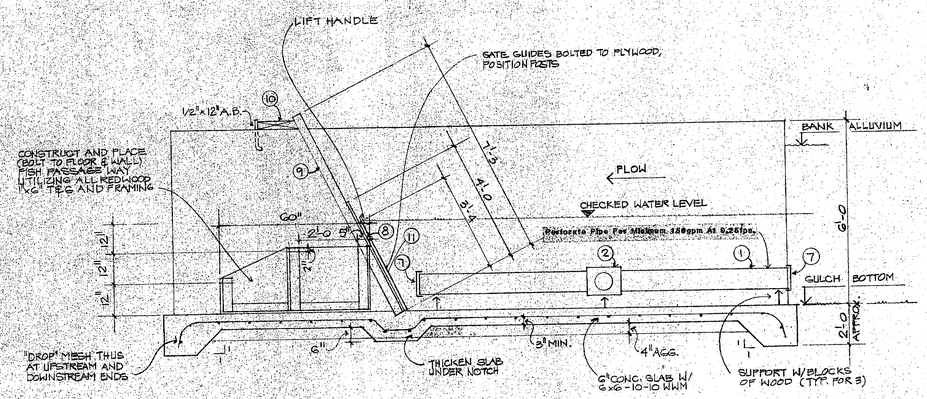
RECORD DWGS. 2-1992
CO.SD. 1990 WATER PROJECT
SLOW SAND FILTER & VALVE PIT ENCLOSURE
DATE 8-90
SHEET 6



SECTION A-A



SECTION B TYP. ALL WALLS



SECTION C-C

ITEM	SIZE	MATERIAL
1	8"	SCH. 40 PVC Triple Perforated Pipe. Cal Ag Turf, Sacramento, Pipe w/0.064" Wide Slots Provide 150 gpm through the 12 ft. of Pipe shown or Approved Equal.
2	8"	" " " Tee
3	8"	" " " Pipe
4	6"X8"	" " " Reducer
5	6"	Gate Valve w/Box and Cover, WATERMAN OR EQUAL
6	6"	CL160 PVC
7	8"	SCH. 40 PVC Cap
8	4'X8'	1-inch Marine Plywood
9	4"X4"	Redwood Post
10	4"X14"	D.F. Beam
11	15"X40"	Steel Stop Gate w/Gate Guides
12	4"	CL160 PVC
13	4"	SCH. 40 PVC Ell
14	6"X6"X4"	" " " Reducing Tee
15	4"	Gate Valve w/Box and Cover
16	6"X6"	SCH. 40 PVC Ell

NOTES:

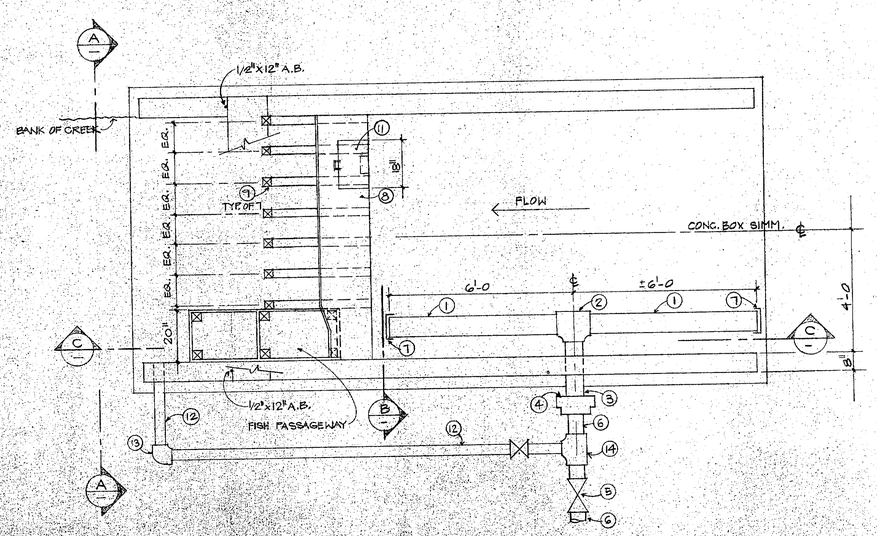
1. Contractor to contact California Department of Fish & Game (DFG) at (916) 355-7030 for on-site inspection with Game Warden prior to start of construction in accordance with conditions of the current Streambed Alteration Agreement. Contact CCSD for status of Agreement.

