CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation

Attachment 3: Project Physical Benefits Table 5-- References

Attached are the references that relate to Table 5 Project Physical Benefits Tables for project:

- Grizzly Flat Drought Measures Infrastructure Project

Preliminary Engineering Report

CARLTON
Engineering Inc.

For the

Grizzly Flats Community Service District
Water System Improvements Project
Grizzly Flats, California

Project No. 6414-01-09
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Prepared for:
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INTRODUCTION

Carlton Engineering Inc. (Carlton) has been retained by the Grizzly Flats Community Services District (GFCSD) to prepare the Preliminary Engineering Report (PER) for the Water System Improvements Project (WSIP). To perform the services, Carlton has contracted with The H2O Group and Brent Stewart, P.E., Consulting Engineer. A previous PER was prepared by Dewante & Stowell Consulting Engineers (D&S, 2000) in April 2000.

1.0 GENERAL

The proposed WSIP consists of multiple projects that will improve the following areas:

- Raw Water Storage,
- Water Treatment System,
- Water Distribution System, and
- Water System Operations.

Additionally, the project will also correct deficiencies identified by the State Department of Health Services in all the above mentioned areas.

2.0 PROJECT PLANNING AREA

A. LOCATION: GFCSD is located in the foothills of the Sierra Nevada in El Dorado County. GFCSD provides water to 605 residential and 5 commercial customers. Approximately 1,221 parcels exist within GFCSD's area. The GFCSD abuts to El Dorado National Forest and elevations in the service area vary from 3,600 to 4,200 feet. Specifically, the project area is located in portions of Sections 10, 11, 14, 15, 16, 20 and 21 of Township 9 North, Range 13 East, MDM as shown on D&S Figure 1 included in Appendix A.

B. ENVIRONMENTAL RESOURCES PRESENT: See attached Appendix B.

C. GROWTH AREAS AND POPULATION TRENDS: GFCSD's area covers approximately 1,115 acres and includes the Grizzly Park subdivision and several larger perimeter parcels. GFCSD estimates that approximately 1,252 parcels could require water at build-out. Additionally, GFCSD has been recognized as the purveyor of choice for 9,200 acres by El Dorado County Local Agency Formation Commission (LAFCO). Presently GFCSD has sold 611 connections, slightly less than the projected amount by previous reports.

3.0 EXISTING FACILITIES

A. LOCATION MAP: A WSIP map showing the location of all the proposed improvements is included in Appendix A.

B. HISTORY: The Community of Grizzly Flats was founded in the 1850s. In 1966, the Grizzly Park Water Company was formed. On October 27, 1987, the El Dorado County Board of Supervisors formed the GFCSD. GFCSD is authorized to supply its customers with water for domestic, irrigation, sanitary, industrial, and fire protection purposes.

C. CONDITION OF FACILITIES: The current system has been the subject of multiple studies, and even though it was appropriately installed and meets the applicable state requirements of the Safe Drinking Water Act, several issues of concern were revealed in these studies. As outlined by National Grant Services (NGS) in its 2009 Project Narrative, these concerns are as follows.

1. Raw Water Storage Reservoir
    a. Poor foundation conditions,
    b. Low density embankment materials,
    c. Stability considerations,
    d. Seepage losses,
    e. Operating head considerations,
    f. Underutilization of storage capacity, and
    g. Reservoir inflow meter frequently incapacitated due to clogging from organic debris.
2. Water Treatment System
    a. Corrosion along bottom of vessel of filter train #1,
    b. Dated operational equipment and controls, and
    c. Inflow meters frequently incapacitated due to clogging from organic debris.
3. Water Distribution System
    a. Two physically separate systems that are hydraulically incompatible,
    b. System deficiencies for fire protection, and
    c. Existing well as source of standby water. Well was not formerly permitted by California Department of Public Health as an approved source for "Standby" or "Active" status.
4. System Operations
    a. Currently there is no SCADA system in place, and
    b. Unreliable stream gage system.

Additionally, all these previously mentioned concerns jeopardized water quality, reliability, and fire protection reliability. Continued use of the current system represents significant risk to GFCSD's ability to provide potable water and fire protection in the future.

B. FINANCIAL STATUS OF ANY EXISTING FACILITIES: Based on the RWJ, 2007 and 2008, GFCSD's financials are in conformity with accounting principles generally accepted in the United States of America. Audits performed for years 2007 and 2008 as well as the 2009/2010 Final Budget are included in Appendix D.

4.0 NEED FOR PROJECT

A. HEALTH, SANITATION, AND SECURITY: The existing system offers adequate fire flows when storage tanks are full and the system is fully operational. That said, the system is fraught with operational systemic problems that under emergency or drought conditions could severely limit GFCSD's ability to provide adequate fire flow. The primary driver for this project is one of overall reliability for both domestic and fire flow use as well as drought prevention. This project is not intended to be an incentive for growth; rather, it is intended to increase GFCSD's ability to manage drought conditions, the reliability of fire service, and the reliability of the overall system.

In 2008, GFCSD implemented Stage 1 of its Drought Plan when water demand outstripped supply during the late summer and fall months. It did so again in 2009, and as the raw water storage reservoir water level continued to drop, GFCSD came within inches of implementing Stage 2 of its Drought Plan. A late season rain stabilized the water level in the reservoir making Stage 2

unnecessary. Investigation by GFCSD revealed that flow from the North Canyon diversion had been reduced some 30% due to root intrusion at multiple points along the 8,735 lineal feet of 8-inch PVC pipe. In addition, GFCSD estimates that approximately 35 acre-feet per year of raw water are lost due to seepage through the bottom of their raw water storage reservoir. Due to the cost of replacing the North Canyon diversion line and associated environmental hurdles, GFCSD has chosen to focus on improving the existing reservoir along with a series of other overall system improvements designed to improve reliability and operational efficiency.

A previous Drought Plan study (B&C, 2007) was prepared in joint effort with the El Dorado County Water Agency. The Drought Plan identifies trigger levels of drought stages based on the elevation of water in the raw water storage reservoir. The stages are Stage 1, 2 and 3. Stage 1 begins when the reservoir stops spilling and consists of a voluntary demand reduction of 15%. Stage 2 begins when the reservoir drops 16" below spill and consists of a voluntary demand reduction of 30%. Stage 3 begins when the reservoir drops 29" below spill and results in mandatory restrictions to decrease demand by 50%.

B. SYSTEM O&M: The current system was constructed over time without a master plan; therefore, two hydraulically separate systems exist. Additionally, the existence of undersized pipes in addition to dated facilities creates minor operational difficulties. In addition, the lack of any central controls or central data gathering technology results in significant inefficiencies in the manual operations of the facilities.

C. GROWTH: As described in URS, 2009, GFCSD has been identified as the purveyor of choice for a sphere of influence around Grizzly Flats covering an area of approximately 9,200 acres. Previous reports did not include this larger sphere of influence when considering water service and focused on the existing area of service of approximately 1,252 parcels. As mentioned in D&S, 2000, new development will be responsible for the future improvements required to serve the project. This would be accomplished though the implementation of some type of development fee program with the exception of minor "in-fill" that will occur over time regardless of the status of the proposed project.

5.0 ALTERNATIVES CONSIDERED

A. RAW WATER SUPPLY AND STORAGE SYSTEM

1. Reservoir Lining

a. Description: Currently GFCSD maintains a bentonite lined reservoir that supplies water for the existing water treatment plant, which in turn is used for domestic service and fire suppression. As described above, the clay liner is failing and the reservoir is losing a significant volume of water due to seepage, approximately 35 acre-feet per year. There are multiple alternatives that can be used to line the reservoir including clay, HDPE liner, and gunite. Given that the reservoir is currently experiencing root intrusion, settlement and a failure of the clay liner, Carlton does not expect to continue to use clay going forward. Rather, we anticipate using a more flexible and durable liner such as HDPE. This assumption will be analyzed during the final design phase of the project.

Cleaning of the liner will not likely be a significant O&M cost. The water flowing into the reservoir is of low turbidity, and the area around the reservoir is fairly clear of trees. That said, some cleaning will be required, probably every five to ten years. This assumption will be further analyzed during the design phase of this project.

Providing an impervious lining will augment the storage capacity of the existing reservoir, reduce the seepage losses to negligible levels, and increase the safe yield by approximately 13.5 acre-feet per year (B&A, 1998).

In addition, the top three feet of the reservoir will be recompacted as part of this project in order to raise the water level in the reservoir. The reservoir's embankment height measured from the toe to the top of the berm is approximately 19 feet, and is, therefore, below the 25 foot height requirement for regulation under the Division of Dam Safety. Flow to the treatment plant is via gravity. The reservoir provides limited operational storage and no seasonal carry-over storage; therefore, increasing the water level in the reservoir would add to GFCSD's ability to manage its water supply during the driest months of the year.

The existing spillway is set three feet below the top of the berm, approximately sixteen feet above the bottom of the reservoir. Currently, the water level in the reservoir cannot be increased because of poor compaction of the upper three feet of the reservoir. Recompacting the top three feet would allow GFCSD to increase the water level in the reservoir by another 1.5' to 2' depending on desired freeboard. This would add approximately 5 acre/feet of storage capacity.

b. Design Criteria:

   1) Reduce or eliminate existing seepage loss previously investigated by B&A, 1998 at 35 acre-feet per year;

   2) Increase storage capacity to approximately 30 acre-feet per URS, 2009; and

   3) Increase safe yield to approximately 180 acre-feet per URS, 2009.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: This alternative will not require land acquisition.

f. Construction Problems: The embankment will have to meet a minimum slope requirement prior to installing the liner for safe access / egress when the reservoir is filled. In addition, an effective liner anchor will have to be designed and constructed to provide long term liner integrity based on embankment soil characteristics. Outside of construction issues related to installation of the lining in the reservoir, construction timing will need to be considered because the dry time of the year represents the best time to perform the construction; however, the current system heavily depends on the reservoir during the non-rainy season when the stream flow is the lowest. As such, the reservoir liner will likely be installed at the tail end of the wet season, so the reservoir can be replenished prior to the dry season. Carlton plans to have the reservoir drained and the surface dry during the bidding process and prior to the award of the contract, so that the contractor is able to immediately install the liner at the time the Notice to Proceed is issued. This will allow the reservoir liner to be installed as quickly as possible, giving the reservoir time to replenish.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

   1) Advantages:

      i. Reduces seepage losses,

      ii. Increases storage capacity,

iii. Increases safe yield, and

iv. Increases operating flexibility during the most critical times of year.

2) Disadvantages:

i. Does not meet future water supply needs and/or safe yield; additional measures will be needed to handle future needs; and

ii. Cleaning of sediment buildup may present tear risks to the HDPE liner.

2. Off-Stream Storage Reservoir

a. Description: Previous investigations (B&A, 1998 and WR, 2008) assumed an off-stream reservoir of approximately 400 acre-feet. A later report (URS, 2009) indicated that an off-stream reservoir with an active storage of approximately 200 acre-feet would provide a safe yield to match the demand, assuming the treatment plant reservoir is lined. The indications on all previous reports are consistent in the recommendations that an off-stream reservoir would likely be needed to meet the projected demand.

b. Design Criteria:

1) Increase storage capacity to meet projected future demands, and

2) Increase safe yield to levels recommended in URS, 2009.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: The environmental impacts of this alternative would be extensive, and an EIR would likely be required in order to fully analyze them.

e. Land Requirements: A previous report (WR, 2008) analyzed two specific sites located in areas that could be procured by the GFCSD. One site is located within the El Dorado National Forest; the other is privately owned. The sites considered are approximately 30 to 40 acres. Additionally, both sites were considered free of environmental issues or constraints that cannot be reasonably mitigated during or after construction.

f. Construction Problems: Typical construction issues related to the construction of a reservoir including massive earth moving operations, dewatering, environmental mitigation efforts, etc.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

1) Advantages:

i. Increases storage capacity;

ii. Increases safe yield; and

iii. Meets projected future demands.

2) Disadvantages:

i. High construction cost;

ii. Significant environmental impacts; and

iii. Land acquisition challenges.

B. WATER TREATMENT SYSTEM

1. WTP #1 Rehabilitation

a. Description: Upgrade the existing 20+ year old packaged water treatment plant (WTP) #1 with current parts, equipment and controls to best match the parts, equipment and controls to the adjacent packaged WTP #2. Both packaged WTPs were designed by the same process engineering firm (Rescue Engineers). In addition, WTP #1 requires a rehabilitation of its interior coating system and repairs to some areas where core erosion is excessive or has pitted some of the steel shell or flooring. Upgrades will be made to the controls to provide additional operation capability, flexibility and automation with the addition of a SCADA system.

b. Design Criteria: Rehabilitate the existing packaged WTP, matching as best as possible the parts, equipment and controls to the existing adjacent packaged WTP #2 installed in 2002. Flow characteristics will continue to treat up to 200 gpm, with additional capabilities to vary the flow rate with the addition of a flow control valve. Existing corrosion and pitting will be addressed with the upgrading of some minor components to stainless steel, with most of the repairs comprised of removal of the coating at failed locations using proper blast preparation of the surface, followed by restoration of steel shell and accessories where excessive pitting has occurred and, finally, restoration of the surface with a field applied and inspected industrial coating system.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: No additional land is required than is currently occupied by the existing WTP footprint.

f. Construction Problems: Rehabilitation will require timing with lower water demands to accommodate the reduction in treatment capacity from 400 gpm to 200 gpm for up to a month or more.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

1) Advantages:

i. Consistency with existing parts, controls and operations with the adjacent WTP #2;

ii. Spare parts on hand will work for both plants; and

iii. No additional training or knowledge is required for the WTP operators.

2) Disadvantages:

i. Requirement to schedule the rehabilitation during lower seasonal demands sometime during Fall, Winter or Spring; and

ii. A field-applied coating is not as good as a factory-applied coating in a controlled environment; however, if completed in accordance within manufacturer specifications and inspected to assure a quality product, the coating should last for many years with proper inspection and periodic maintenance.

2. Replace WTP #1 with New Packaged Treatment Plant

a. Description: Replace the existing 20+ year old packaged WTP #1 with a new state-of-the-art packaged WTP of equal capability and flow rate. Remove and salvage existing WTP.

b. Design Criteria: Match water treatment process capacities and flow rate of the existing 0.3 MGD (200 gpm) packaged gravity surface WTP. Operation and controls should use reliable and readily available parts and equipment and match the capabilities of the newer WTP #2. The new WTP should have the additional ability to deliver water with greater flexibility through the system at varying flow rates.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: No additional land requirements since the new WTP would use the space of the existing plant.

f. Construction Problems: None.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

1) Advantage: A brand new state-of-the-art WTP and a life expectancy of 25 or more years.

2) Disadvantages:

i. WTP operators must possess the knowledge to operate and maintain water treatment process plants and controls from two different manufacturers, and

ii. Cost of plant.

C. WATER DISTRIBUTION SYSTEM

1. Forest View Tank Improvements

a. Description: The Forest View tank sits 50 feet lower than both Tyler and Winding Way. Historically, the Forest View tank was separate from the eastern part of the system and has been hydraulically incompatible with the eastern system when the two systems were connected by a single 6-inch water main. The Forest View tank has a storage capacity of 100,000 gallons and has an altitude valve installed to shut off the filling of the tank when full. The tank is supplied by gravity from the hydraulically higher eastern part of the system. The tank cannot discharge by gravity and becomes stagnant with difficulty maintaining a minimum level of chlorine residual. The only draw from the tank is the supply to a small local pressure zone of approximately 8 services (Forest View Upper Zone 4). This pressure zone is served by a small booster pump station with a hydro-pneumatic tank.

The pre-application proposed a project with a booster pump station and altitude valve at the Forest View tank with some additional operational upgrades to meet regulatory requirements for an estimated cost of $75,000. These improvements would allow the GFCSD to force the booster pump station to operate the facility during high demand periods and fill during low demand periods. This would put the Forest View tank capacity back into use and eliminate the condition of stagnant water and low chlorine residuals.

Since the recent addition of the 200,000 gallon Clearwell tank at the WTP, the capacity of the Forest View tank is not really beneficial to the system. The booster

pump station has to be forced on to overcome the pressure head from the water supplied by gravity from the eastern system. This is a waste of electricity as long as a gravity solution exists that can meet system demands and storage requirements. This alternative is not the preferred solution. If additional water storage is required for the system, then a booster pump station at this location may be necessary, although relocating the storage tank may be a more economical solution when considering operational costs in addition to capital costs.

Because this tank is not currently used on a regular basis, it has stagnation problems and would require a booster pump system to be incorporated into the larger water system; because it is no longer needed for distribution system storage, it should be taken off-line. The tank can be relocated at a later date to a point in the system where it will be more beneficial or incorporated into the treatment process for the rehabilitated Forest View Well which is discussed later in this document. The local lots will be served by the larger gravity fed system via the existing small booster pump and hydro-pneumatic tank.

b. Design Criteria: Based on previous PER (D&S, 2000)

   1) Fire flow demand of 500 gpm at 20 psi residual pressure for 2 hrs;

   2) Demand based on a maximum day of 350 gpd/DU and 575 gpd/DU for peak day;

   3) William and Hazen "C" value of 140 for PVC pipes; and

   4) Maximum filtration unit rate of 6 gpm/sf.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: None; the property is currently owned by the GFCSD.

f. Construction Problems: Coordination to minimize any operational interruption.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

   1) Advantages: Allows the use of 100,000 gallons of storage capacity that is currently not being used.

   2) Disadvantages: Significant operational pumping costs to force the use of this water into the system in addition to making the operation of the water system more complex than necessary.

2. <u>Grizzly Flat Road Parallel Pipe and Sciaroni Road Distribution Loop</u>

   a. Description: Currently, GFCSD has three locations where a single line serves a large number of its customers. Two of the locations are addressed in this alternative with the addition of parallel lines; this will do much to improve the overall system reliability and performance. The distribution system includes a single 6-inch water main in Grizzly Flat Road between Evergreen Drive and Mt. Pleasant Drive. Should this water main become compromised, approximately half of GFCSD's water customers would be without water until the 6-inch main was restored. It is recommended that an 8-inch ductile iron pipe approximately 550 feet in length be installed with appropriate valving to parallel the existing 6-inch water main. This will provide critical redundancy and reliability to this part of the water system. The 8-inch water main has been sized to accommodate a 250 gpm maximum day demand

plus a 500 gpm fire flow demand while maintaining a velocity of less than 5 to 7 feet per second.

As described in D&S, 2000, a looped intertie between the west and east ends of the distribution system is needed via Sciaroni Road and Grizzly Flats Road to eliminate the vulnerability to the system due to this single line of service. This connection would remedy pressure and distribution problems in the western area. Additionally, it would provide redundancy to an area susceptible to interruptions if the existing single pipeline is out of service. In order to loop the system in this location, approximately 950 lf to 1,800 lf of pipe will need to be installed, depending on the alignment. We recommend 8-inch ductile iron pipe be installed due to the critical nature of the pipe.

b. Design Criteria: Based on previous PER (D&S, 2000)

   1) Fire flow demand of 500 gpm at 20 psi residual pressure for 2 hrs;

   2) Demand based on a maximum day of 350 gpd/DU and 575 gpd/DU for peak day;

   3) William and Hazen "C" value of 140 for PVC pipes; and

   4) Maximum filtration unit rate of 6 gpm/sf.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: The acquisition of an easement from the Grizzly Flats Community Church will be required for the Sciaroni Road distribution loop. GFCSD has received permission from the church for the proposed easement.

f. Construction Problems: Coordination to minimize any operational interruption.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

   1.) Advantages: Ability to provide critical redundancy and reliability in this vulnerable location in the distribution system that would potentially affect approximately half of GFCSD's customers.

   2.) Disadvantages: None.

3. <u>Plant Discharge Upgrade</u>

   a. Description: The elevation difference between the Clearwell tank and both the Tyler tank and Winding Way tank is 10 ft at the base (4,072.30 ft Clearwell vs. 4,062.05 ft Tyler and 4,061.80 ft Winding Way). Currently, the Tyler and Winding Way tanks are both filled by gravity flow from the Clearwell tank. During demands in the summer, high flow rates cause significant head loss through a single 6-inch diameter discharge line approximately 1,620 feet in length from the 200,000 gallon Clearwell tank. The excessive head loss causes both the Tyler and Winding Way tanks to operate substantially below capacity. As previously identified in the March 30, 2000, Distribution System Analysis prepared by Dewante & Stowell, recommendations for an 8-inch parallel water main or a booster pump station at the Clearwell tank would resolve the current discharge restrictions to the system and operating levels of the Tyler and Winding Way tanks.

   The pre-application proposed a project with a booster pump station at the Clearwell tank as the preferred alternative due to lower initial capital cost estimated at $60,000

construction cost, not including operating costs. Compare this to the 1,620 feet of parallel 8-inch water main at an estimated cost of $100,000. When you take into consideration system redundancy, reliability, complexity, operating costs, and additional demands, the preferred solution is the parallel water main. With the booster pump station alternative, should a failure or interruption in communications, power, and integrity of the existing single 6-inch water main serving the entire system be compromised, water delivery to the entire system would be critically reduced.

The preferred alternative is approximately 1,620 feet of parallel water line, utilizing a minimum 8-inch diameter pipe, from the discharge of the Clearwell tank to the intersection of Quietwood Drive and Tyler Drive. The pipe material should be ductile iron pipe due to the critical nature of this pipeline as well as the robust strength and benefits this material provides as long as soil conditions are compatible. It is recommended that a 12-inch water main be installed instead of the formerly recommended 8-inch diameter main to be able to meet current and future maximum daily system demands, including a 500 gpm fire flow, or peak hour demands in accordance with California Department of Public Health requirements. Should the existing 6-inch water main become compromised, the 12-inch water main can still meet system demands, including a fire flow until the 6-inch main is restored. In addition, the 12-inch water main will significantly improve the ability of the system to meet fire flow requirements. The recommendation from the March 30, 2000, Distribution System Analysis is almost ten years old and does not take into consideration the additional system demands that have increased since then.

b. Design Criteria: Section 64554 of the Title 22 California Code of Regulations.

The 12-inch water main was sized to accommodate a 500 gpm maximum day demand plus a 500 gpm fire flow demand while maintaining low head losses to supply both Tyler and Winding Way tanks in order to maintain adequate operational and emergency capacities in each during high flow conditions out of the Clearwell tank.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: Use of existing right of way.

f. Construction Problems: Coordination of pipe connection to the existing Clearwell tank to minimize any operational interruption.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

1.) Advantages:

i. Critical improvement to system reliability and redundancy for the entire water system, and

ii. Significant reduction in operating costs by using gravity to transport water instead of electricity compared to the alternate solution of installing a booster pump station.

2.) Disadvantages: None.

D. MISCELLANEOUS OPERATIONAL IMPROVEMENTS

1. Operational Upgrades

a. Description: This alternative includes multiple projects that would enhance the overall operations and monitoring of the current system. The list below includes the proposed improvements with a brief description.

1) Upgrade 10-inch Reservoir Influent Flow Meter: The current 10-inch influent flow meter to the reservoir is of the propeller type and is frequently incapacitated due to clogging from organic debris. When the meter is not incapacitated by debris, the meter still generates flow readings that appear to be inconsistent from one moment to the next. The installation of the meter is not consistent with typical manufacturer requirements providing the proper number of pipe diameters downstream and is the likely cause of the inconsistent readings. The flow measurement readings are required to be reported annually to both the California Department of Public Health (CDPH) and the State Department of Water Resources (DWR). The meter readings are also required to perform monthly water audits to compare the water diversions and the amount of water that reaches the raw water reservoir.

   The existing meter will be replaced with a mag-meter type flow meter that contains no moving parts that may prevent debris from clogging the water meter. The meter installation will be reconfigured to allow the proper manufacturer recommended pipe diameters, both upstream and downstream. A blow-off and air release valve will be installed to allow for a full flowing pipe as well as a method to clean any sediment or debris build-up in the low pipe segment of the installation.

2) Low-Head Raw Water Booster Pump Station: Flow rate through the WTP is reduced below the filter plant treatment capacity of 400 gpm once the water level in the raw water storage reservoir does not have sufficient head to gravity feed this flow rate to the filters. Reduced flows due to insufficient head to feed the WTP will eliminate flow constrained storage capacity in the raw water storage reservoir of 1.57 acre-feet discussed in the Project Narrative dated July 18, 2009. The constrained flow condition may exist during one or more dry years, or in the event of a reduction of flow through the two upstream diversion points or their pipelines. The diversion pipelines have had reduced flow in the past due to tree root intrusion requiring maintenance repairs to restore flow.

   Installation of a low-head booster pump station with variable frequency drives can be constructed to provide a consistent flow rate up to 400 gpm to match the treatment capacity of both filter trains at their rated capacity of 200 gpm each.

3) Old Mine Road PRV Upgrades: This PRV installation is substandard and needs to be brought up to current standards. The vault was installed as a combination of concrete and part plywood. The vault lid does not fit and is several feet below the adjacent roadway surface grade. This allows water and snow to infiltrate into the vault making it difficult to maintain the valve. The proposed solution is to replace the valve and upgrade the vault and surrounding grade.

4) Tyler Tank Upgrades: The Tyler tank does not currently have remote level indication capability, nor is there high or low tank level alarm indication. This capability will be provided as part of the improvements to this facility in addition to installing a screened overflow pipe, security access ladders and handrails in accordance with CDPH inspection deficiencies and to meet OSHA requirements.

5) Winding Way Tank Upgrades: The Winding Way tank does not currently have remote level indication capability, nor is there high or low tank level alarm indication. This capability will be provided as part of the improvements to this

facility in addition to installing security access ladders and handrails in accordance with CDPH inspection deficiencies and to meet OSHA requirements.

6) Install Backwash Flow Meter: Currently there is no flow meter installed on the filter backwash water return line to the reservoir. This meter is required by CDPH for recording and reporting the quantity of backwash water used during the treatment process. This meter will also be of the mag-meter type flow meter and will not contain any moving parts. The meter will not be affected by any particulate or organic material that may be present in the backwash water.

7) Stream Gauge Electronic Data Collector and Measuring Device: The purpose of these improvements is to improve the data collection and reporting capabilities at the diversion points. Currently, some of the data collection equipment is damaged, data can be lost or inaccurate, and battery life is limited, which requires more frequent access to the sites. Improved equipment will provide better data to GFCSD for system analysis and reporting purposes.

8) Rehabilitation of Forest View Well: GFCSD has an existing approximately 40 gpm well that was drilled in 1995 and remains unused and had not been previously permitted with the California Department of Public Health (CDPH). The well has high levels of iron and manganese with an existing multimedia water treatment system using an oxidation and filtration method for removal. The well previously had an approximate 28 gpm sustained yield. The cost and uncertainty in developing other groundwater source wells in the area including exploratory drilling, property acquisition, power availability, water quality characteristics, and other factors would significantly exceed the cost to rehabilitate and permit the existing Forest View well as an "active" source. Previous records for the existing Forest View well were reviewed and a meeting was held with Mr. David Lancaster, District Engineer for the Sacramento Office of Water for CDPH; it was determined that rehabilitation of the Forest View well is the most economically feasible solution at this time. This will provide a backup water source of up to 40 gpm to meet short duration needs in the event the primary water source is compromised. For longer durations in a more extreme condition, the well records indicate the potential for supplying a sustained 28 gpm as a backup water source. Since the treatment capacity of the existing water system appears to have been sized for a flow rate of approximately 28 gpm, permitting the well as an "active" treated source meeting all primary and secondary health standards is proposed with this alternative. Optimization of the treatment process and the addition of liquid chlorine in the form of sodium hypochlorite as an oxidant and used to carry a residual for disinfection will be completed as part of the rehabilitation of this source. The operation of the well will be kept simple to keep costs to a minimum, since the source is primarily for backup purposes to GFCSD's primary surface water source at this time. Should the well need to be pumped at a lower flow rate, a manually operated isolation valve will be partially closed to control the flow rate, such that a sustained flow rate of 28 gpm, for example, can be obtained. The costs shown in the alternative cost analysis includes the cost of permitting this source, including initial annual required water quality sampling as part of the overall permitting process with the health department.

9) Sampling Stations: The purpose of these two sampling stations is to give GFCSD staff the means to efficiently collect samples from the system. Samples are currently collected out of the hose bibs of some GFCSD customers. Sampling

stations will be located where parallel lines are installed on Sciaroni Road and Grizzly Flat Road.

10) Pressure Zone Modifications: It is recommended that five pressure reducing valves (PRV) be installed to maintain reasonable system pressures in areas that currently experience pressures in excess of 100 psi.

11) SCADA system: A Supervisory Control and Data Acquisition System (SCADA) is needed to gather readings and alarm conditions from the various components of the water system. The SCADA will communicate via radio or phone line to the various sensors in the pipelines and tanks. The SCADA will then display remote tank levels and flow rates to the plant operators. When one of these remote sensors detects an alarm condition, the SCADA system will notify the operators of the alarm. If the operators are away from the plant, they will be able to remotely access the SCADA by computer or cell phone to determine the problem. This will allow operators and maintenance personnel to respond more quickly and appropriately to problems in the system. Ultimately, quick warning and easy access to system status will help reduce water waste, soil erosion, unauthorized discharge of chlorinated water into the environment, and public safety issues from water damage to roadways.

b. Design Criteria: Based on previous PER (D&S, 2000)

1) Fire flow demand of 500 gpm at 20 psi residual pressure for 2 hrs;

2) Demand based on a maximum day of 350 gpd/DU and 575 gpd/DU for peak day;

3) William and Hazen "C" value of 140 for PVC pipes; and

4) Maximum filtration unit rate of 6 gpm/sf.

c. Location Map: A map including the location of all the alternatives considered is included in Appendix A.

d. Environmental Impacts: See Appendix B.

e. Land Requirements: The improvements proposed in this alternative will not require land acquisition or impact additional land.

f. Construction Problems: Typical construction challenges are expected.

g. Cost Estimates: See Alternatives Cost Analysis in Appendix C.

h. Advantages/Disadvantages:

1) Advantages:

i. Increase overall system reliability,

ii. Increase operational efficiency and flexibility,

iii. Enhance system monitoring,

iv. Improve system accuracy,

v. Increases supply capacity, and

vi. Comply with safety violations.

2) Disadvantages: None.

6.0 SELECTION OF AN ALTERNATIVE

A. RAW WATER STORAGE SYSTEM

Reservoir Lining – The construction cost of an off-stream reservoir is financially prohibitive for GFCSD at this point, making the reservoir lining the only feasible alternative. The lining of the reservoir will result in a significant return on investment for GFCSD in terms of protection against drought and fire for the dollars invested.

B. WATER TREATMENT SYSTEM

Rehabilitate Filter WTP #1 – Upgrading the existing filter WTP #1 is the preferred alternative to replacing it with a new packaged filter plant. There is no need to change the treatment process, so upgrading the existing overall package with new components and refurbishing the main body of the WTP with new paint is more economical than complete replacement. Project cost estimate is $82,500 for the preferred WTP upgrade alternative compared to $230,000 for WTP replacement.

C. WATER DISTRIBUTION SYSTEM

1. Plant Discharge Upgrade

   Installation of approximately 1,820 feet of 12-inch diameter ductile iron pipeline that parallels an older 6-inch asbestos cement (transite) pipeline is the preferred alternative compared to the installation of a booster pump station on the existing 6-inch pipeline at the outlet of the Clearwell tank. Severe limitations of head loss and excessive velocities would remain with the booster pump alternative with the added operational expense of using electricity to pump water through a small pipeline. Additionally, 99% of the system demands are supplied by this single 6-inch water main with no redundancy or looping currently provided.

   The preferred alternative of adding the parallel 12-inch pipeline will significantly increase system reliability in one of the most critical sections of the entire water system, while meeting the current maximum daily demand and an increased fire flow demand. This pipeline will also allow GFCSD to meet higher flow rates in the future with an increase in system demand.

   The booster pump station alternative does not address one of GFCSD's most vulnerable sections of the distribution system, thus this alternative is not a complete solution when compared to the parallel pipeline.

2. Sciaroni Road Distribution Loop

   Install 1,300 lf to 1,800 lf of 8-inchductile iron pipe in order to loop the east and west portions of the system. The system in this location is currently served by a 6-inch transite pipe and redundancy is required here to ensure that service interruptions do not occur if problems are encountered with the 6-inch pipe at some point in the future. This new pipe will also allow GFCSD to meet higher demands in the future. There is no alternative to this.

3. Grizzly Flat Road Parallel Pipe (Evergreen Drive to Mt. Pleasant Drive)

   Install approximately 550 feet of 8-inch diameter ductile iron pipe that parallels an older 6-inch asbestos cement (transite) pipeline along a portion of Grizzly Flat Road to provide additional looping and system reliability that currently does not exist.

D. MISCELLANEOUS OPERATIONAL IMPROVEMENTS

The alternatives presented in this section represent basic operational improvements required for maintaining a dependable and safe system that can be monitored and operated more efficiently at a relatively low cost. Additionally, these improvements will comply with previous safety violations by the California Department of Public Health. Of the Miscellaneous Operational

Improvements, the rehabilitation of the Forest View Well is the most critical and will yield the greatest benefit to GFCSD by improving the reliability of the water source.

7.0 PROPOSED PROJECT

A. PROJECT DESIGN

1. Water Supply

   The rehabilitation of the Forest View Well will provide a backup water source in the event the primary water source is compromised. The Forest View well rehabilitation as a standby source is the most economically feasible solution at this time.

2. Treatment

   Rehabilitate WTP #1 with upgraded piping and operational components including a rehabilitation of the existing coating system on wetted portion of the steel tub and accessories.

3. Storage

   The reservoir lining alternative will improve the Raw Water Storage for GFCSD significantly. Previous reports mentioned (B&A, 1998) that the seepage loss in the reservoir could amount to 35 acre-feet per year if the reservoir was full all year. Lining the reservoir would effectively reduce or eliminate seepage while increasing the safe yield by 13.5 acre-feet per year (D&S, 1998). The current reservoir has a total storage capacity of 22.8 acre-feet that can be increased to 27.3 acre-feet, including an increase from 15.1 acre-feet to 20.2 acre feet for active storage capacity.

4. Distribution System

   Provide 1,620 ft of 12-inch parallel plant discharge pipe, 950 ft of 8-inch pipe along Sciaroni Road from the end of Tyler Drive cul-de-sac to Grizzly Flat Road to provide critical system looping and reliability, and 550 ft of 8-inch pipe along Grizzly Flat Road from Evergreen Drive to Mt. Pleasant Drive.

5. Miscellaneous Operational Improvements

   Installations and upgrades to miscellaneous system components to provide better record keeping and reporting requirements to meet local, state and federal agencies; comply with required safety regulations; meet identified system deficiencies; provide more efficient system operations and pressures; and to provide partial system source water redundancy in the event of an emergency. Projects include:

   a. Low-head raw water booster pump station;
   b. Upgrade 10-inch reservoir influent flow meter;
   c. Install backwash flow meter;
   d. Rehabilitate Forest View well as an "Active Source";
   e. Upgrade stream level measurement devices;
   f. Upgrade Tyler and Winding Way tanks;
   g. Rehabilitate and installation of pressure reducing valves;
   h. Sampling stations;
   i. Pressure zone modifications; and
   j. Install SCADA system.

B. TOTAL PROJECT COST ESTIMATE

See Table 1 below. Also see Appendix C for a detailed cost estimate.

Selected Alternative	Cost
Reservoir Lining	$ 225,185
WTP #1 Rehabilitation	$ 133,400
Grizzly Flats Parallel Road and Sciaroni Road Distribution Loop	$ 166,025
WTP Discharge Upgrade	$ 204,225
Miscellaneous Operational Improvements	$ 442,975
TOTAL	**$1,171,810**

Table 1. Cost estimate for proposed project

C. ANNUAL OPERATING BUDGET

1. Operating Budget

Please see Appendix D for financial information for GFCSD. GFCSD's Operating Budget (Schedule 1) shows a negative Net Income in the current 2009/2010 year. Going forward, including the project loan and necessary reserves, the Net Income turns positive through the first full year. This is due to rate increases that GFCSD has planned and is currently implementing. Please see Appendix D for current rate information. The funding for this project is not generated through rate increases however; instead, it is through an existing tax assessment of $4.00 per month per lot within GFCSD's service area. Of this $4.00, $2.87 is unallocated and available for use in the payment of principle and interest on the USDA loan. According to GFCSD's financial statements, 1224 lots pay this monthly assessment, which translates into approximately $42,155 per year (at $2.87/lot). This amount will cover the following yearly costs:

a. Principal and interest payment shown in the attached Loan Payment Schedule 3 (See Appendix D);

b. Short Lived Asset Reserve (See Appendix D); and

c. Please note that the debt service reserve is being pre-paid by GFCSD.

Please see attached spreadsheet titled Short Lived Asset Reserve in Appendix D for a list of Short Lived Assets and the reserve required for their replacement. The reserve amount shown is included within the $2.87/lot assessment that is set aside for this project. This is evidenced by the positive net income and the fact that the $42,255 per year allocated from the assessment to cover this project's costs. Short lived assets are accounted for in line 25 of Schedule 1 Operating Budget in Appendix D.

Please note that the interest payment of the loan is accounted for on line 48 of Schedule 1 Operating Budget of Appendix D and the principle payment is accounted for on line E.3 of Schedule 2 in Appendix D.

2. Operating Income

Rate schedules effective on January 2009 and January 2010 are attached in Appendix D. They show the increase in rates currently planned and approved by GFCSD rate payers. In addition, Schedule 1 in Appendix D shows how these rate changes translate into operating income through the First Full Year. Though Net Income is negative in the current year, it becomes positive in 2010/2011 and beyond. The improvements included in this project are not intended to generate new revenue, rather they are operational improvements meant to improve GFCSD's ability to provide a reliable water supply.

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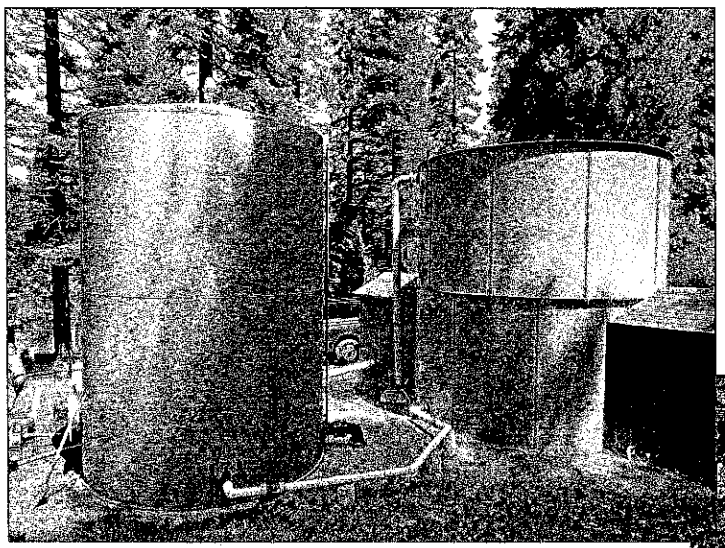
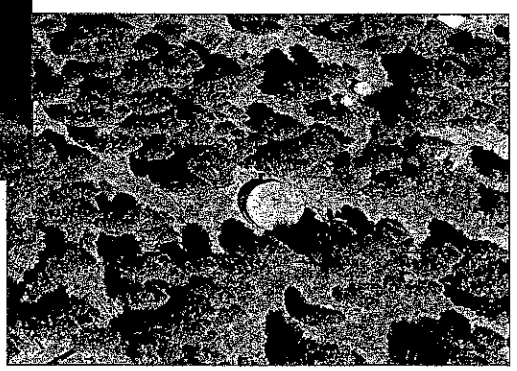
Final Report
Tank Evaluation

Backwash Tanks 1 and 2
Grizzly Flats Community Services District





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July 31, 2013

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- Exterior Photos - Backwash Tank No. 2
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Introduction

The Grizzly Flats Community Services District authorized CSI Services, Inc. (CSI) to conduct a maintenance inspection on the Backwash Tanks No. 1 (T1) and Backwash Tank No. 2 (T2) located adjacent to the main district office on 4765 Sciaroni Road, Grizzly Flats, CA. The focus of this evaluation was to examine the tank coatings and develop recommendations for maintenance coating activities. Three steel tanks are located within the immediate site. The T1 is the steel welded tank, and T2 is the smaller bolted tank located immediately adjacent to T1.

Coatings maintenance recommendations have been made in accordance with the applicable requirements of American Water Works Association's Standard (AWWA) D102 "Coating Steel Water Storage Tanks," AWWA Standard M42 "Steel Water Storage Tanks, and CSI's experience with evaluating hundreds of water storage facilities. A photo summary has also included to document the condition of the tank.

The field-work was completed on Monday, July 1, 2013 by Mr. Patrick Sweeney. The exterior shell observations were made mostly from grade level, while the exterior of the roofs were examined close-up. The interior inspections were carried out after the tanks were drained of water, but the tank bottoms were mostly obscured by media and other debris that prevented a thorough inspection. Mr. Sweeney retrieved the field data and prepared this report and commendations for maintenance work. Mr. Sweeney is a certified SSPC and NACE Level III inspector, an SSPC Certified Protective Coating Specialist, and has evaluated hundreds of water storage tanks.

Summary

In overview, the exterior of both tanks are in satisfactory condition, but the interiors are in poor condition. With respect to corrosion, the exterior coating systems, including the galvanized tank have isolated locations with more advanced corrosion that should be spot repaired. The tank interiors are mostly covered with a significant amount of corrosion below the highest water level (HWL). Although the area above the HWL of T2 is galvanized and in excellent condition, the surfaces above the HWL in T1 are also in poor condition and mostly corroding. It should be noted that the floors of both tanks were for the most part obscured from a thorough visual inspection. Nonetheless, a few areas that were sampled within each tank indicate that these tank bottoms are also in poor condition with widespread corrosion. The major concerns with respect to corrosion in the tanks involve isolated pits and corroded weld seams in T1 and isolated pits and corroded fasteners in T2. It is recommended that the interior of both tanks be relined within the next 1 year.

Background

Backwash Tank No. 1 (T1) is a welded steel above ground standpipe tank. The year of construction is not known, but the tank is suspected of being at least 30 years old. The tank is approximately 8 feet in diameter by 16 feet high, providing a nominal capacity of 16,000 gallons. The tank shell has two 8 foot plate courses connected to pitched roof. The tank has one center roof vent, one roof hatch, and one first course manway. There is various piping that enters the tank, but no overflow was observed. The tank has one floating water level indicator. The tank does not have an internal or exterior ladder, and the roof hatch does not have a roof rail assembly. The tank rests on grade, and there is no internal or external cathodic protection (CP) system installed. The internal surfaces of the tank have some evidence of a bitumastic coal tar cut-back (Supertank Solution) lining, whereas the exterior of the tank appears to be painted with an alkyd with aluminum flake. There is a housing enclosure that covers a portion of the lower course.

Backwash Tank No. 2 (T2) is a bolted steel above ground standpipe tank. The year of construction is not known, but the tank is suspected of being at least 25 years old. The tank is approximately 12 feet in diameter by 16 feet high, providing a nominal capacity of 24,000 gallons. The tank shell has two 8 foot stave-plate courses connected to a bolt fastened roof and floor. The stave plate vertical shell seams and roof are connected by bolts channels with the nut fasteners located on the exterior. The plates are connected horizontally on the exterior by bolted flanges creating an adjacent interior seam. The tank roof is supported by a structure consisting of a center support column and internal roof rafters, one roof hatch, and one first course manway. The tank does not have an internal or exterior ladder and the roof access hatch area does not have a roof rail assembly. There is no internal or external cathodic protection (CP) system installed. Interior and exterior surfaces of the structure have been galvanized with without any conventional topcoating applied. There is a housing enclosure that covers a portion of the lower course.

Field Evaluation

The purpose of this survey was to assess the conditions of the existing coatings and recommend remedial work where applicable. The evaluation mainly involved visual observations and destructive/non-destructive testing procedures. A photo summary has been included with this narrative report.

For survey purposes, the tank evaluations have been segmented into defined areas: exterior roof structure, exterior shell, interior roof structure, interior shell, and interior floor. The various appurtenances within each of these areas have also been evaluated. A rating system has been developed to quantify the condition of the various tank areas. Each of

the rating criteria is found in the Attachments (Charts 1 through 6).

The condition of the coating systems was rated as being poor, fair, good, or excellent (Chart 1). The extent of any rust defects identified within each of the areas were generally determined using guidelines set forth in ASTM D610 "Standard Test Method for Evaluating the Degree of Rusting of Painted Steel Surfaces" (Chart 2). Where applicable, the characteristic or stage of corrosion was determined according to CSI Corrosion Grade criteria (Chart 3). The degree of chalking was determined in accordance with ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Test Method D659, Method C (Chart 4). Coating adhesion was assessed in accordance with ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test, modified Method A or ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife" (Chart 5). Any blistering that may have been present was rated in accordance with ASTM D714 "Standard Test Method for Evaluating the Degree of Blistering in Paints" (Chart 6). The results of the evaluations for each tank follow:

Backwash Tank No. 1

Exterior

Close-up visual observation of the coating was limited to the first (lowest) shell course, upper shell areas adjacent to a removable ladder, and the roof. The paint on the roof and shell is in fair to good condition with light chalking (ASTM D4214, No. 8). The paint has scattered, isolated spots of dark rust (CSI Corrosion Grade No. 2), but is otherwise mostly free of significant corrosion (ASTM D610, 9). The majority of the painted surfaces have light scrapes. The most common location of dark rust was on the roof and on the edges of the various other appurtenances. The roof was found to have some isolated patches of dark corrosion up to and including shallow pitting (CSI Corrosion Grades 2- 3). The paint dry film thickness was measured to range from between 3 and 6 mils and film adhesion was found to be satisfactory (modified ASTM D3359, 4 / D6677, 8).

Interior

The roof and shell lining was found to be in poor condition. The roof and shell surfaces had patches of both lining and rust. The vast majority of these surfaces, up to approximately 80 percent (ASTM D610, 1) have dark corrosion (CSI Corrosion Grade No. 2). The corrosion also included isolated areas with pitting and exfoliation (CSI Corrosion Grades 3 and 4). Some areas on the roof also appeared to have some patches of intact mill scale. No indication of tank movement or bending of any beams was observed. A few isolated linear inches of internal weld beads were no longer present on the shell seams. The floor was covered with a slurry of water and filter media that prevented a thorough inspection of all areas, but it is believed that the tank bottom is also in poor condition with widespread corrosion and isolated areas of pitting. It was also noted that the water level indicator was no longer operational in that the guide and traveling wires had broken.

Backwash Tank No. 2

Exterior

Close-up visual observation of the tank exterior was limited to the first (lowest) shell course, upper shell areas adjacent to a removable ladder, and the roof. The exterior galvanizing on the tank is in fair condition. With a few exceptions, the galvanized surfaces of the tank were found to be free of any corrosion defects. The exceptions include some points where dark rust (CSI Corrosion Grade 2) is present. Although it is not clear if any of these spots of heavy corrosion extend to the interior as a hole, the majority of these isolated spot defects appear to be the result of some isolated mechanical damage. It was also noted that an upper course fastener had been replaced by a longer bolt. The amount of corrosion on the tank was rated to be less than 0.1 percent of the total surface (ASTM D610, 8). The exterior film thickness was found to range from between 2.0 and 3.0 mils. It was also noted that an old small washout area is located at the tank bottom.

Interior

Visual observations were made from the tank bottom. The roof coating (galvanizing) was found to be in excellent condition. The only defects observed involved some light corrosion at a few fasteners. No indication of tank movement or bending of any beams was observed. The total amount of rust on the roof was rated to 0.01 percent of the total surface (ASTM D610, 9).

The majority of the lining on the shell was found to be in poor condition. The upper approximate one-foot of the shell is the same condition as the roof (excellent condition), while the shell surfaces below this zone was found to be mostly covered with rust nodules. Bolt channels, including fasteners were found to be mostly corroding and rust nodules were present in most areas. All corrosion was rated to be dark in nature with shallow pitting suspected in at least a few locations (CSI Corrosion Grade 2 and 3). The amount of corrosion on the shell was rated to be 80 percent of the surface (ASTM D610, 1).

The floor was covered with a slurry of water and filter media that prevented a thorough inspection of tank bottom areas, but it is believed that the floor is also in poor condition with widespread corrosion and isolated areas of pitting. An area was tactile inspected which noted some scaling and exfoliation of the steel (CSI corrosion Grade 4). The center column was found to have large rusting nodules along its length, while all other appurtenances below the highest water level were found to have widespread corrosion. A corrosion pit up to 1/16 of an inch was identified on the lower portion of the column (CSI Corrosion Grade 3). It was also noted that the water level indicator was no longer operational in that the guide and traveling wires had broken.

Discussion

In overview, the exterior of both tanks are in satisfactory condition, but the interiors are in poor condition. With respect to corrosion, the exterior coating systems, including the galvanized tank have isolated locations with more advanced corrosion that should be repaired. When considering whether a spot repair approach is a viable option, a good rule of thumb is that spot repair, with or without overcoat, makes sense with up to 10 percent of the surface area requiring repair. With more than 10% in disrepair, making spot repairs and overcoating becomes a diminishing return. With 10 percent rusting, overcoating may be an option if the adhesion is better than fair. If there is more than 10 percent rusting and the substrate is free of mill scale, overcoating may be considered an option if the adhesion is excellent. Once the amount of surface area in need of repair exceeds this range, the cost of cleaning and coating the individual rust spots approaches (or exceeds) the total cost of removal and replacement. Although the exterior paint system on T1 should continue to provide satisfactory corrosion protection for a few more years, it would be prudent to spot repair the exterior paint spot defects anytime within the next 2 to 3 years to extend the life of the existing system. Otherwise, any decision for wholesale exterior painting would be based purely on aesthetics. Similarly, the galvanized T2 has isolated areas of advanced, significant corrosion that should be spot repaired within 2 years.