2. See Details in the Specifications for fence and buried valve details.

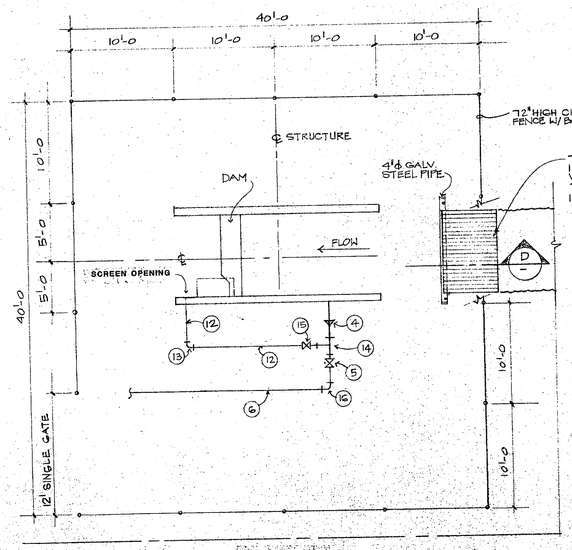
3. Shape channel and trash rack for neat fit.

4. Alternate reinforced concrete box is acceptable--use 3-sided boxes as manufactured by Utility Vault Company, or approved equal (don't fabricate or ship until shop drawings are approved).

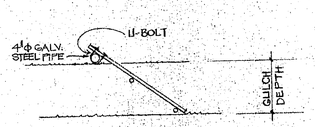
5. Construction to be kept within confines of CCSD easement(s) as described on Pg. 00253-54 of the Supplemental General Conditions.



PLAN



SITE PLAN



SECTION D

CAMPBELL GULCH DIVERSION STRUCTURE

RECORD DWGS. 2-1992

REGISTERED PROFESSIONAL ENGINEER
ORIEN B. WALTERS
No. 14,100
CIVIL
STATE OF CALIFORNIA

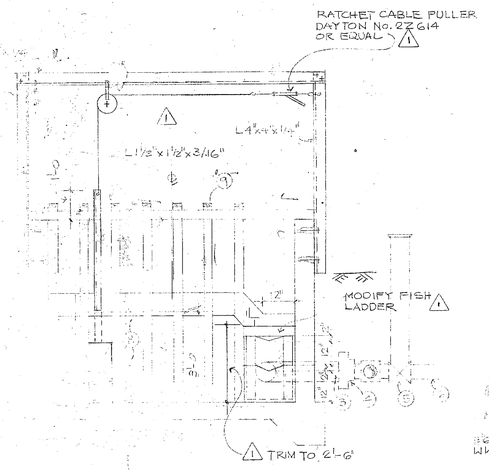
WALTERS ENGINEERING
CIVIL ENGINEERING CONSULTANTS
3680 GRANT DR. SUITE A RENO NV 89509
702 • 827 • 6546

CCSD 1990 WATER PROJECT

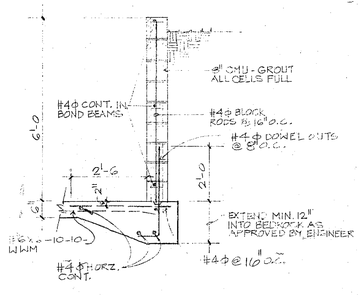
CAMPBELL GULCH DIVERSION STRUCTURE

DATE 8-90

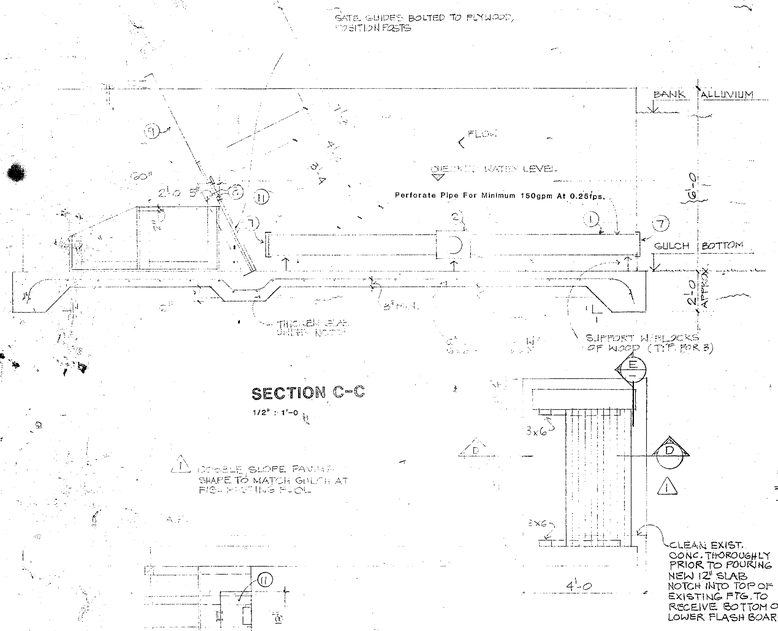
SHEET 7 OF 7



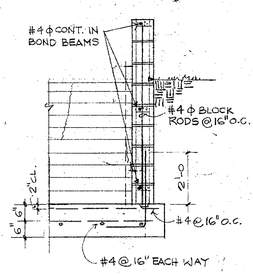
SECTION A-A
1/2" : 1'-0



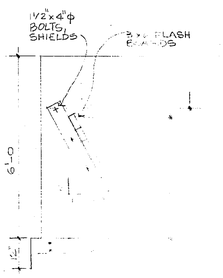
SECTION B TYP. ALL WALLS
1/2" : 1'-0



SECTION C-C
1/2" : 1'-0



SECTION E
1/2" : 1'-0



SECTION F

ITEM	SIZE	MATERIAL
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4	6"X8"	" " " Reducer
5	6"	Gate Valve w/Box and Cover. WATERMAN OR EQUAL
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9	4"X4"	Redwood Post
10	4"X14"	D.F. Beam
11	15"X40"	Steel Stop Gate w/Gate Guides (HANDLE MISSING)
12	4"	CL160 PVC
13	4"	SCH. 40 PVC Ell
14	6"X6"X4"	" " " Reducing Tee
15	4"	Gate Valve w/Box and Cover
16	6"X6"	SCH. 40 PVC Ell

NOTES:

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2. See Details in the Specifications for fence and buried valve details.

3. Shape channel and trash rack for neat fit.

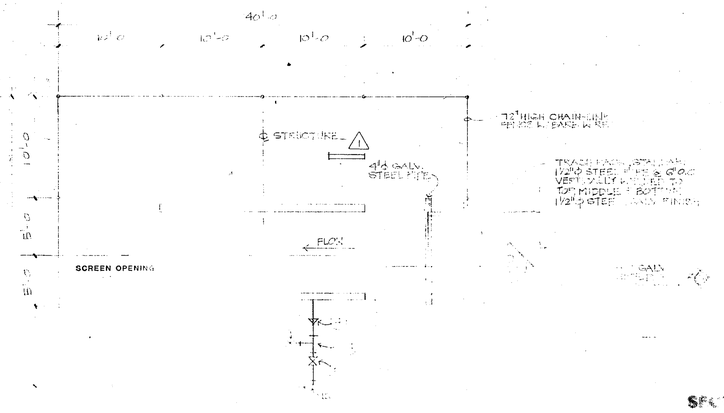
4. Alternate reinforced concrete box is acceptable--use 3-sided boxes as manufactured by Utility Vault Company, or approved equal (don't fabricate or ship until shop drawings are approved).

5. Construction to be kept within confines of CCSD easement(s) as described on Pg. 00253-54 of the Supplemental General Conditions.

6. This Plan describes the following proposed improvements to be accomplished by District maintenance forces:

a) Trim (lower) the dam crest.
b) Enlarge the sluiceway.
c) Install the emergency cable puller and closing angle.
d) Construct a fish resting pool (DFG to furnish detail).
e) Modify the fish ladder (DFG to furnish detail).
f) Add a northside spillway.