The interior of both tanks are in poor condition with widespread corrosion. The tank interiors are mostly covered with a significant amount of corrosion below the highest water level (HWL). Although the area above the HWL of T2 is galvanized and in excellent condition, the upper surfaces of T1 are also in poor condition and mostly corroding. It should be noted that the floors of both tanks were for the most part obscured from completing a thorough visual inspection. Nonetheless, a few areas that were sampled within each tank indicate that these tank bottoms are also in poor condition with widespread corrosion.

The condition of both tanks is significantly worse than what is normally found in water storage tanks. The condition of the areas that are corroding inside both tanks are similar to what would be expected in a tank that is more than 40 years old that has not had any maintenance coating work. The galvanized surfaces of T2 that to do not see immersion are in satisfactory condition. This indicates that the failed galvanizing below the HWL may have been chemically attacked by the water. Untopcoated zinc coatings (galvanizing) are limited to a pH range of 5 to 10 because the zinc is attacked at both low and high pH. It is suspected that the water may periodically see spikes of low or high pH levels and that this resulted in the breakdown of the galvanizing. These surfaces below the HWL have corrosion up to an including some localized shallow pitting, scaling, and significant metal loss.

The major concerns with respect to corrosion in the tanks involve isolated pits and

corroded weld seams in T1 and isolated pits and corroded fasteners in T2. Further, the floor fasteners in T2 were not visually accessible, but it is presumed that the tank bottom has lost significant metal in areas through either pitting or scaling development. The plates of bolted tanks are fabricated with much thinner gauge steel than what is typically found on a welded steel tank. As a result there is much less tolerance for corrosion, and the T2 may soon begin to develop leaks or loss of structural integrity. It was not the scope of this assignment to determine if the tanks are structurally sound.

It is recommended that the interior of both tanks be relined within the next 1 year. In addition to the spot repairs required on the outside of the tanks, there would be added value of having the exteriors topcoated with the internal work to provide for better amortization of the construction costs. Since the interiors have significant corrosion, crevices, seams, corroding fasteners, and irregular surfaces (i.e. channels/pitting); a 100 percent solids elastomeric lining should be used to properly cover all areas and essentially create a tank within a tank. This maintenance work should also anticipated the need for some structural repairs through welding operations - notably to fill corrosion pits and rebuild weld seams that may have lost metal. It is projected that the coating work in both tanks can be completed, including engineering and third-party inspection services for approximately $35,000.

If the tanks cannot be drained for the above maintenance work, then it is recommended that a sacrificial anode cathodic protection (CP) system be installed in the tanks immediately to help defer the lining work for an additional period of time. It should be noted that this added protection will only slow the level of corrosion in the tanks and not solve the corrosion issues in the tanks.

Recommendations

It is recommended that the following work be completed within the next year:

Exterior

1) Spot repair the corroding spots on each tank. This work should involve the preparation of each rusting defect in accordance with SSPC SP15 "Powertool Cleaning to Commercial Grade Cleanliness" followed by a patch of epoxy/urethane.

Interior

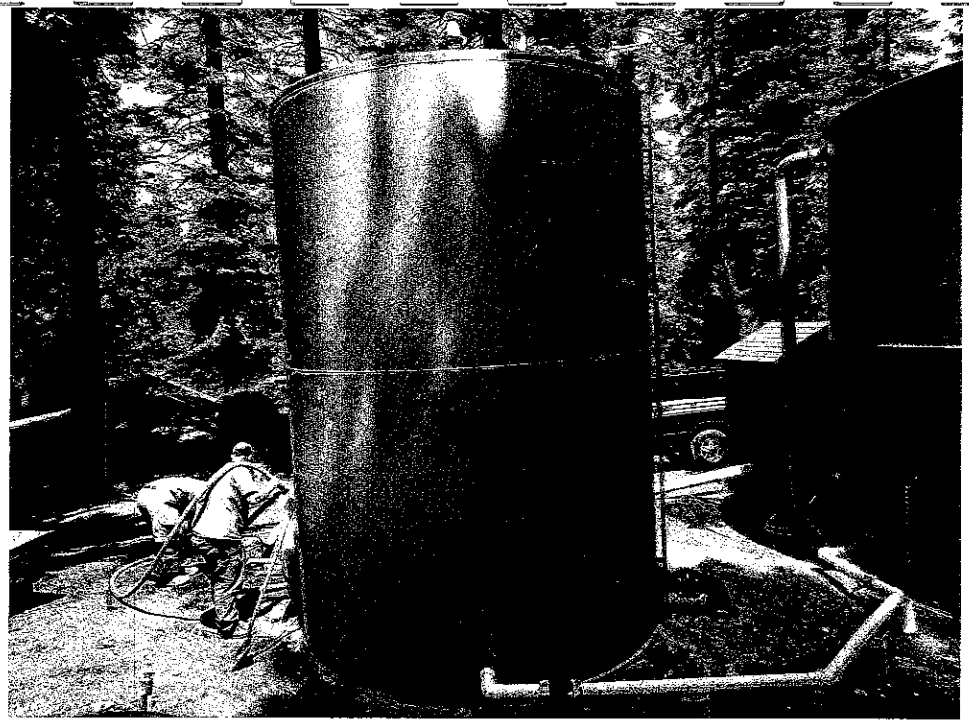
1) Remove and replace the interior lining system in both water storage tanks. This work should include abrasive blast cleaning in accordance with SSPC–SP10 "Near-White Metal Cleanliness". The newly applied lining system should include an elastomeric NSF Certified epoxy or urethane system to at least 60 mils thick.

A) As an option to relining the tanks within the next year, install a sacrificial anode cathodic protection system in the tank to help defer the lining work.

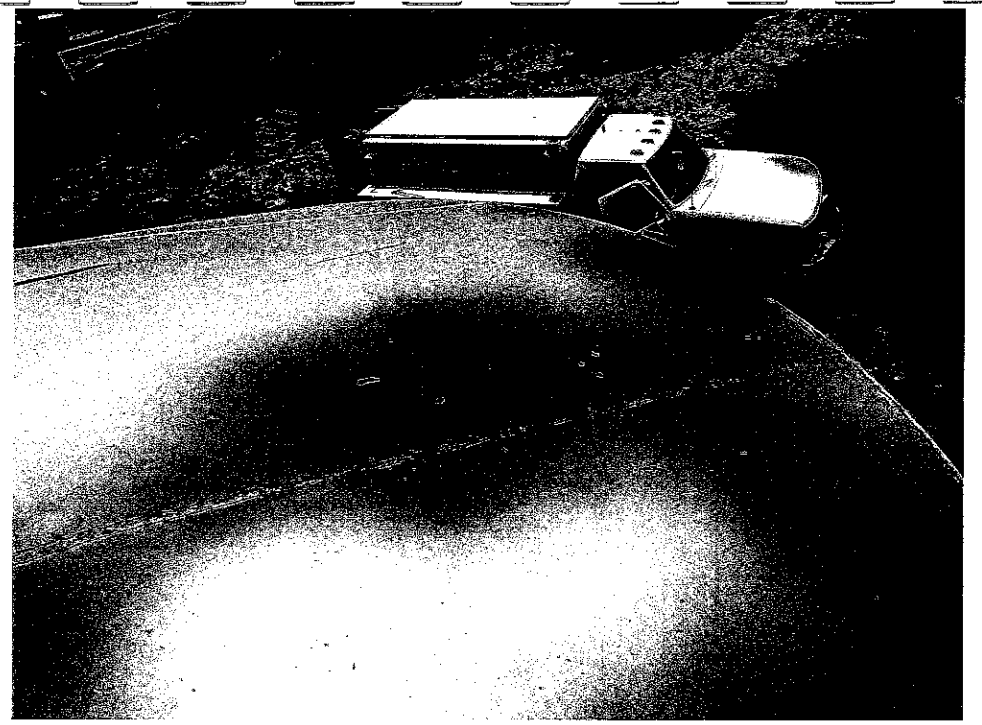
2) Plan to include some welding repairs to the most severely corroding areas in the tanks prior to any lining work. These areas may not be fully identified until the areas have been abrasive blast cleaned.

3) Replace the tank water level indicators if they are needed for operations.

NOTICE: This report represents the opinion of CSI Services, Inc. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, and materials obtained and does not guarantee a leak proof tank.



Backwash Tank 1 Exterior Photo (1)



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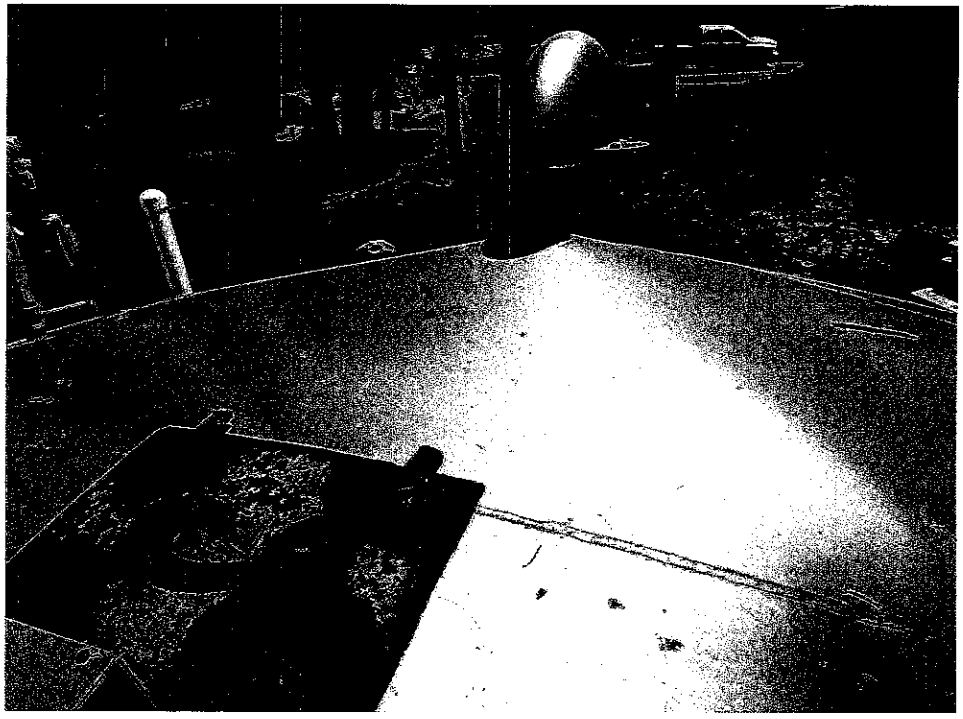
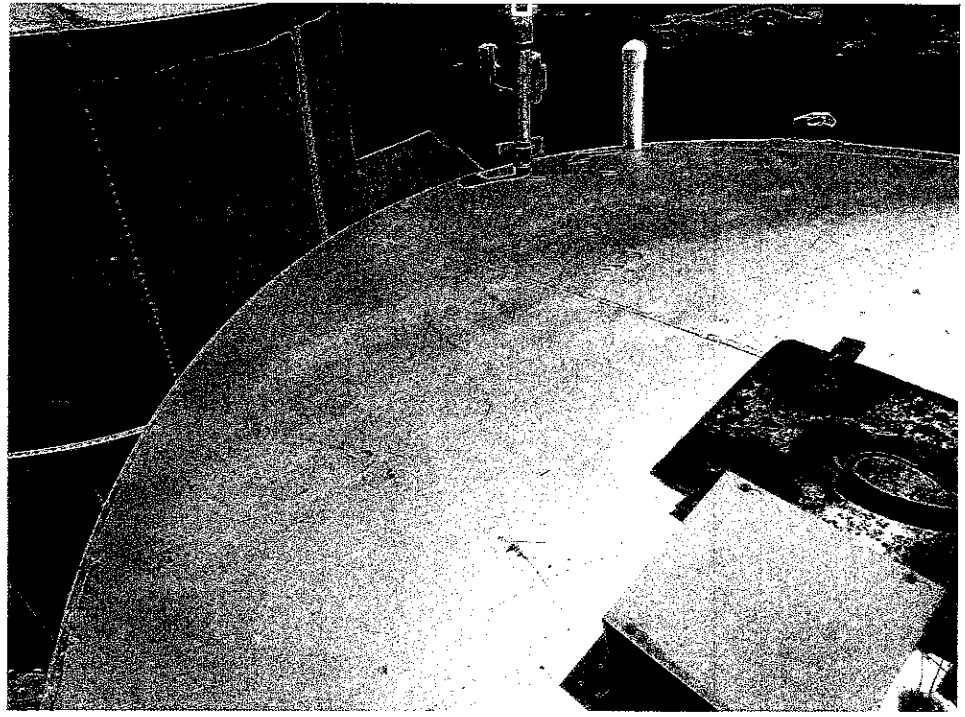
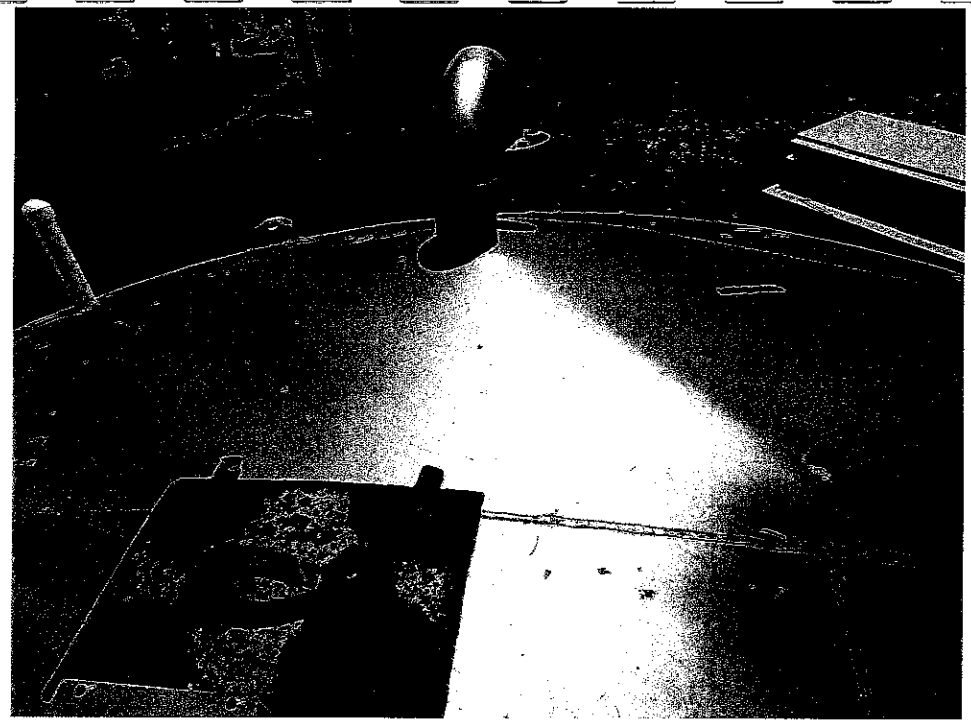


Backwash Tank 1 Exterior Photo (3)



Backwash Tank 1 Exterior Photo (4)

Backwash Tank 1 Exterior Photo (5)



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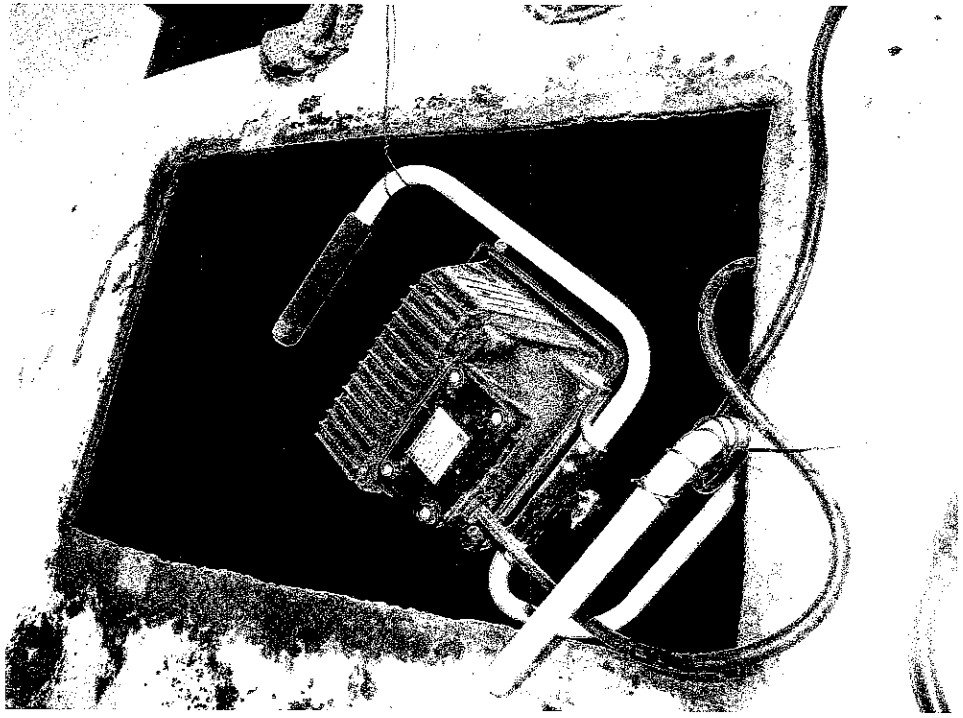
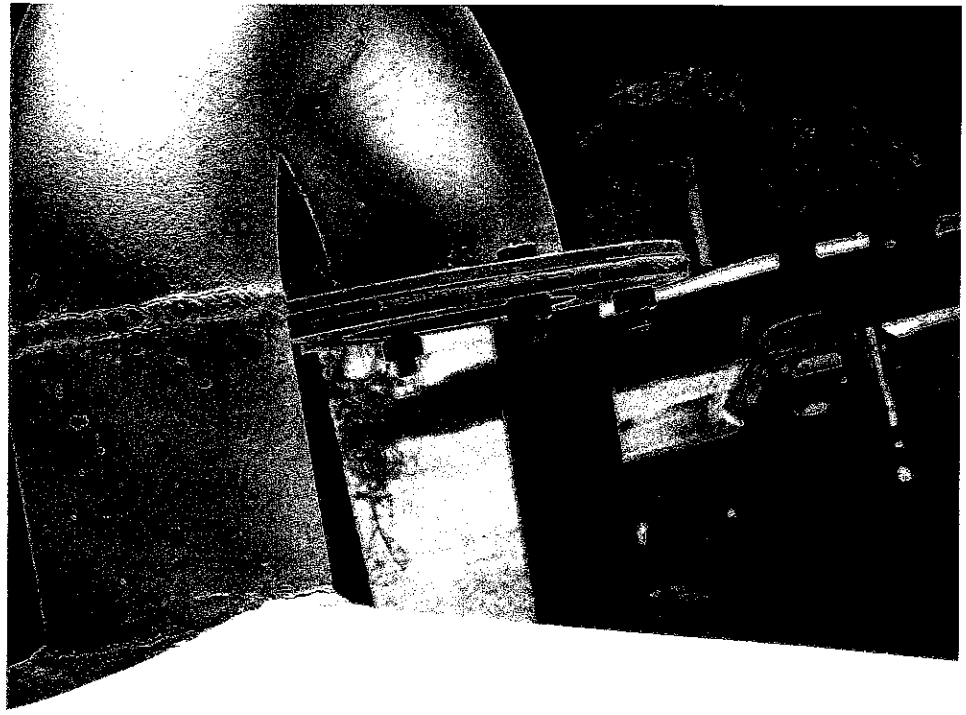
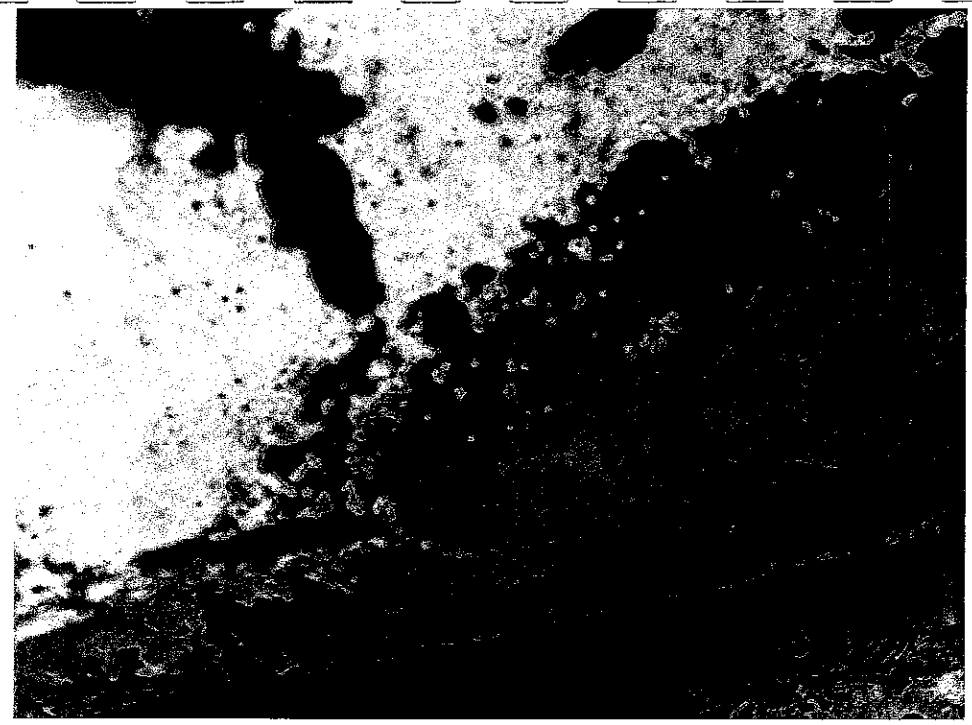


Backwash Tank 1 Exterior Photo (7)

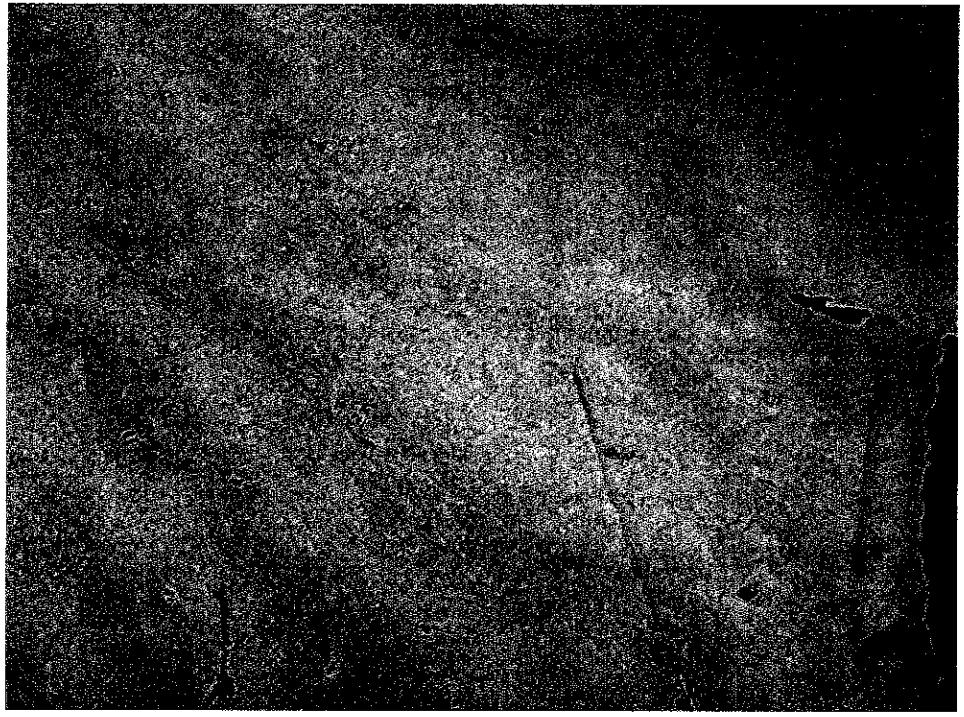


Backwash Tank 1 Exterior Photo (8)

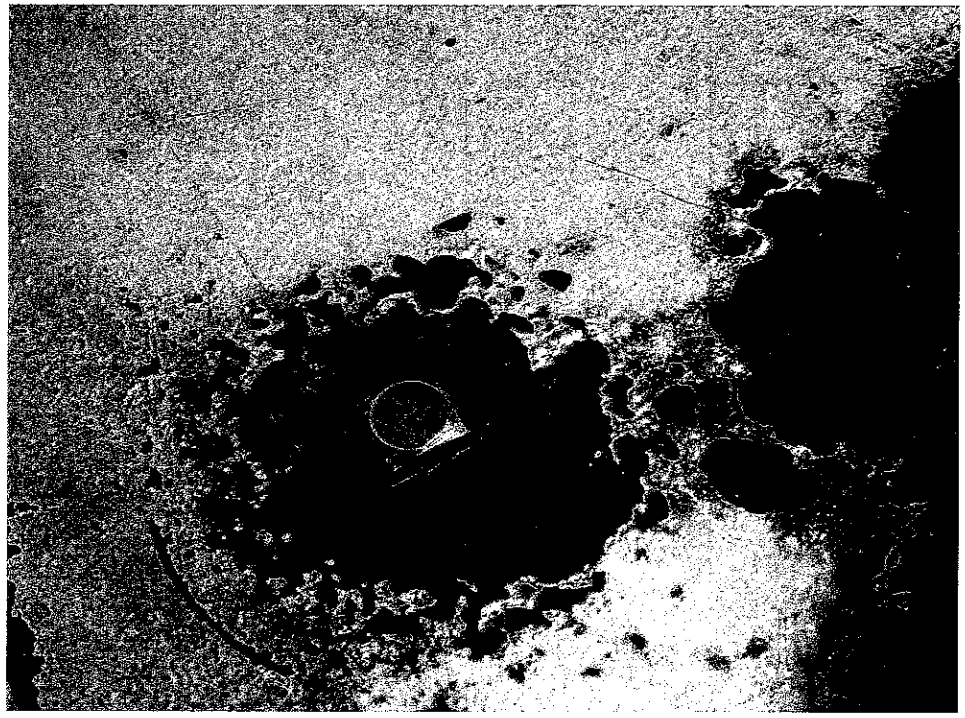
Backwash Tank 1 Exterior Photo (9)



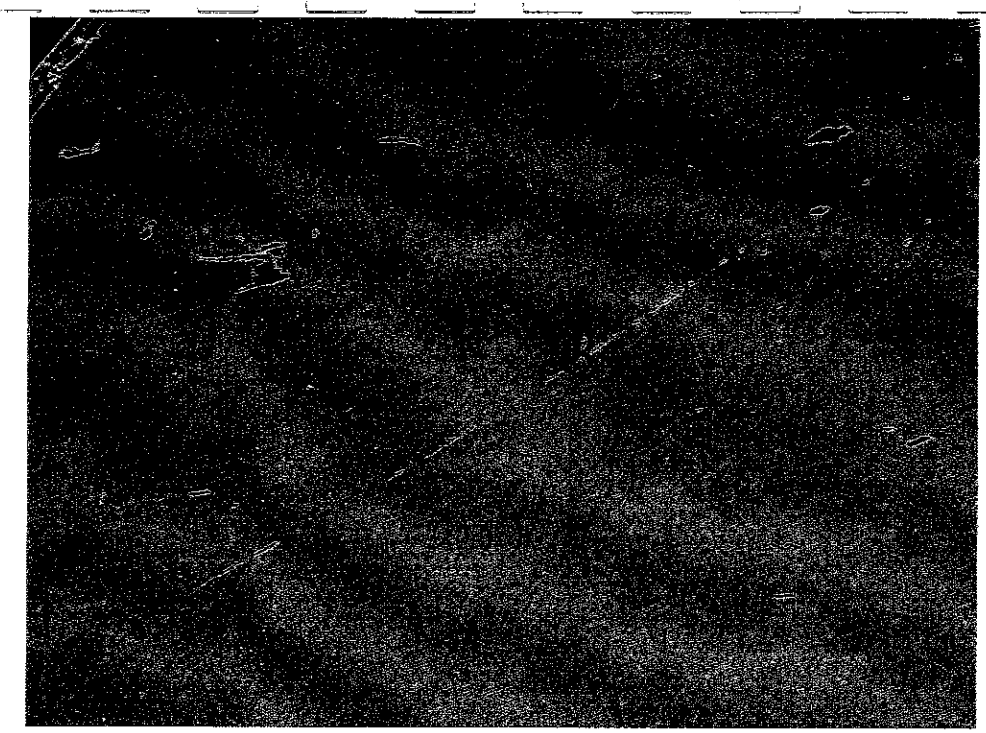
Backwash Tank 1 Exterior Photo 10



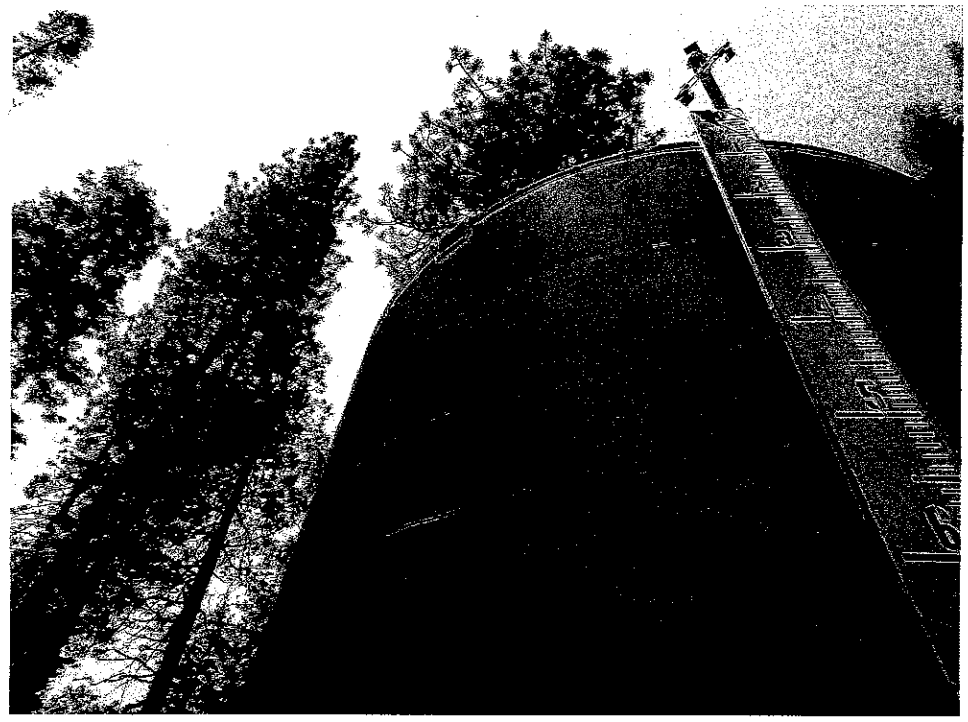
Backwash Tank 1 Exterior Photo 11



Backwash Tank 1 Exterior Photo 12

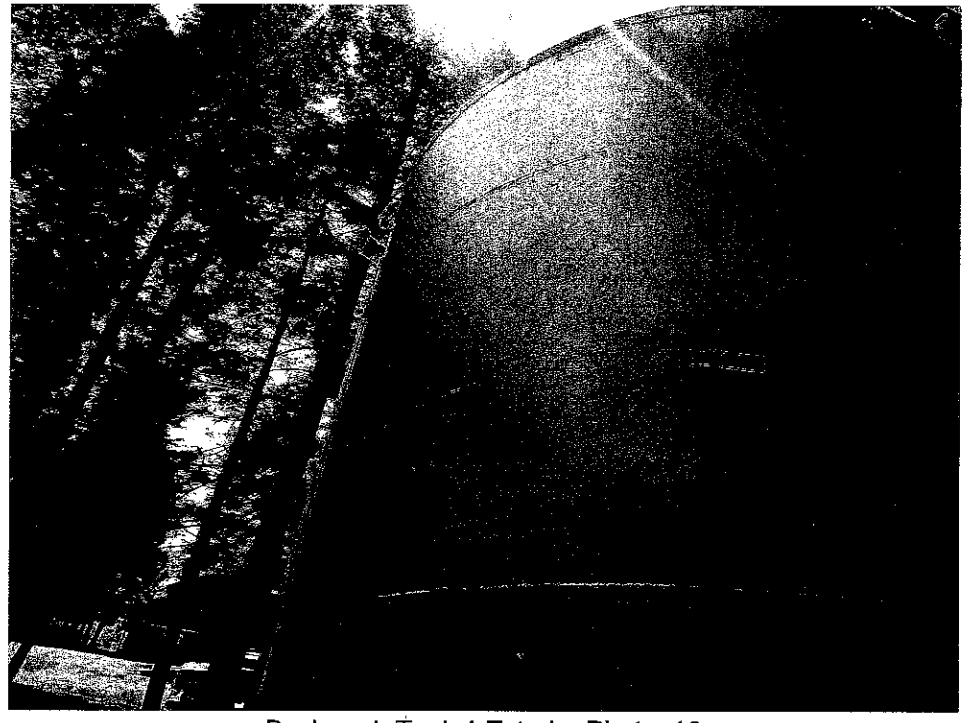


Backwash Tank 1 Exterior Photo 13



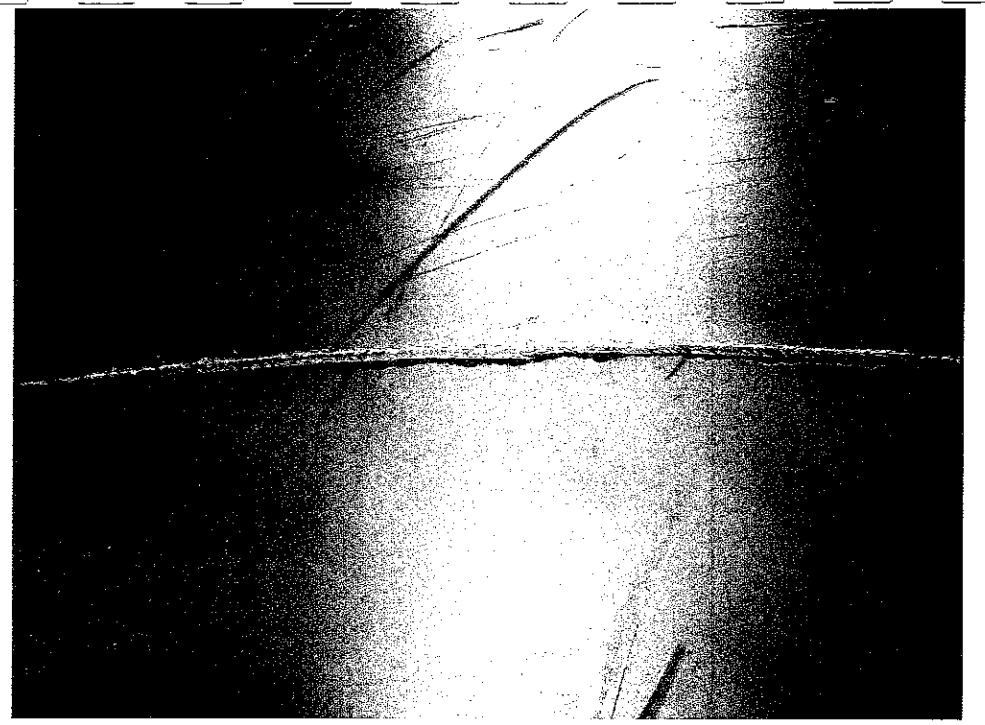
Backwash Tank 1 Exterior Photo 14

Backwash Tank 1 Exterior Photo 15

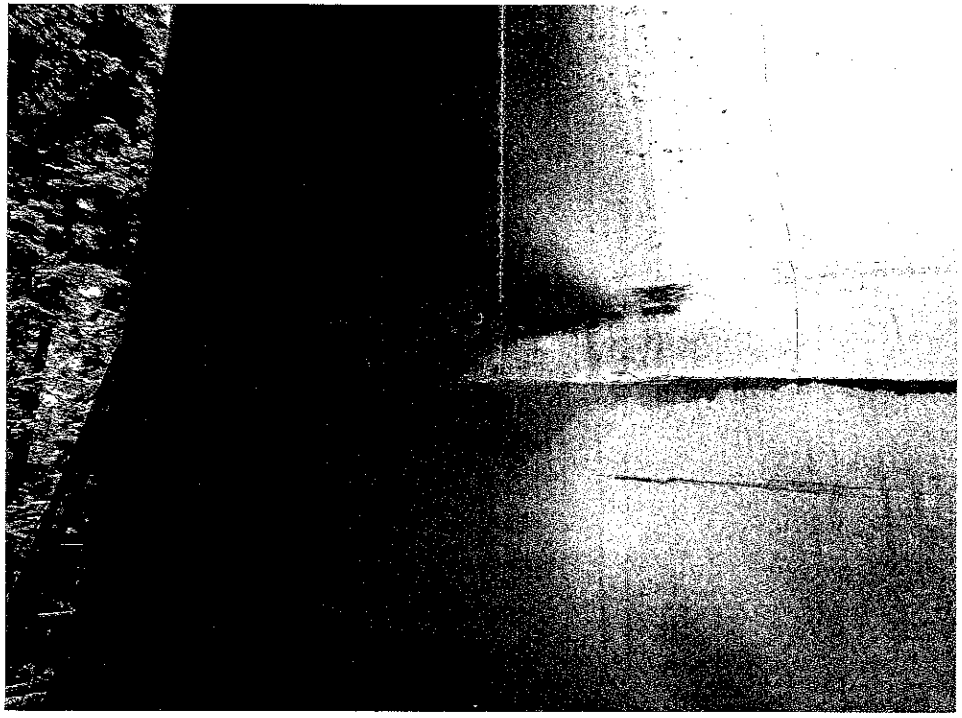


Backwash Tank 1 Exterior Photo 16

Backwash Tank 1 Exterior Photo 17



Backwash Tank 1 Exterior Photo 18



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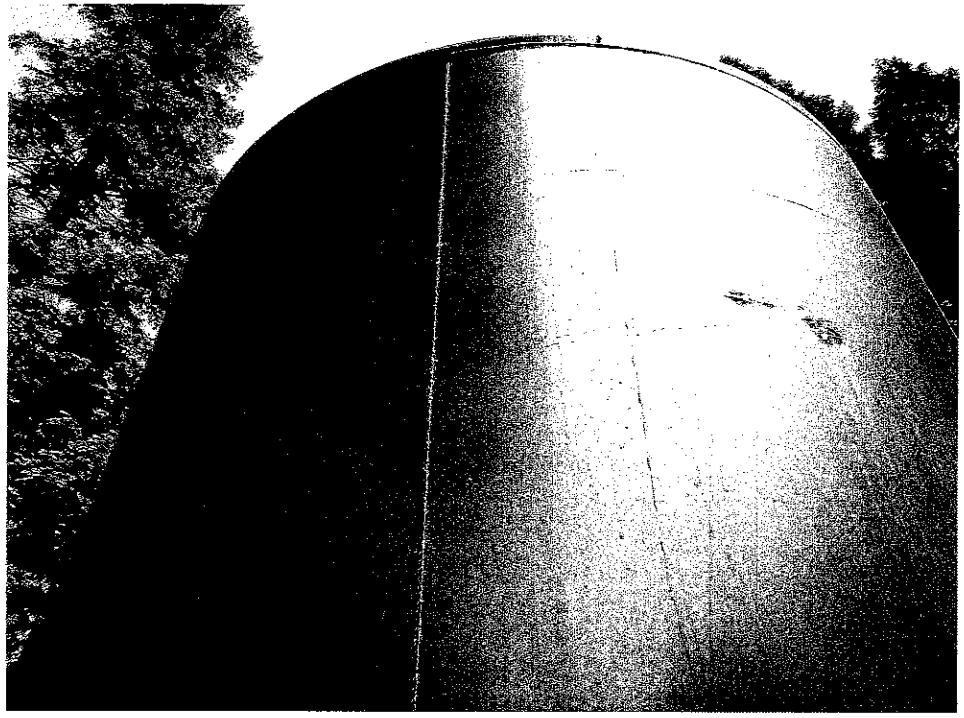
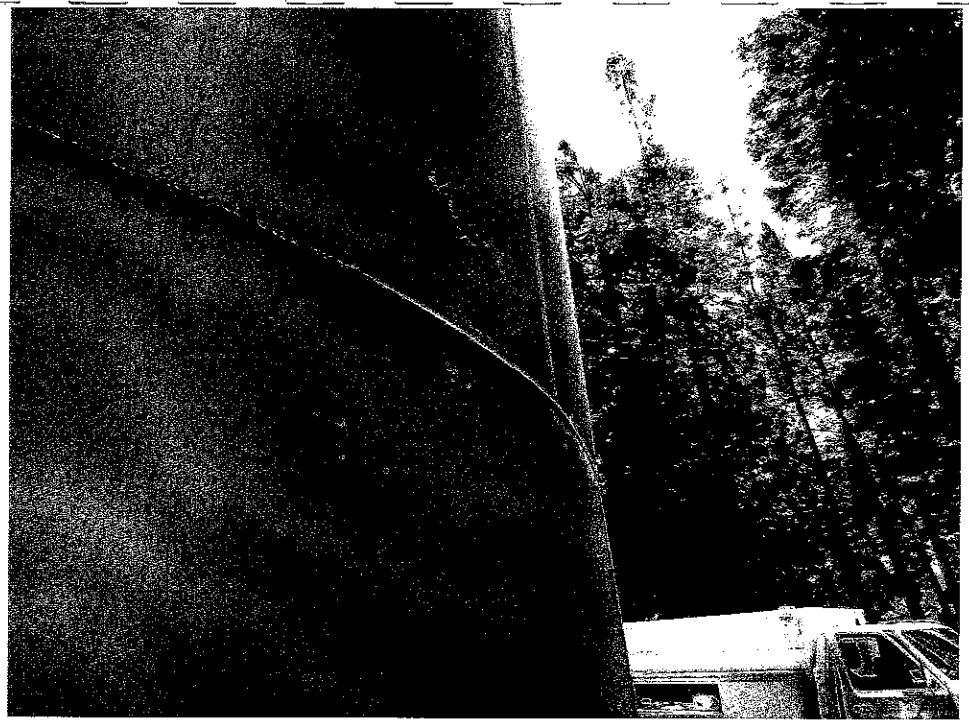


Backwash Tank 1 Exterior Photo 20



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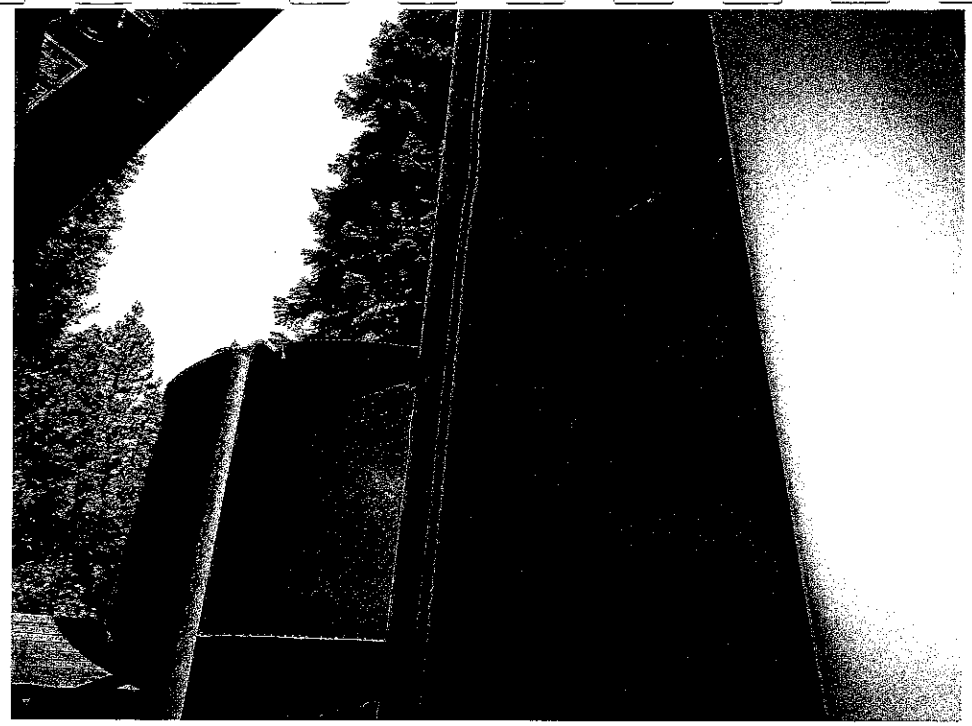
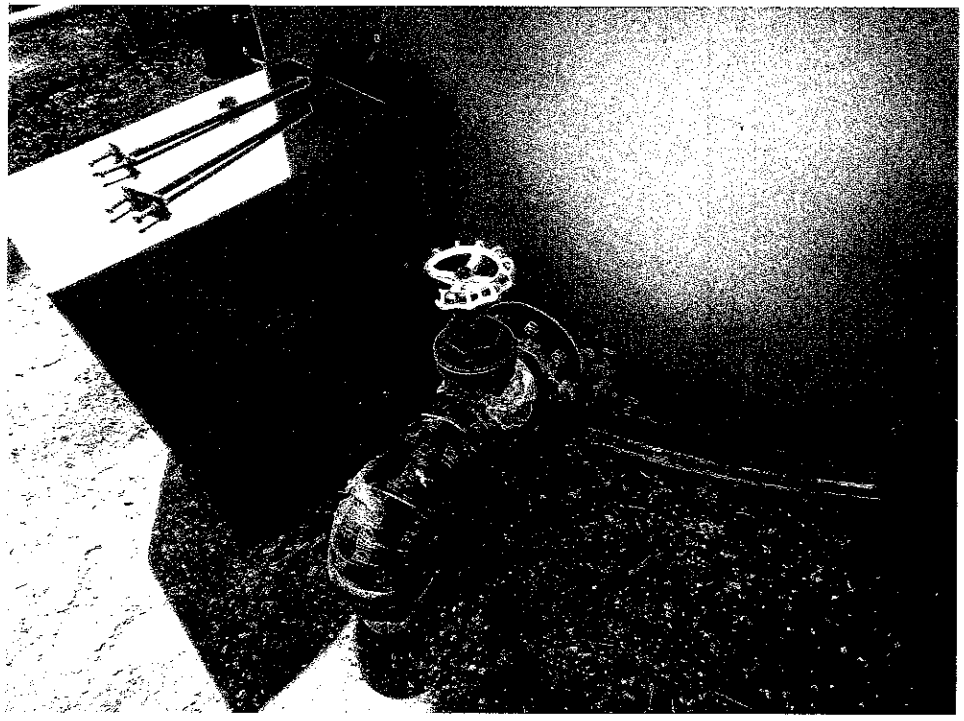


Backwash Tank 1 Exterior Photo 22

Backwash Tank 1 Exterior Photo 23



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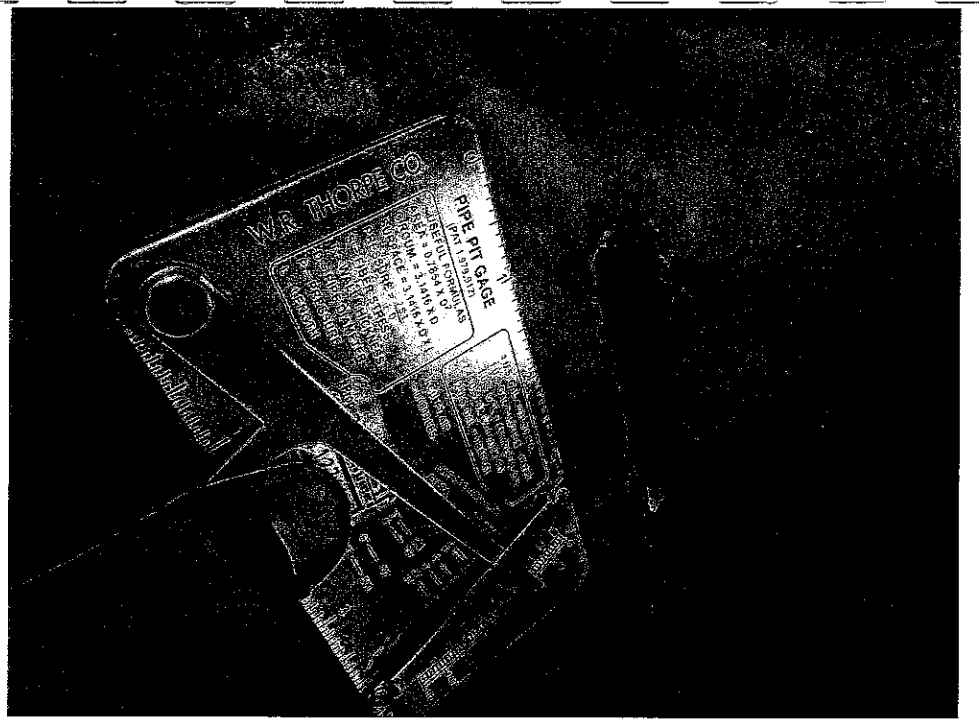
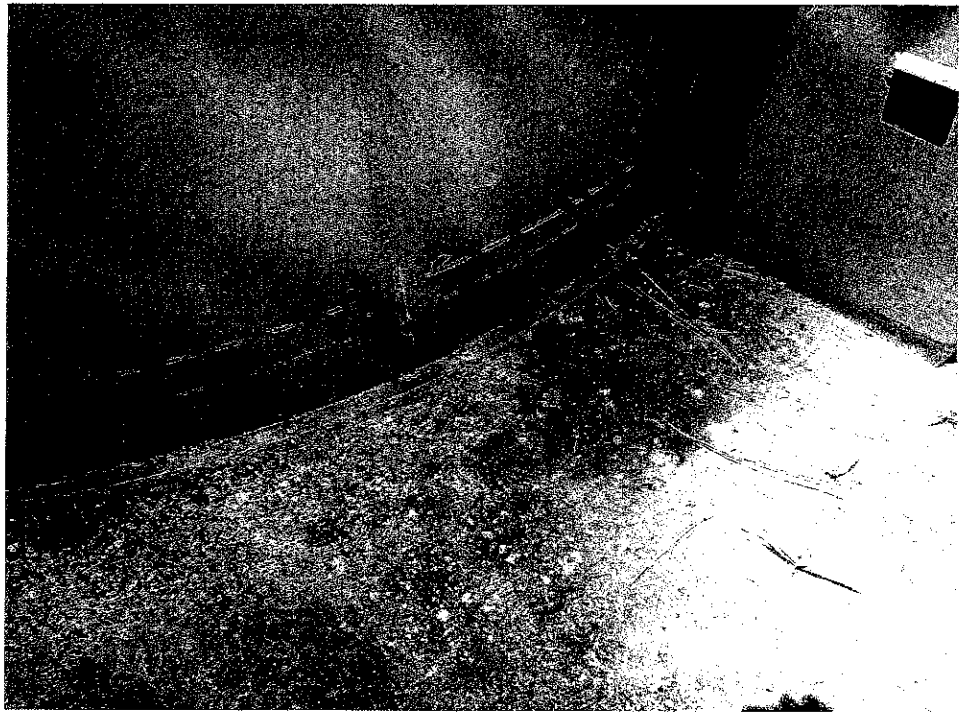