7. District to secure any additional necessary permits and land rights for the proposed 1992 improvements.



SECTION D

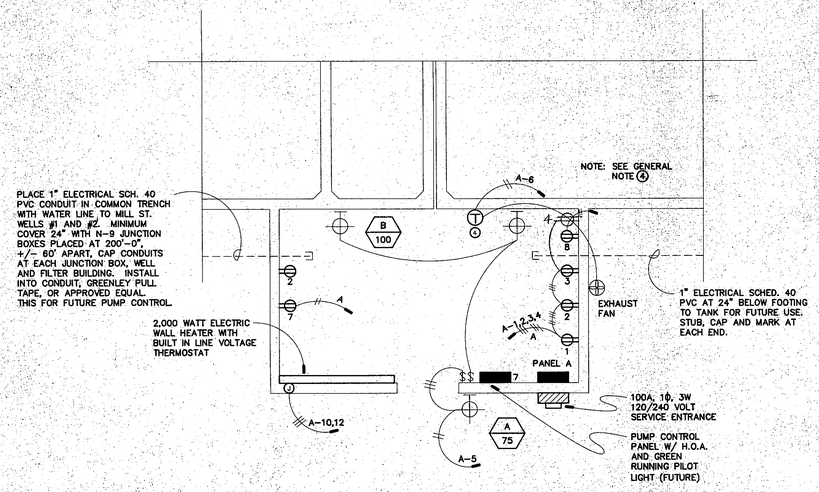
REVISIONS
1 PROPOSED 6-12 DIVERSION DAM IMPROVEMENTS

ENGINEERING
CIVIL ENGINEERING CONSULTANTS
1575 DELUCCHI LANE - SUITE 115-15 - RENO, NV 89502
702 • 827 • 6546

CAMPBELL GULCH DIVERSION STRUCTURE

SHEET 1 OF 1

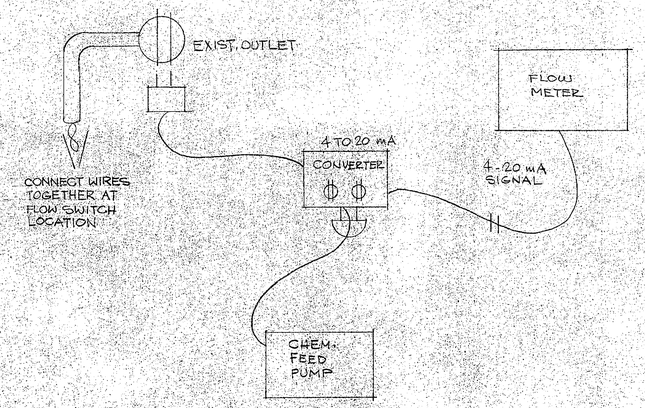
PRELIMINARY



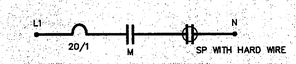
VALVE PIT ENCLOSURE ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"

NOTE:
CHEM PUMPS ARE ON/OFF WITH WATER METER. BISULFITE & PRE CHLORINATION OPERATION IS A SEPERATE MODE. PHOSPHATE & POST-CHLORINATION OPERATION IS A SEPERATE MODE. SEE CHLORINATOR CONTROL DIAGRAM THIS SHEET.

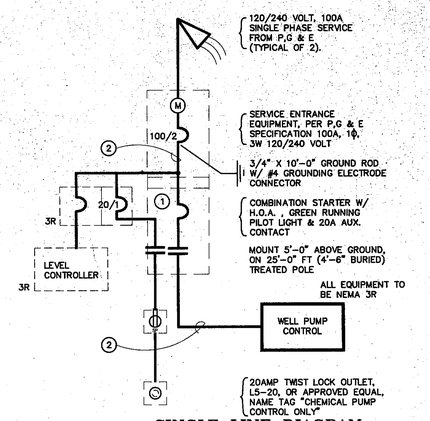


CHEM. FEED PUMP BLOCK DIAGRAM



CHLORINATOR CONTROL DIAGRAM

(TYP. EACH WELL & VALVE PIT)

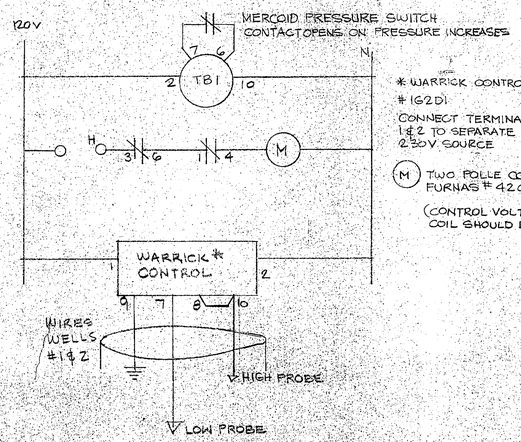


SINGLE LINE DIAGRAM

MILL ST. WELL #1
MILL ST. WELL #2

GENERAL NOTES

1. MILL ST. WELL #1 30 AMP 2 POLE
   MILL ST. WELL #2 40 AMP 2 POLE
2. MILL ST. WELL #1 1/2" C W/ 3 #10 THHN
   MILL ST. WELL #2 3/4" C W/ 3 #8 THHN
3. 100A, 1ϕ, 3W, 120/240 VOLT SERVICE- VERIFY REQUIREMENTS W/ P,G & E- USE TRENCH JOINT W/ WATER LINE WHEREVER POSSIBLE.
4. LINE VOLTAGE THERMOSTAT CONTACT CLOSE ON TEMPERATURE RISE.



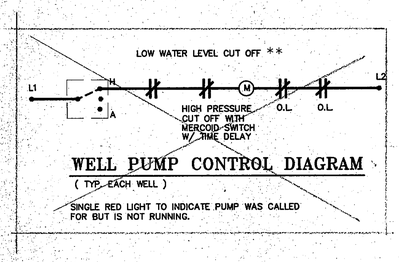
* WARRICK CONTROL
# 162D1
CONNECT TERMINALS 1&2 TO SEPARATE 230V SOURCE

(M) TWO POLLE CONTACTOR FURNAS # 42CE15A*106

(CONTROL VOLTAGE FOR COIL SHOULD BE 115V)

WELL CONTROL DIAGRAM
TYP. FOR 2 WELLS

NOTE
WELL # 1 PROBE SETTINGS: LOW 340, HIGH 70
WELL # 2 PROBE SETTINGS: LOW 200, HIGH 90



WELL PUMP CONTROL DIAGRAM

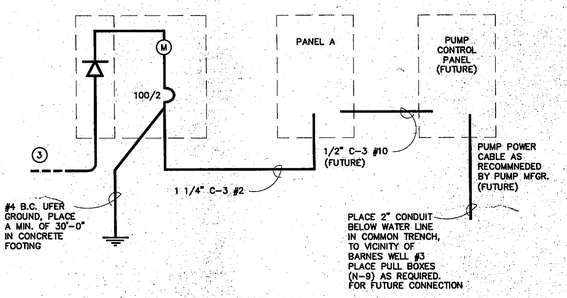
(TYP. EACH WELL)

SINGLE RED LIGHT TO INDICATE PUMP WAS CALLED FOR BUT IS NOT RUNNING.

NOTE
LOW WATER CUT OFF TO CONSIST OF B/W OR WARRICK LEVEL CONTROLLER WITH TWO PROBES SET FOR PUMP DOWN OPERATION. ELEVATION OF WELL PROBE TO BE AS DETERMINED AND DIRECTED BY THE ENGINEER. LEVEL CONTROLLERS ARE TO BE MOUNTED IN A NEMA 3R ENCLOSURE AT EACH OF THE TWO WELL SITES.

FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	REMARKS
A/75	HITEK TWL 70S	1-70WHPS(INCH)	MOUNT ABOVE DOOR
B/100	KEYLESS W/ WIRE GUARD	1-100W A-19	MOUNT INSIDE ROOM ON WALL +11'-0"



SINGLE LINE DIAGRAM

SLOW SAND FILTER, FUTURE BARNES WELL #3 (N.C.I.)