Backwash Tank 1 Exterior Photo 25

Backwash Tank 1 Exterior Photo 26



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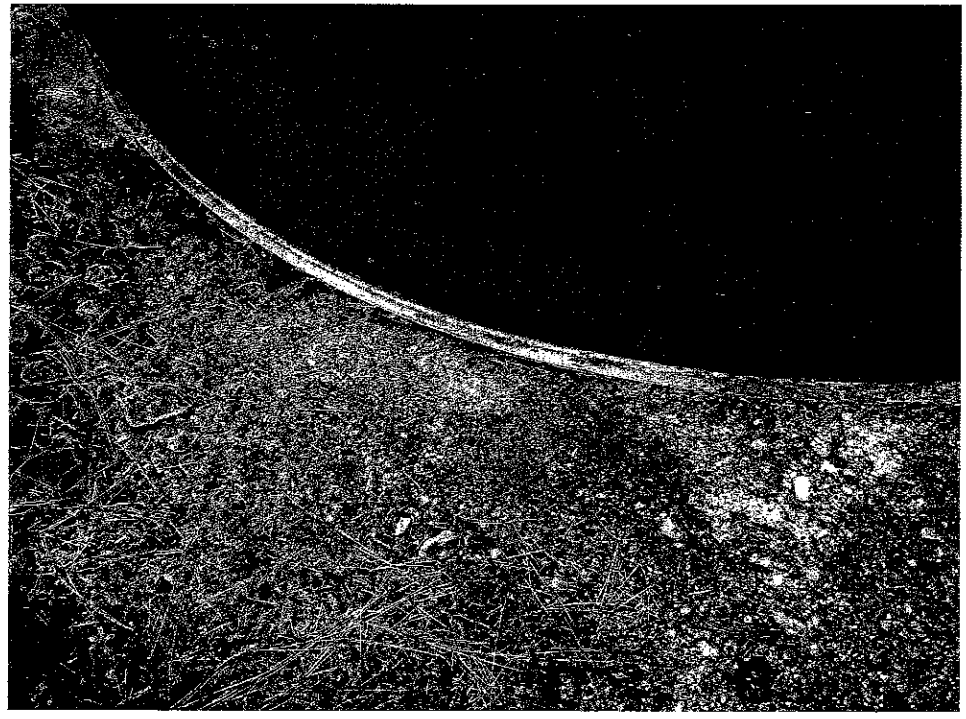

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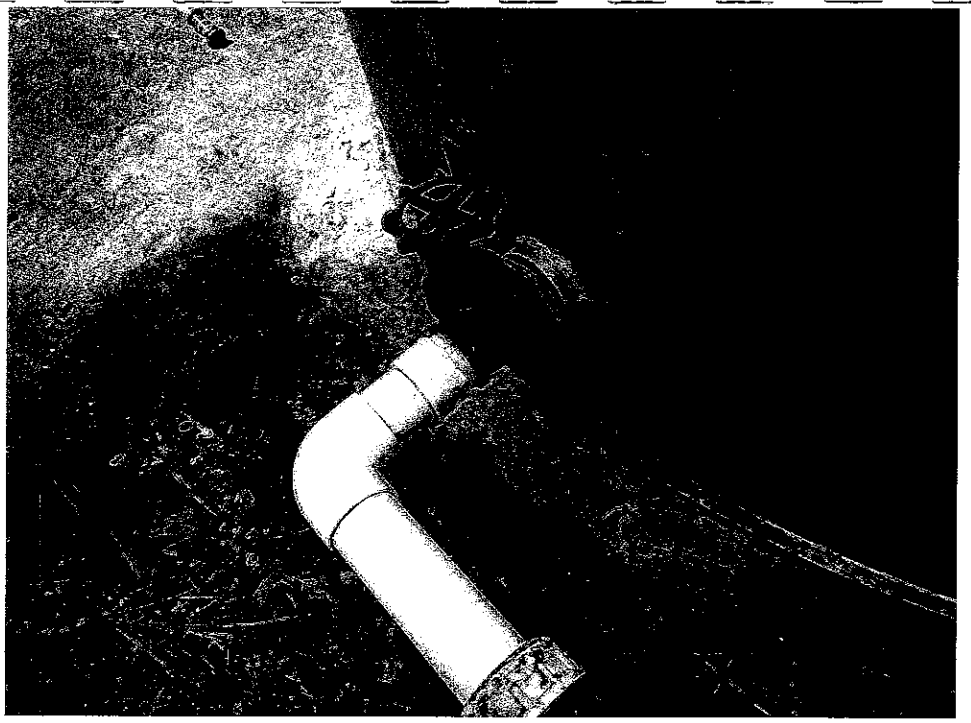

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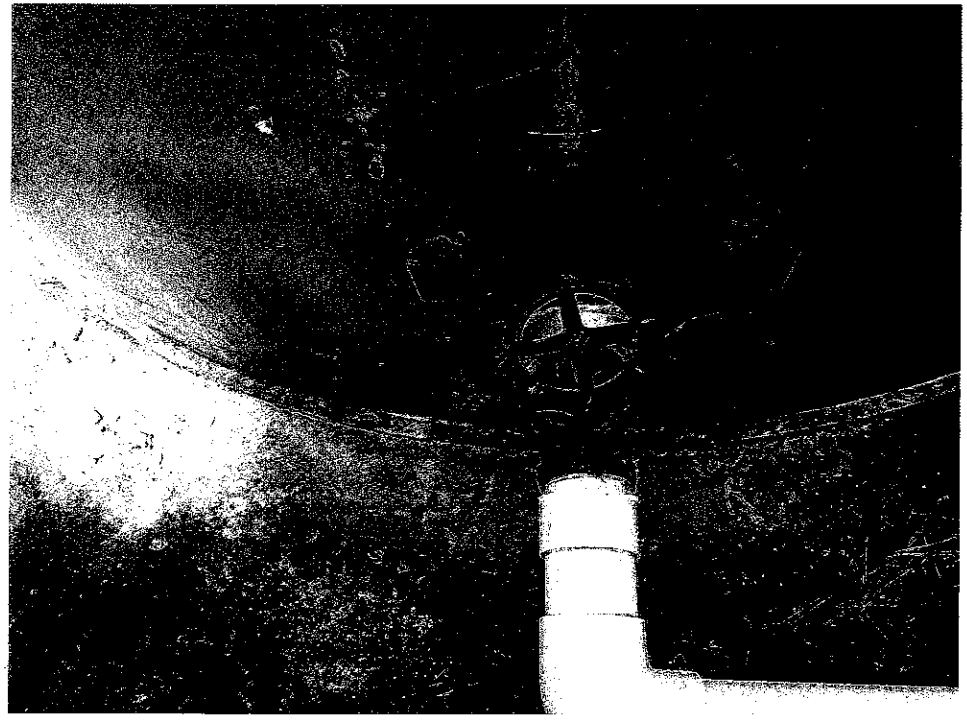

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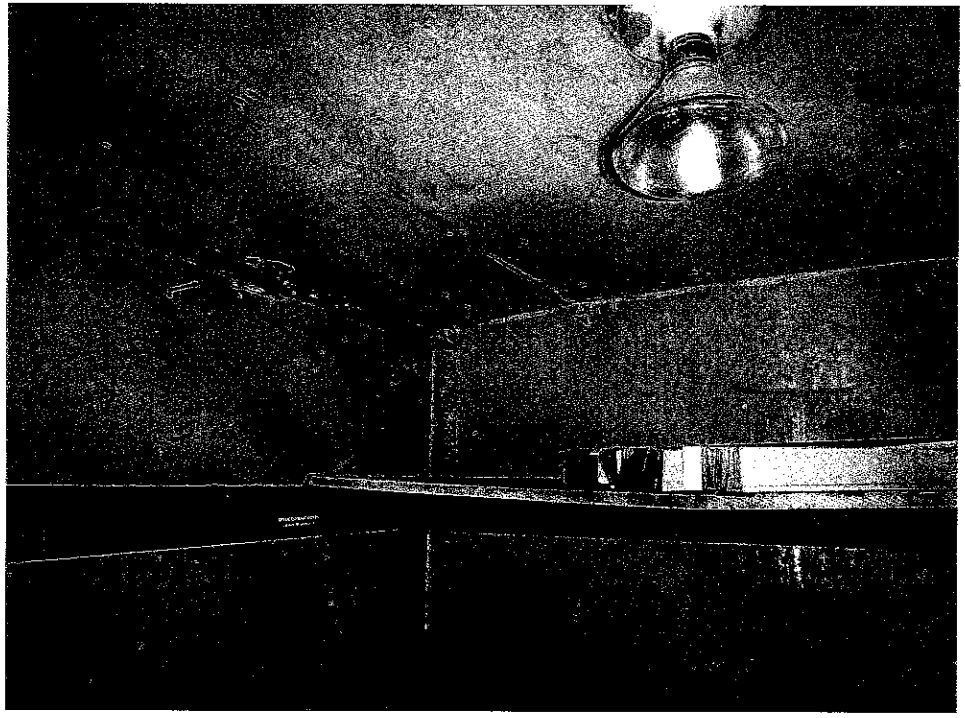
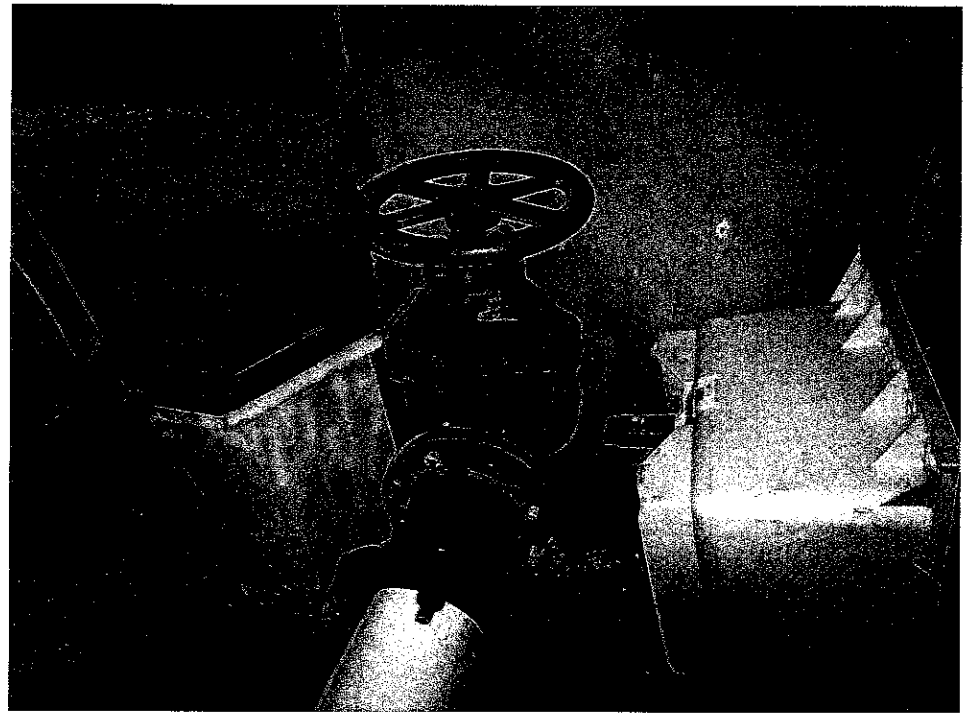


Backwash Tank 1 Exterior Photo 31



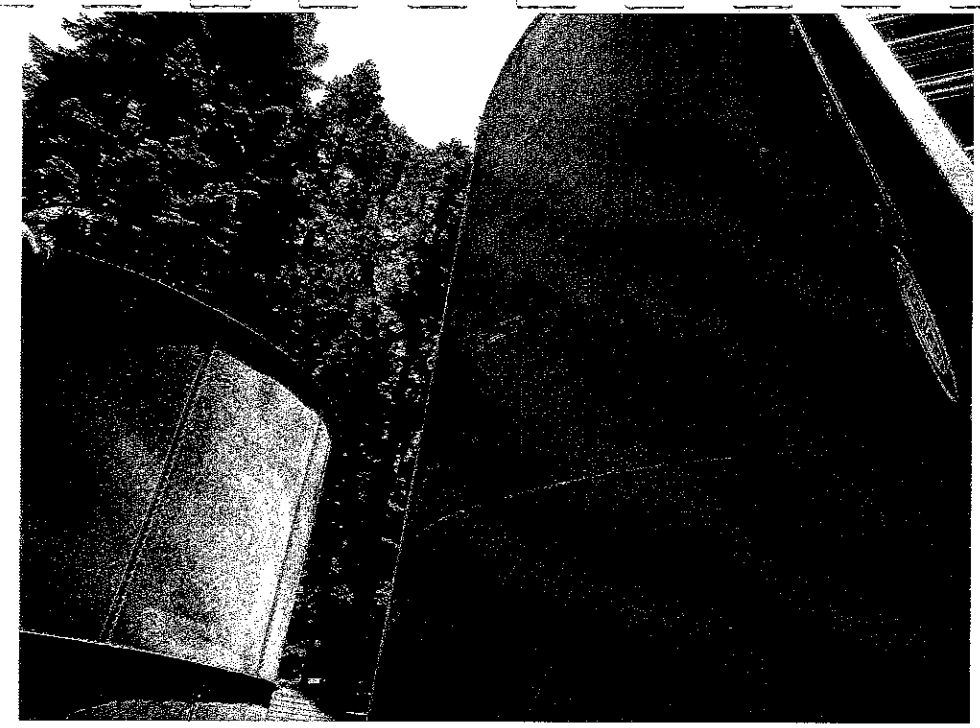
Backwash Tank 1 Exterior Photo 32

Backwash Tank 1 Exterior Photo 33

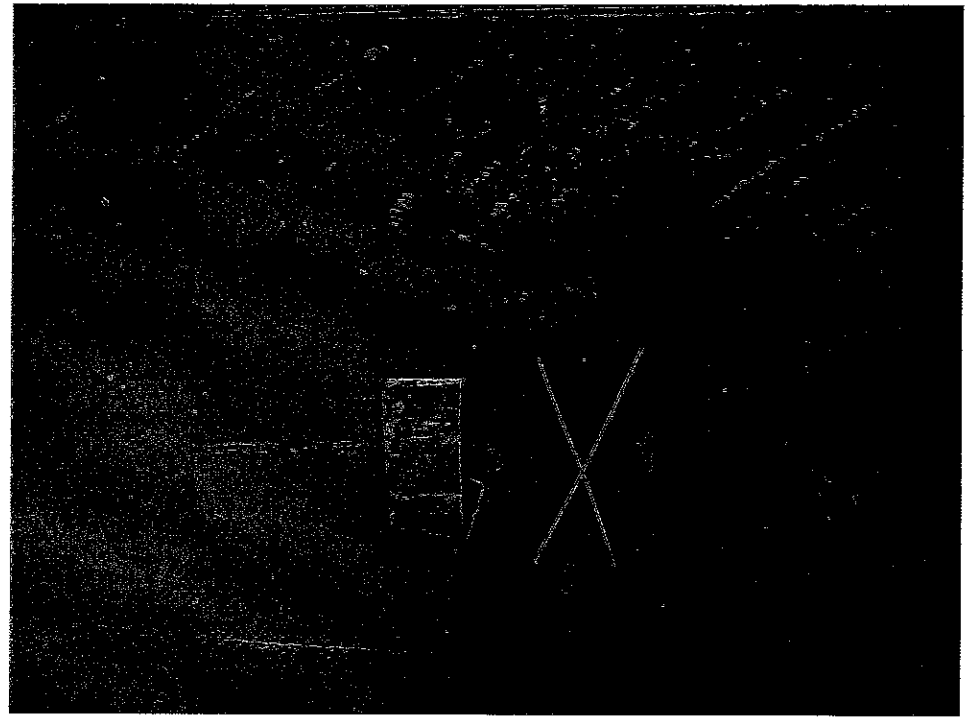
Backwash Tank 1 Exterior Photo 34

Backwash Tank 1 Exterior Photo 35

Backwash Tank 1 Exterior Photo 36



Backwash Tank 1 Exterior Photo 37



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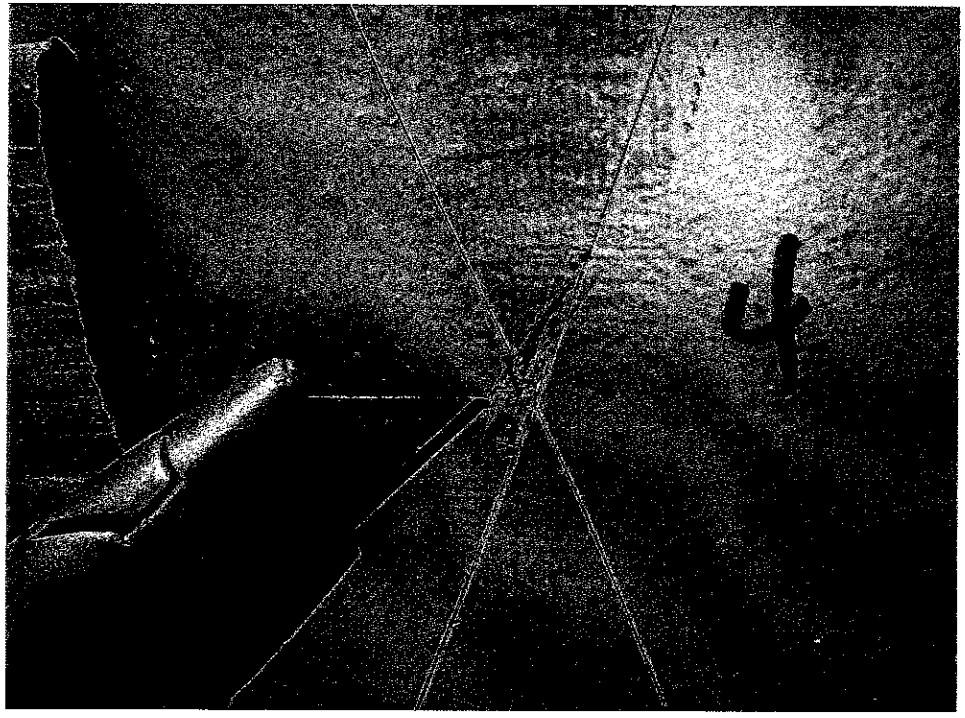

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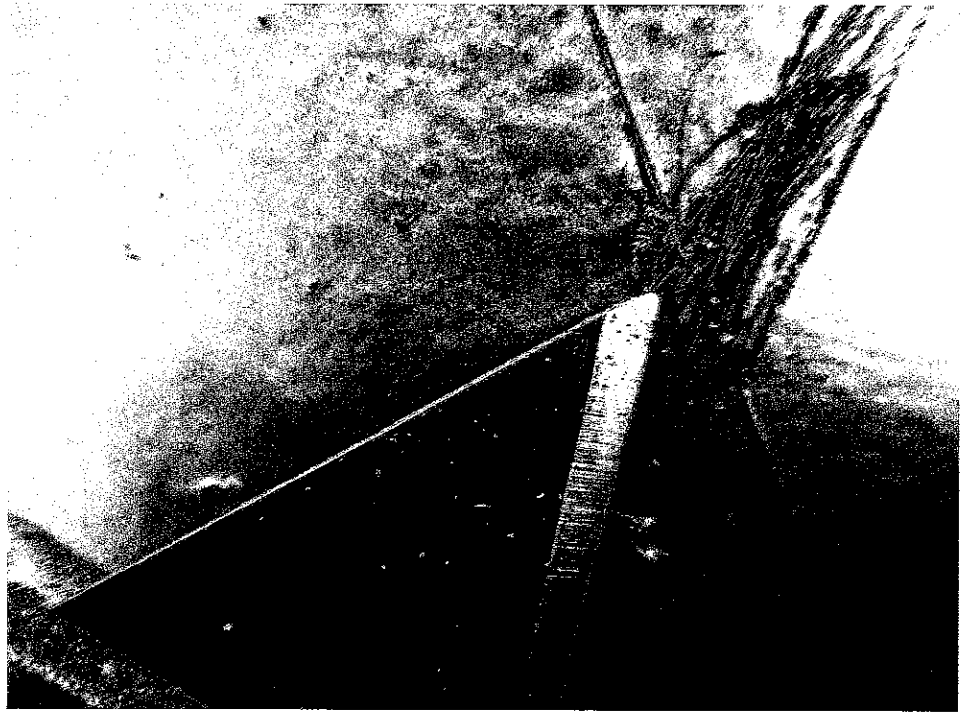
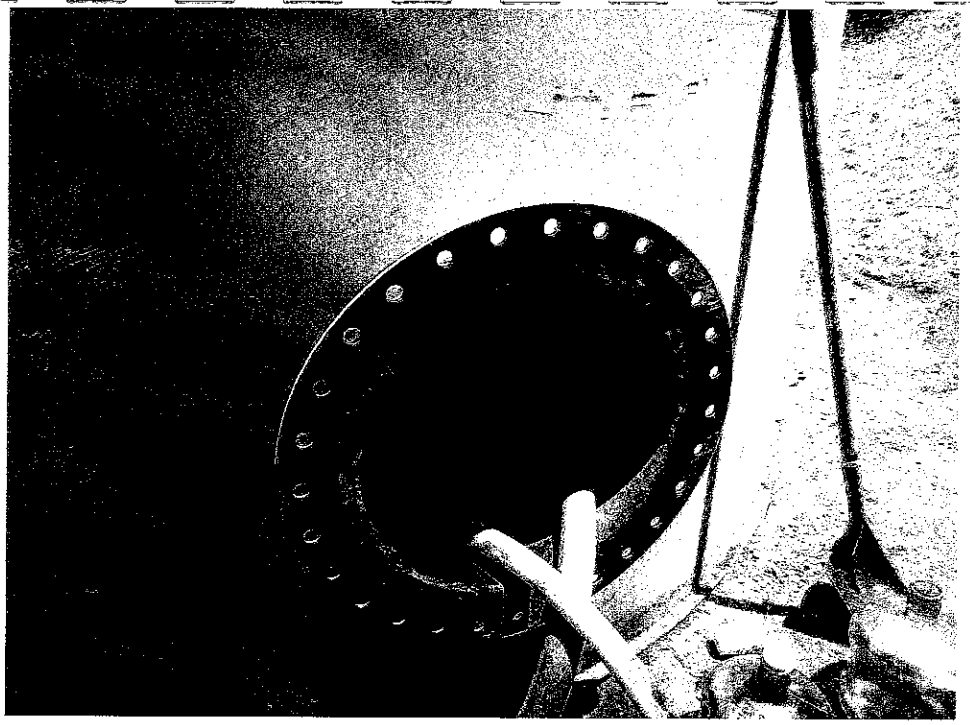


Backwash Tank 1 Exterior Photo 40



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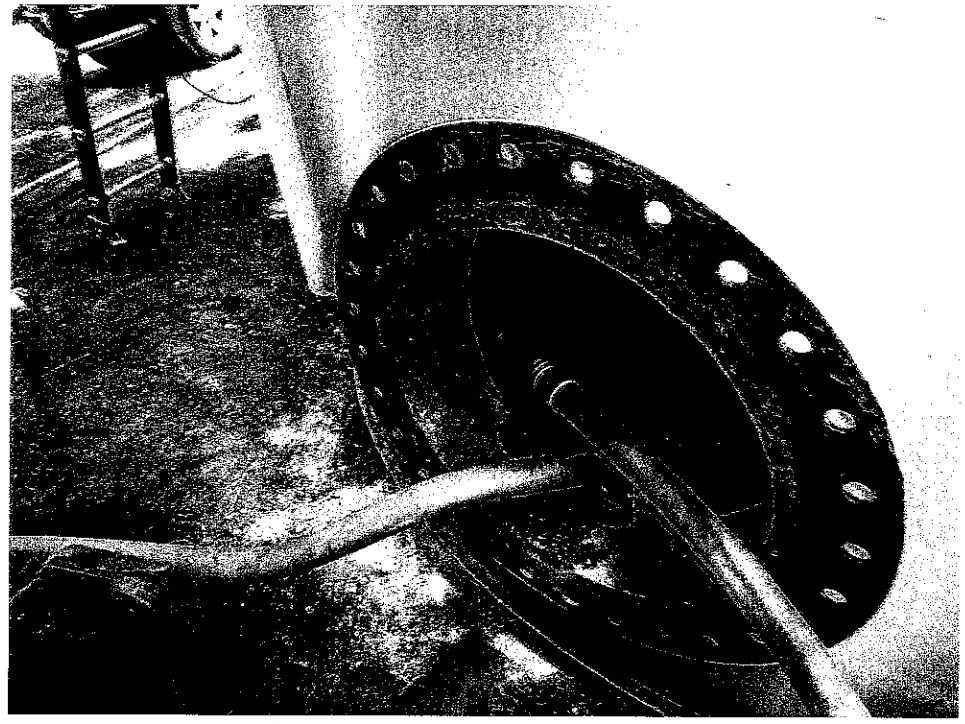

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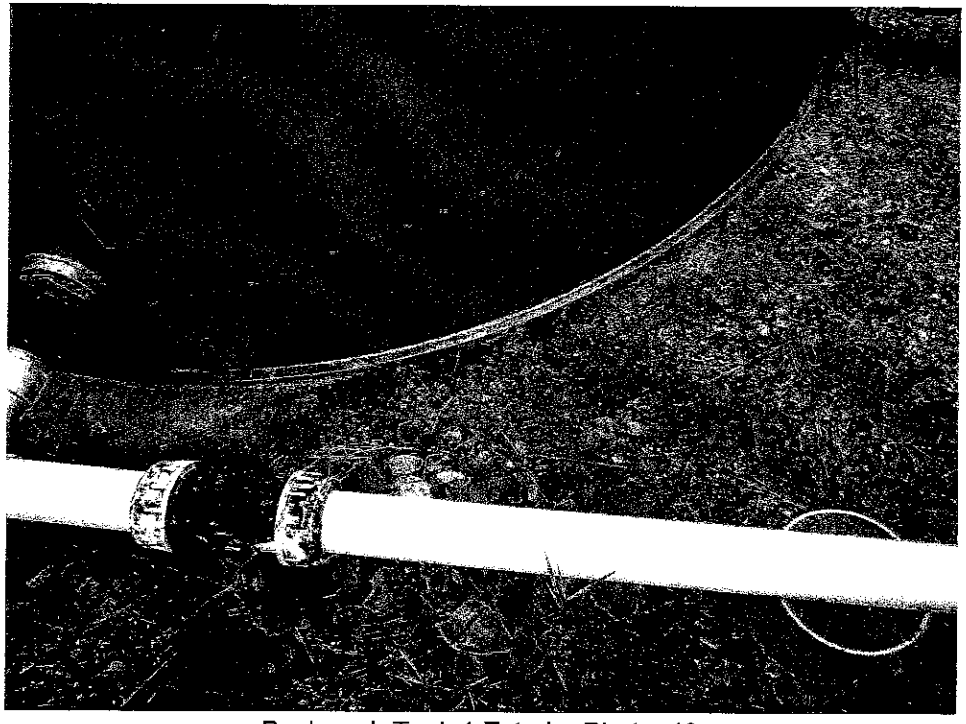
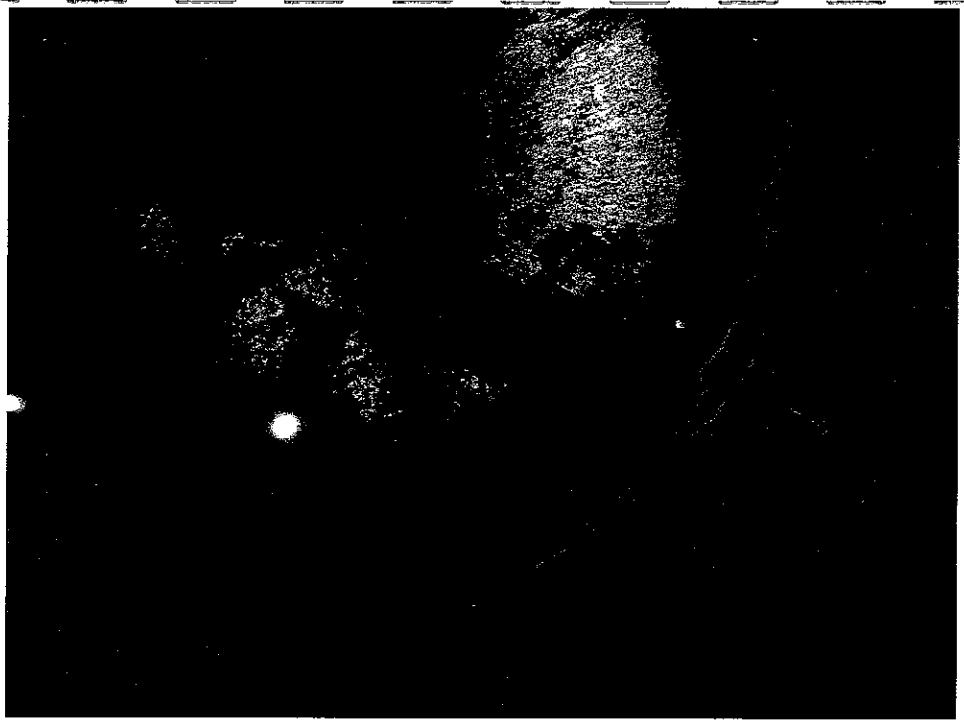
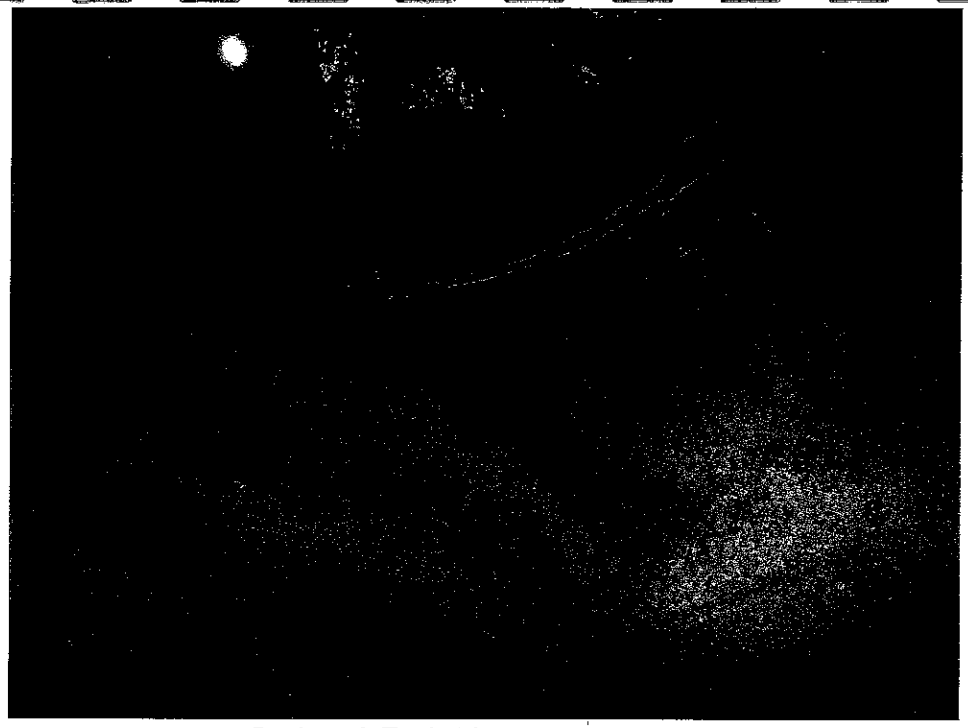


Backwash Tank 1 Exterior Photo 43

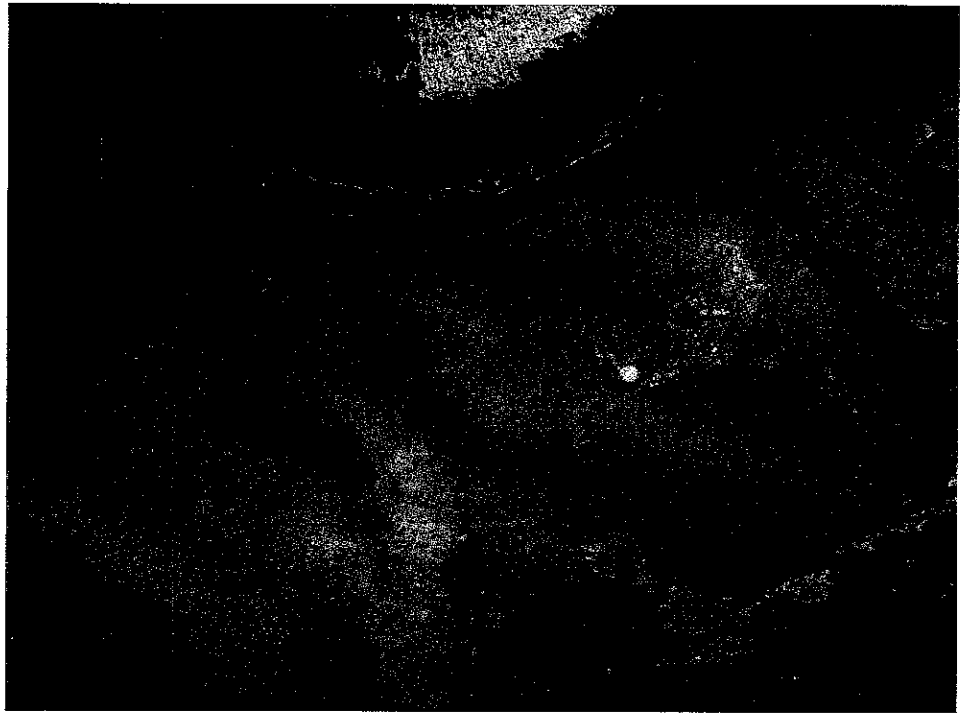
Backwash Tank 1 Exterior Photo 44



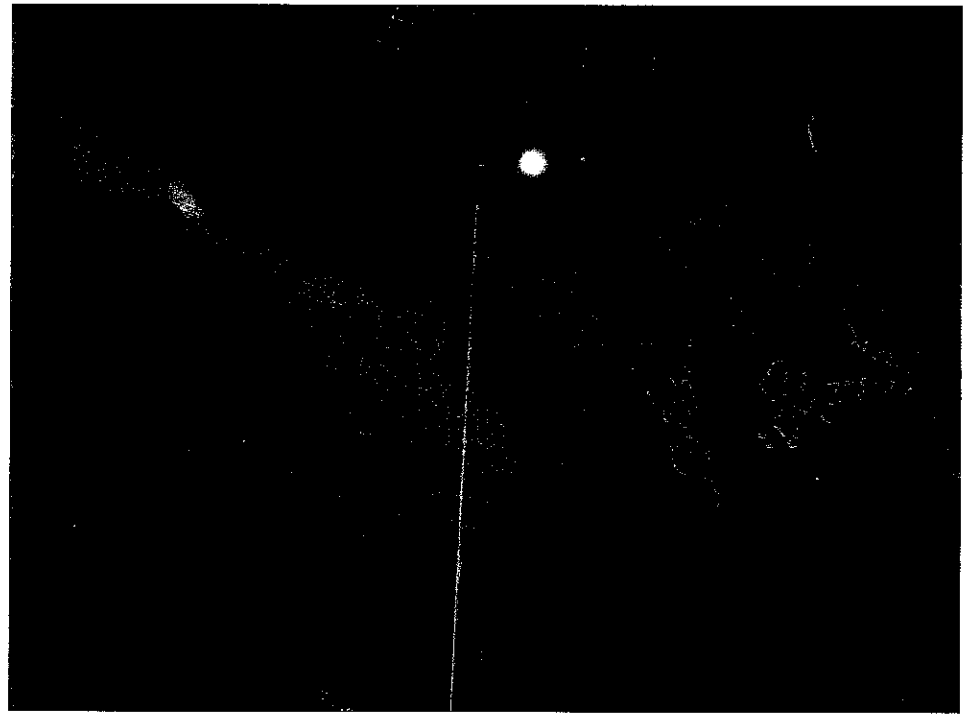
Backwash Tank 1 Interior Photo (1)



Backwash Tank 1 Interior Photo (2)



Backwash Tank 1 Interior Photo (3)



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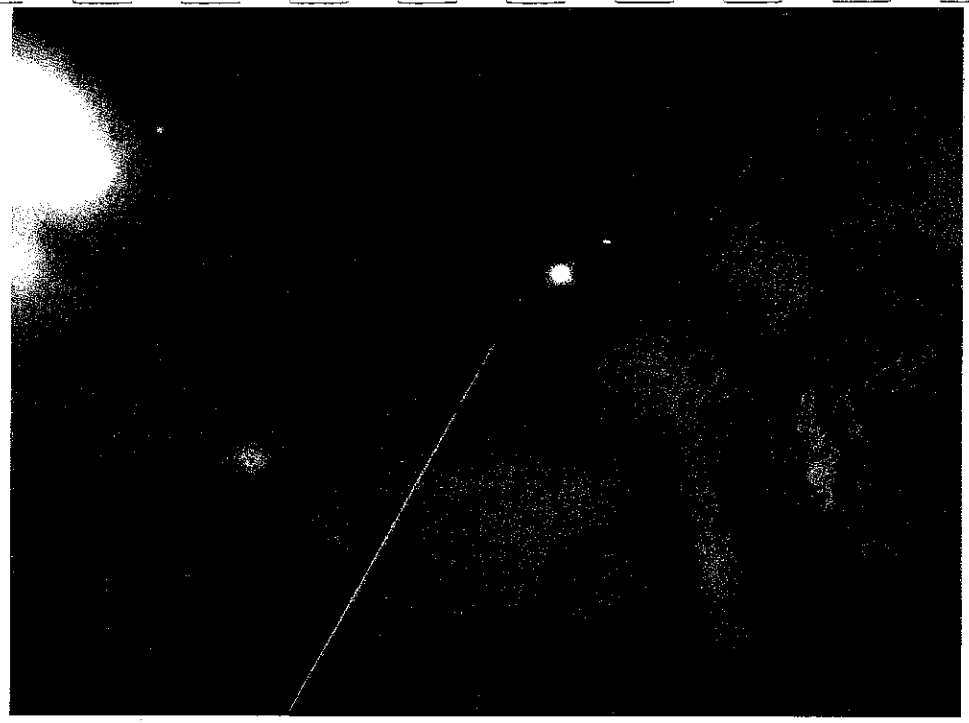
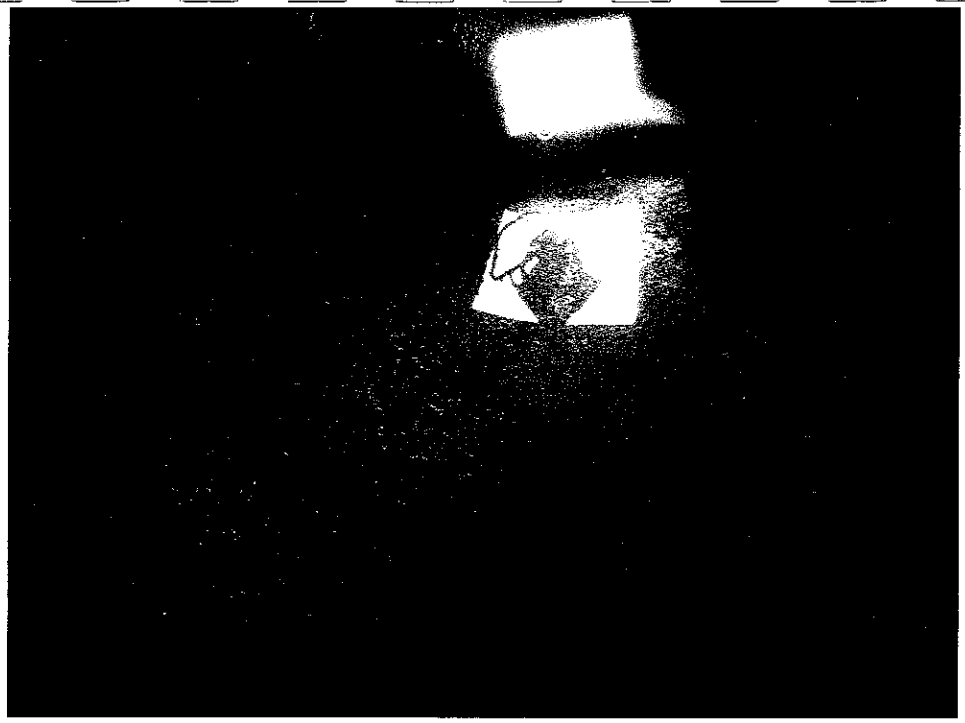
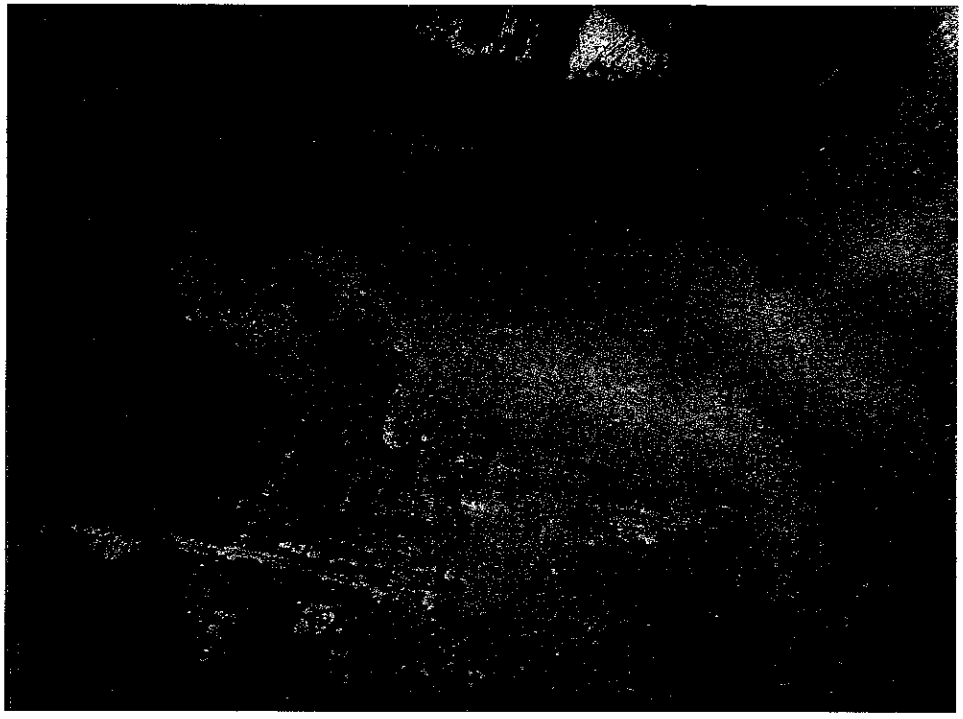


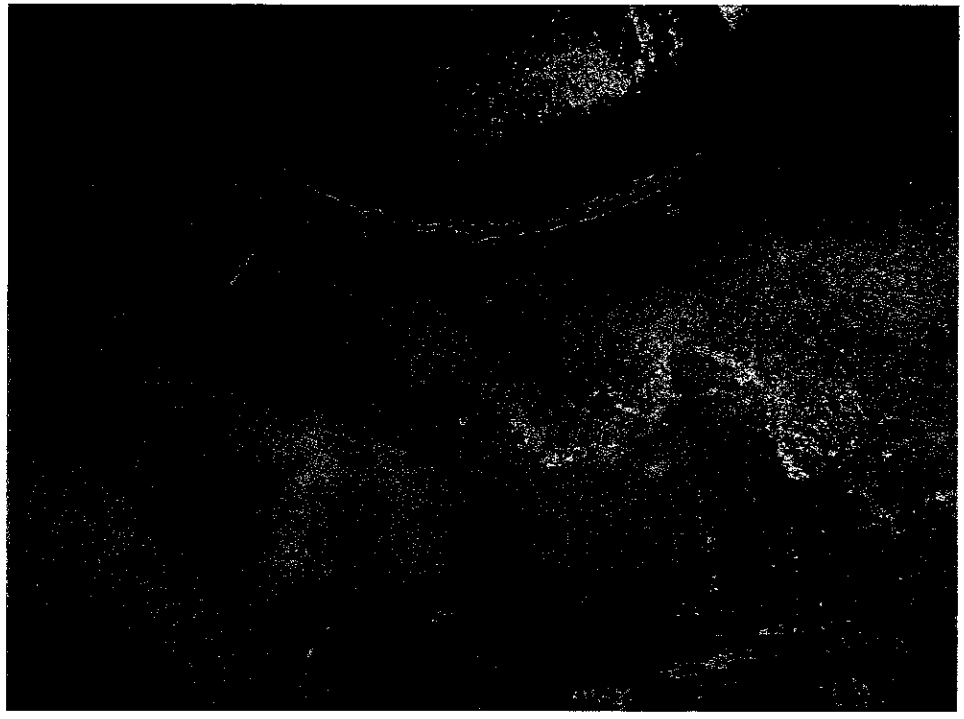
Backwash Tank 1 Interior Photo (5)



Backwash Tank 1 Interior Photo (6)



Backwash Tank 1 Interior Photo (7)