PANEL "A"

DIRECTORY	LOAD	BKR	CIR	CIR	BKR	LOAD	DIRECTORY
CHEMICAL PUMP (PHOSPHATE)	300	20/1	1	2	20/1	300	CHEMICAL PUMP (BISULFITE)
CHEMICAL PUMP (PRE-CHLORINATION)	300		3	4		300	CHEMICAL PUMP (POST-CHLORINATION)
LIGHTS	300		5	6		300	EXHAUST FAN (50 CFM)
OUTLET GFI.	180		7	8		500	TURBIDIMETER
WELL PUMP- (FUTURE)	1000	30/2	9	10	30/2	1000	ELECTRIC HEATER
WELL PUMP (FUTURE)	1000	30/2	11	12	30/2	1000	ELECTRIC HEATER
			13	14			
			15	16			
SPARE	300	20/1	17	18	20/1	300	SPARE

PANEL 100A, 1ϕ, 3W, 120/240 VOLT, SURFACE MOUNTING — CONNECTING LOAD: 6280 (27A)

RECORD DWGS 2-1992

1-7-91

REVISIONS

WALTERS ENGINEERING
-CIVIL ENGINEERING CONSULTANTS-
3680 GRANT DR. SUITE A RENO NV 89509
702 • 827 • 6546

CCSD 1990 WATER PROJECT

POWER AND TELEMETRY PLANS

DATE 12-90

SHEET 8 OF

1/4" = 1'-0" STS-4

CA-1 Headwaters Resilience and Adaptability Program - March 2013
Attachment 1

YUBA COUNTY
ENVIRONMENTAL HEALTH DEPARTMENT
SMALL WATER SYSTEM INSPECTION REPORT

Purveyor: **CAMPTONVILLE COMMUNITY SVS DIST** System Number: 5800924
Person(s) Contacted/Position: Mike Hines/Operator, Richard Dickard/Board Member
Date of Inspection: September 5, 2012 Inspector: Jodi E. Bird

A. INTRODUCTION

1. ***Permit Status*** (Date Issued/Amendment Purpose)
   Full Permit issued April 24, 1992
   Amendment(s) None
   Are the permit provisions complied with? Yes
   Is the permit up to date? Yes
   List data sheets on file: sample siting plan, technical report, disinfection data sheet, filter plant data sheet, surface water sources, drinking water source assessment and sanitary survey

2. ***Changes in System***
   Since last annual inspection: None
   Planned future changes: Larger storage tank, 1 new sand filter, a new gw source, and iron & manganese treatment.

3. ***Consumer & Production Data***
   Number of service connections: 75 **Number with meters:** 75
   Approximate population served: approximately 180
   Water produced during recent 12 month period: Unknown – only have logs January thru August 2012
   Maximum month August – 2,173,400 **Maximum day** August 21 – 144,900
   Discussion and appraisal: This system serves the Town of Camptonville, which includes a school, two restaurants, a fire station and numerous residences.

B. SOURCE DATA

Source	Status	Capacity	Comments
Groundwater (2 wells)	**Standby**		These wells are in okay condition and have been supplementing the system in the summertime.
Surface Water			
Campbell's Gulch			The operator inspects the intake structure monthly or more if needed.
Emergency			
			Bottled water from an approved source shall be provided in the event of an emergency or water quality failure.

Discussion & appraisal (i.e., does source capacity comply with Waterworks Standards?)

This source appears to be producing an adequate amount of water for the current use.

C. TREATMENT

1. ***Surface Water Sources [See Appendix]*** Appendix completed

2. ***Groundwater Sources*** (Standby sources)
   Is continuous disinfection provided? Yes
   Describe facilities: Both wells feed into the filter plant
   If disinfection is not provided, are provisions & connections for emergency chlorination provided per ODW guidelines? Disinfection is provided
   Discussion & appraisal: These two wells are only used in the summer to supplement the water taken from the creek.

3. ***Other Treatment or Blending Facilities***
   Describe facilities & parameters treated/blended (i.e. iron, & manganese, fluoridation, nitrate, corrosion control, organics, etc.):
   None

4. ***Describe Records Maintained of Treatment***
   Readings of chlorine residual, raw & finished water turbidity and pH, backwash readings, and water production are taken daily and recorded on a log that is submitted to this department monthly. You must begin taking & recording CT values daily. The CT logs must also be submitted to YCEH monthly.

   A new, properly calibrated turbidimeter is needed. It must be calibrated using a primary standard every 3 months & a 2nd standard every week. Recommend evaluating the acquisition of a Hach 2100P using Stablcal.