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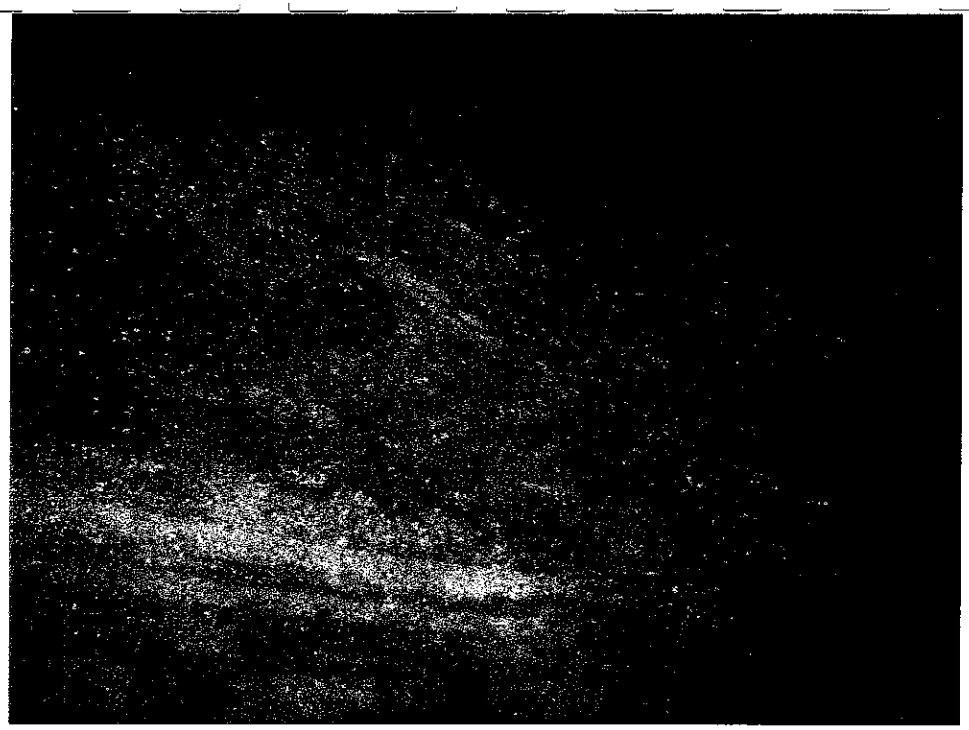
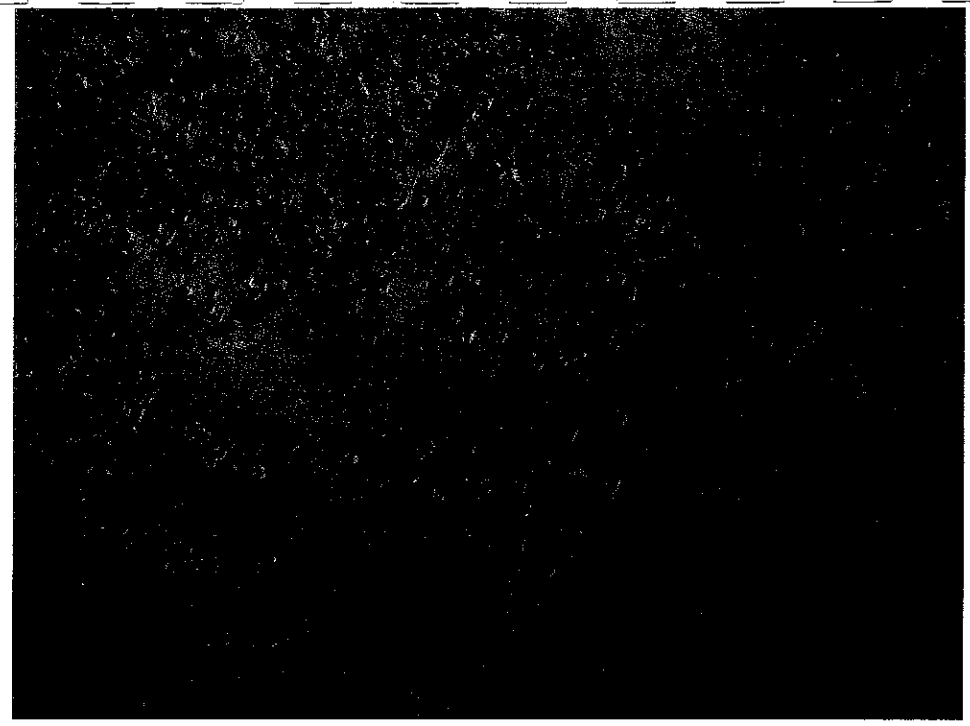
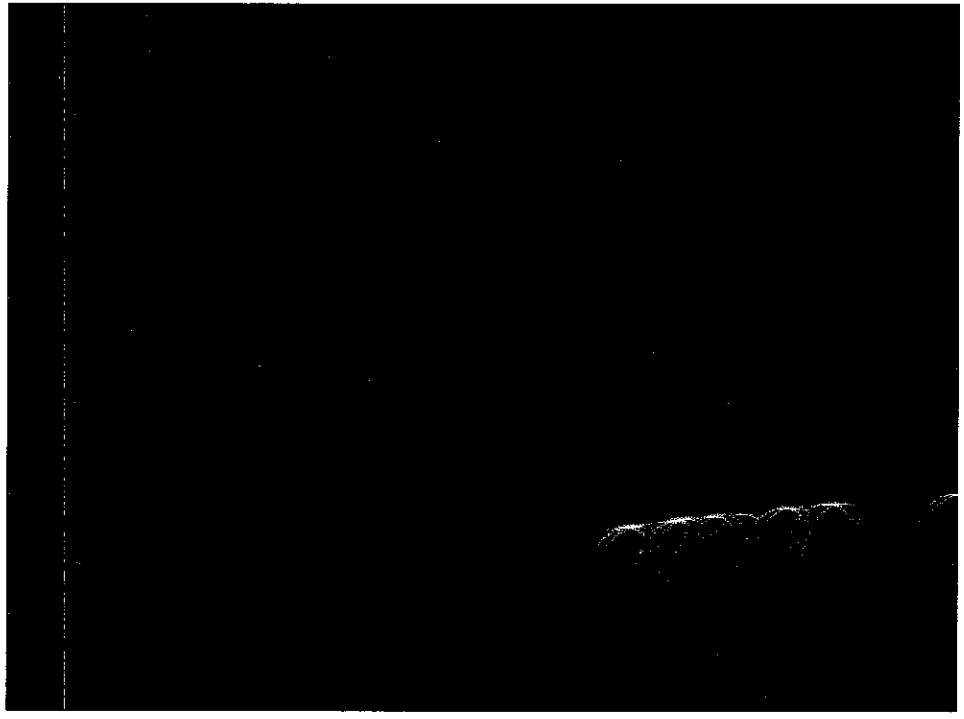


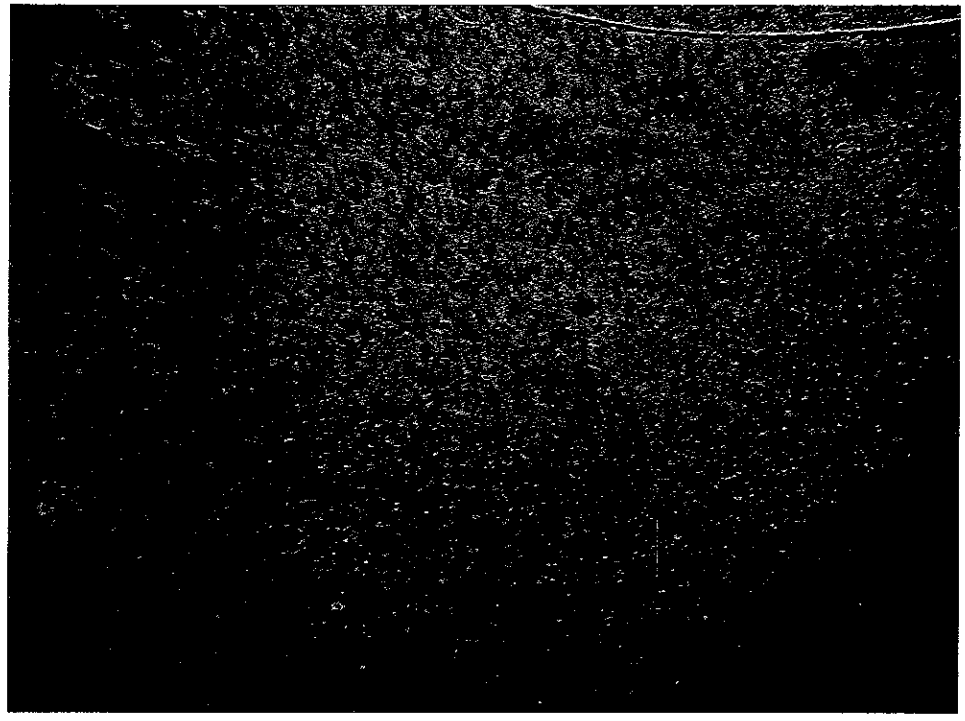
Backwash Tank 1 Interior Photo (9)



Backwash Tank 1 Interior Photo 10

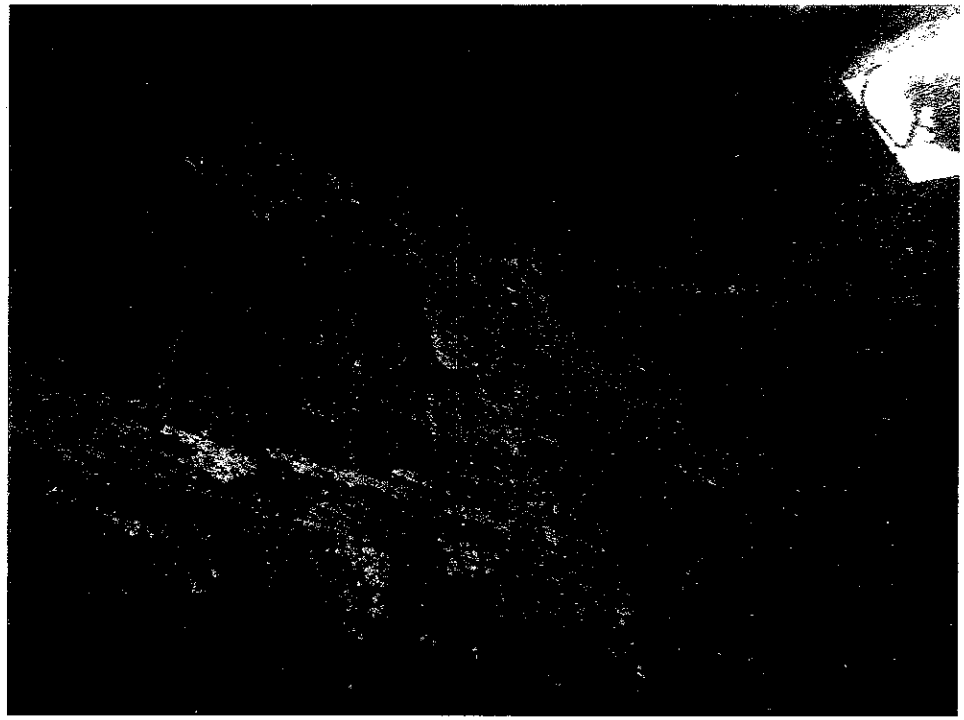


Backwash Tank 1 Interior Photo 11

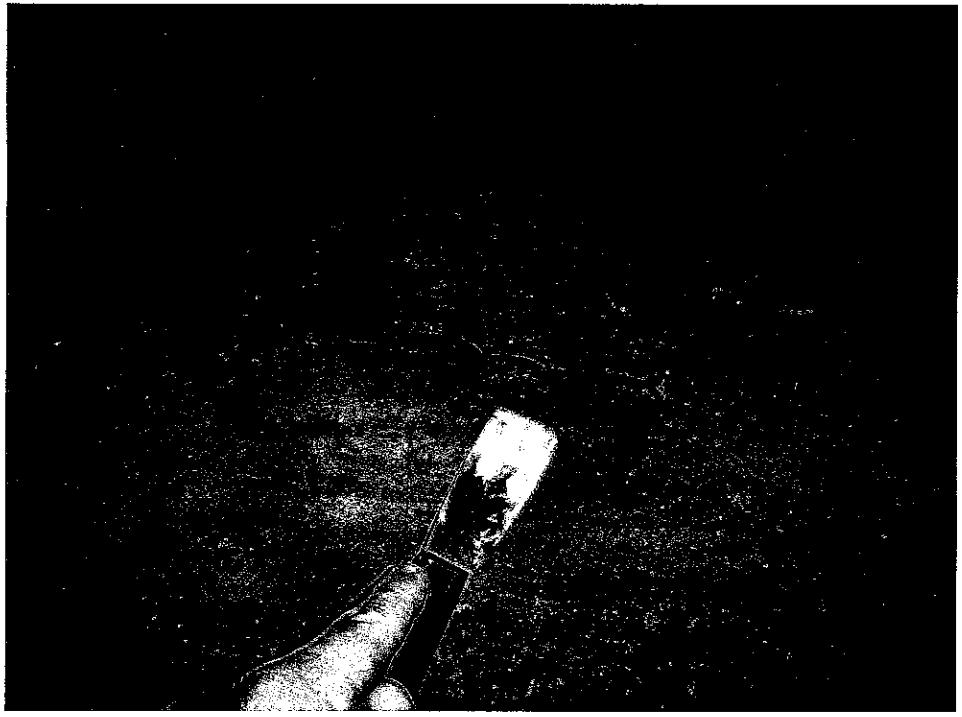


Backwash Tank 1 Interior Photo 12

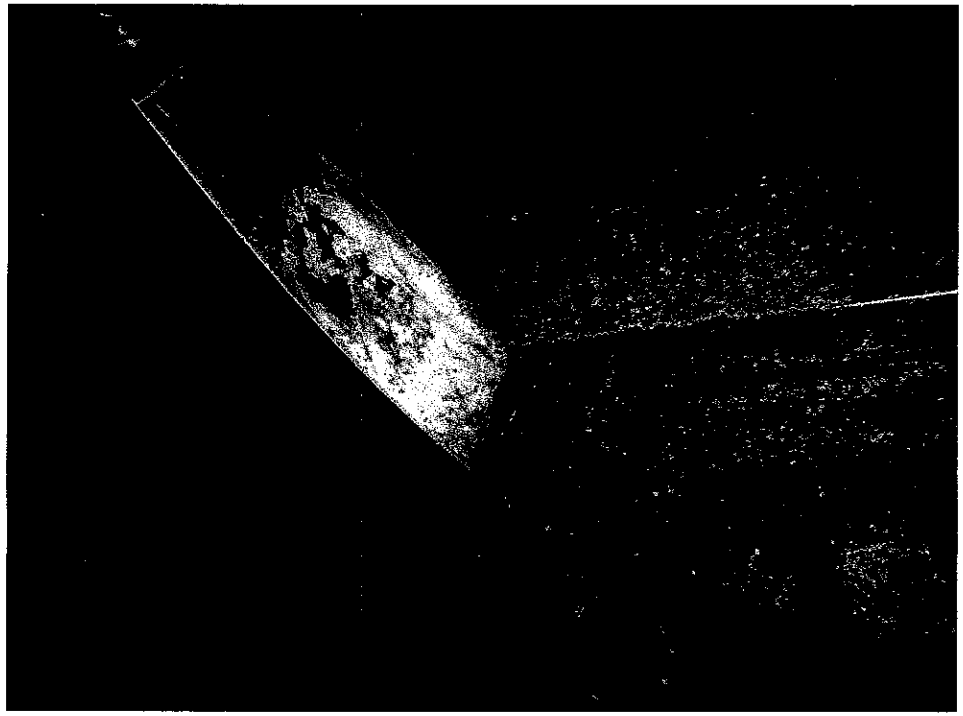
Backwash Tank 1 Interior Photo 13



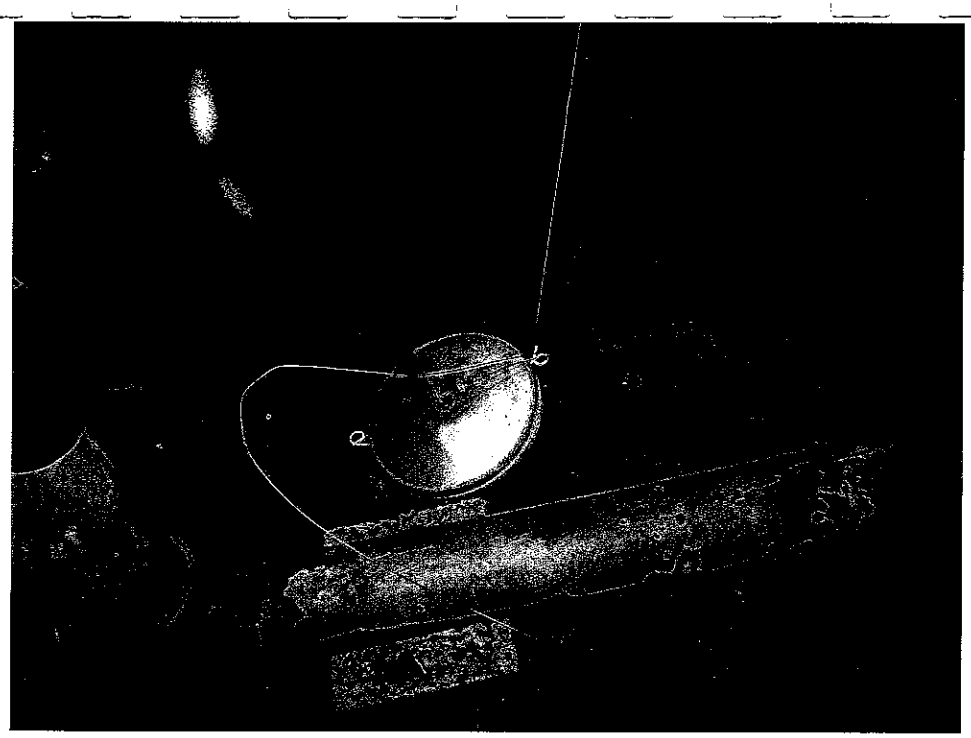
Backwash Tank 1 Interior Photo 14



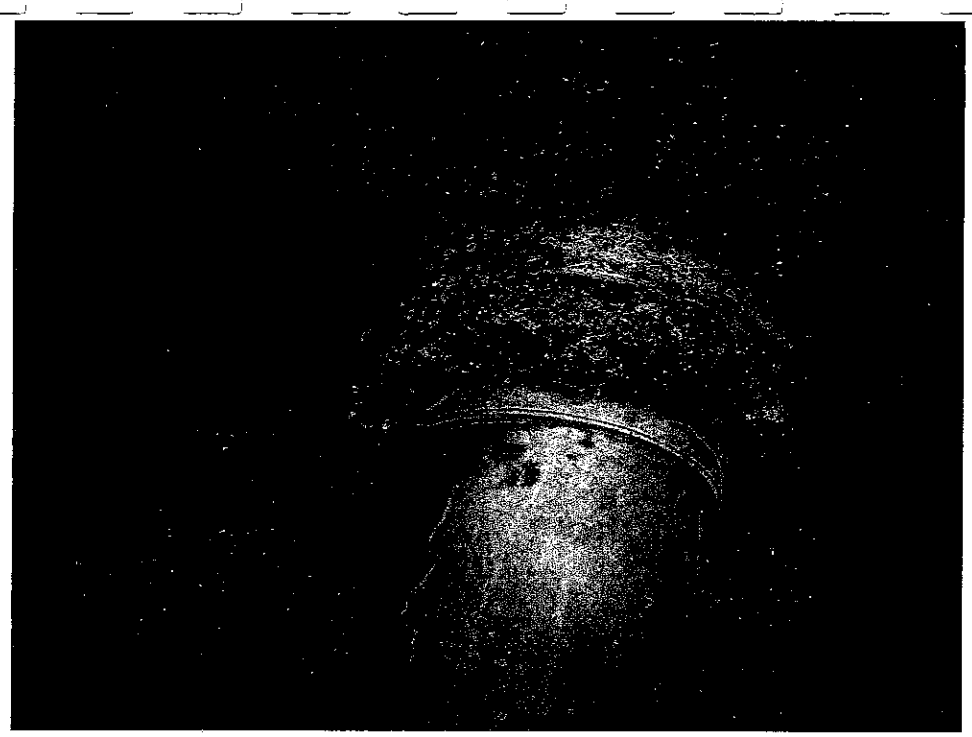
Backwash Tank 1 Interior Photo 15



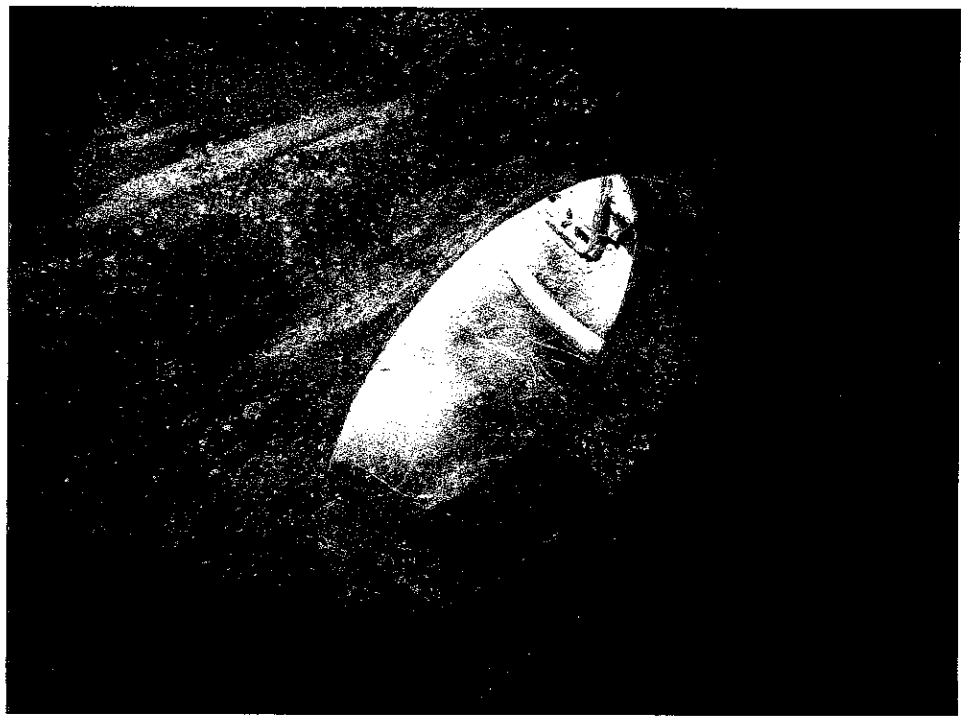
Backwash Tank 1 Interior Photo 16



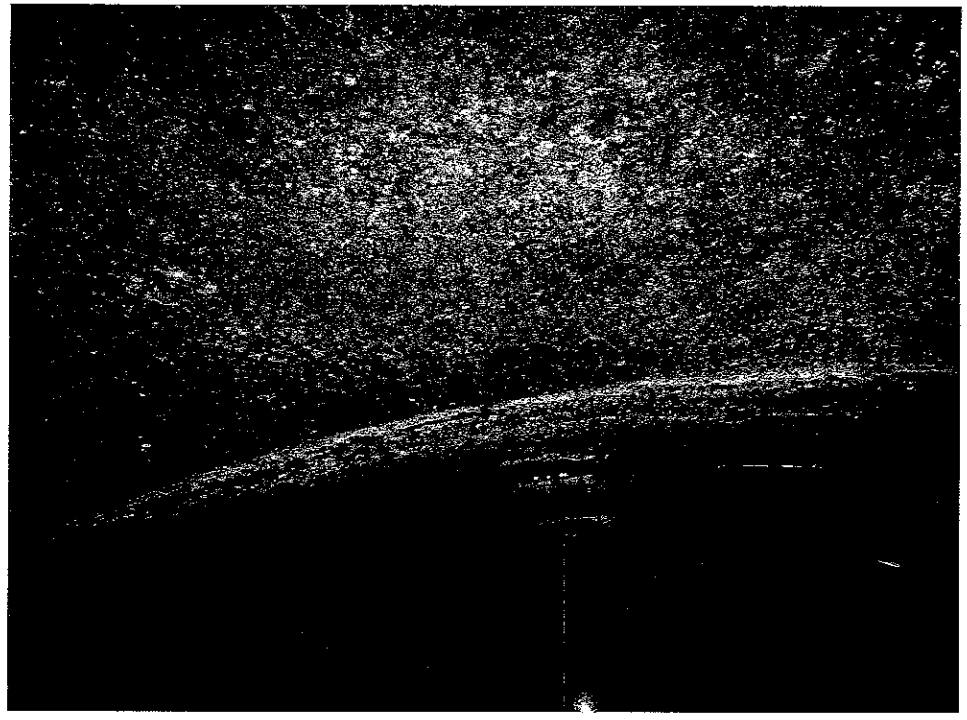
Backwash Tank 1 Interior Photo 17



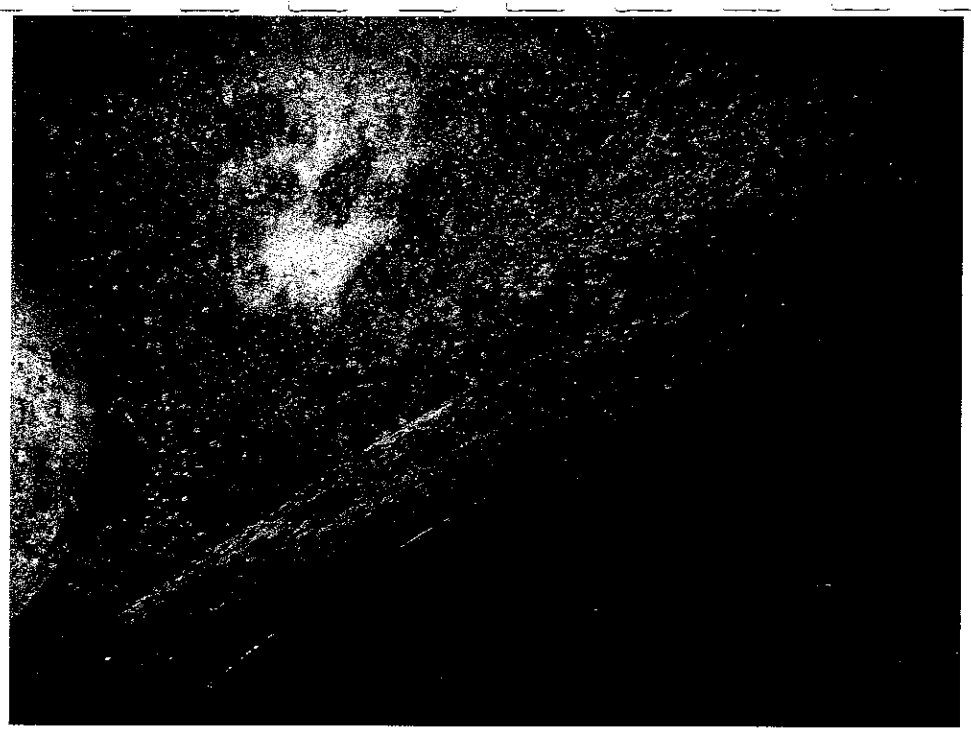
Backwash Tank 1 Interior Photo 18



Backwash Tank 1 Interior Photo 19

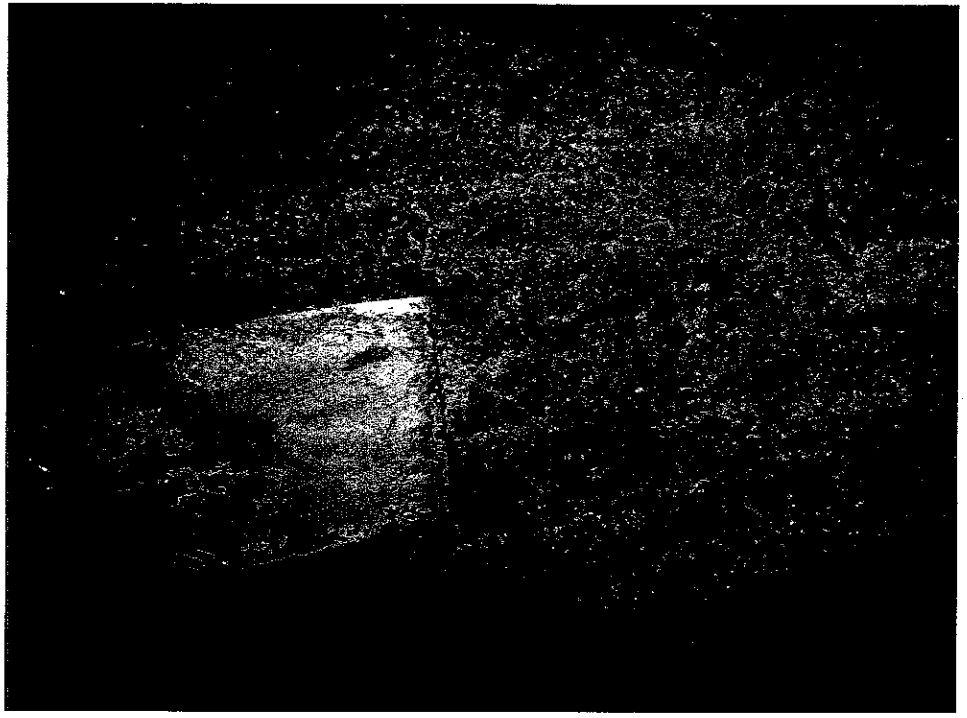


Backwash Tank 1 Interior Photo 20

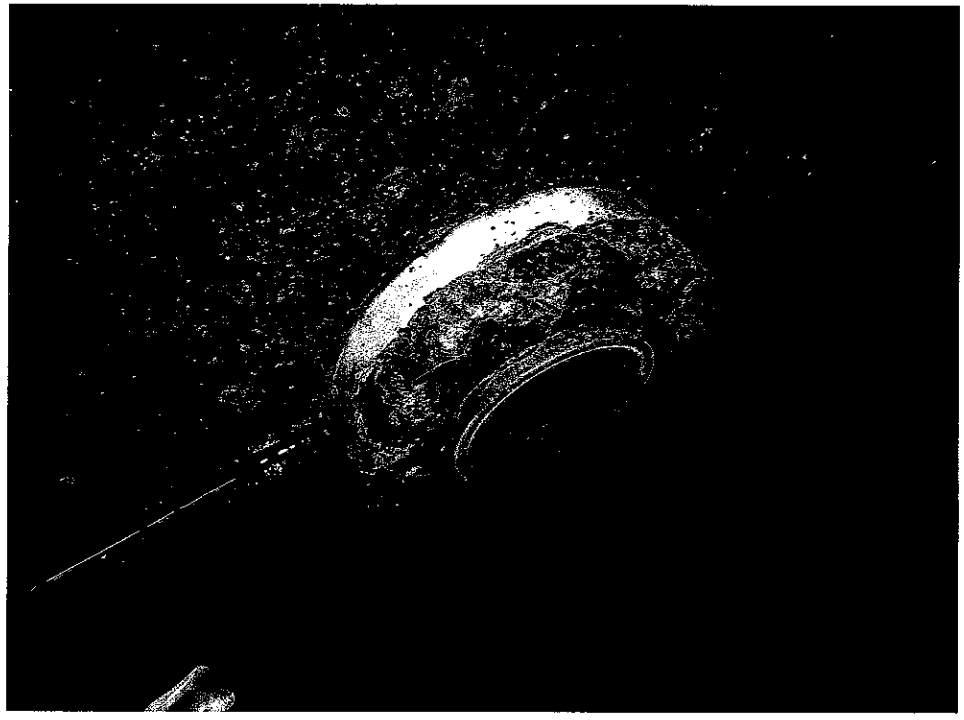


Backwash Tank 1 Interior Photo 21

Backwash Tank 1 Interior Photo 22

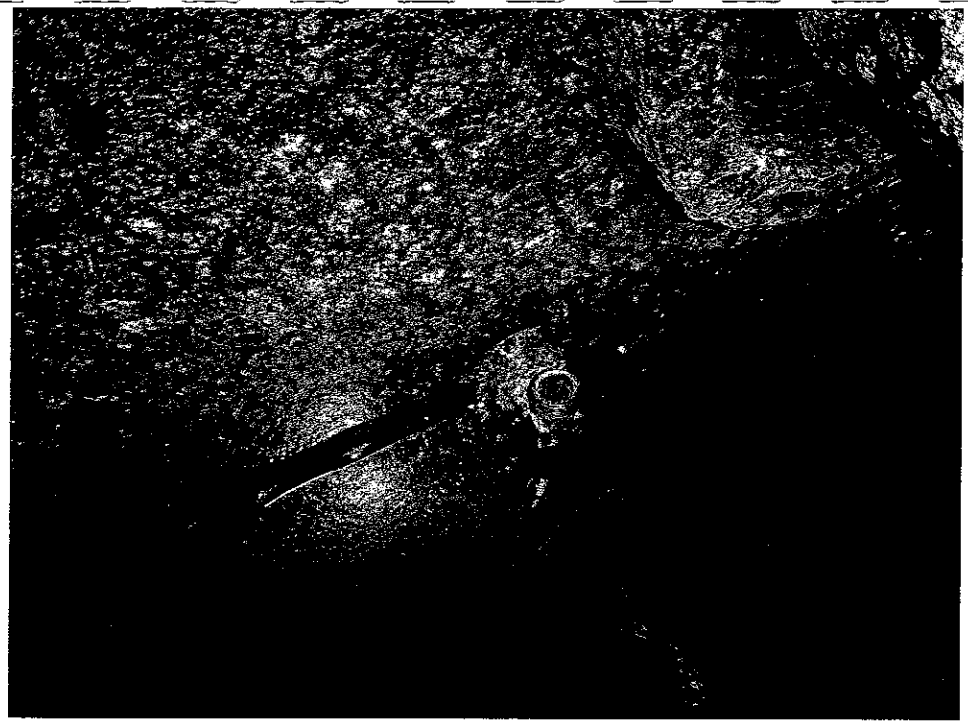


Backwash Tank 1 Interior Photo 23

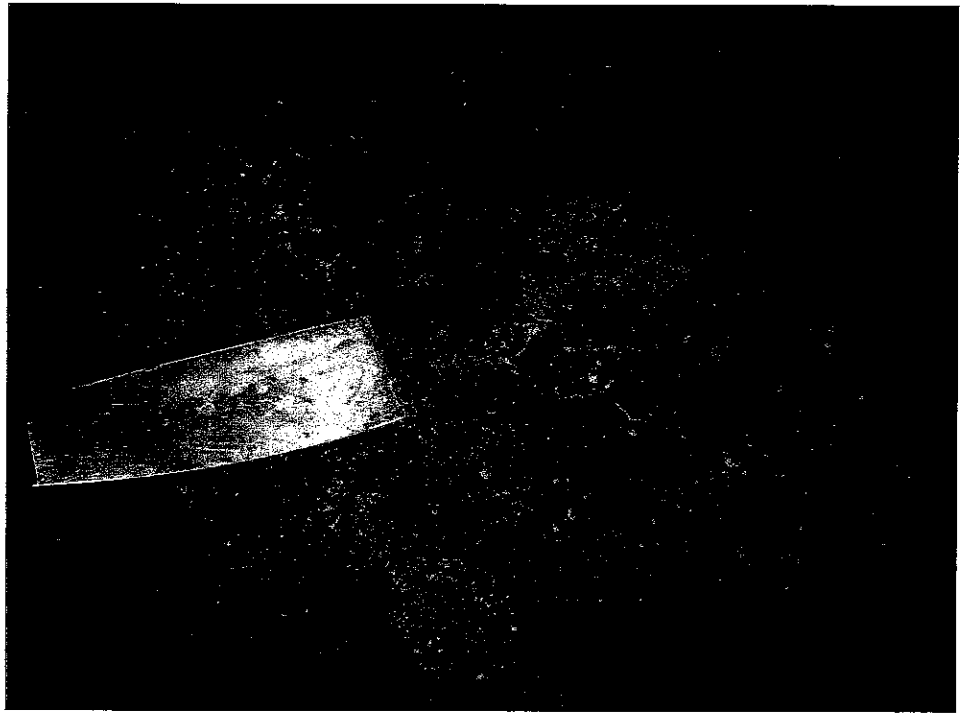


Backwash Tank 1 Interior Photo 24

Backwash Tank 1 Interior Photo 25



Backwash Tank 1 Interior Photo 26



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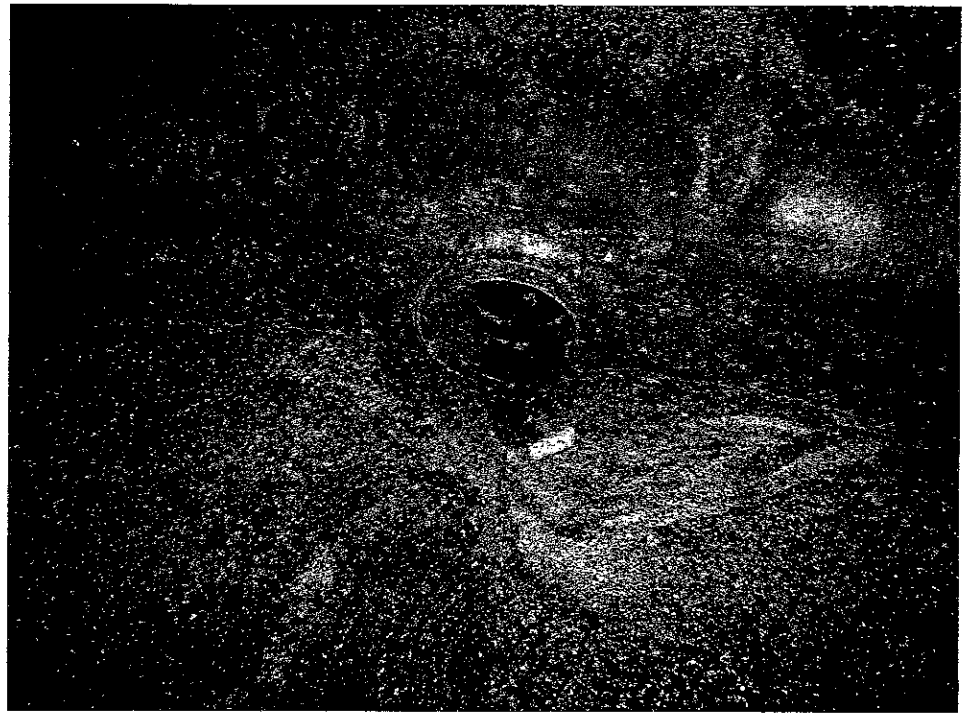
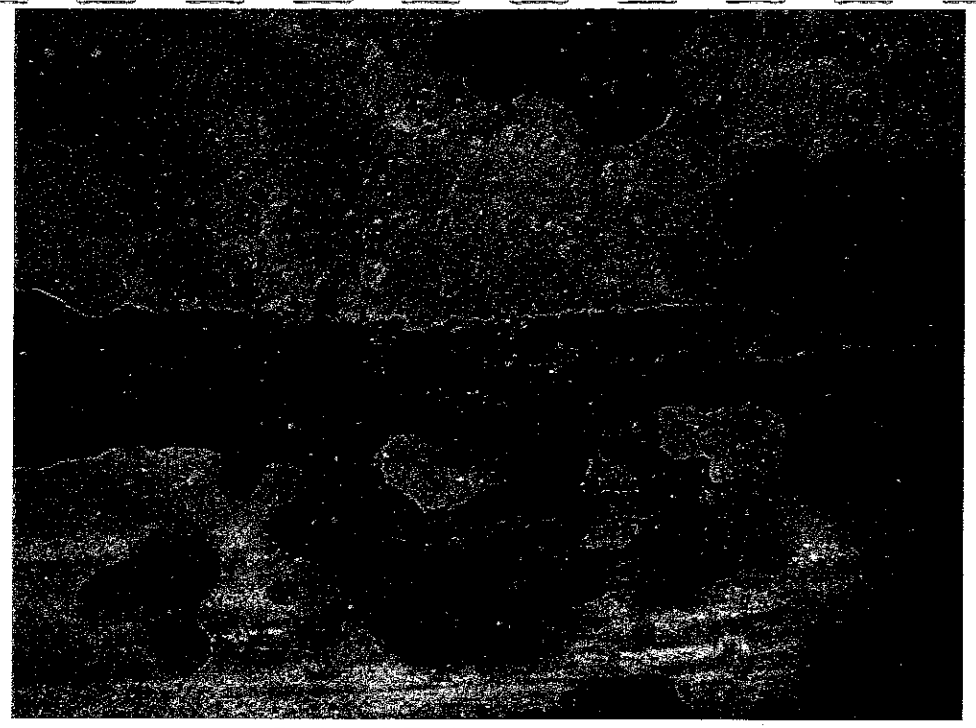


Backwash Tank 1 Interior Photo 28

Backwash Tank 1 Interior Photo 29



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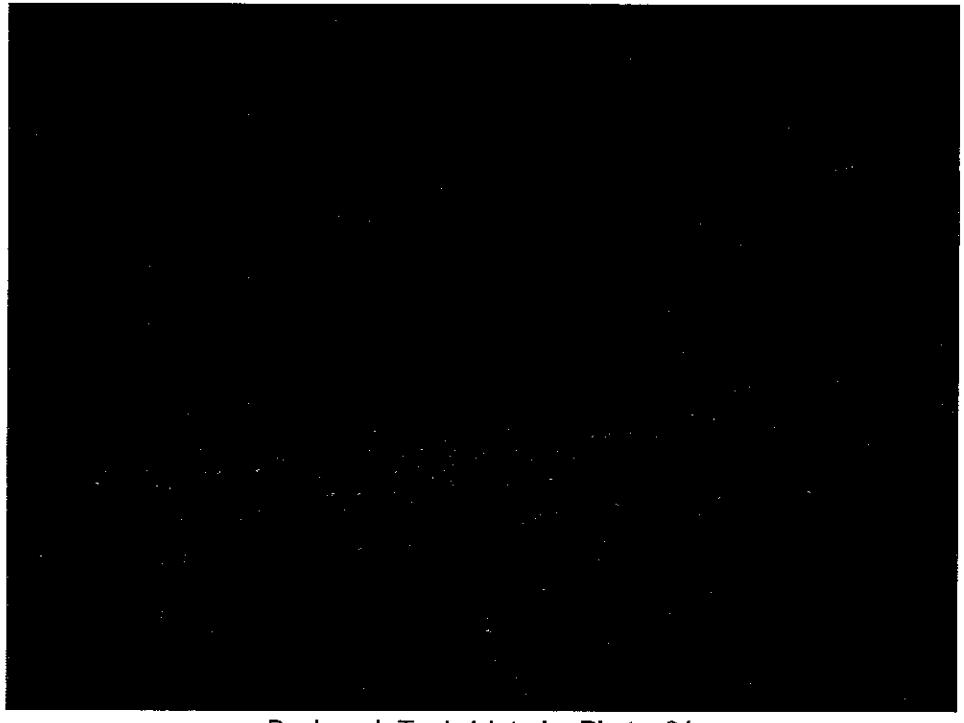
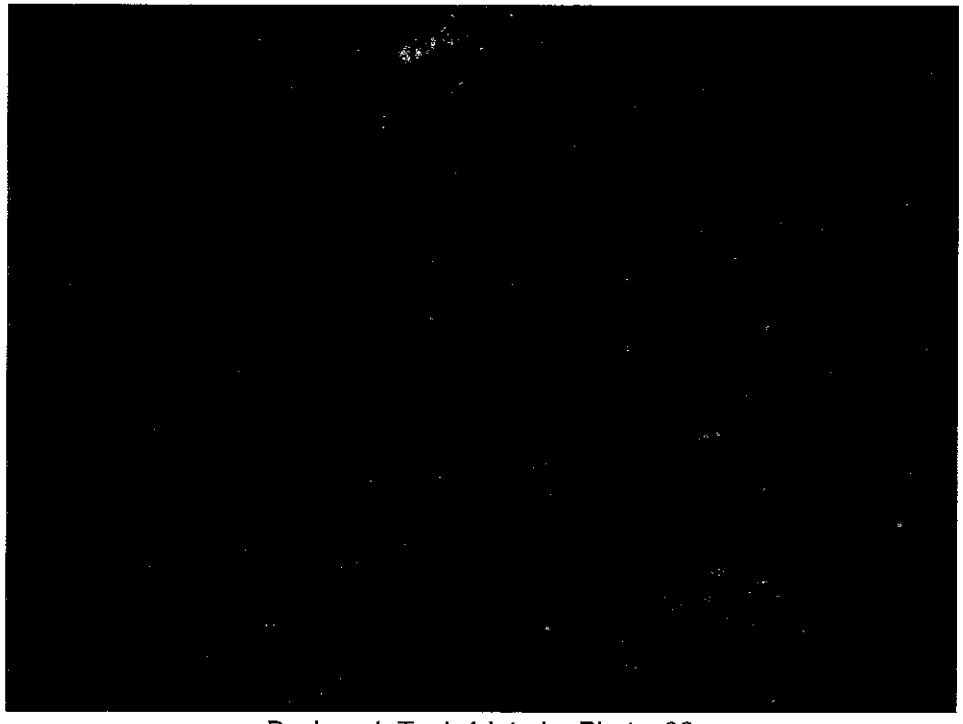
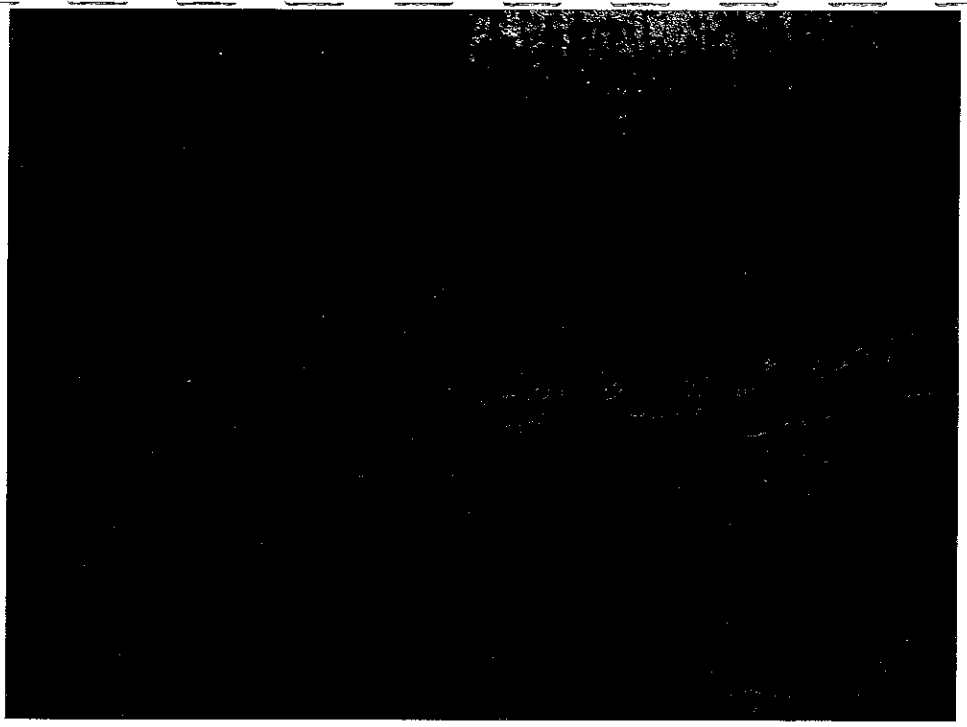


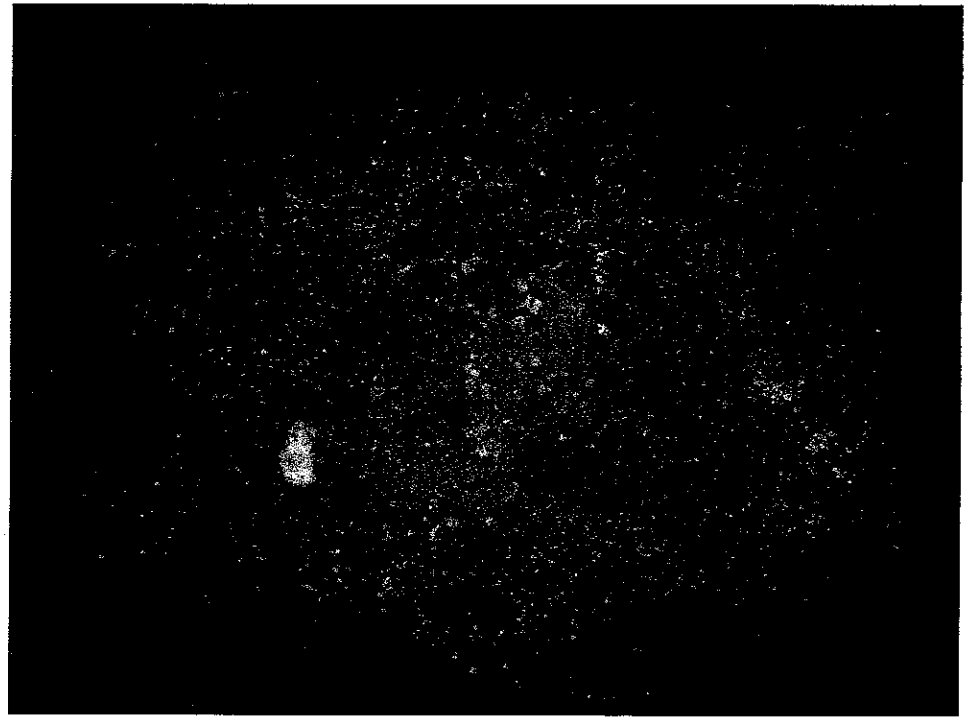
Backwash Tank 1 Interior Photo 31



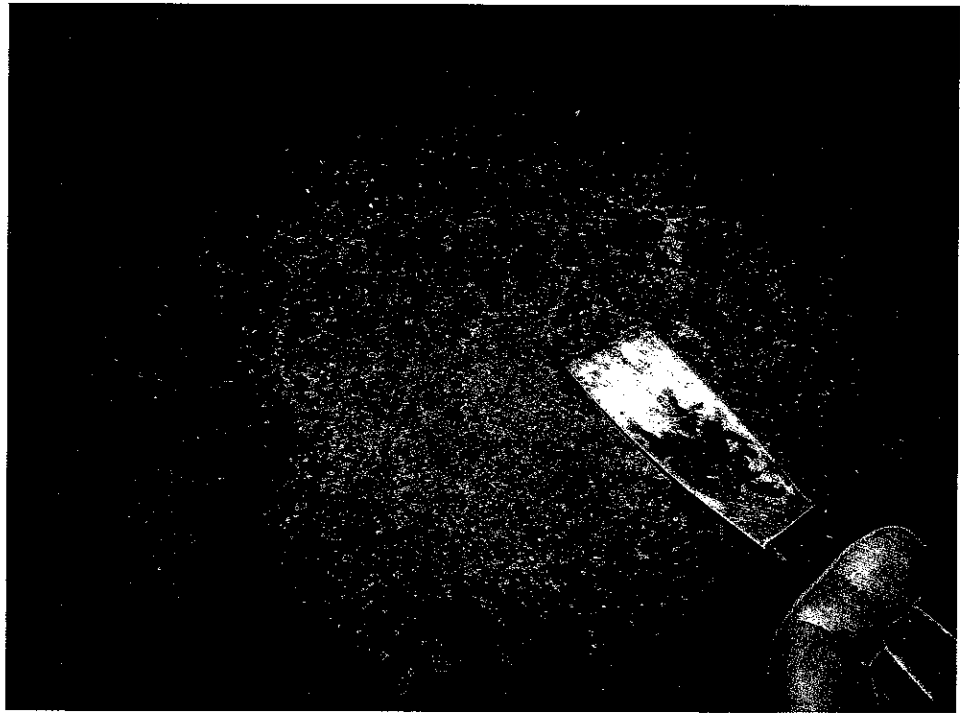
Backwash Tank 1 Interior Photo 32



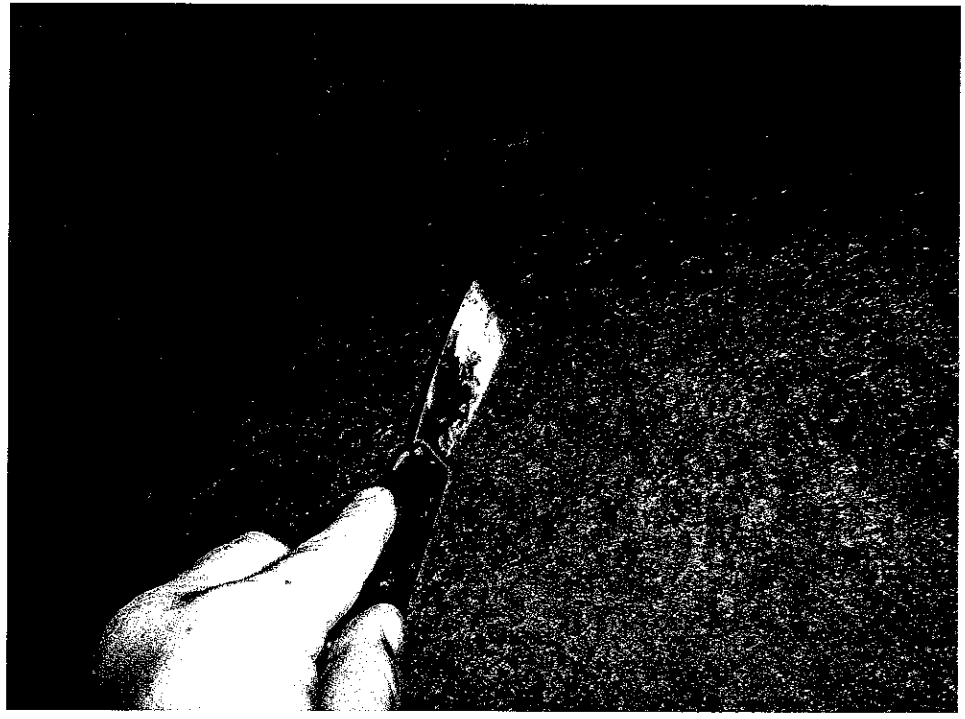
Backwash Tank 1 Interior Photo 33



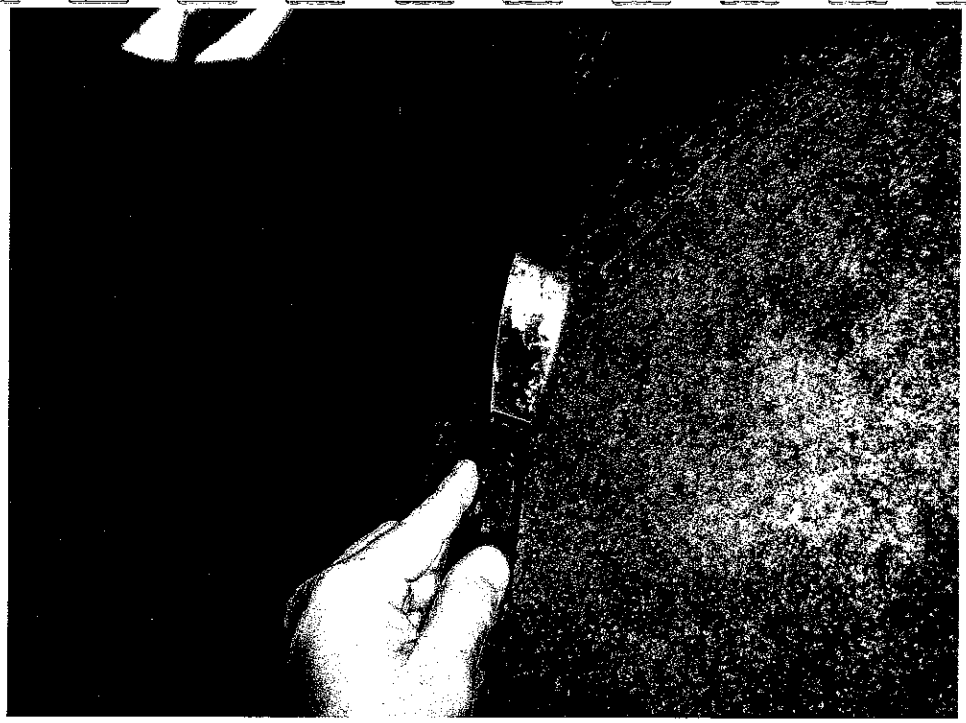
Backwash Tank 1 Interior Photo 34



Backwash Tank 1 Interior Photo 35

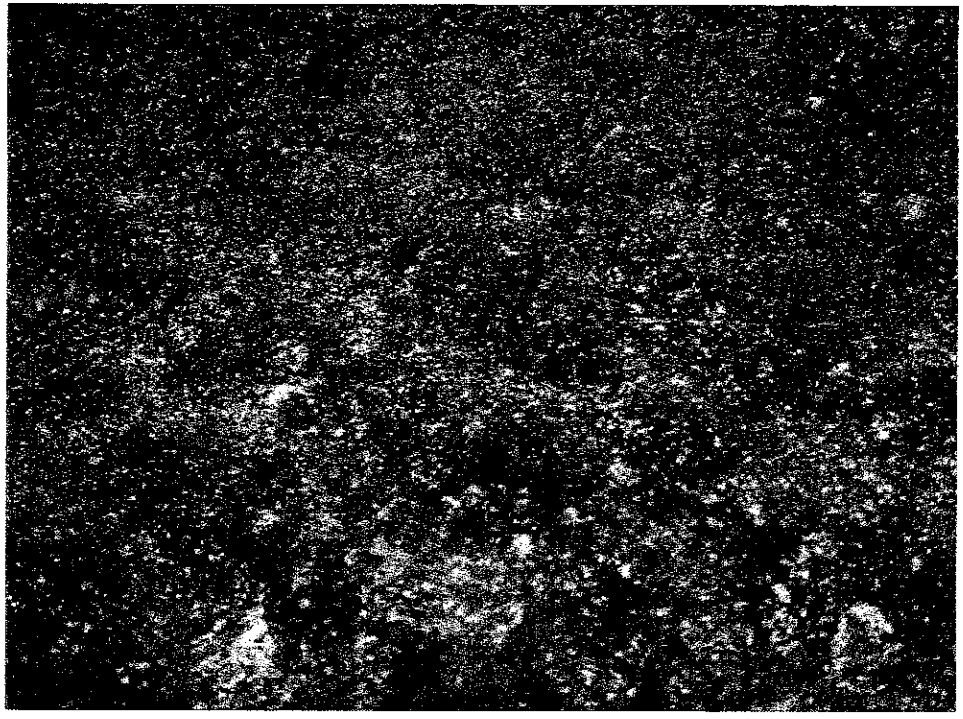


Backwash Tank 1 Interior Photo 36

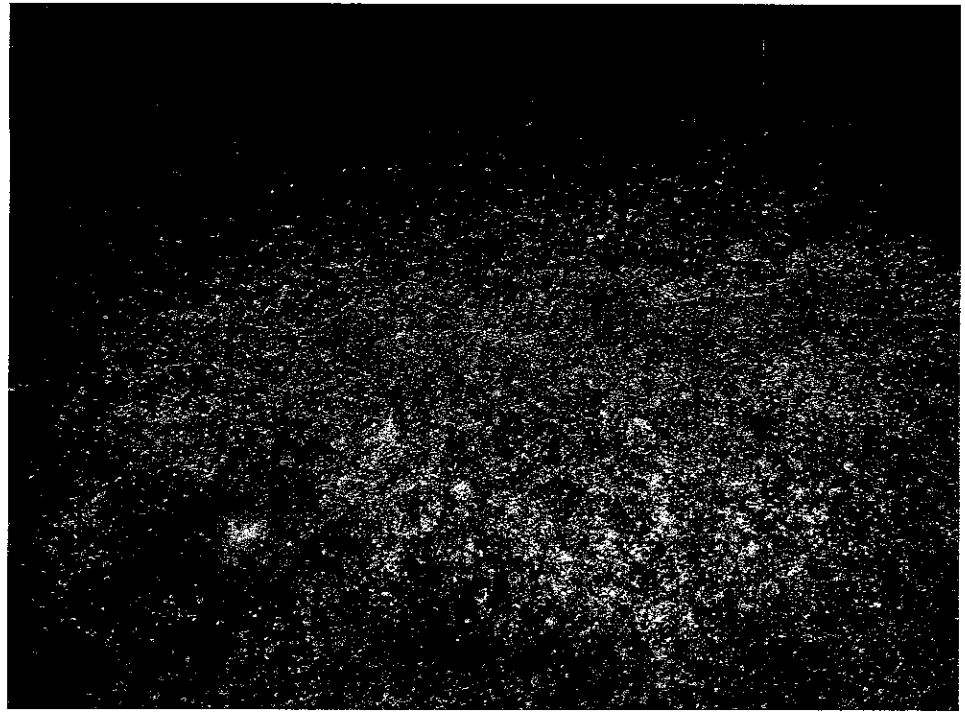


Backwash Tank 1 Interior Photo 37

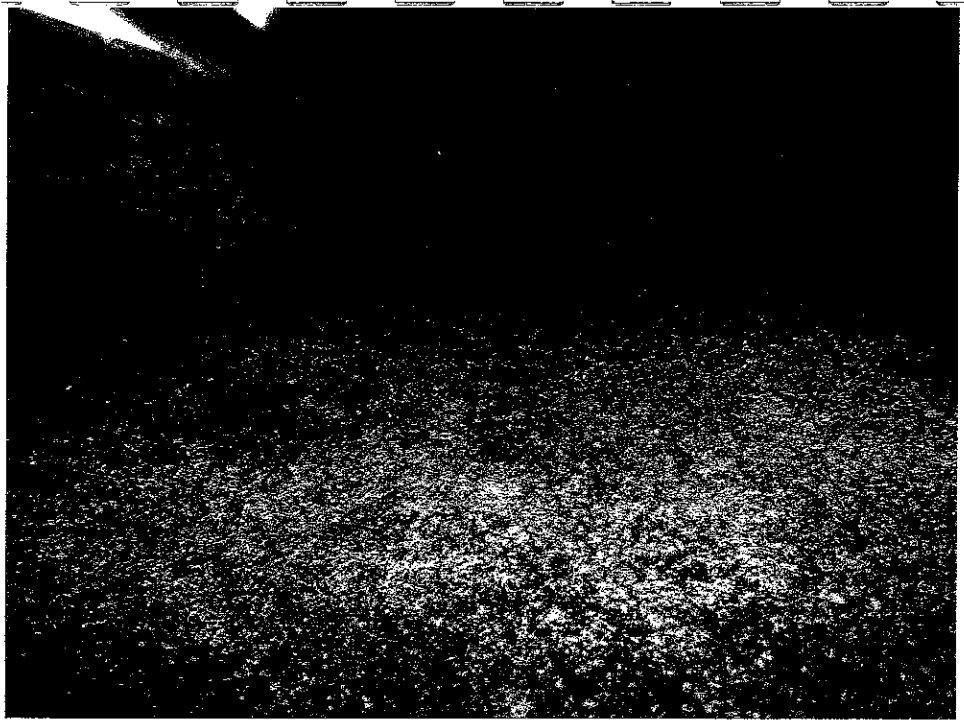
Backwash Tank 1 Interior Photo 38



Backwash Tank 1 Interior Photo 39

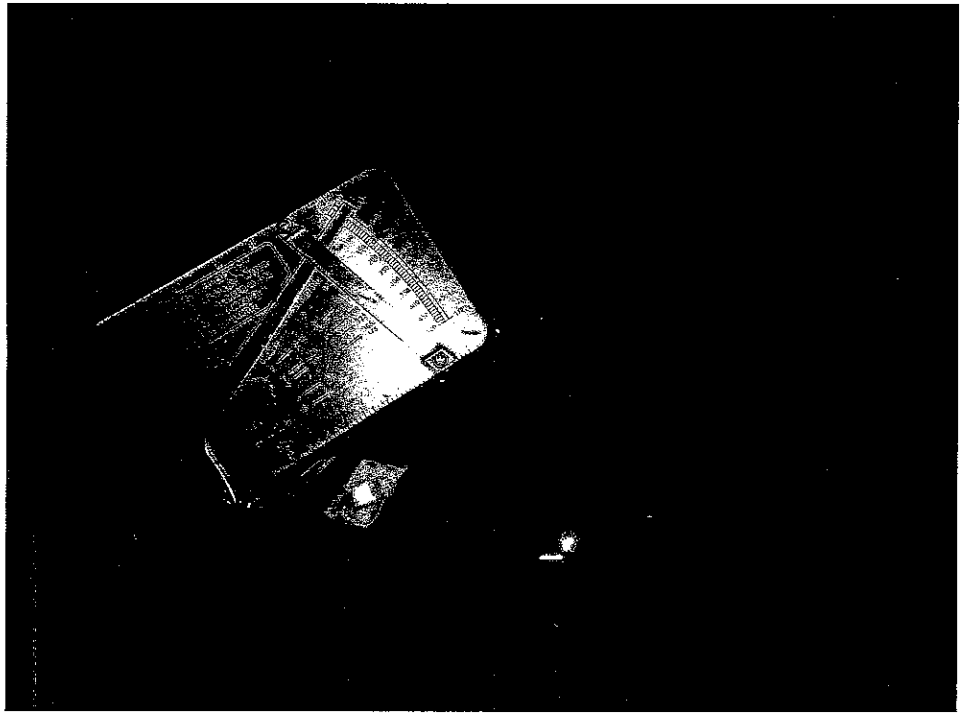


Backwash Tank 1 Interior Photo 40



Backwash Tank 1 Interior Photo 41

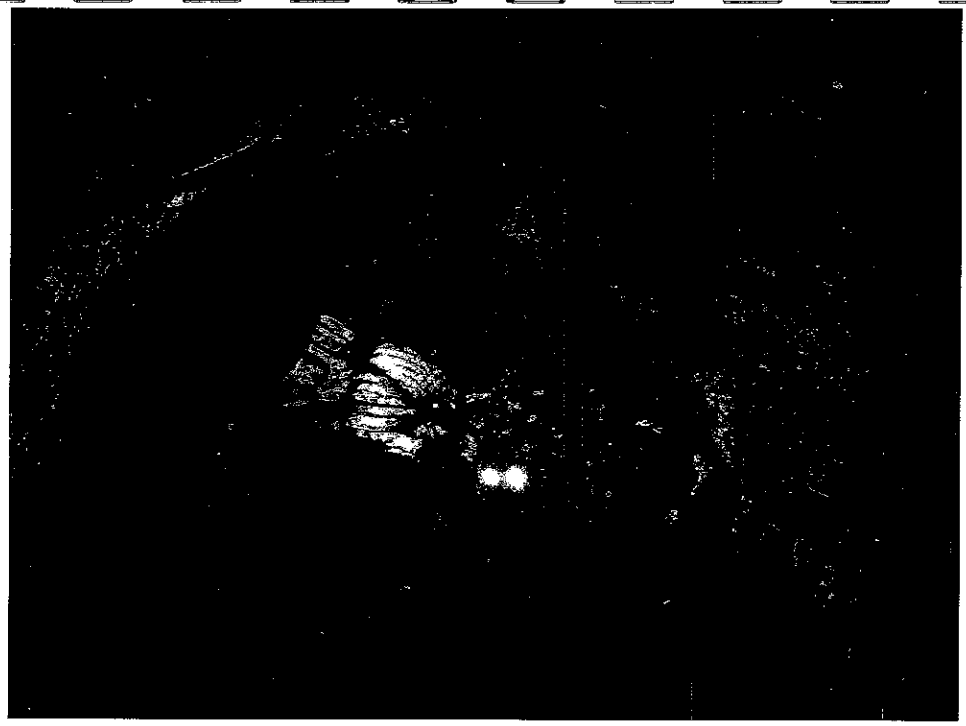
Backwash Tank 1 Interior Photo 42



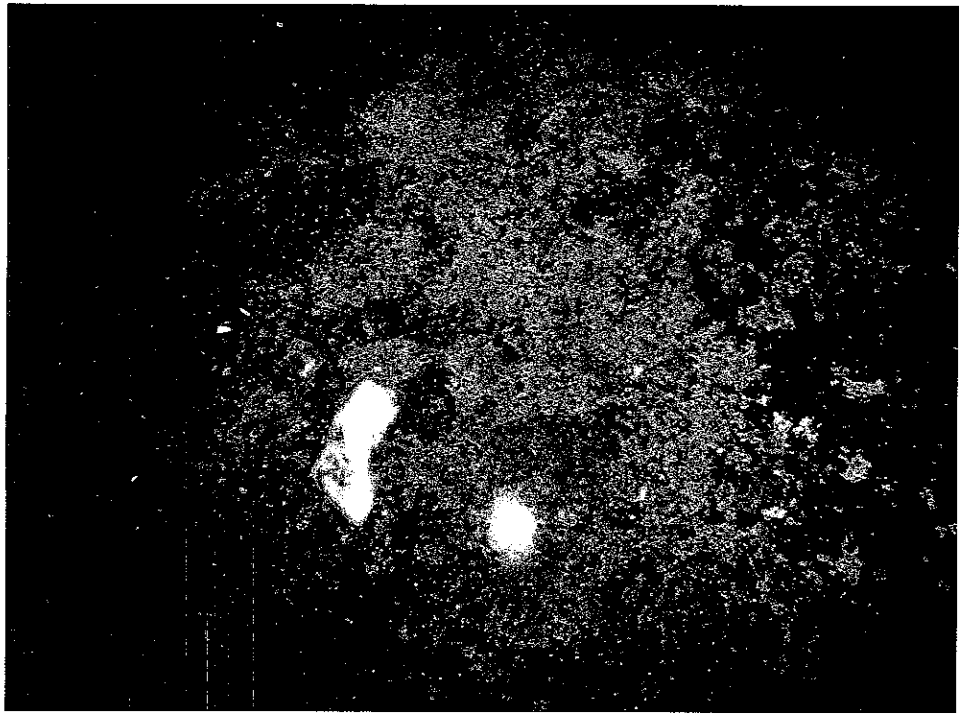
Backwash Tank 1 Interior Photo 43

Backwash Tank 1 Interior Photo 44

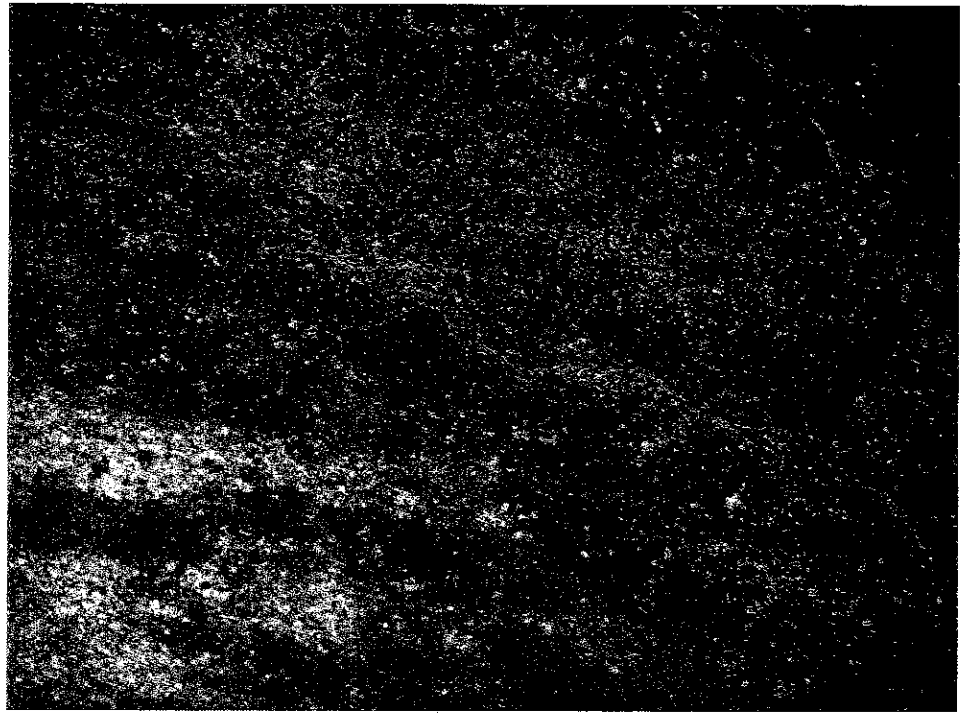
Backwash Tank 1 Interior Photo 45



Backwash Tank 1 Interior Photo 46



Backwash Tank 1 Interior Photo 47



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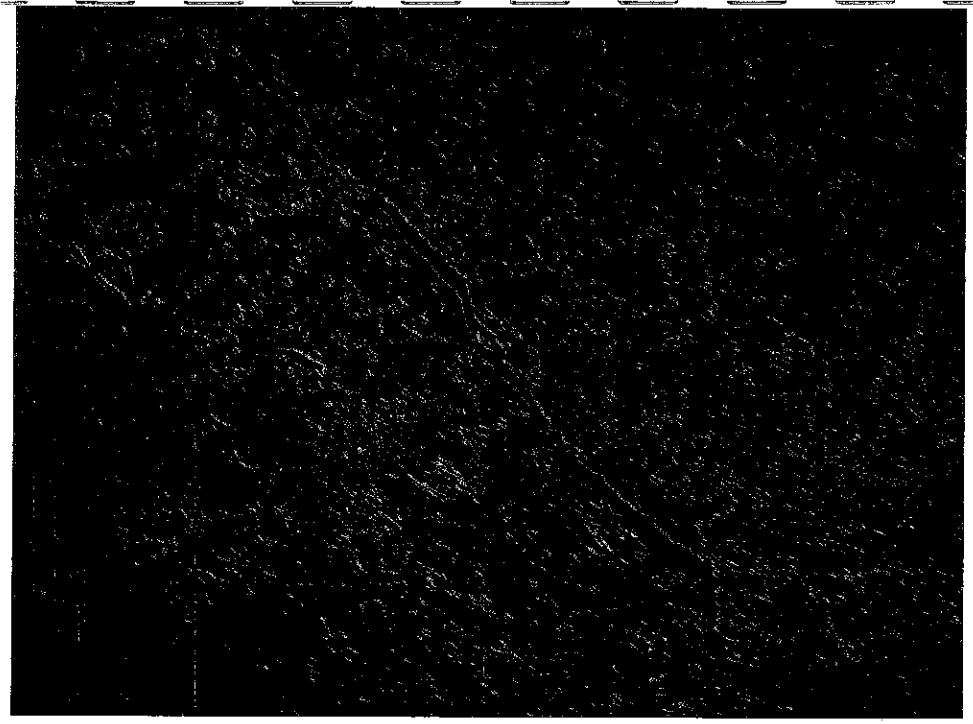

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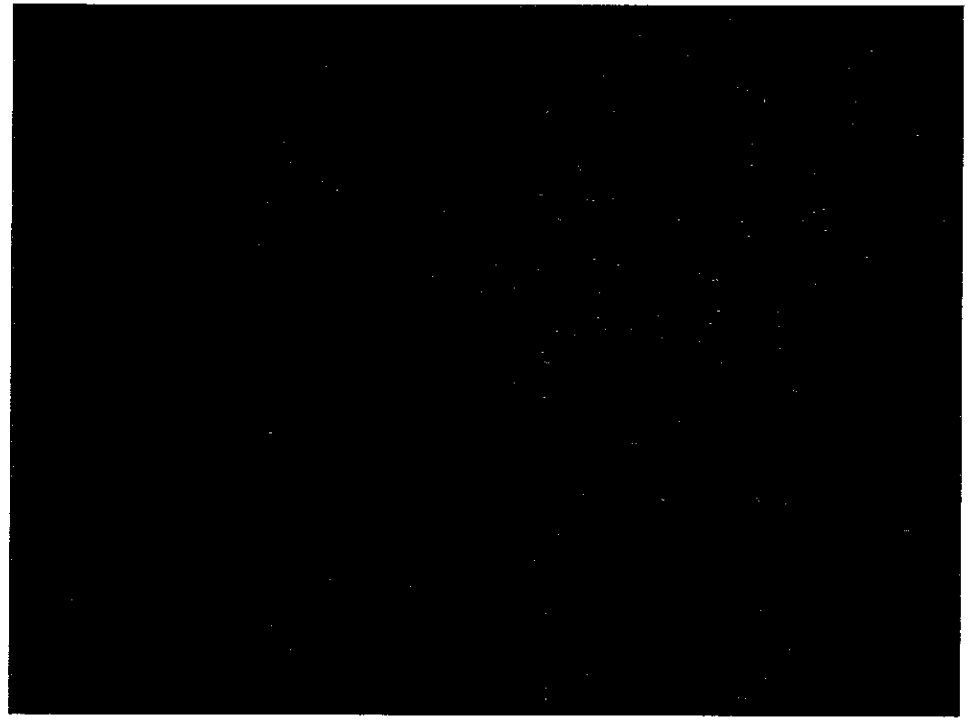
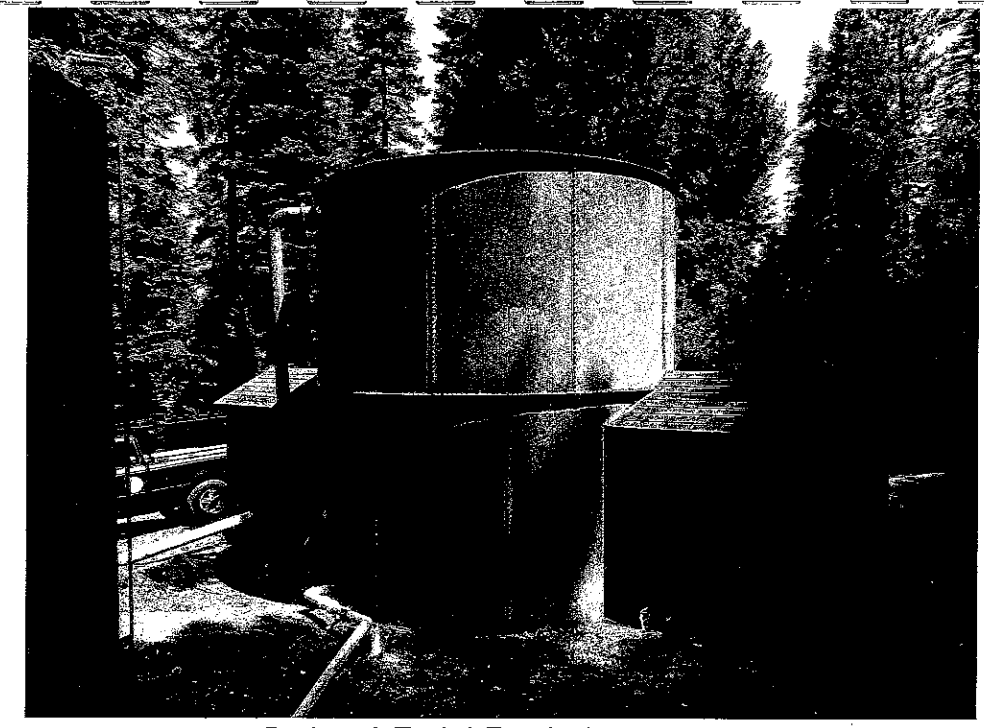
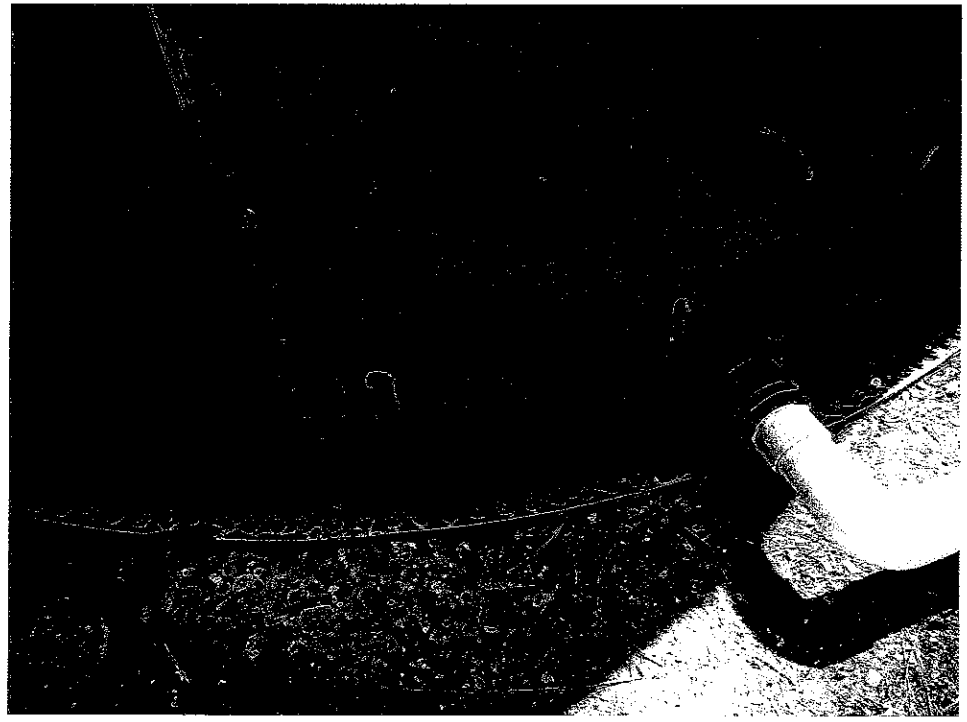


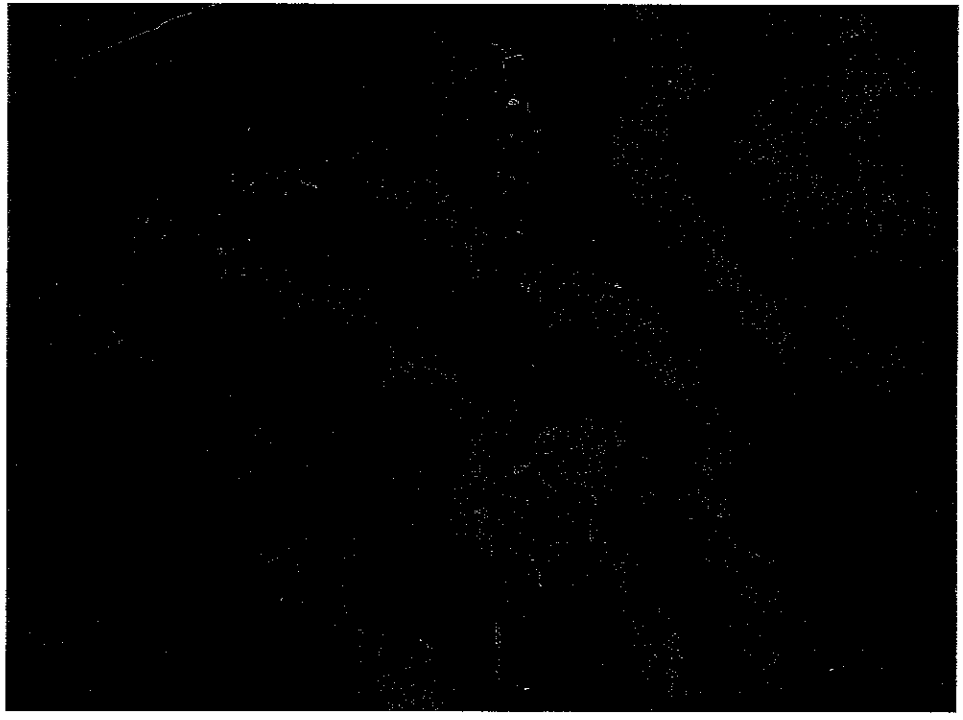
Backwash Tank 1 Interior Photo 50



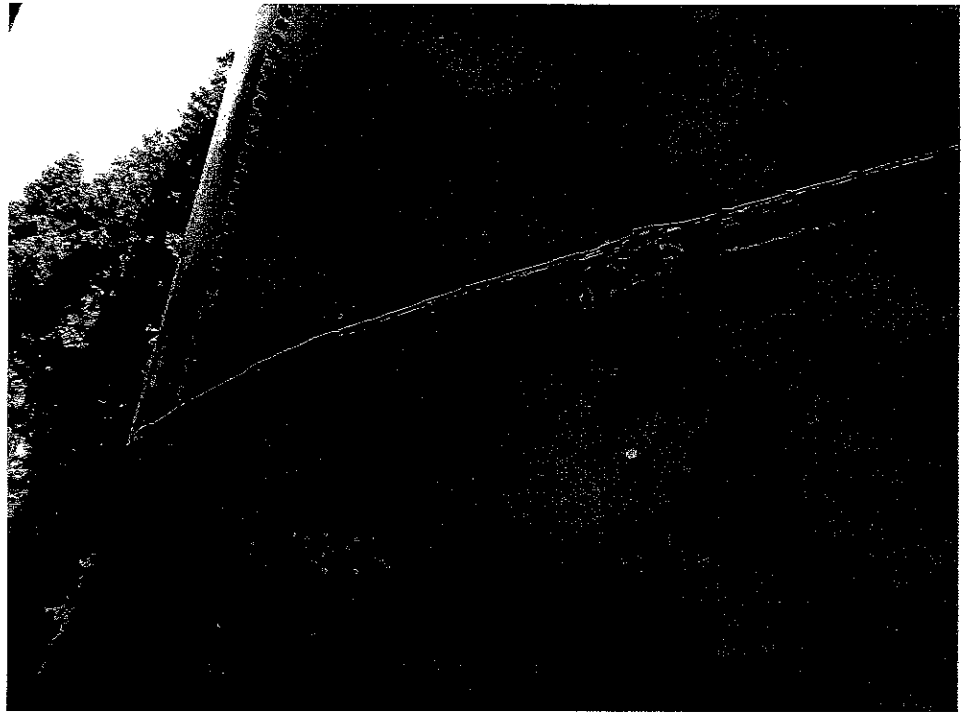
Backwash Tank 2 Exterior Photo (1)



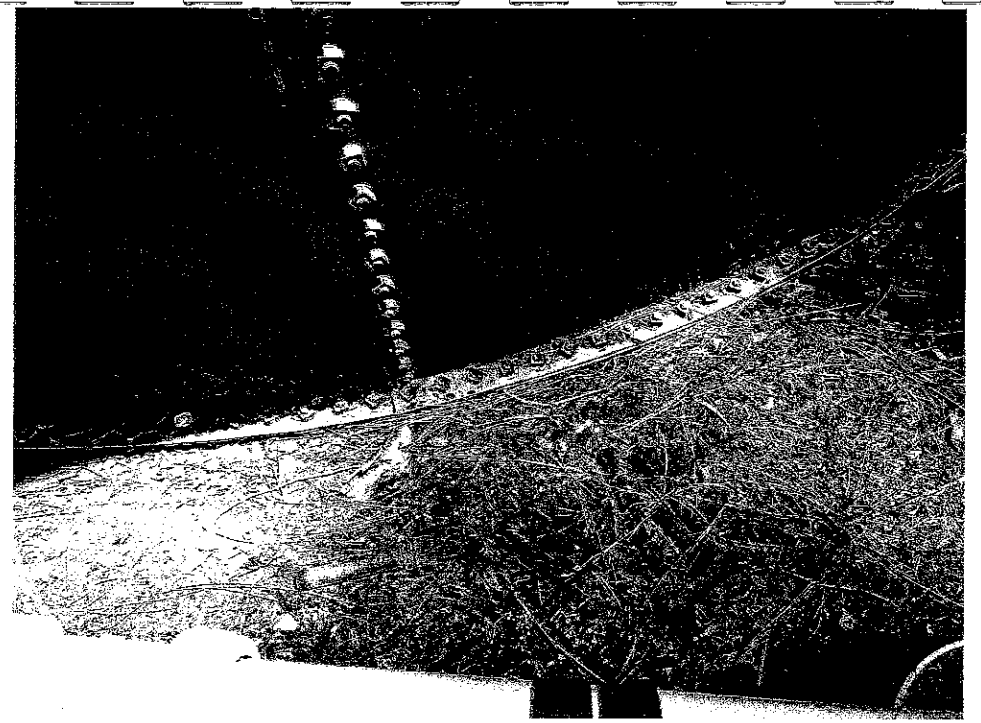
Backwash Tank 2 Exterior Photo (2)



Backwash Tank 2 Exterior Photo (3)



Backwash Tank 2 Exterior Photo (4)



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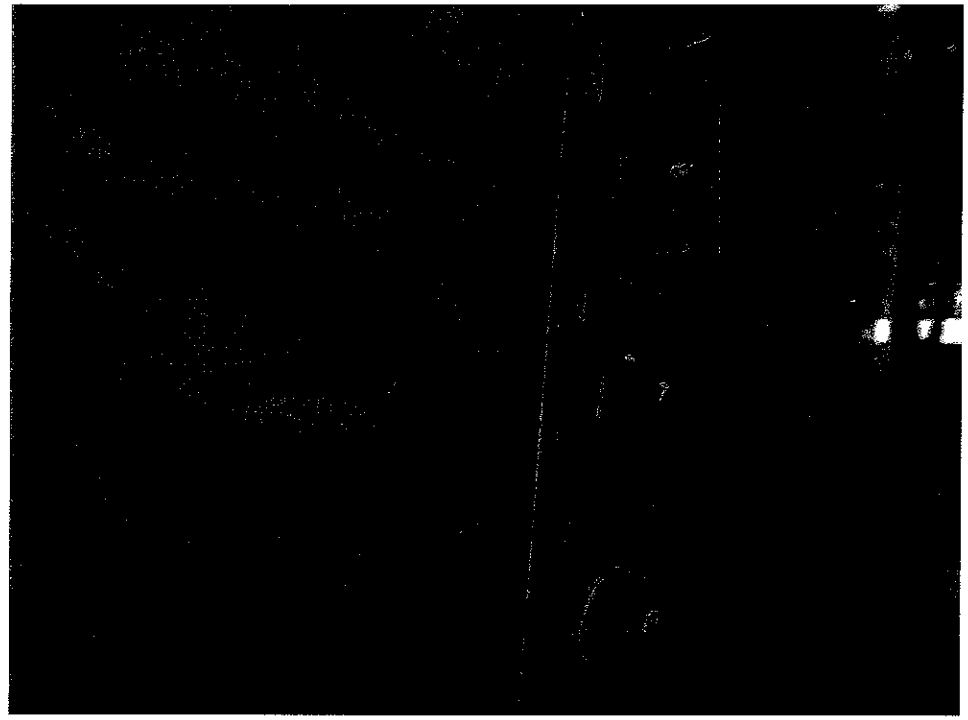

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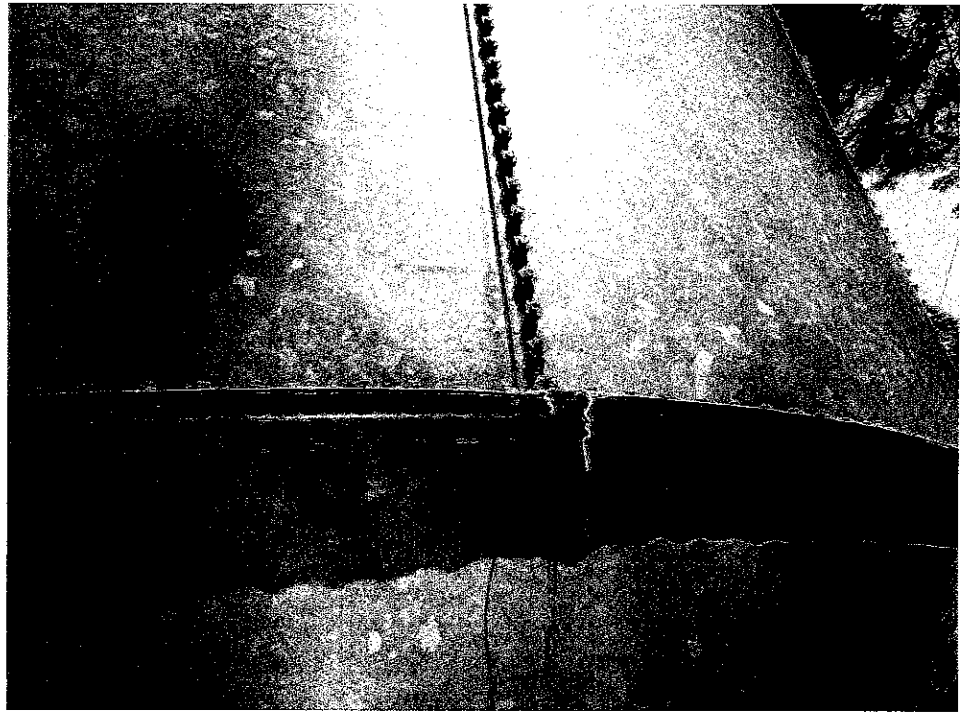
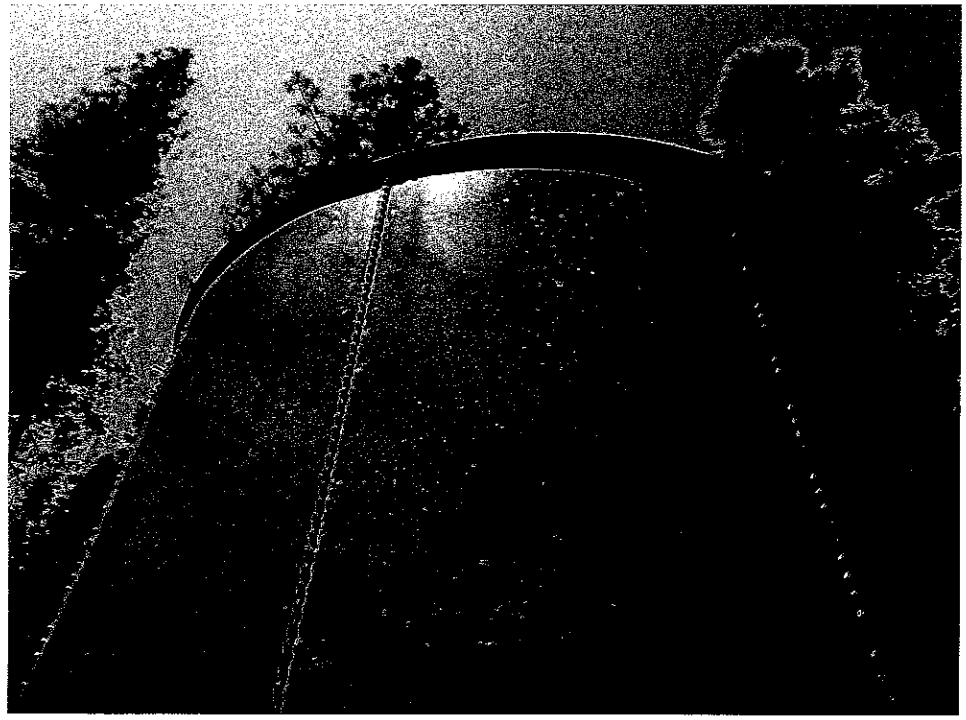


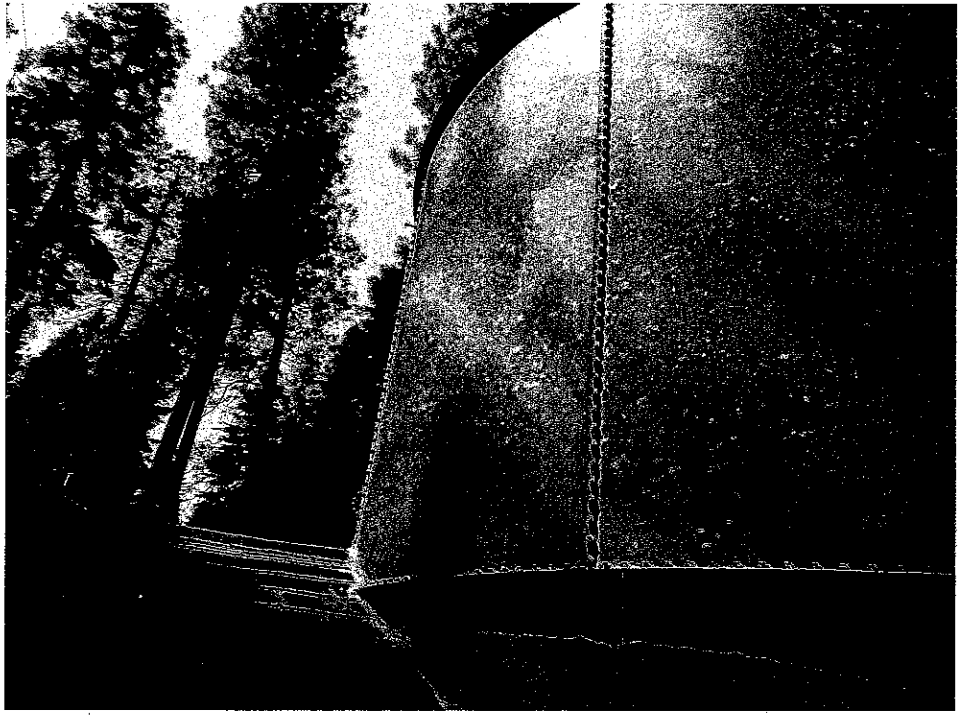
Backwash Tank 2 Exterior Photo (7)

Backwash Tank 2 Exterior Photo (8)

Backwash Tank 2 Exterior Photo (9)