D. STORAGE DATA

Name	Type	Capacity	Zone	Comments
Steel Tank	Storage	64,000 gallons		Tank was repainted several years ago. There was no visible chipping or peeling noted during the inspection.

Discussion & appraisal of capacity, coating procedures, cleanings, inspections & data sheets:

It appears that the storage tank does not have enough capacity to keep up with the current use. Locate the overflow outlet for the tank & make sure it is above grade, downturned, and screened to prevent the entrance of rodents & insects.

E. TRANSMISSION FACILITIES

Describe transmission facilities (if any): None
Discussion & appraisal (include low head lines): N/A

F. DISTRIBUTION SYSTEM

1. ***Pressure Zones***
Describe or tabulate: The distribution system is gravity fed from the storage tank on Mountain House Road.

Pressure Zone Name	Pressure Range	Water Sources	Storage Capacity	Number of Connections

2. ***Booster or Reducing Stations***

Station	Capacity	Status	From Zone	To Zone	Comments

3. ***Mains***
Describe or tabulate: 8", 6" and 4" PVC lines

Material	Amount @ %	Size	Condition	Comments
PVC		8" 6" 4"		No leaks observed during the inspection.

Discussion & appraisal of leak history, construction standard, water & sewer line separation practices, & lead pipes (if any):

Each home in this service district has its own on-site sewage disposal system. The treatment plant and storage tank are an adequate distance from any sewage systems. There were no problems with line breaks this year.

G. WATER QUALITY & MONITORING

1. ***Bacteriological Monitoring***
Description of program: Monthly monitoring for total and fecal coliforms.
Is the sampling plan current & approved? No – please submit
Controlling factor is population or service connection? Service connection
Number of samples per month or week required? One every month
MCL violations in past year? None
Discussion & appraisal:

2. *Chemical Monitoring*

Description of program: Phase II/V chemical monitoring

Source Name	General Minerals	Inorganic Chemicals	General Physical	Radiological	VOC's
Camptonville CSD	12/22/05	12/22/05	12/23/03	05/04/12	05/03/10
Nitrate: 6/13/11 Nitrite: 6/13/11					

Discussion & appraisal: This system is significantly overdue for the LT2 testing. You must IMMEDIATELY submit a monitoring plan & have the testing done. Also due this year is Nitrate and Disinfection Byproducts.

3. *Additional Monitoring*

Description of program (Physical quality of distribution system, corrosion, lead monitoring, etc,): The next round of lead & copper sampling must be completed in June, July, August or September 2013.

H. OPERATION & MAINTENANCE

1. *Planning & Personnel*

Are system improvements made in accordance with the Waterworks Standards? Yes

Does the utility have up-to-date distribution system maps and/or schematics? Yes

What is the minimum grade requirement? Grade 2

List or tabulate certified personnel: Mike Hines, Water Treatment Operator #31225, Grade T1

This system requires a T2 certified operator. Mr. Hines is a Grade T1 certified operator, please provide documentation that an adequately certified operator is overseeing this facility. Additionally, most of the monthly testing logs show Richard Dozier as the plant operator, however, I can find no certified operator by that name on the CA Department of Public Health website.

2. *Cross-Connection Control Program*

Name of cross-connection control inspector(s): None

Is there a copy of the cross-connection control ordinance on file? No

3. *Complaints*

Discussion & appraisal of complaint program: The operator of the system is handling any complaints. YCEH has not received any complaints this year.

4. *Emergency Response*

Is an up-to-date emergency notification plan on file? No-please submit

Discussion & appraisal: Purveyor is aware of the proper procedures to take during a water quality emergency.

5. *Main Disinfection Program*

Describe main disinfection program including, methods, contact time, chlorine residual, bacteriologic tests, records & compliance with AWWA specifications? None

Discussion & appraisal: Mains should be thoroughly disinfected and flushed at least twice per year.

6. *Valve Maintenance Program*

Discussion & appraisal of valve types, locations, & numbers; location maps; & program: Any valves should be turned on a regular basis to ensure proper working order.

7. *Flushing*

Describe flushing program including information on dead ends & record keeping:

Approximate number of dead ends **12 fire hydrants and 6 dead ends**

Discussion & appraisal: This system gets flushed twice per year (June/November).