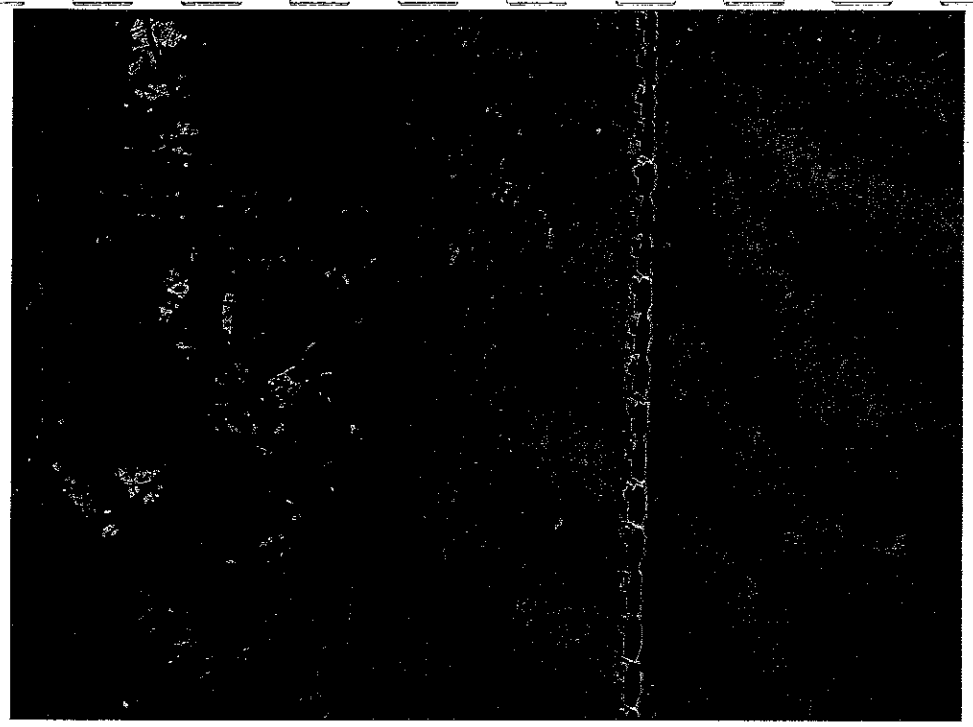


Backwash Tank 2 Exterior Photo 10

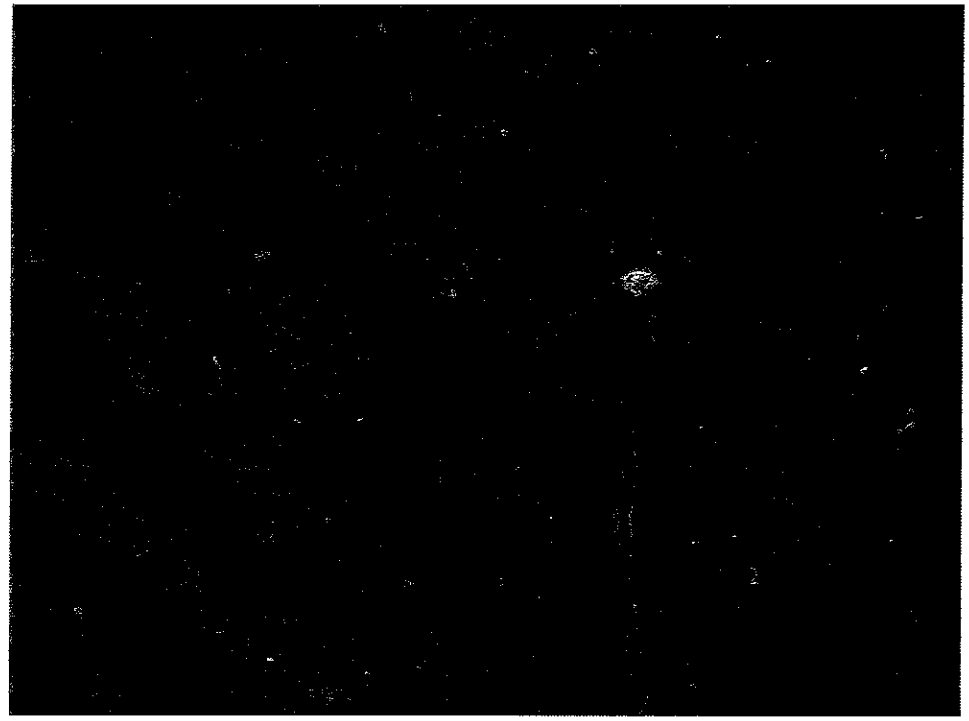


Backwash Tank 2 Exterior Photo 11

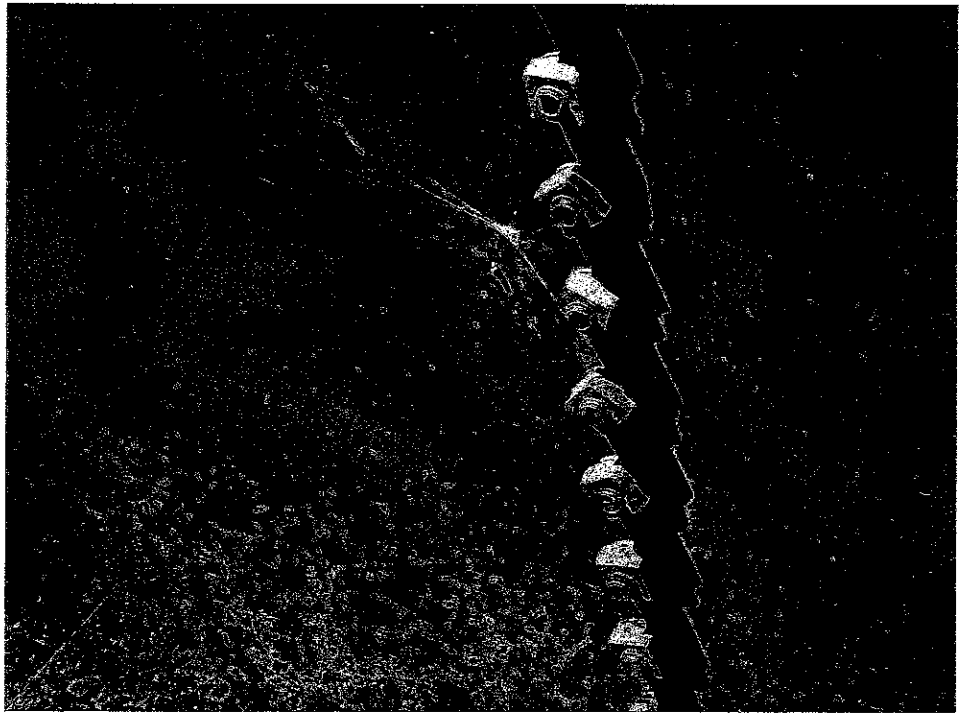
Backwash Tank 2 Exterior Photo 12



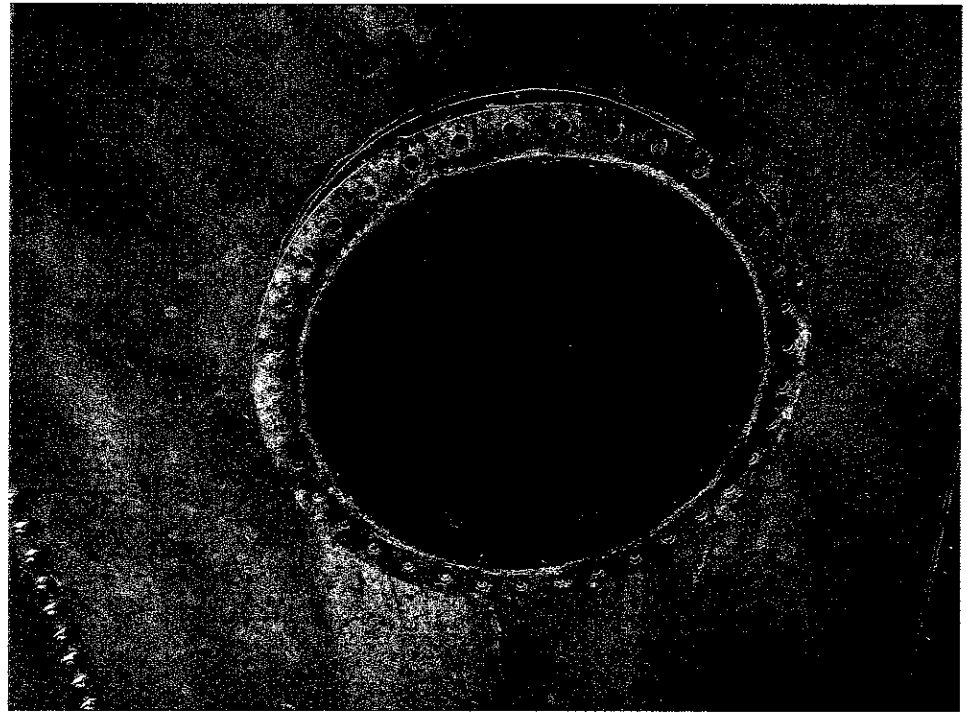
Backwash Tank 2 Exterior Photo 13



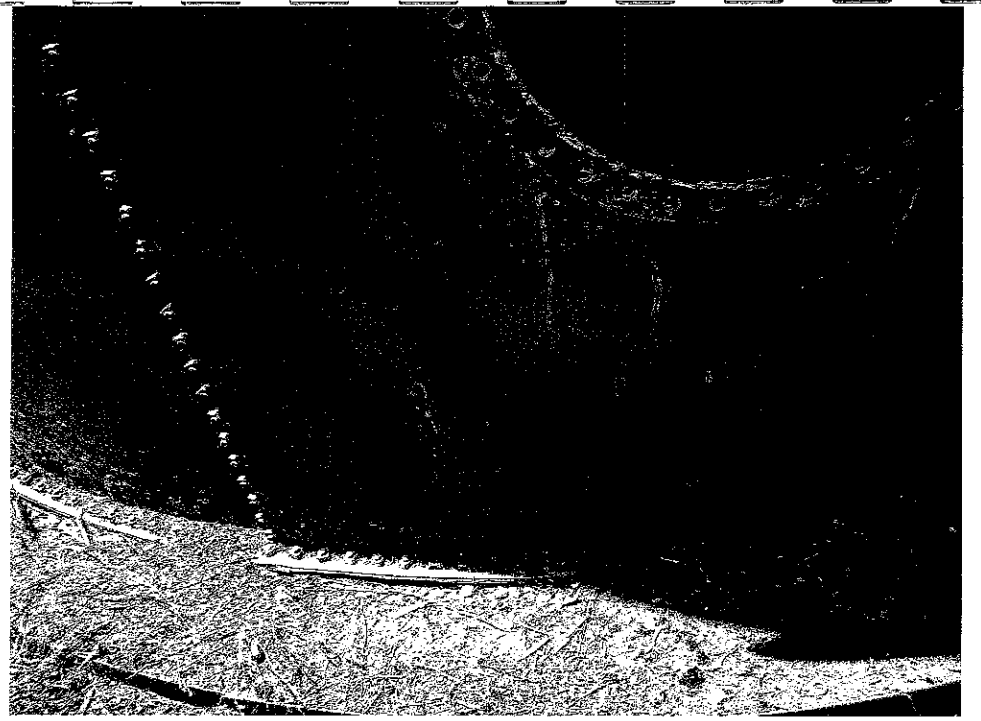
Backwash Tank 2 Exterior Photo 14



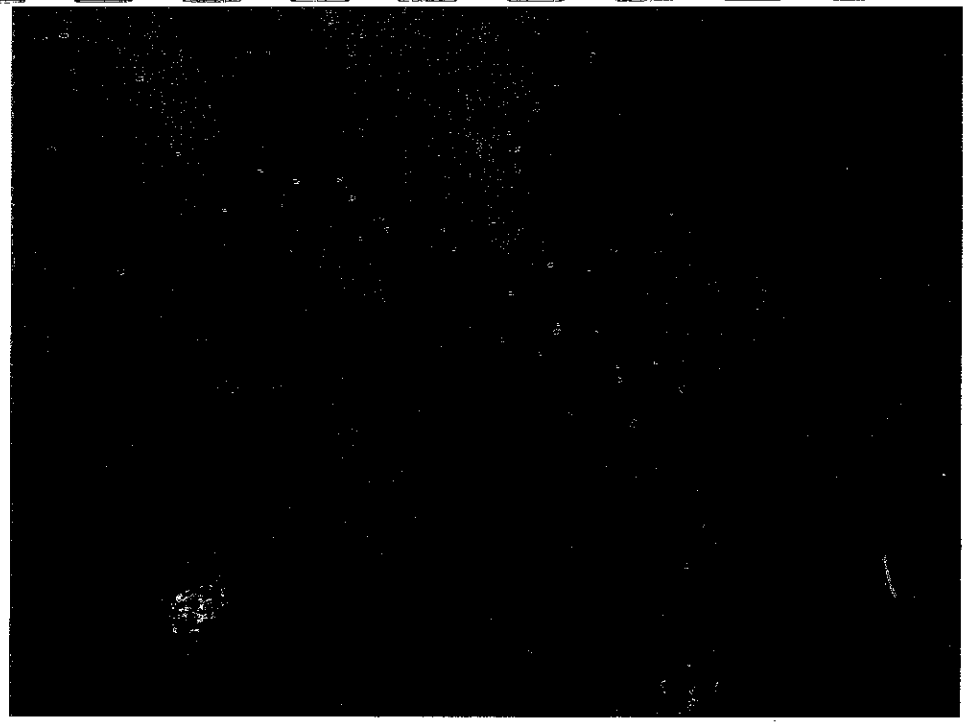
Backwash Tank 2 Exterior Photo 15



Backwash Tank 2 Exterior Photo 16



Backwash Tank 2 Exterior Photo 17



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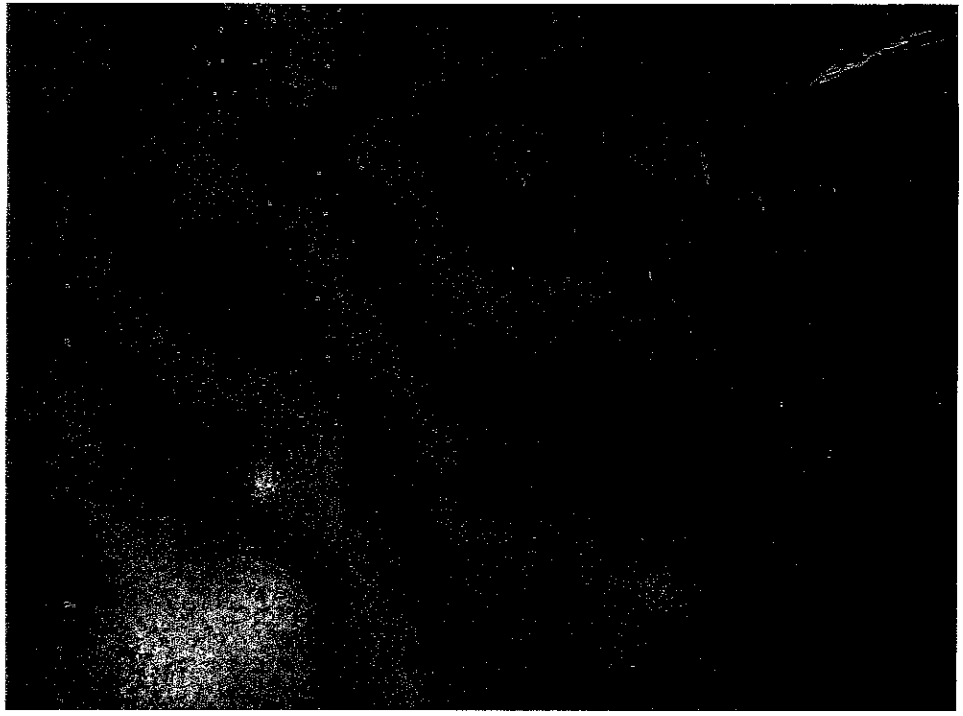


Backwash Tank 2 Exterior Photo 19

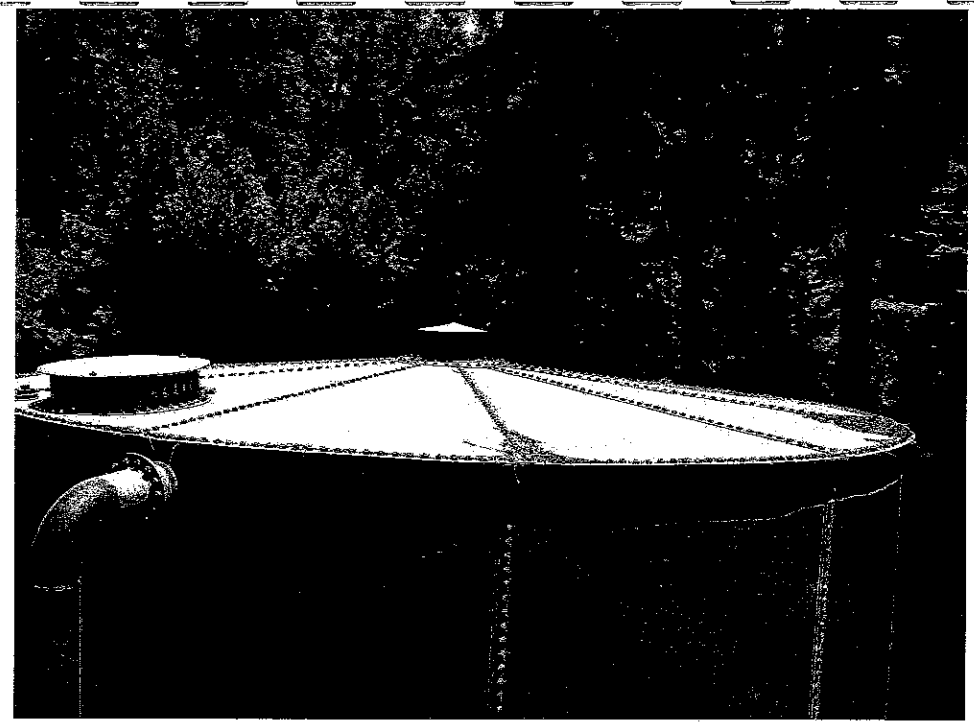
Backwash Tank 2 Exterior Photo 20

Backwash Tank 2 Exterior Photo 21

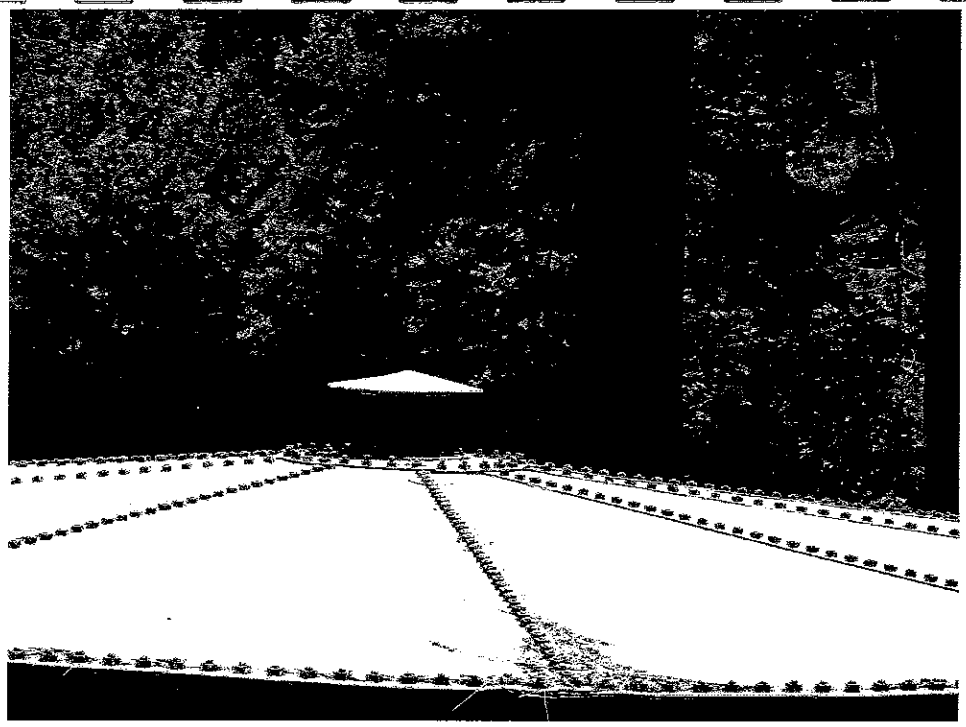
Backwash Tank 2 Exterior Photo 22

Backwash Tank 2 Exterior Photo 23

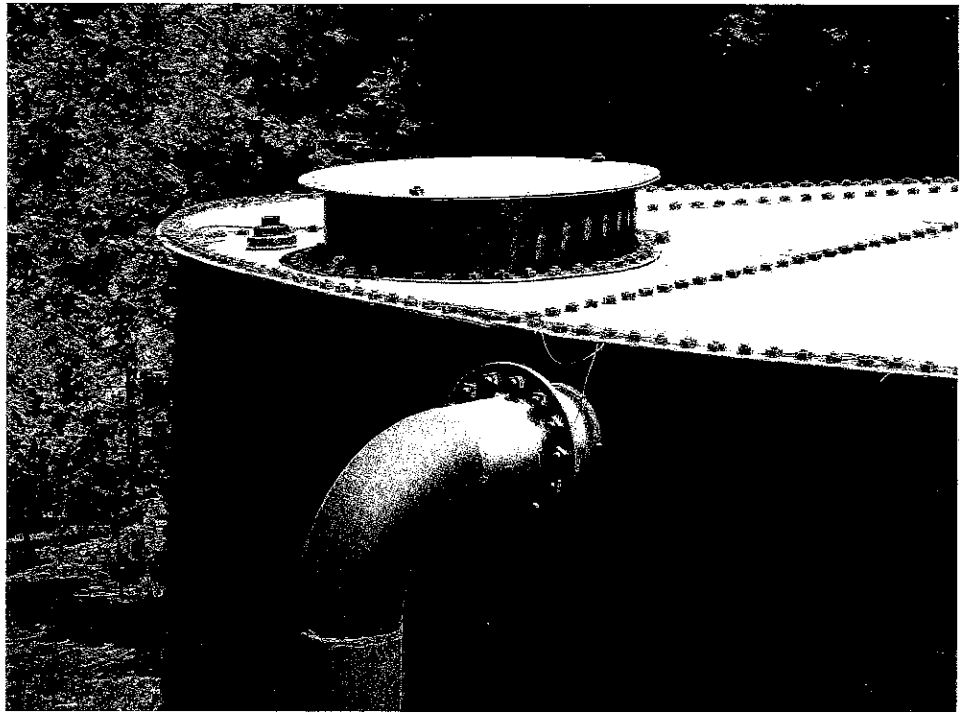
Backwash Tank 2 Exterior Photo 24



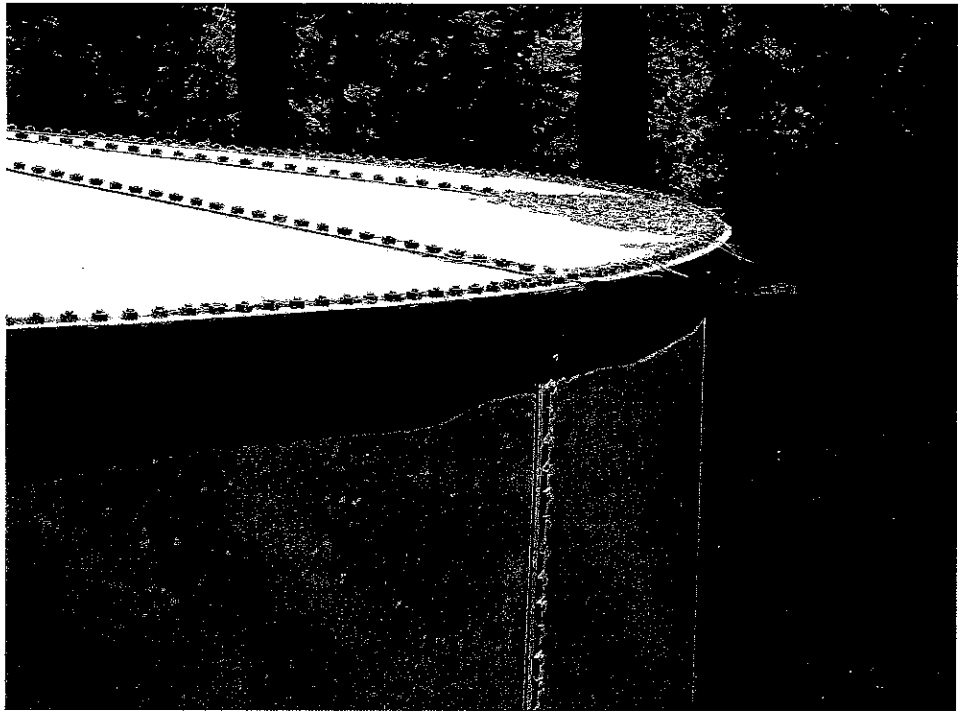
Backwash Tank 2 Exterior Photo 25



Backwash Tank 2 Exterior Photo 26



Backwash Tank 2 Exterior Photo 27



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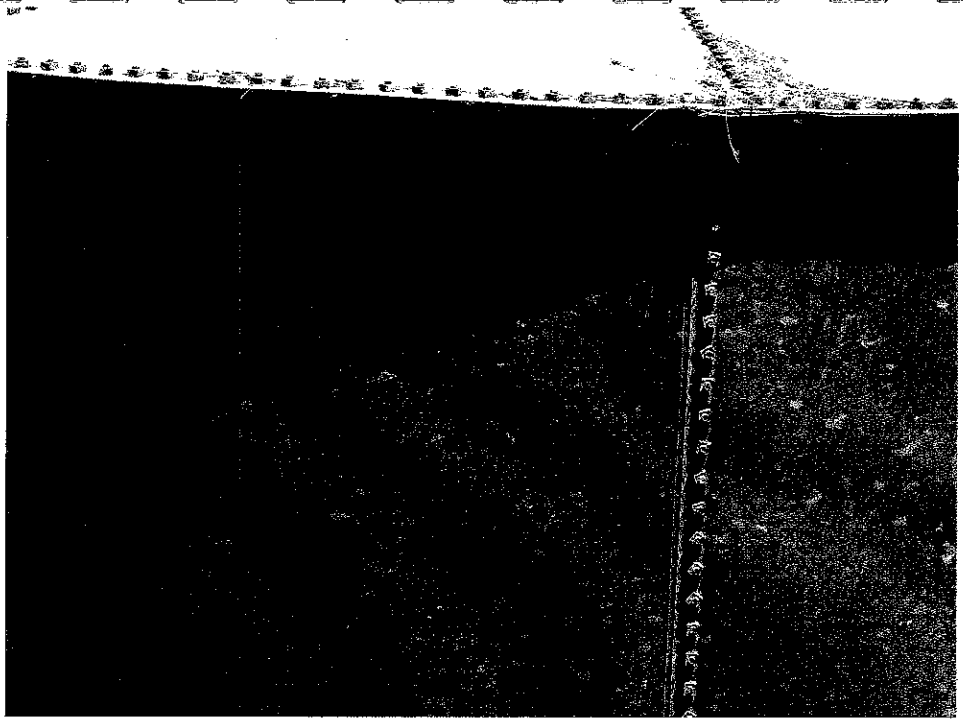

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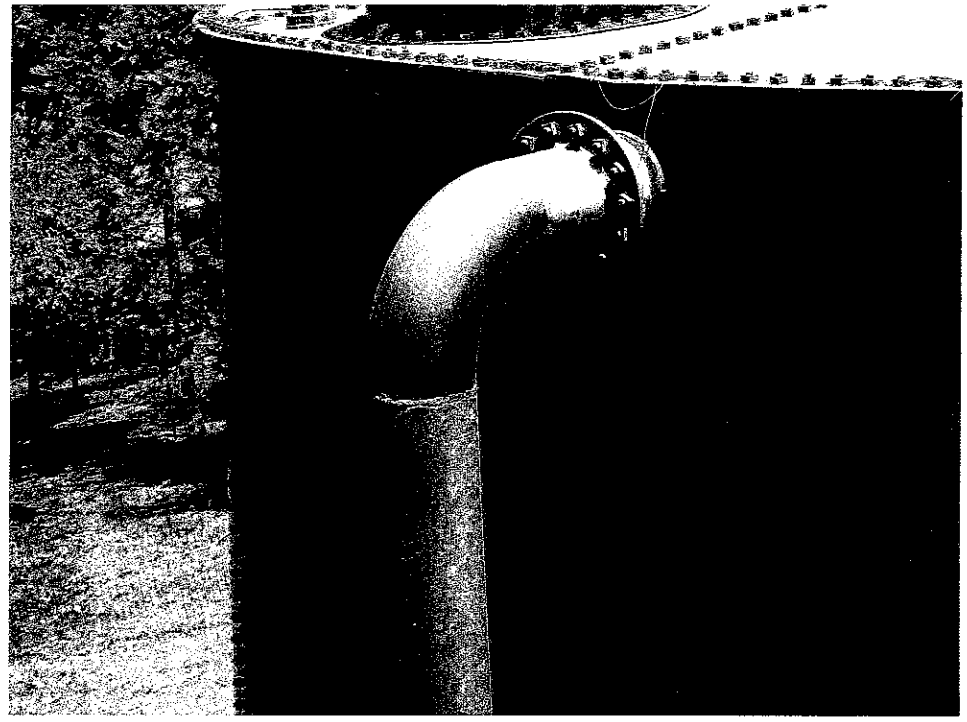
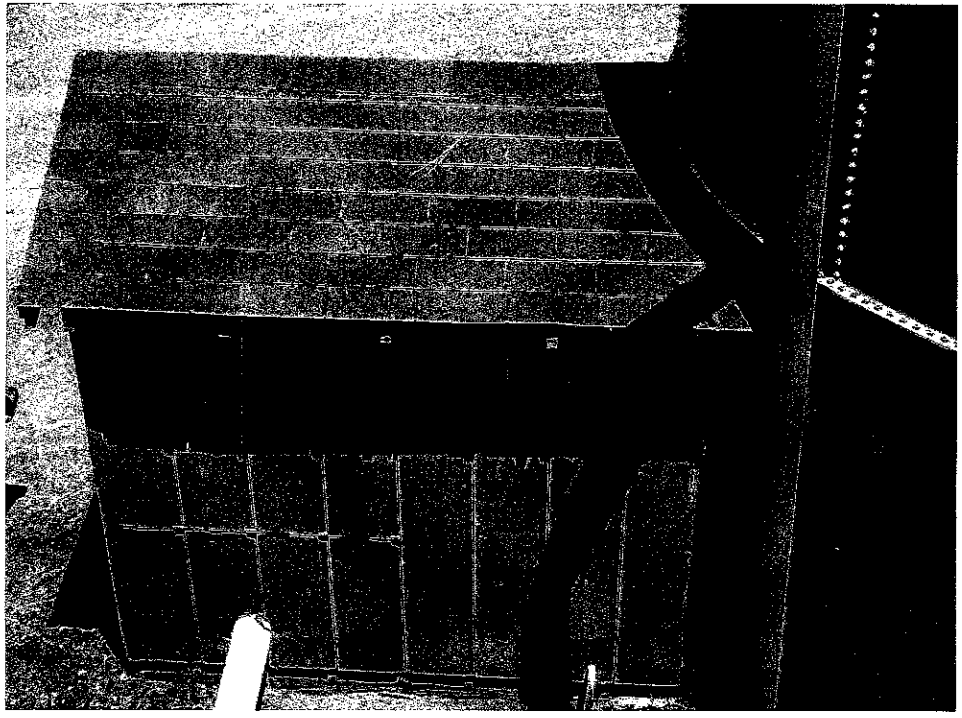


Backwash Tank 2 Exterior Photo 30



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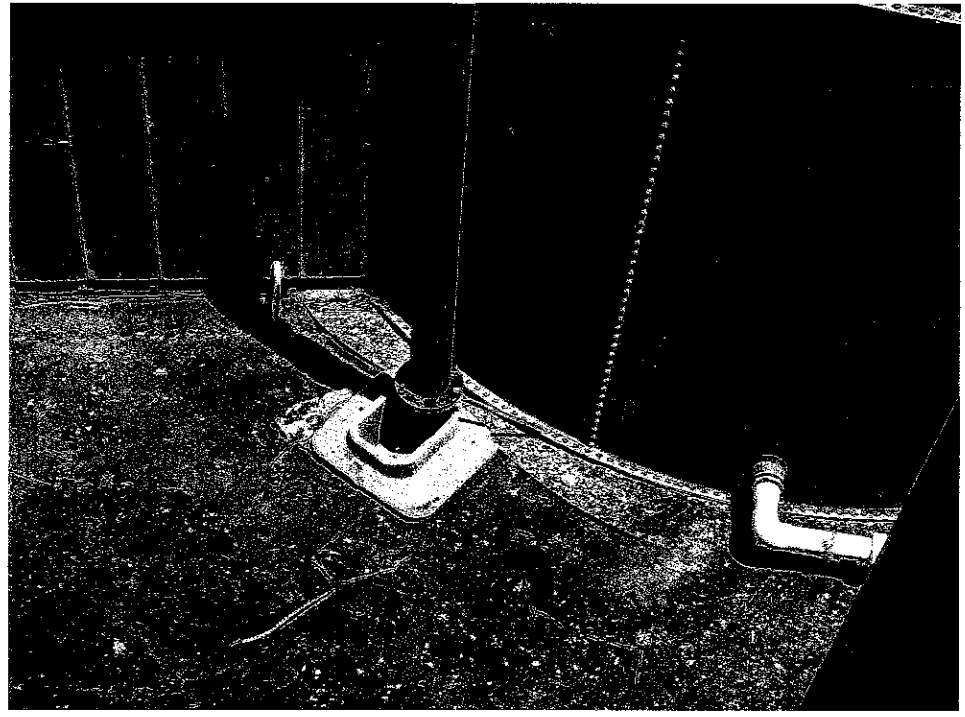
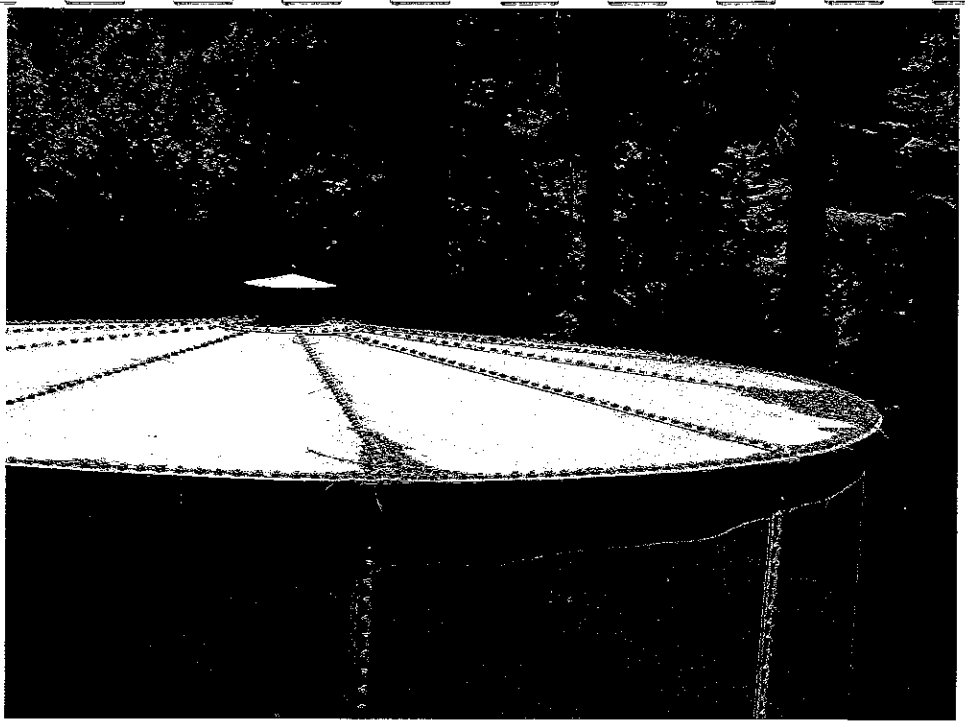
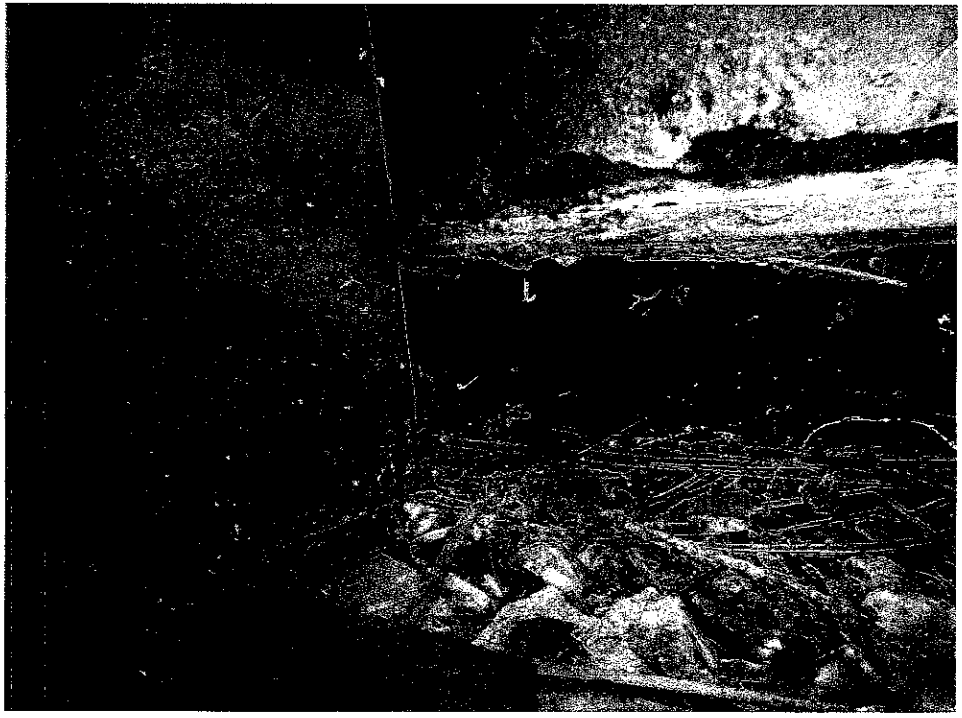


Backwash Tank 2 Exterior Photo 32



Backwash Tank 2 Exterior Photo 33

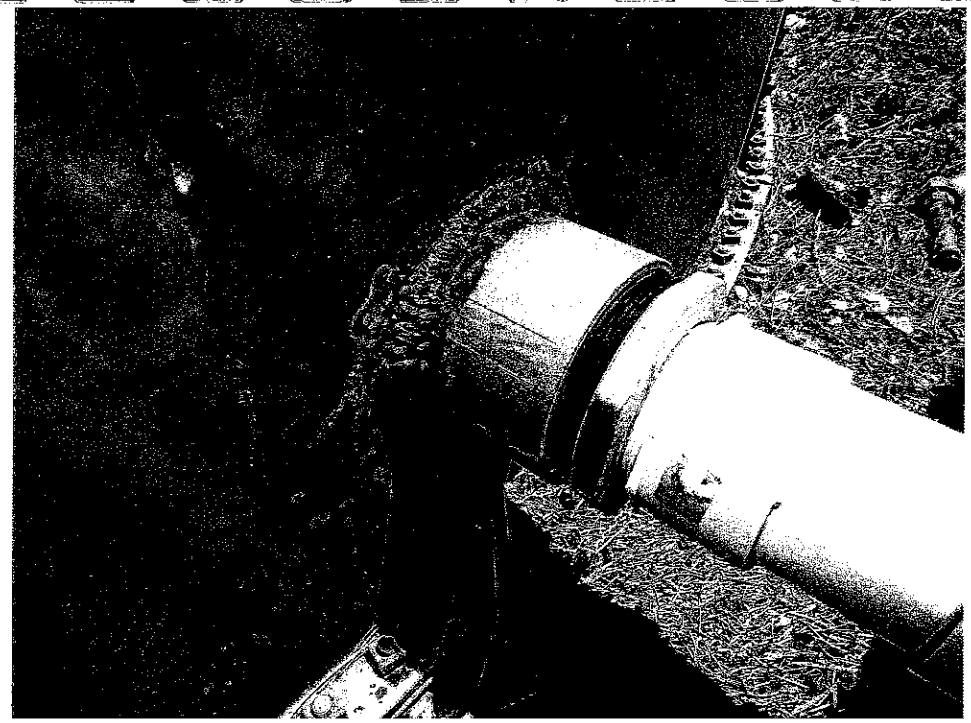
Backwash Tank 2 Exterior Photo 34



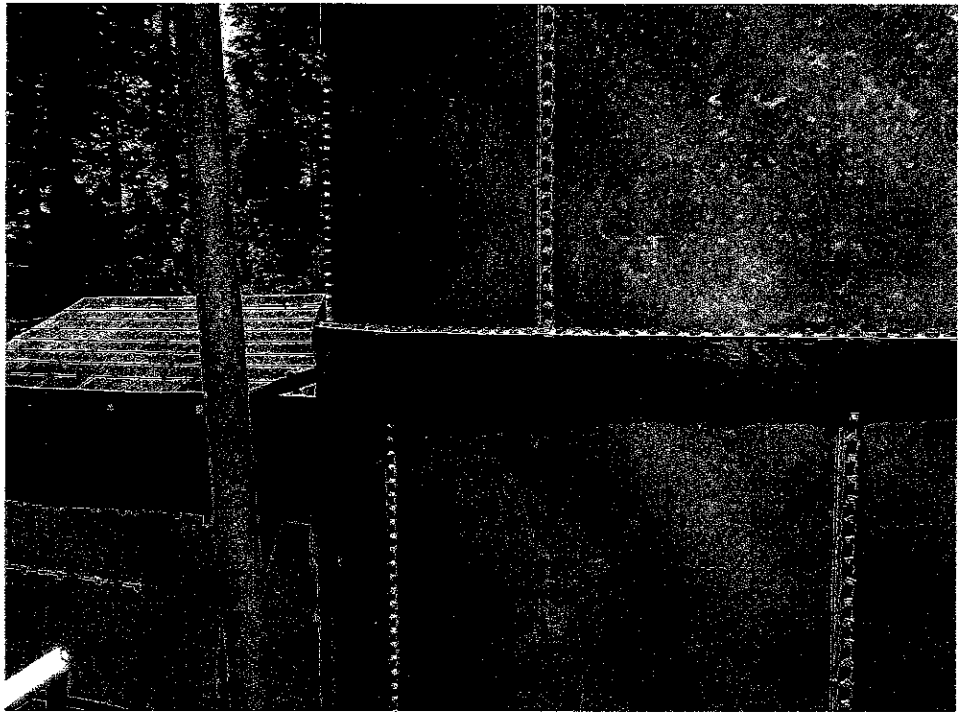
Backwash Tank 2 Exterior Photo 35

Backwash Tank 2 Exterior Photo 36

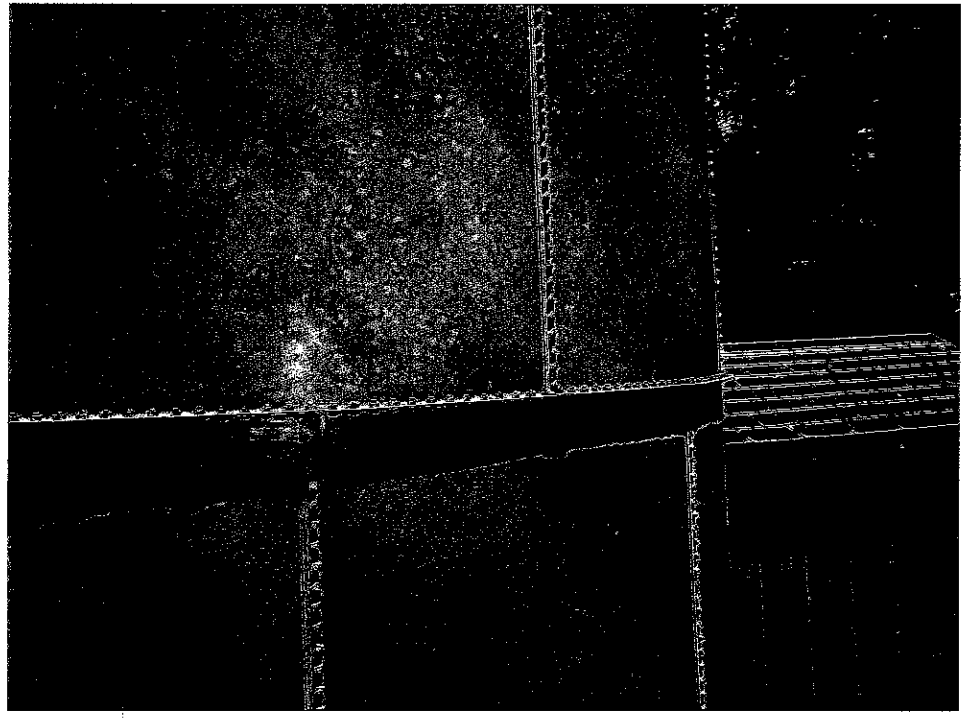
Backwash Tank 2 Exterior Photo 37



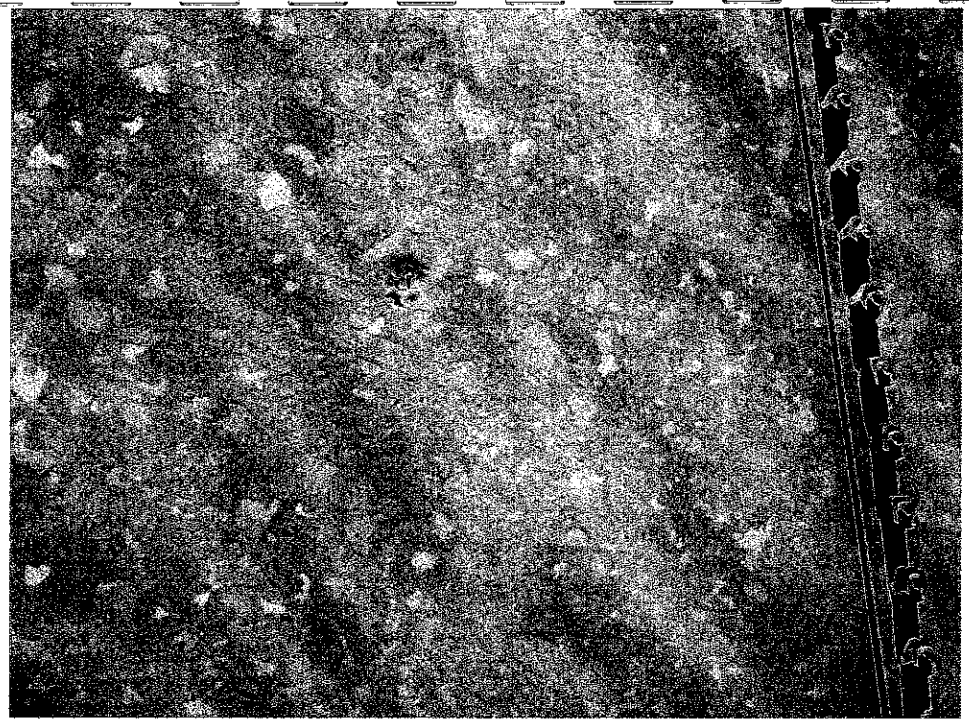
Backwash Tank 2 Exterior Photo 38



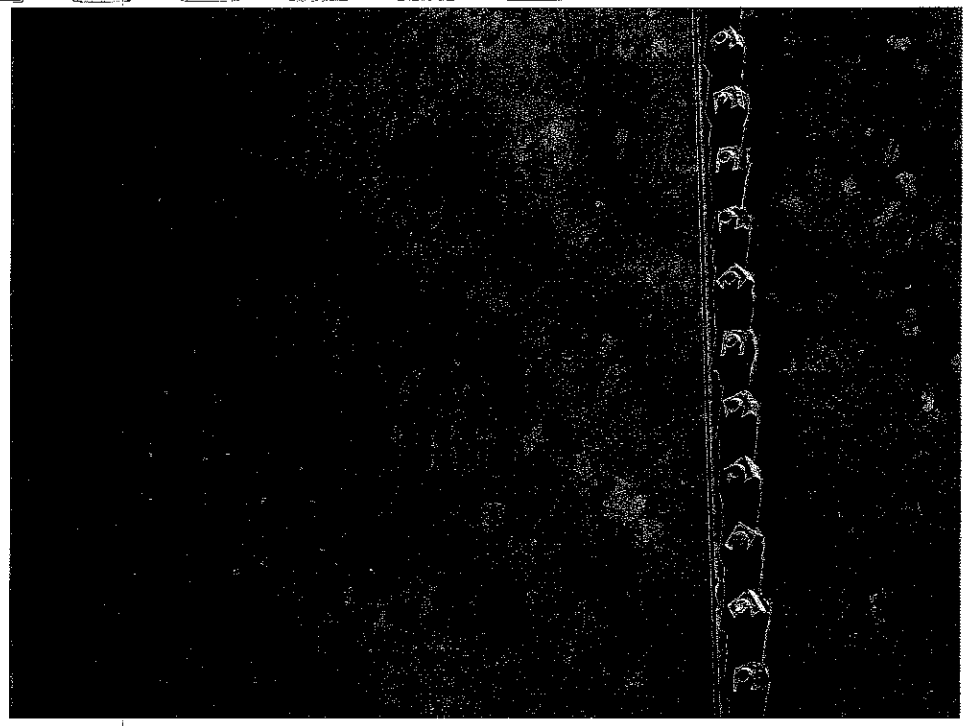
Backwash Tank 2 Exterior Photo 39



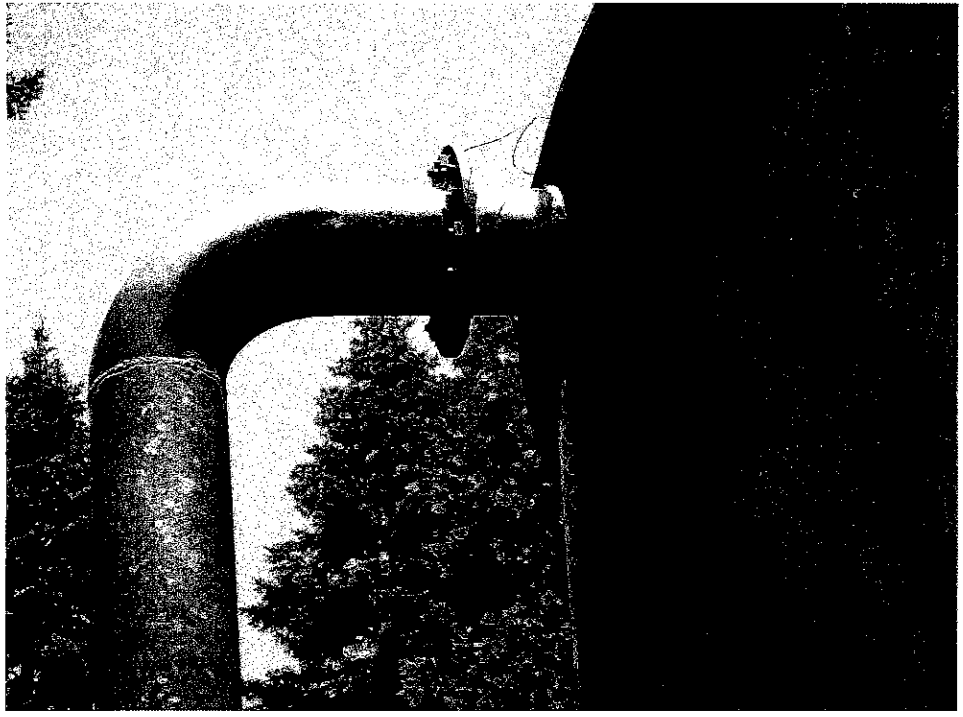
Backwash Tank 2 Exterior Photo 40



Backwash Tank 2 Exterior Photo 41



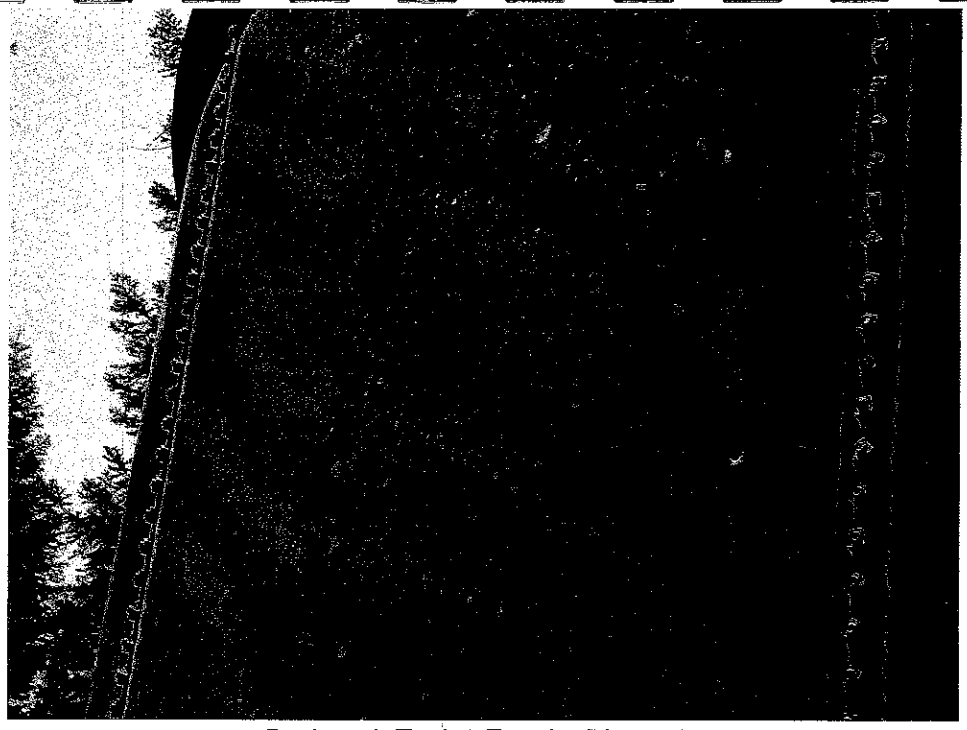
Backwash Tank 2 Exterior Photo 42



Backwash Tank 2 Exterior Photo 43

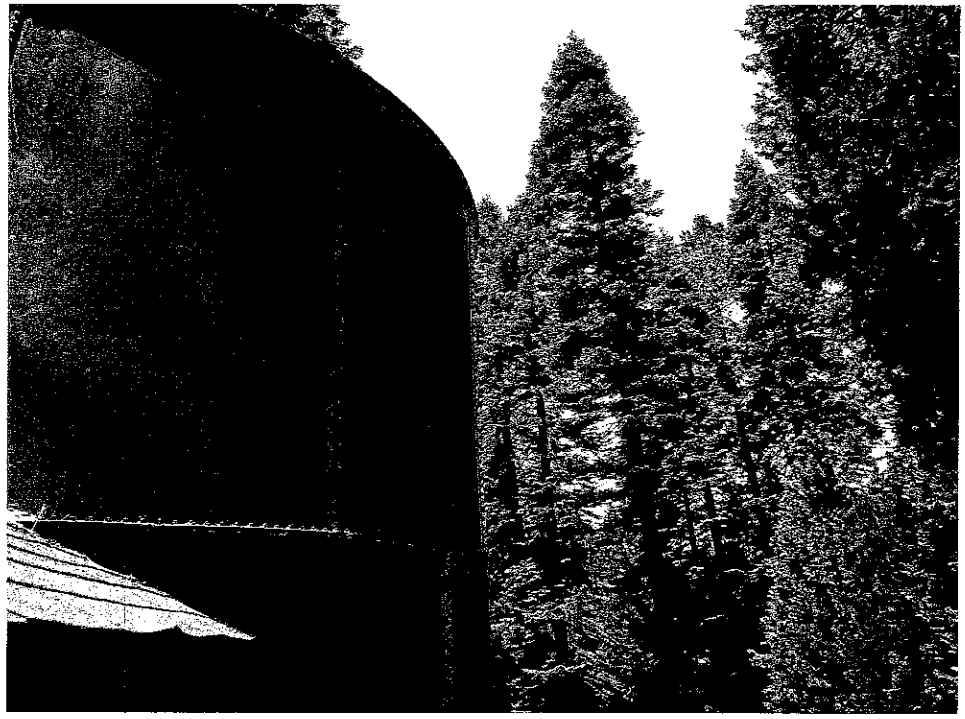
Backwash Tank 2 Exterior Photo 44

Backwash Tank 2 Exterior Photo 45



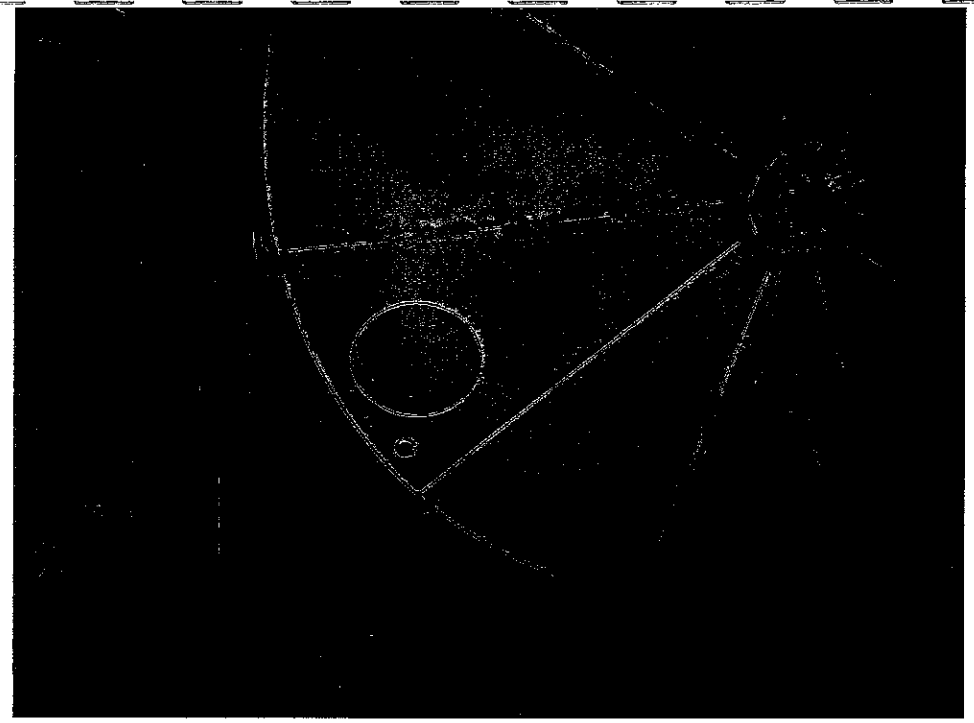
Backwash Tank 2 Exterior Photo 46

Backwash Tank 2 Exterior Photo 47

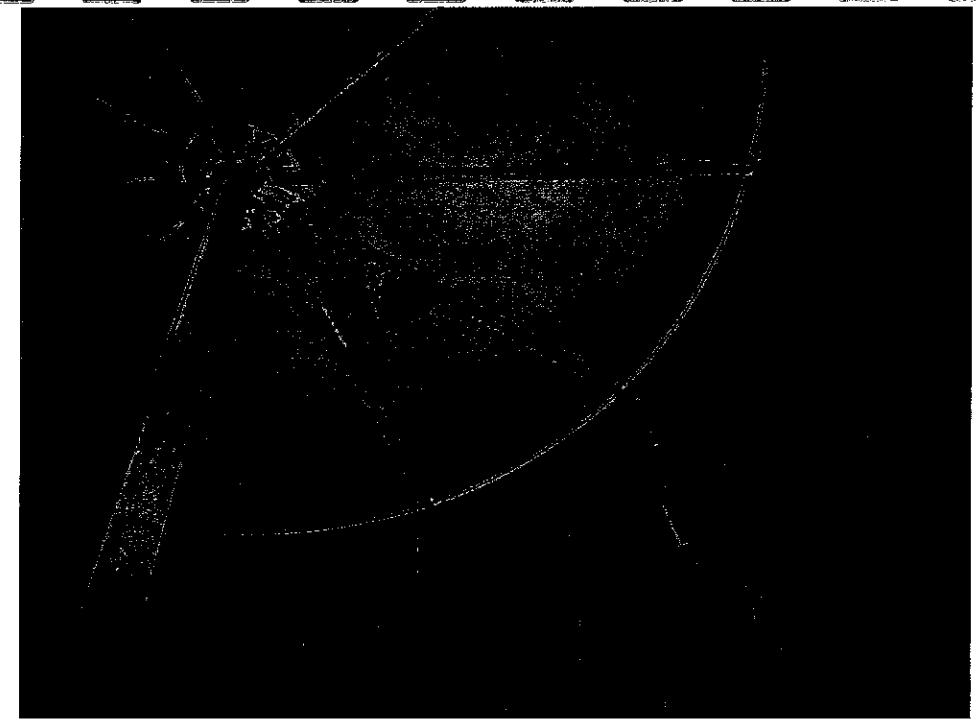


Backwash Tank 2 Exterior Photo 48

Backwash Tank 2 Exterior Photo 49

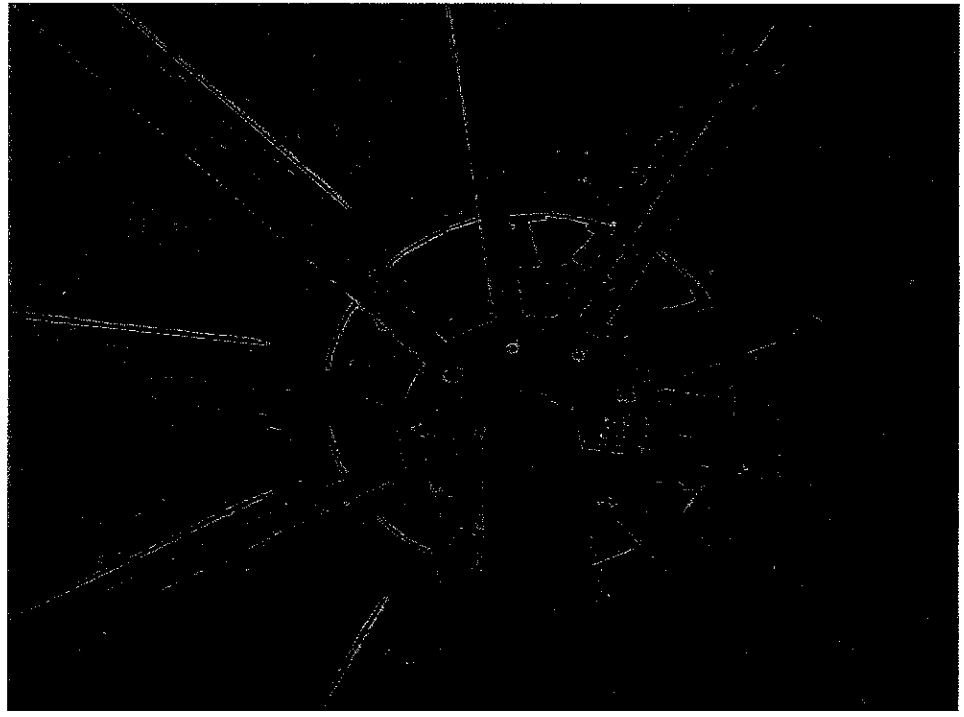


Backwash Tank 2 Interior Photo (1)

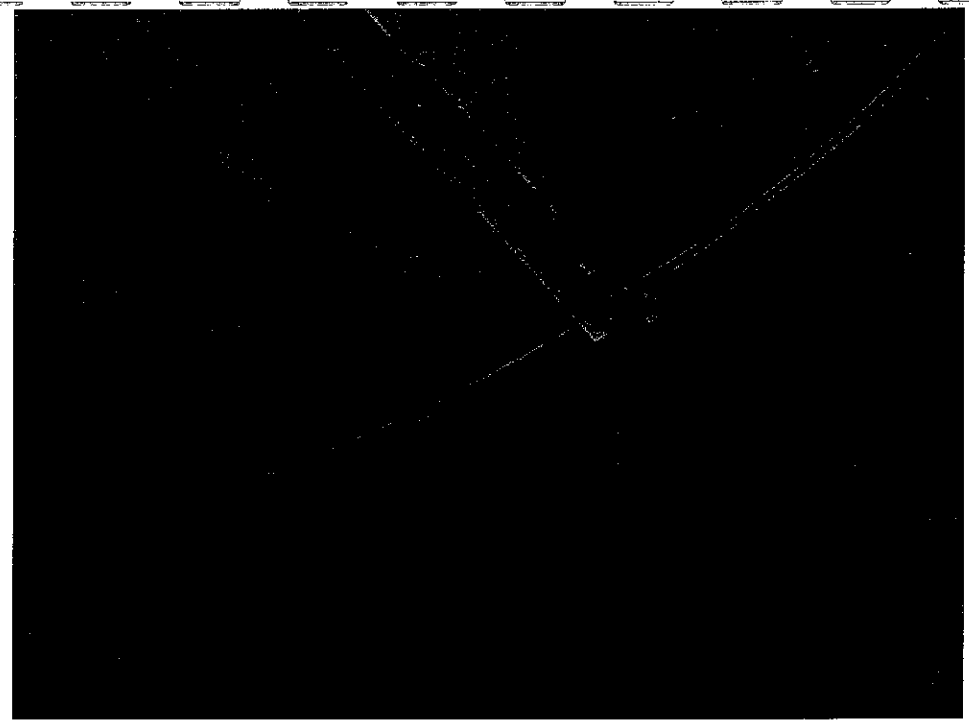


Backwash Tank 2 Interior Photo (2)

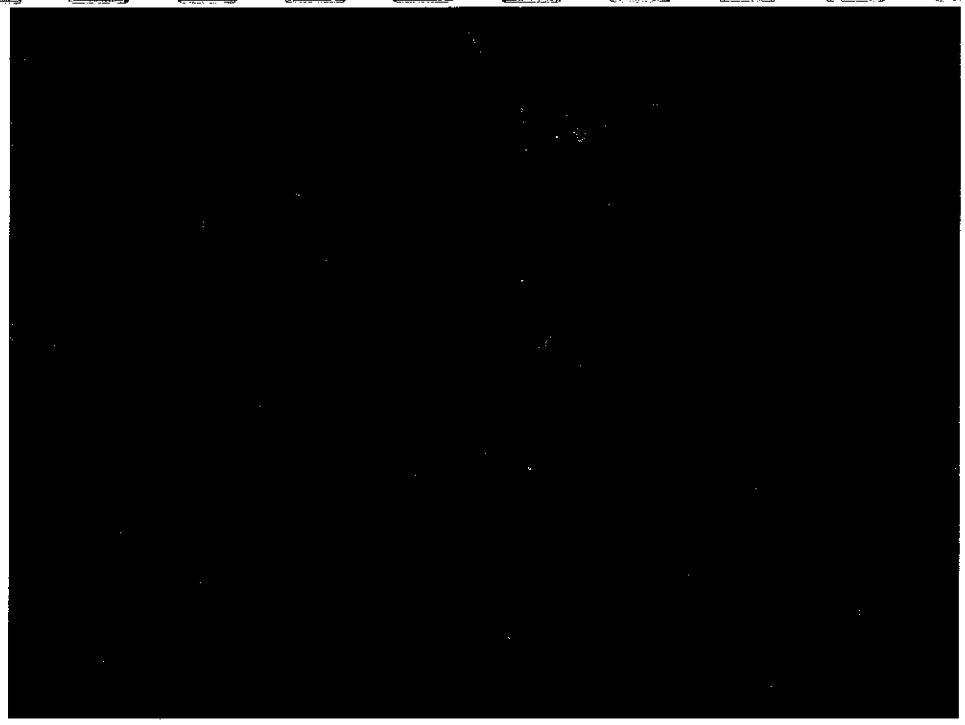
Backwash Tank 2 Interior Photo (3)



Backwash Tank 2 Interior Photo (4)

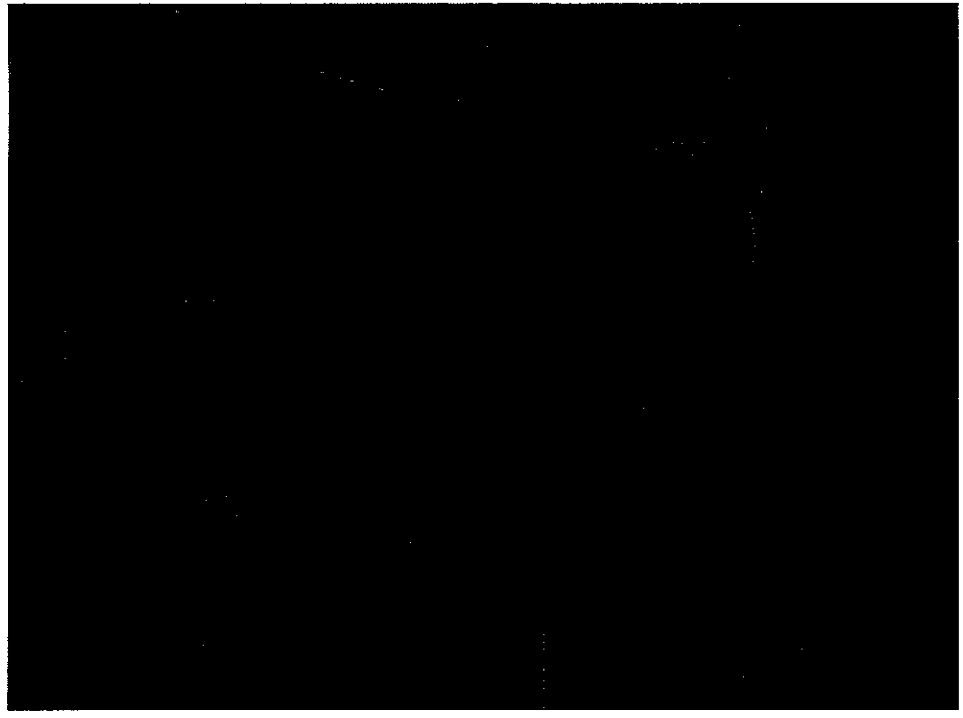


Backwash Tank 2 Interior Photo (5)



Backwash Tank 2 Interior Photo (6)

Backwash Tank 2 Interior Photo (7)



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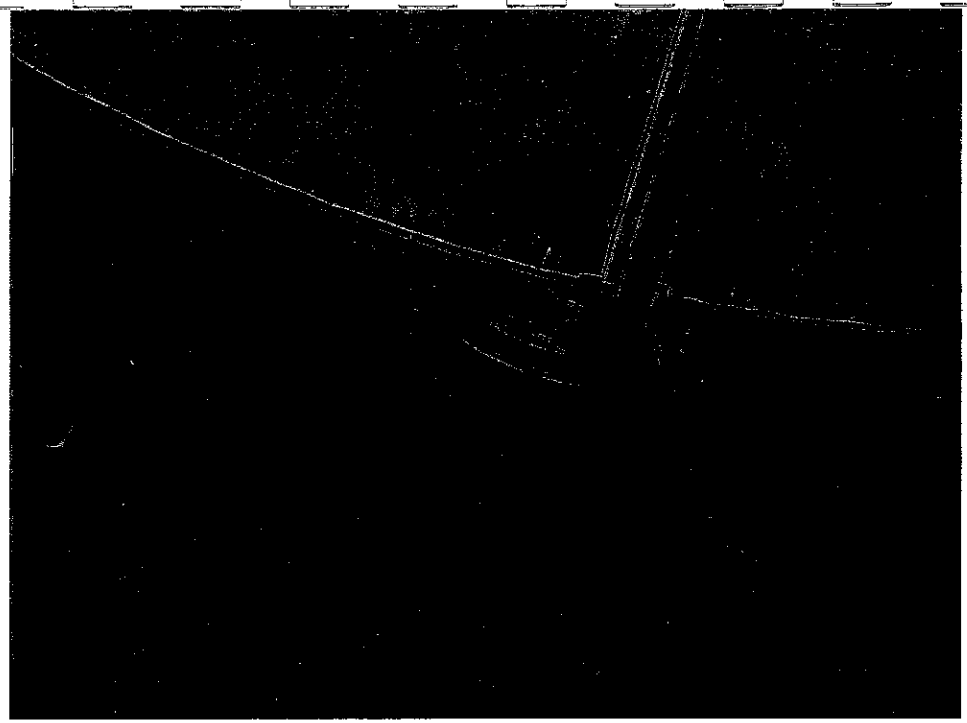
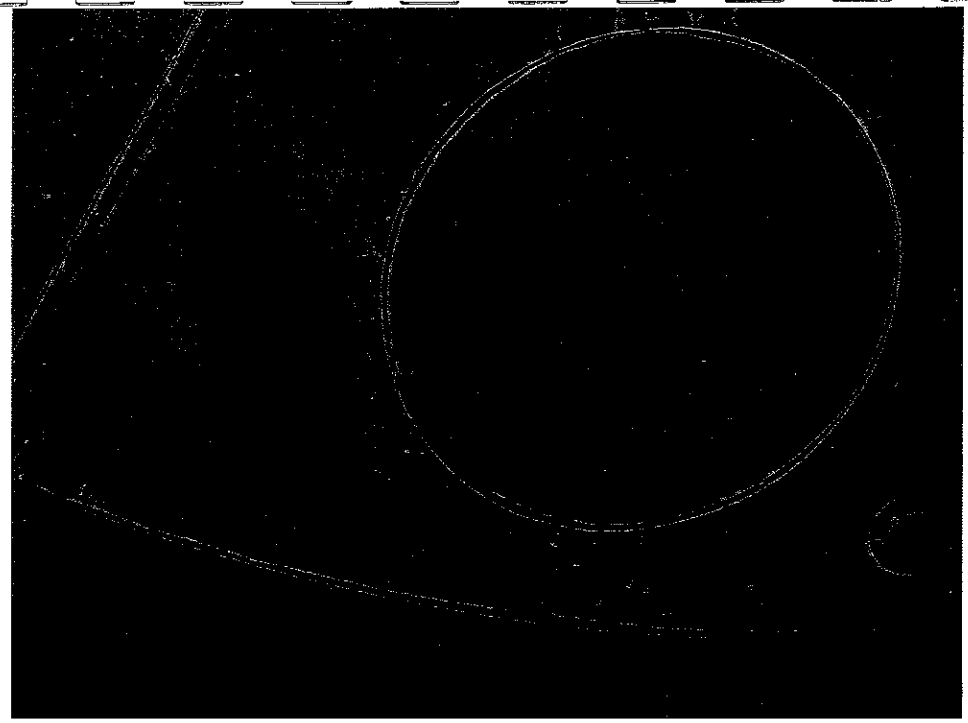


Backwash Tank 2 Interior Photo (9)



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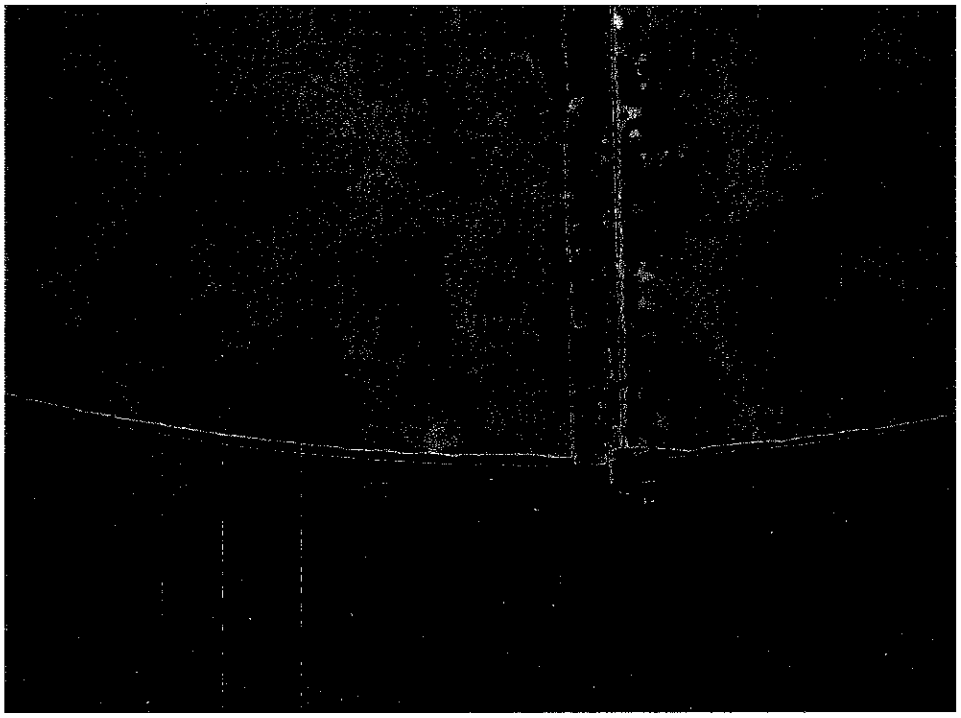

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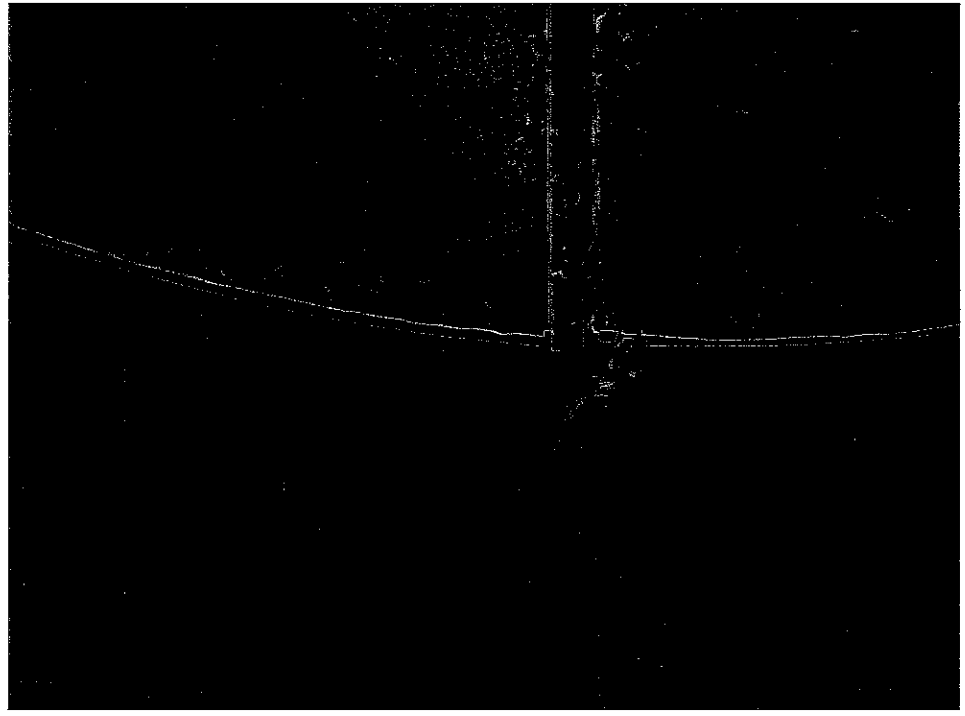

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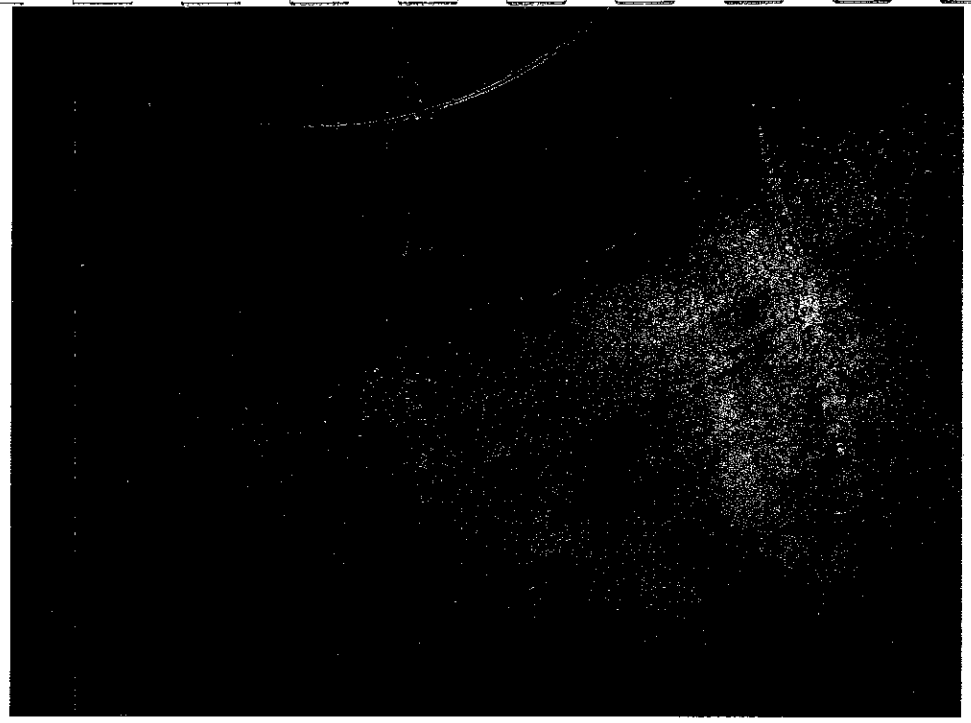

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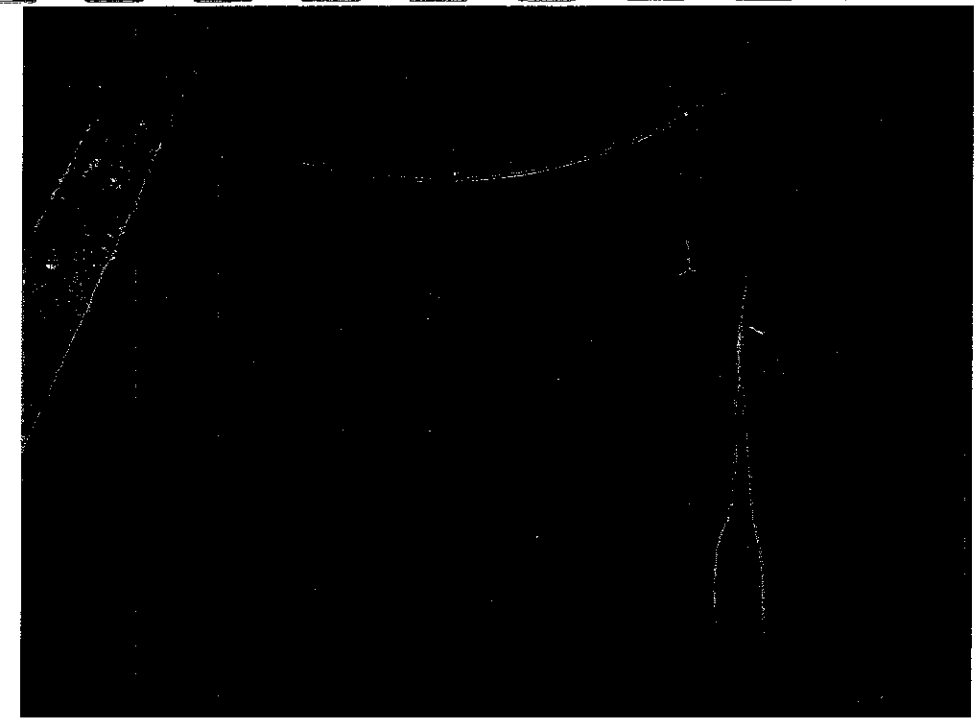

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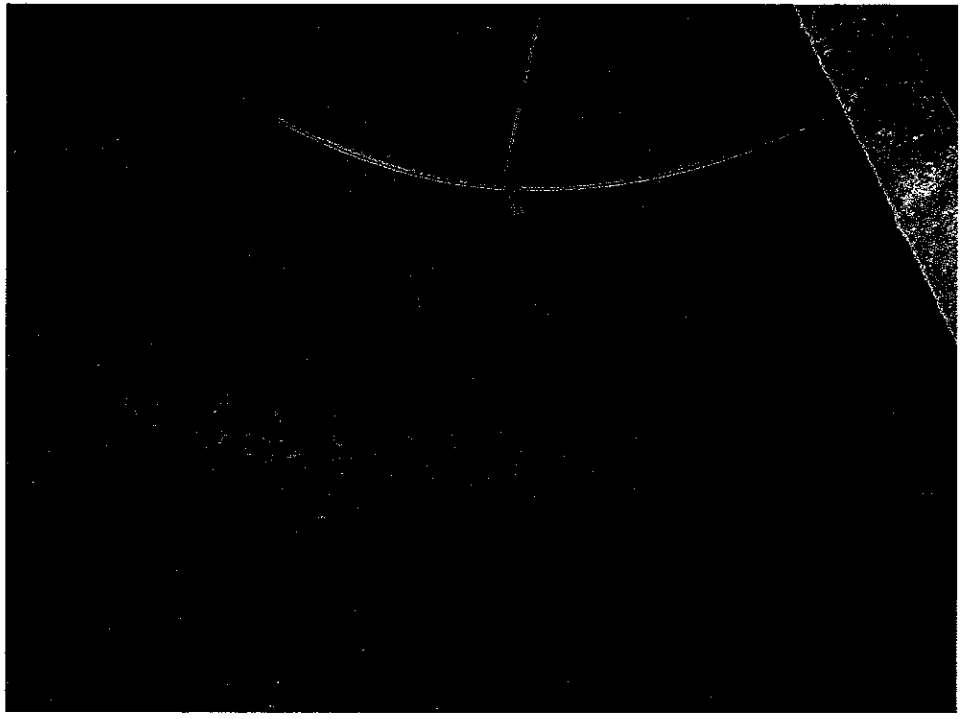

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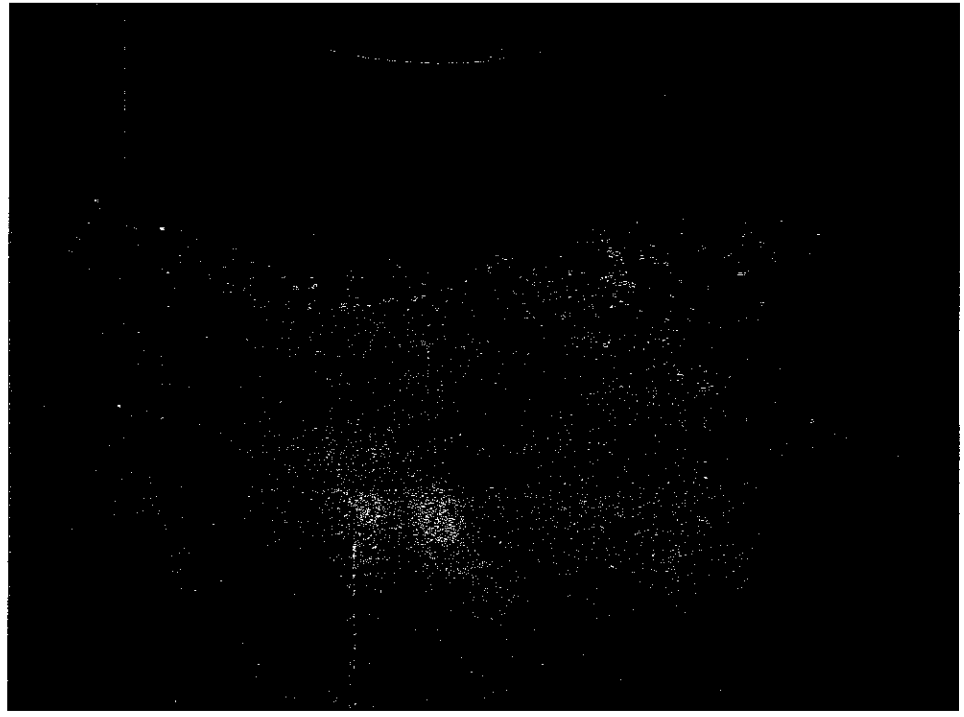

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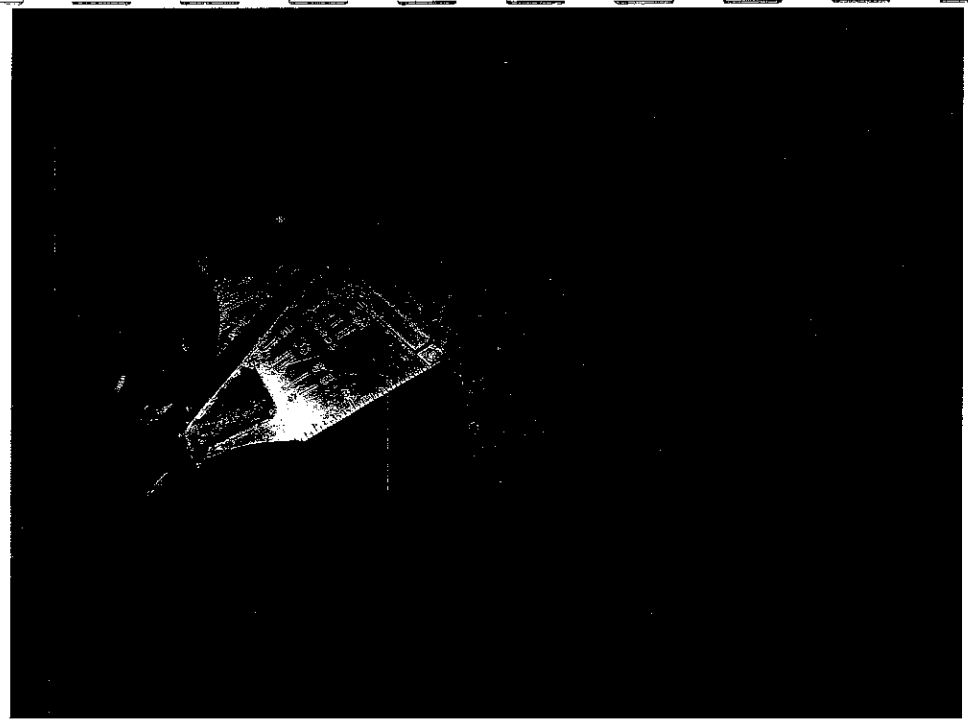

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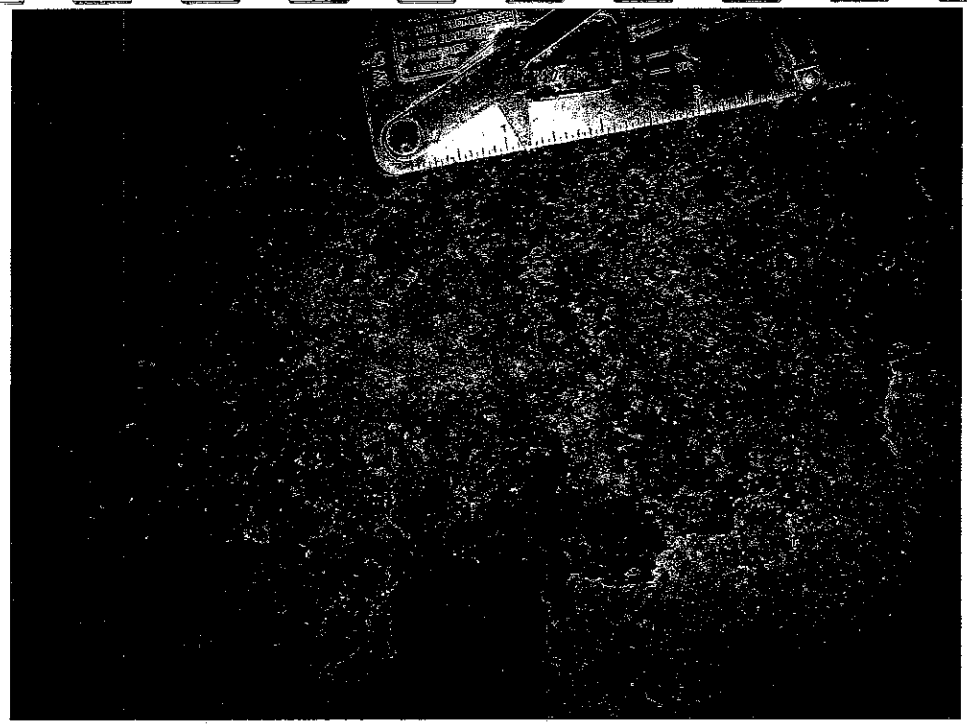

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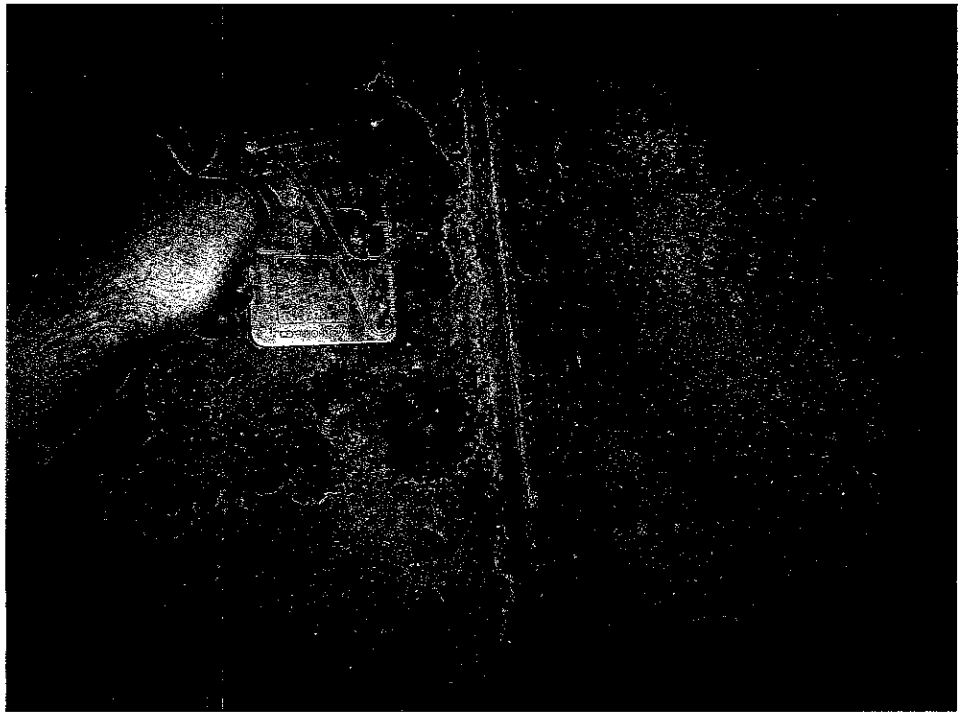

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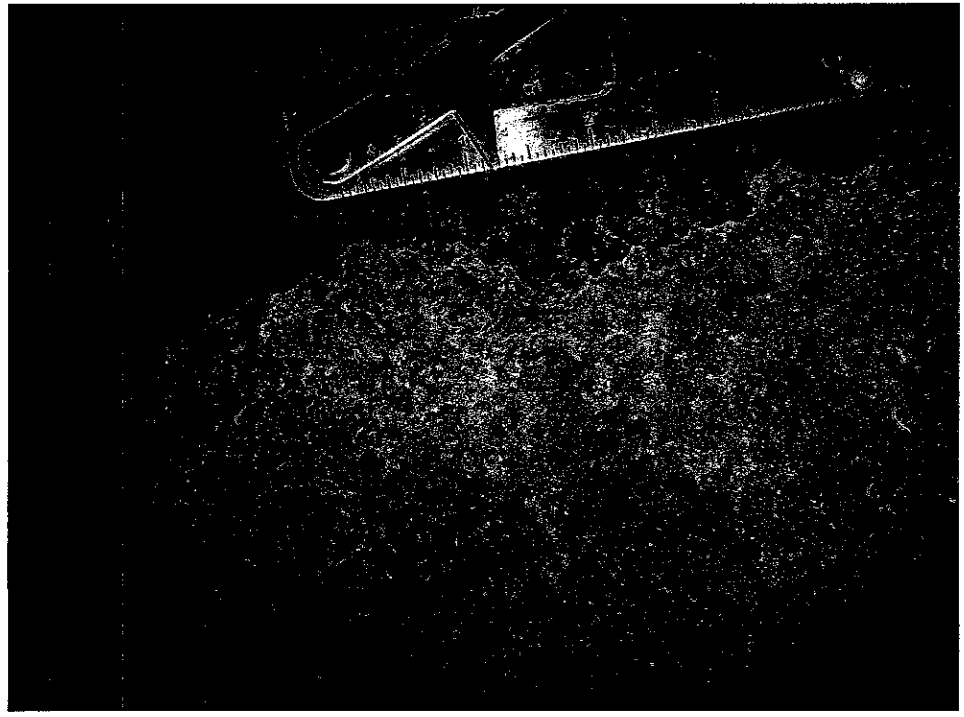

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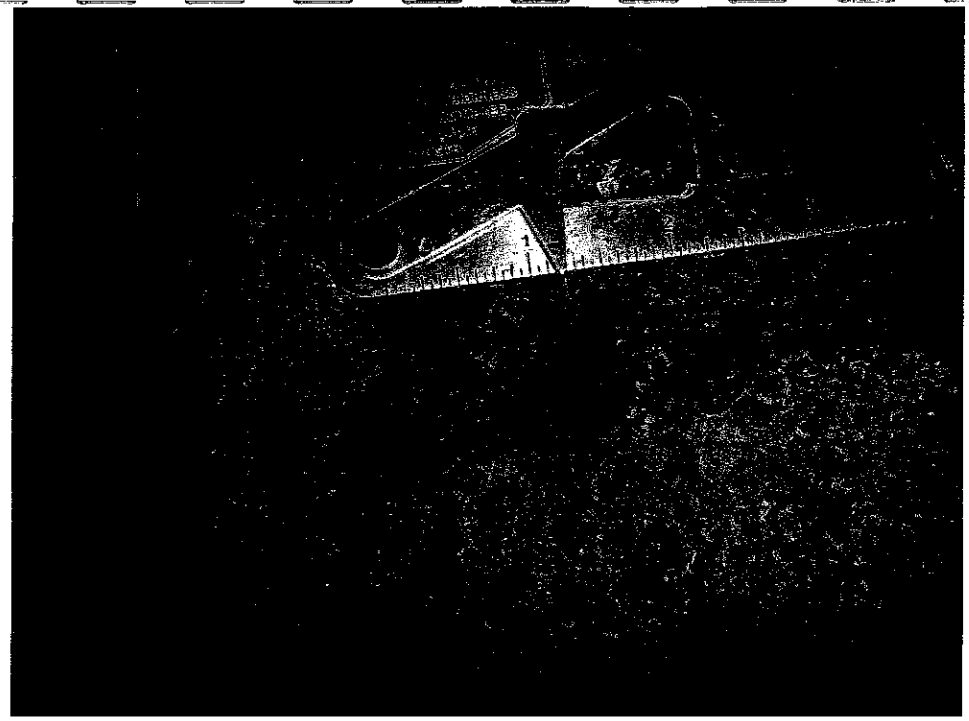

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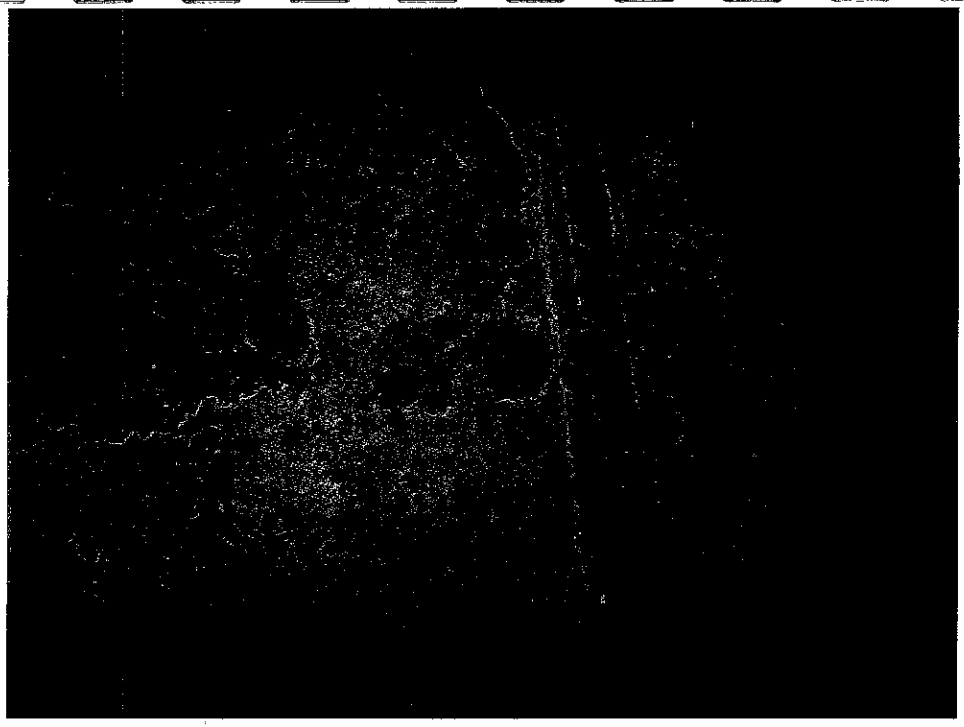

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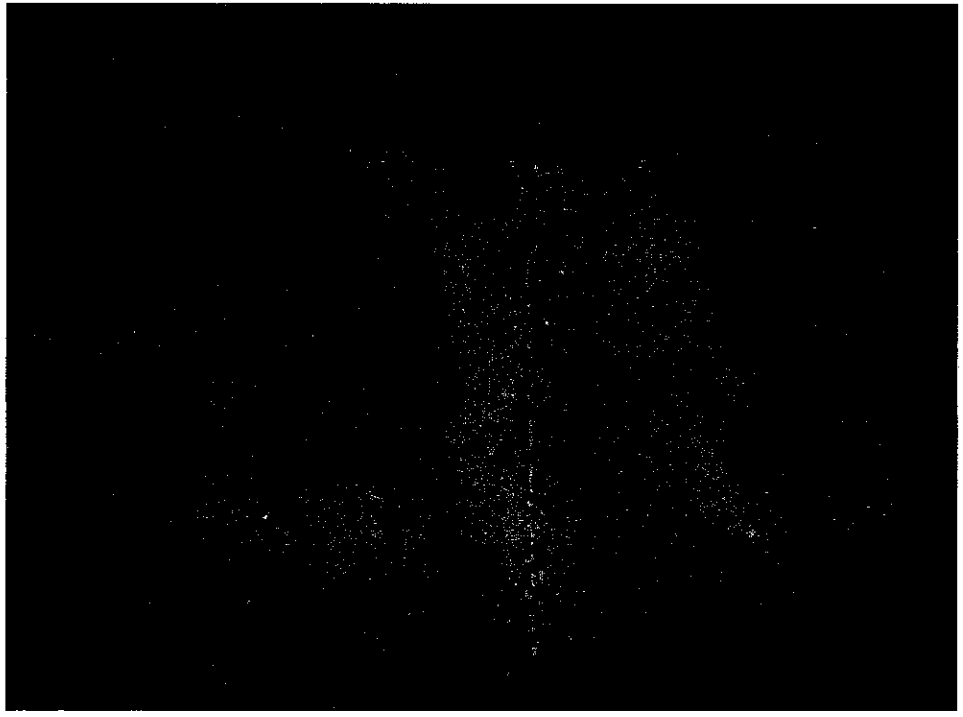