I. CONSUMER CONFIDENCE REPORTS

This system has failed to complete the CCR since 2009. The CCRs must be completed and distributed to all of your consumers by July 1st of each year.

J. OVERALL SYSTEM APPRAISAL

This system appears to be in good working condition. The noted deficiencies are listed on the last page of this report.

Report prepared by:

_____

Date:_____

SYSTEM DEFICIENCY RECORD

Name of System: CAMPTONVILLE CSD **System No:** 5800924

Date Noted	Description of Defect or Hazard	Order No.	Reported Corrected	Confirmed Corrected
9/5/12	Missing daily reading logs	1		
9/5/12	New properly calibrated turbidimeter needed.	1		
9/5/12	Install flow meters & control valves on each filter cell	2		
9/5/12	Install a vacuum release valve	2		
9/5/12	Additional finished water storage capacity needed	2		
9/5/12	Overdue LT2 testing	1		
9/5/12	Locate the overflow outlet for the storage tank & make sure it's above grade, downturned & screened	1		
9/5/12	Adequately certified treatment operator required (T2)	1		
9/5/12	Updated Emergency Notification Plan	1		
9/5/12	Updated Bacteriological Sampling Plan	2		
9/5/12	Complete an Operations Plan	2		
9/5/12	Consumer Confidence Reports	1		
9/5/12	Begin calculating & recording CT	1		

Order Number:

1. Serious health hazard; corrective action must be taken ***immediately***.

2. Critical system or operational defect and/or potential health hazard; must be corrected ***as soon as possible***.

3. System or operational defect and/or potential contamination hazards of lesser public health significance; must be corrected ***as workload permits***.

4. System or operational defect and/or potential health hazard - costly to correct - ***to be included in any long-range water improvement project***.

Camptonville CSD

SURFACE WATER SOURCES

Are there significant sewage hazards? Y (N)

Is there significant recreation? Y (N)

Has a sanitary survey been conducted? Y N Date:_____

Treatment classification: Slow sand

Describe treatment process: 5 sand filters w/post chlorination

Describe records maintained of treatment: Daily cl, turbidity (raw+finished), water usage

Is filter to waste provided? Y N Is reclaimed backwash water returned to headworks? Y N

Are design criteria met? Y N If not, what facilities are needed?_____

Are performance standards met? Y N

Turbidity: A properly calibrated turbidimeter needed Sampling:_____

Where is turbidity sample collected? In the plant before + after treatment

Are operations criteria met? (i.e., filtration rate, operations plan, etc.) Flow meters + control valves needed on each filter cell to prohibit accidental exceedance of the 0.1 gpm/sqft flow rate. No operations plan + the CTs aren't being done.

For controlled watershed:

Alarm_____ Standby replacement_____

For uncontrolled watershed:

Alarm_____ Standby replacement_____

Redundant backup_____ Standby power_____

Disinfection of surface water sources:

Type Chlorine Capacity_____

Standby feeders_____

CT values Not currently being done - forwarded the CT spreadsheets

Residuals_____ Time_____

CT_____ pH range_____

Temperature range_____

Alarm_____

Comments

A new turbidimeter is needed + must be calibrated using a primary standard 1/4 + 2nd standard weekly. Complete an operations plan. Take + record daily CTs. A vacuum release valve is needed in the system.

Camptonville CSD

Inspection 9/5/2012

1. CTs must be done daily. When checking CTs use the chlorine sample leaving the tank. In order to complete the CTs you also need to know pH & temperature of the water. The temperature must be in Centigrade.

2. Need flow meters & control valves on each filter cell. A flow limit valve on each cell will prohibit accidental exceedance of the 0.1 gpm per square foot flow rate, but will also allow reducing the flow rate during lower demand. Globe valves are best suited to regula~~tion~~e flow.

3. A properly calibrated turbidimeter is needed. It must be calibrated using a primary standard every 3 months & 2nd standard weekly. Recommend evaluating the acquisition of a Hach 2100P using Stablcal.

4. Locate the overflow outlet for the storage tank & make sure it's above grade, downturned & screened to prevent entrance of rodents and insects.

5. A vacuum release valve is needed.