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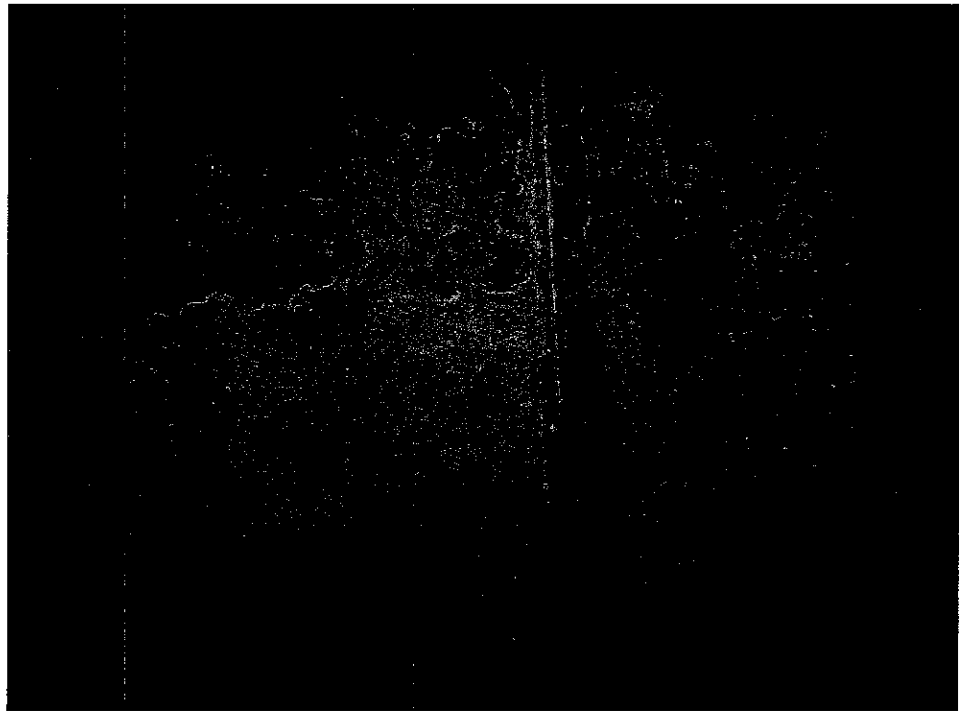
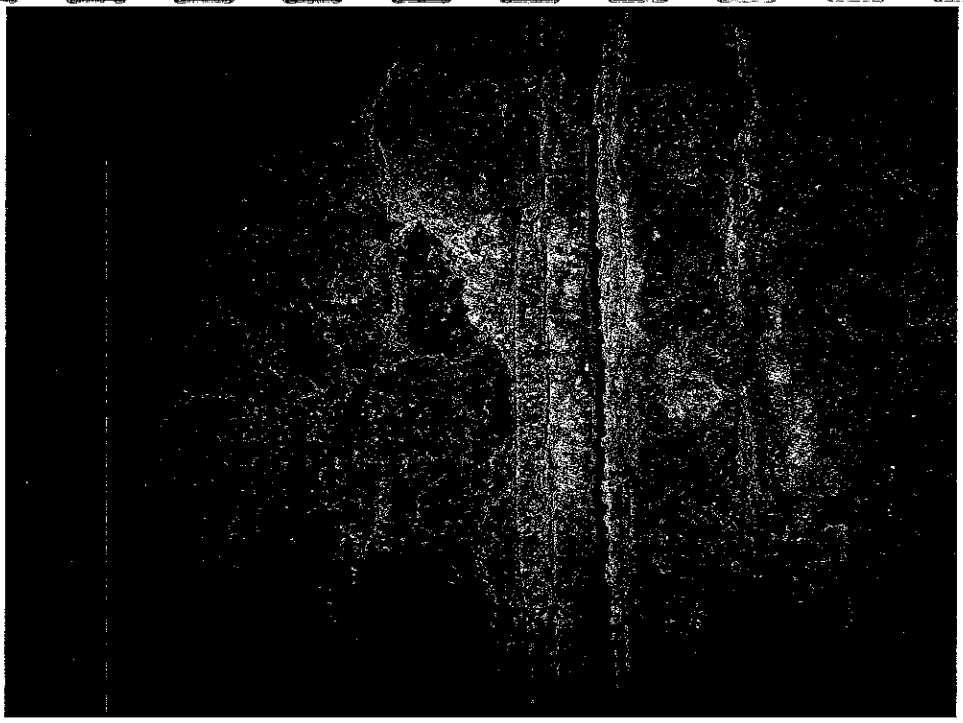
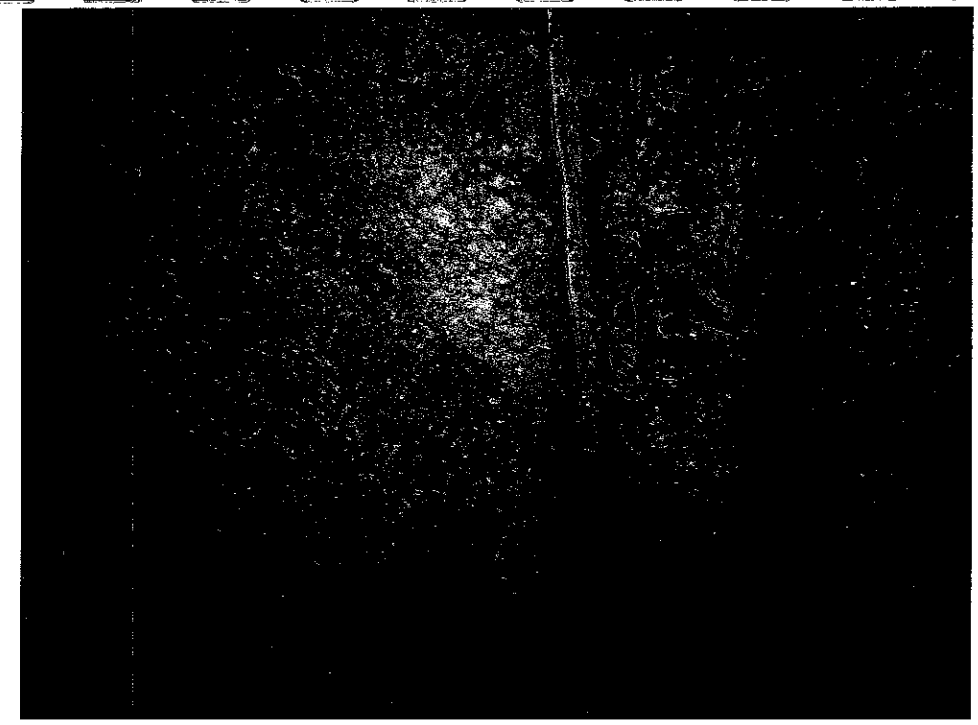


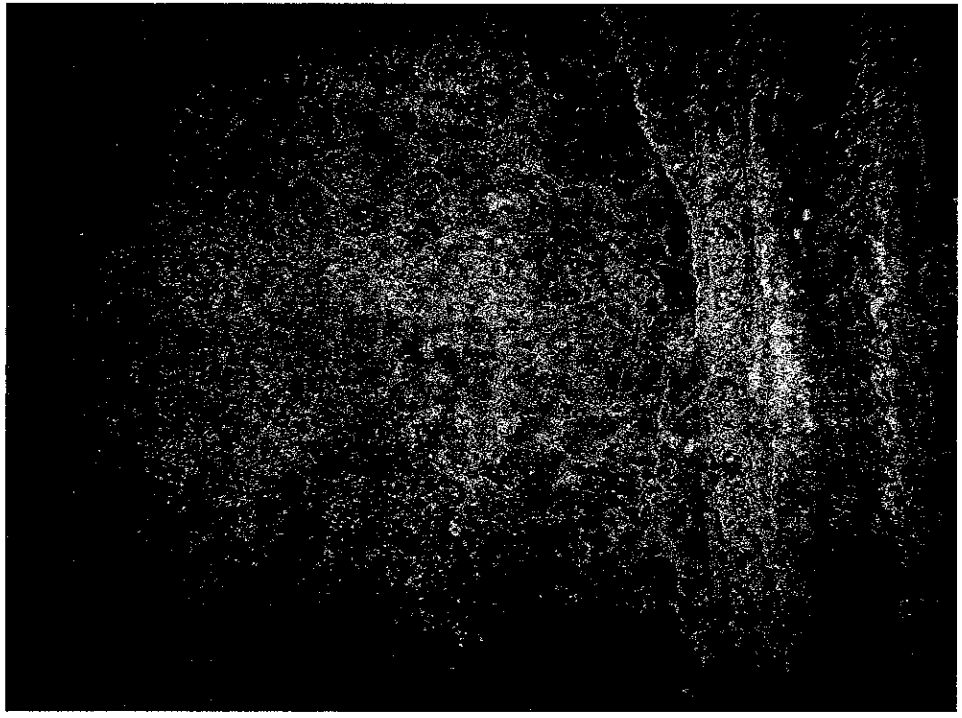
Backwash Tank 2 Interior Photo 24



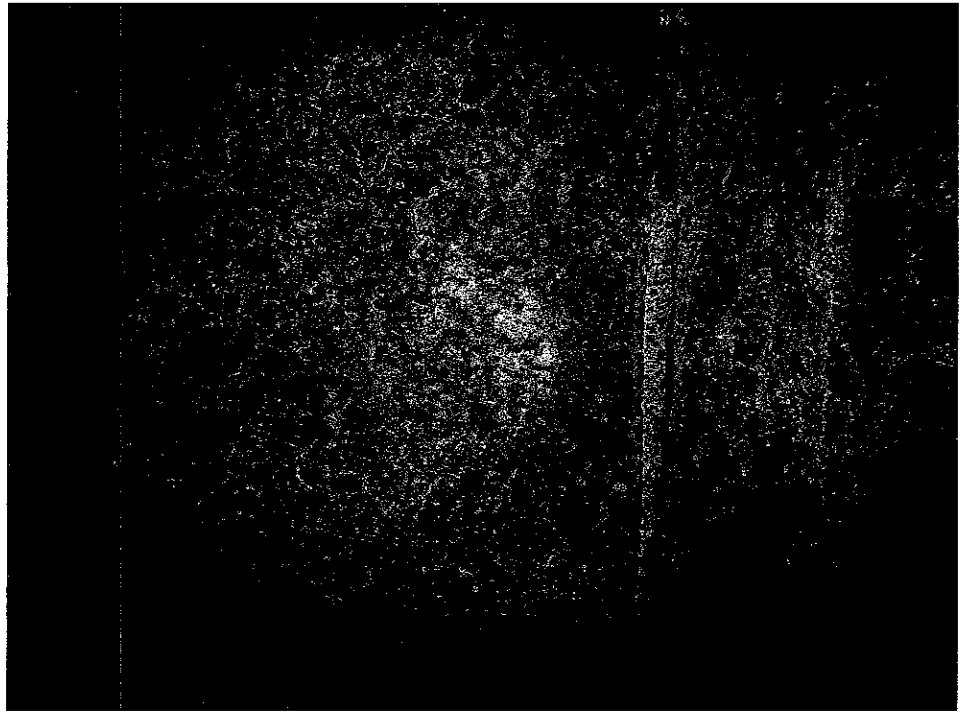
Backwash Tank 2 Interior Photo 25



Backwash Tank 2 Interior Photo 26



Backwash Tank 2 Interior Photo 27



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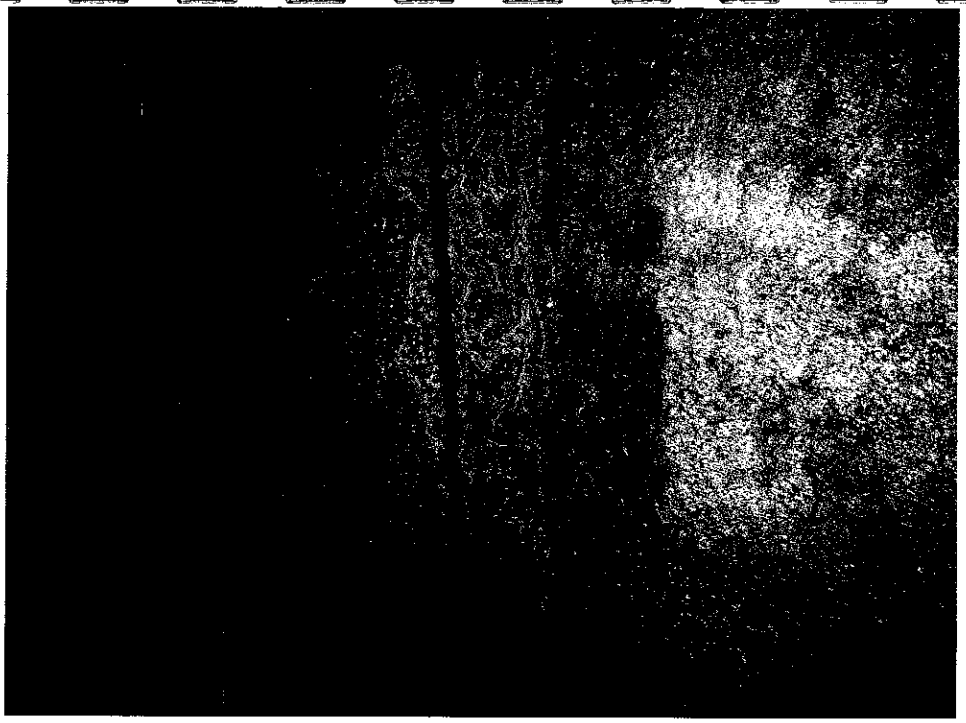

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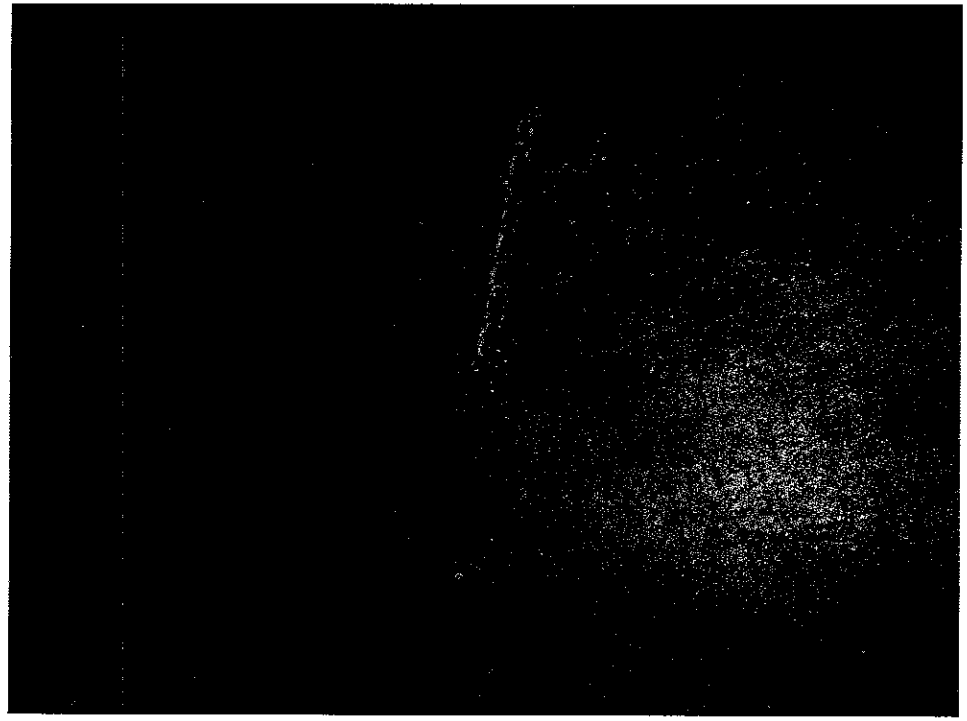

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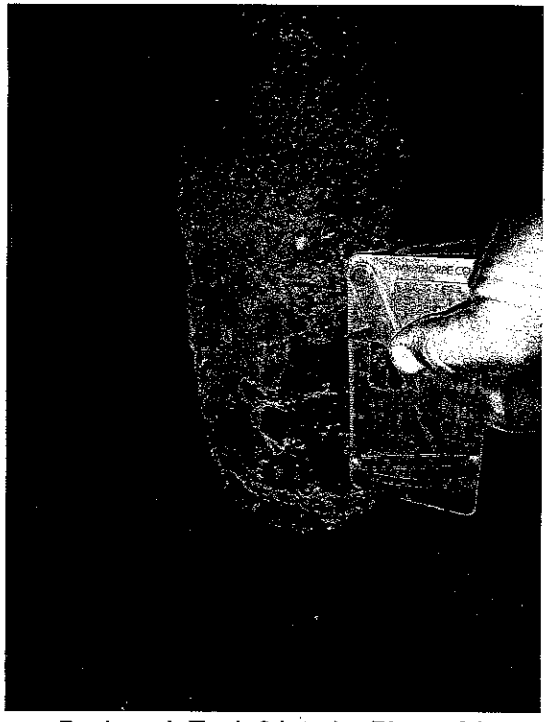

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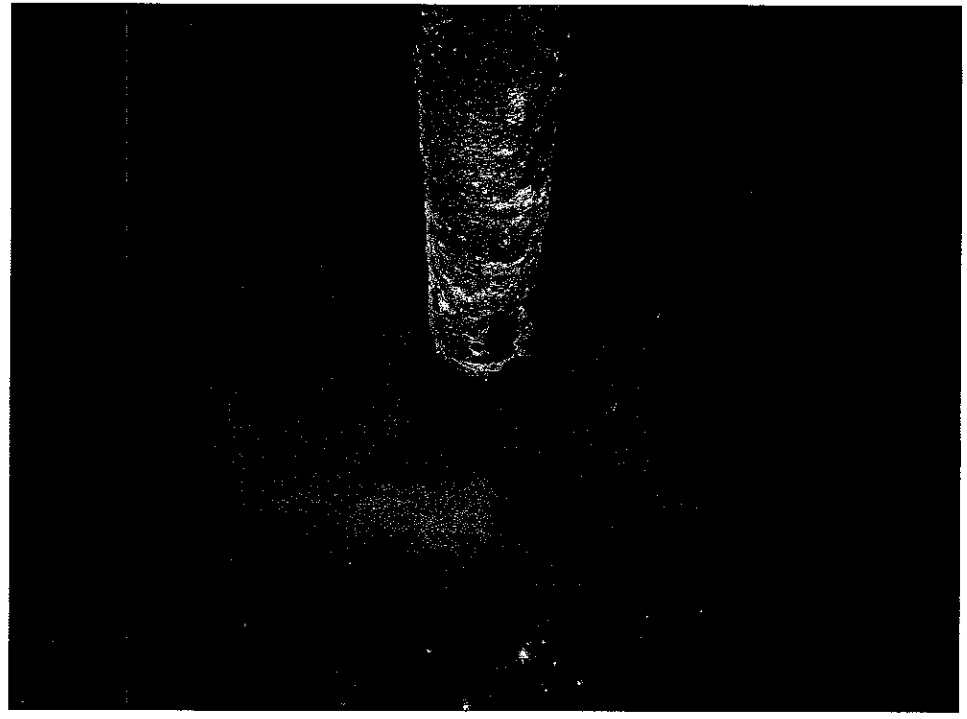

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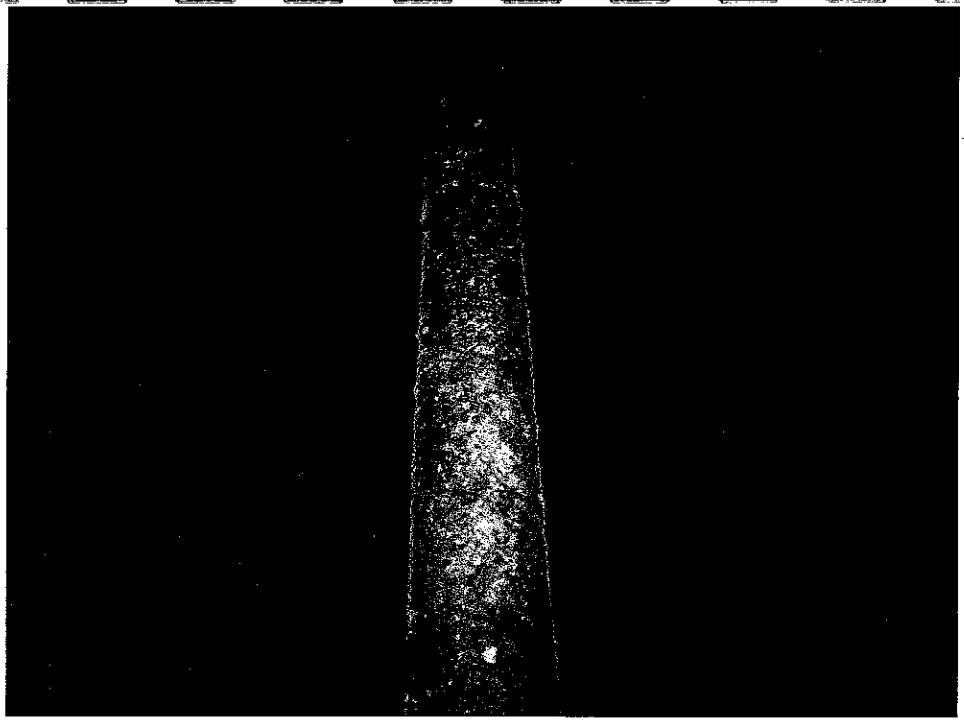

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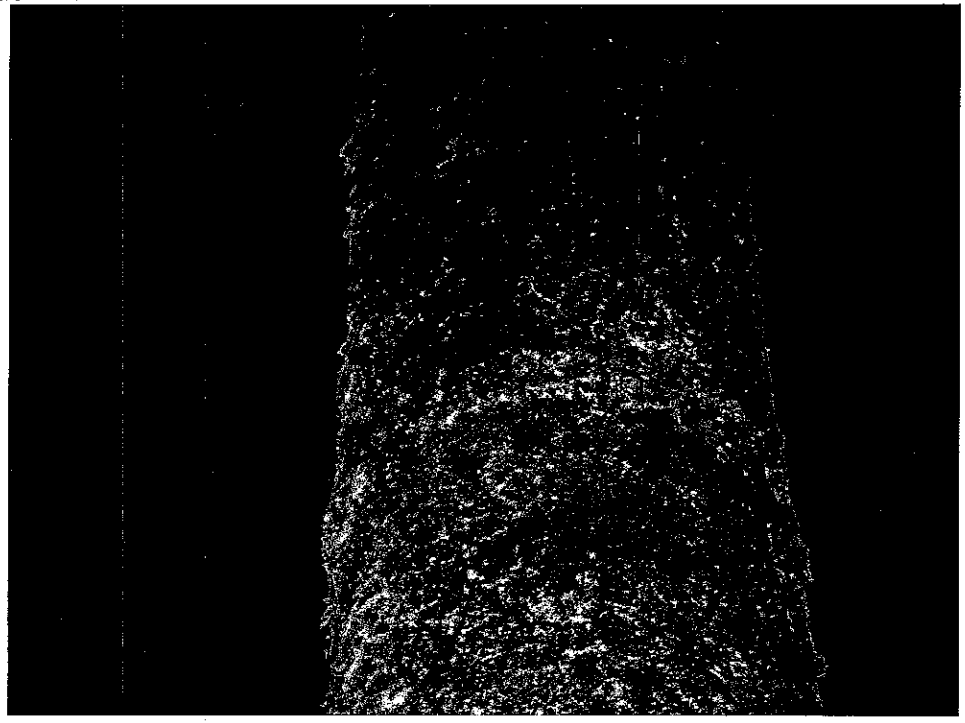

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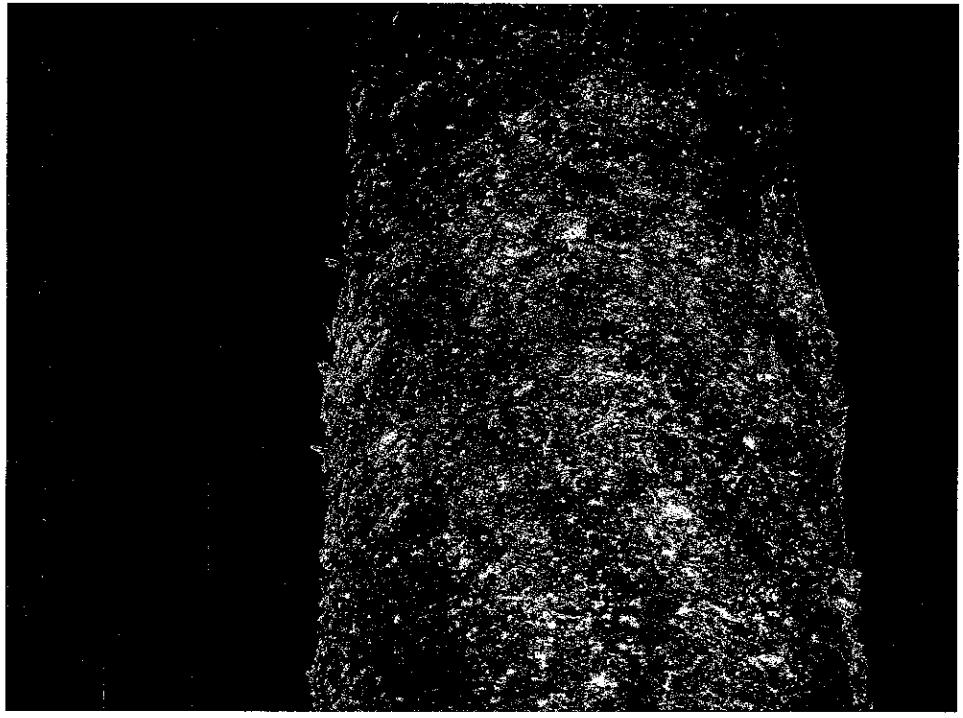

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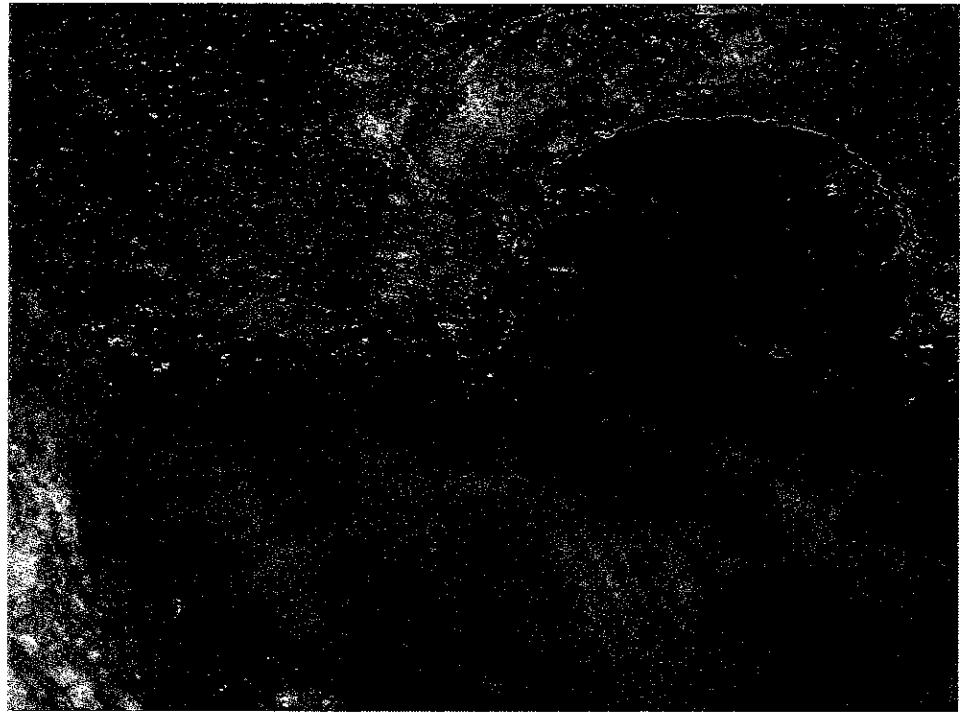

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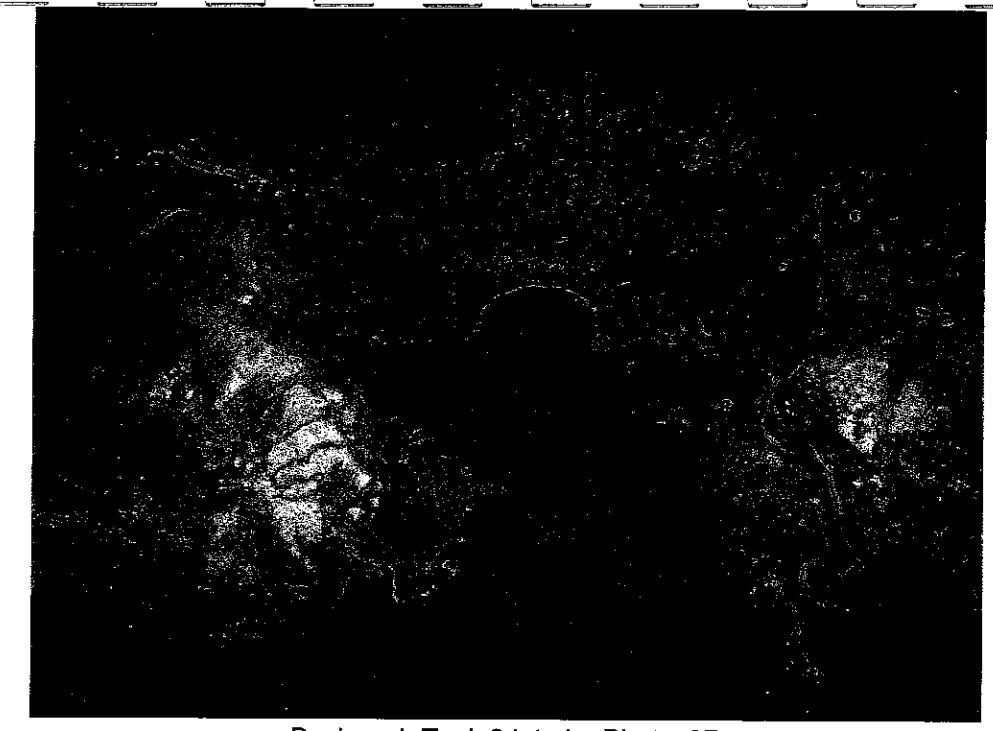

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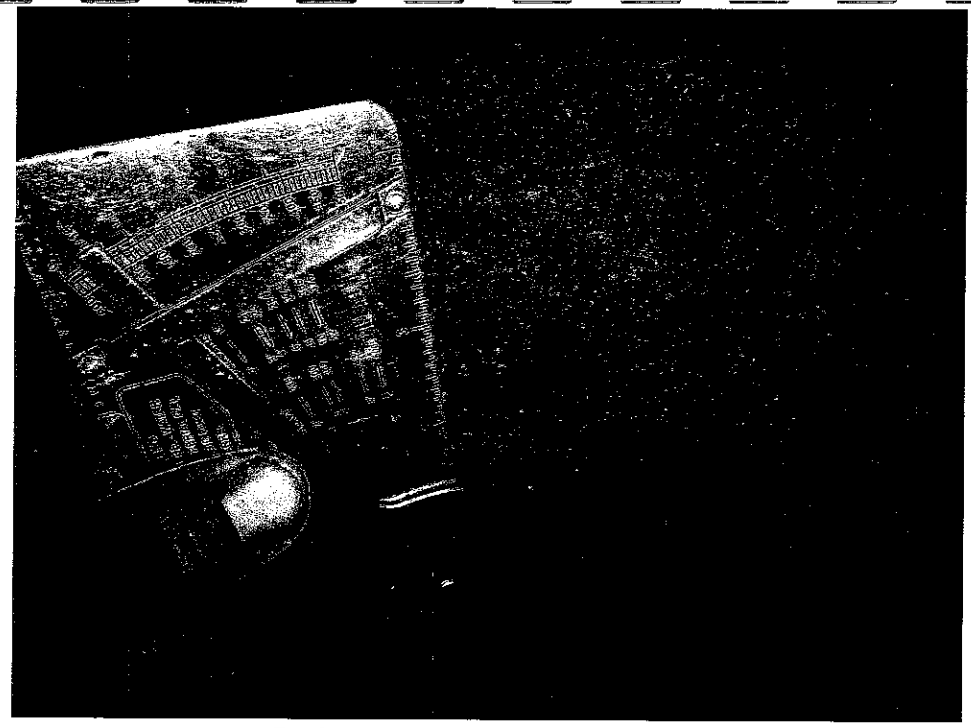

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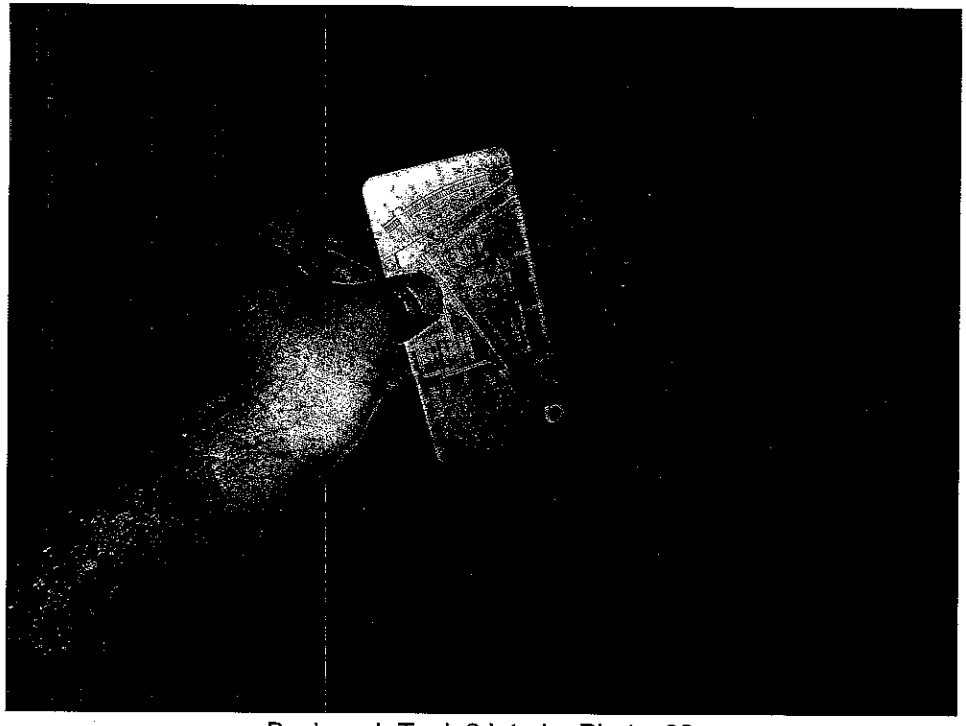

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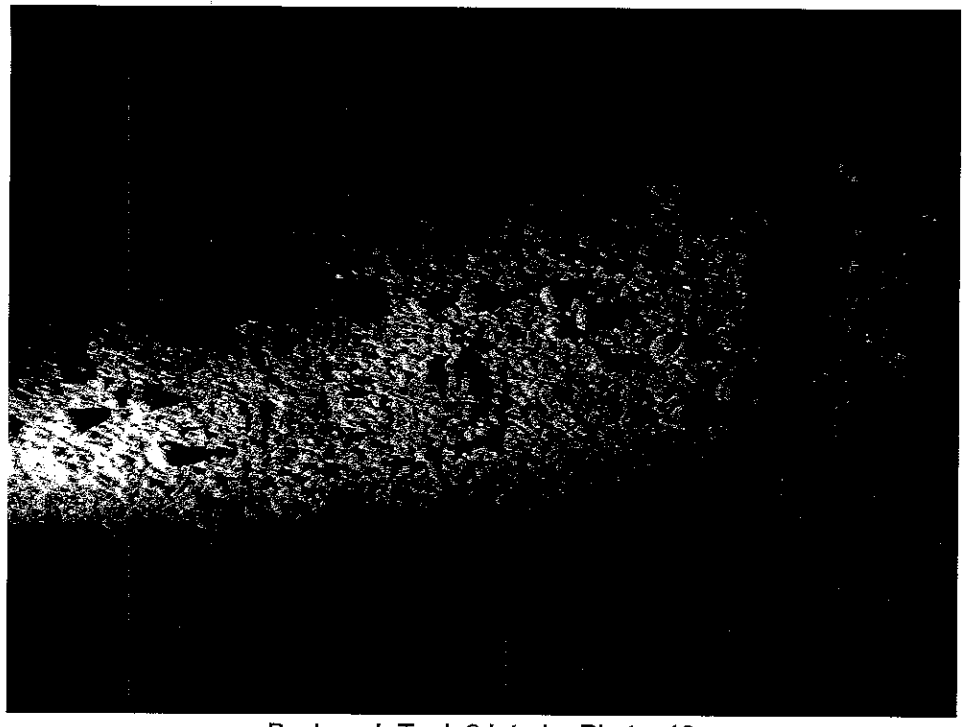
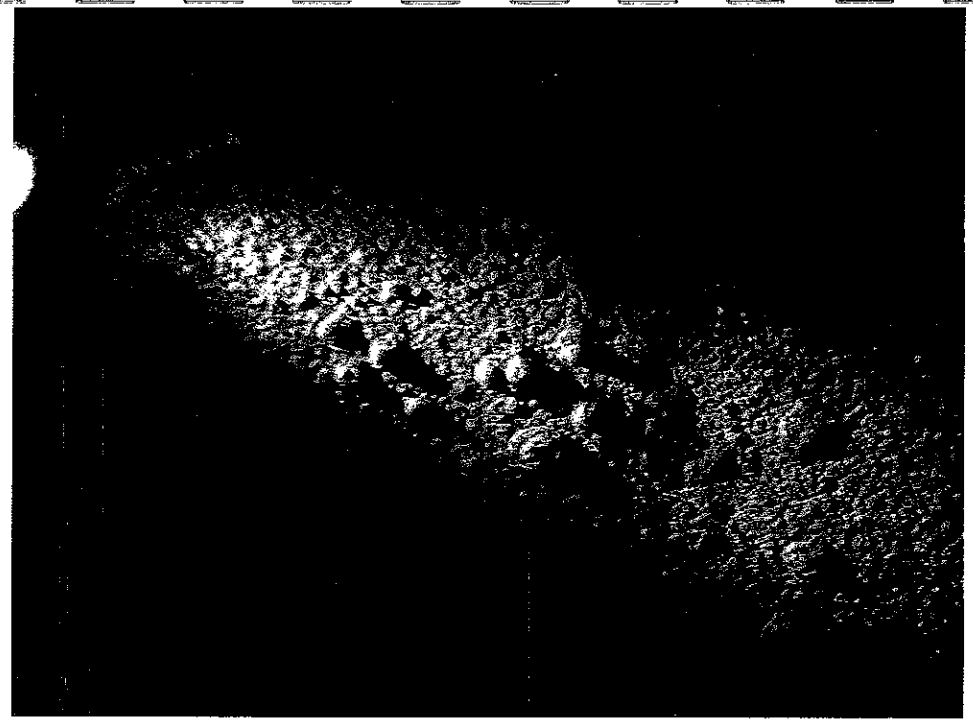


Backwash Tank 2 Interior Photo 40



Backwash Tank 2 Interior Photo 41

Chart 1 - Condition Rating The table below gives a basic description of the four different categories that CSI Services, Inc. uses to provide a general depiction of the condition of each defined area of a structure. The categories are Poor, Fair, Good, or Excellent. The development of these categories is based on historical knowledge and experience of various paint and lining systems over given periods of time in certain service environments. Basically, the rating is determined based on what should be expected of the paint or lining system at that point in its life cycle. As a result, different determinations are made for maintenance inspection versus warranty inspections. A detailed description of each rating with relative consideration addressed follows:

Rating	General Description of Conditions	
	Maintenance Inspection	Warranty Inspection
Poor	This condition is usually prioritized for rework in the short-term. Typically, these surfaces have considerably more coating defects and/or corrosion than what is expected for the age of the system.	This condition identifies an area with wholesale coating defects or corrosion concerns that will typically require significant removal and replacement of the coatings in the area.
Fair	Typically, these surfaces have a level of coating defects and/or corrosion that is slightly worse than what should be expected for the age of the system. This condition is placed on a short-term monitoring schedule.	This condition identifies an area with partial coating defects or corrosion concerns that will require significant rework.
Good	This condition is rated for areas without any considerable coating defects or corrosion. These surfaces are in a condition that is typical for the age of the coating system.	This condition identifies areas with coating defects or corrosion that is typically seen in one-year warranty inspections. Typically, only minor spot repairs are required.
Excellent	This condition is for areas without any considerable coating defects or corrosion. Typically, these surfaces are in a condition that is better than expected for the age of the system.	This condition identified areas that typically are in perfect condition and require no repair work.

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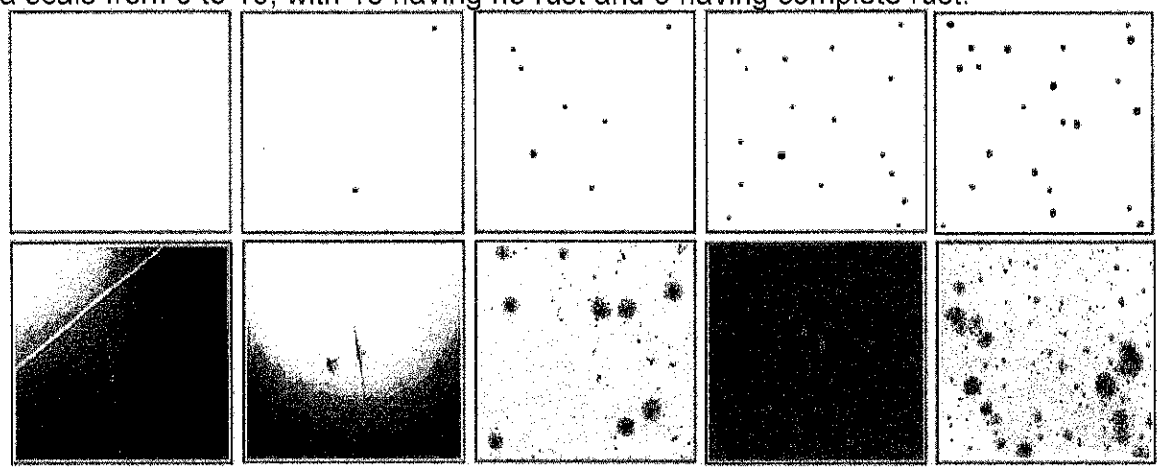
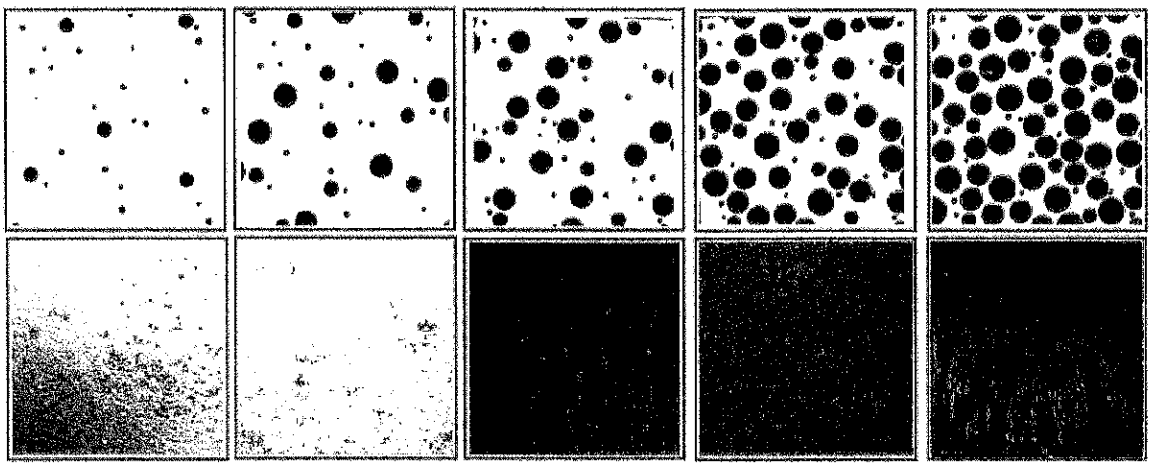
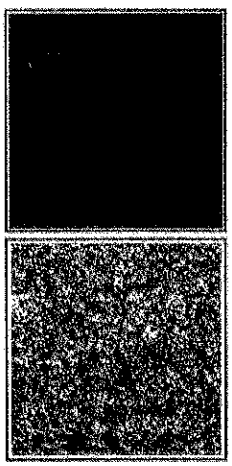
Chart 2 -Rust Grade The black and white figures below depict the standards referenced in ASTM D610 "Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces." Below each standard is a photographic depiction of each level of corrosion, as used by CSI Services, Inc. The standards depict the percentage of rust on a scale from 0 to 10, with 10 having no rust and 0 having complete rust.



Rust Grade 10 Rust Grade 9 Rust Grade 8 Rust Grade 7 Rust Grade 6



Rust Grade 5 Rust Grade 4 Rust Grade 3 Rust Grade 2 Rust Grade 1



Rust Grade 0

Rust Grade	Description
10	No rusting or less than 0.01% of surface rusted
9	Minute rusting, less than 0.03% of surface rusted
8	Few isolated rust spots, less than 0.1% of surface rusted
7	Less than 0.3% of surface rusted
6	Excessive rust spots, but less than1% of surface rusted
5	Rusting to the extent of 3% of surface rusted
4	Rusting to the extent of 10% of surface rusted
3	Approximately one-sixth of the surface rusted
2	Approximately one-third of the surface rusted
1	Approximately one-half of the surface rusted
0	Approximately 100% of the surface rusted

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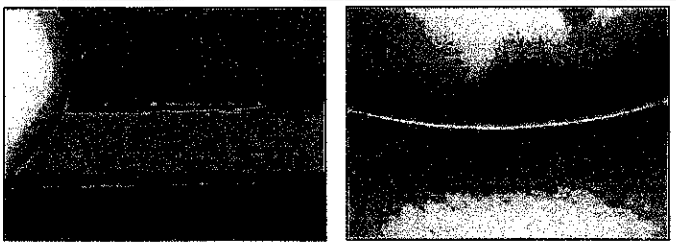
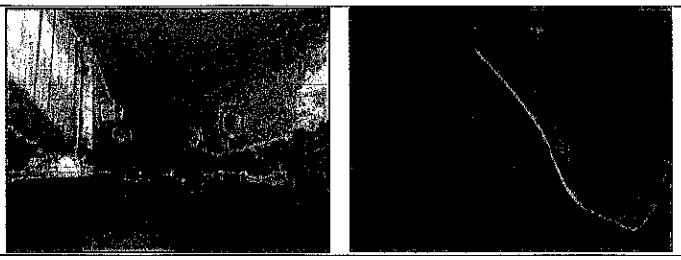
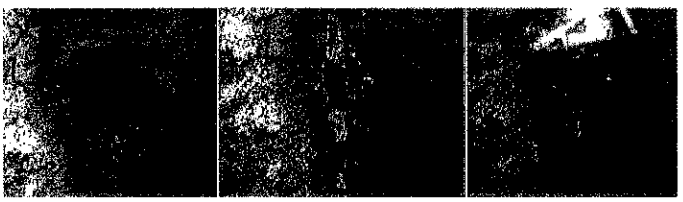
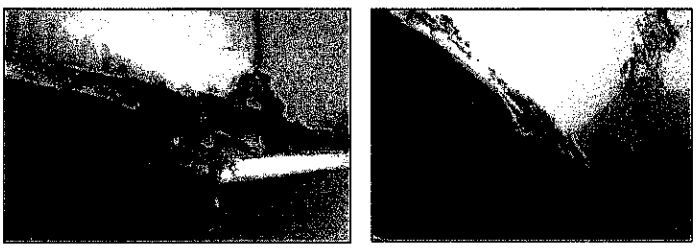
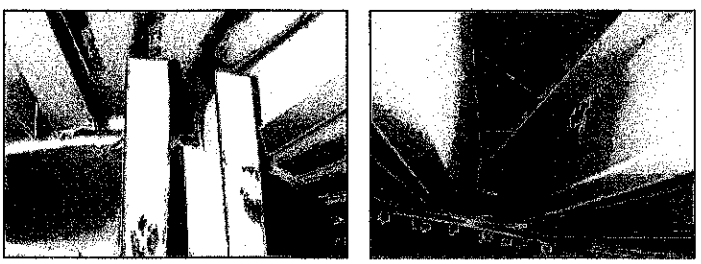
Chart 3 - Corrosion Grade The figure below depicts the photographic standards referenced by CSI Services, Inc. in the determination of the characteristics and stages of corrosion progression. This standard is used to better quantify the level of corrosion once it has progressed to Rust Grades 3, 2, 1, or 0 (see Chart 2). When applicable, CSI classifies an area as one or more of the five different Corrosion Grades. Corrosion Grades 1 through 5 are described below:

Grade	Description	Photo Examples
1	Light Rust - This condition involves relatively light colored rust that does not have any significant metal loss.	
2	Dark Rust -This condition involves relatively dark colored, thicker rust that is progressing towards the next phase, significant metal loss.	
3	Pitting - This condition involves isolated or widespread deep spot corrosion (pitting).	
4	Scale - Also known as lamellar or exfoliation corrosion. The edges of the affected area are leaf like and resemble the separated pages of a wetted book.	
5	Structural Loss - This condition involves metal loss or failure where components will require structural consideration	

The photos depicted are examples and were not taken on this project.

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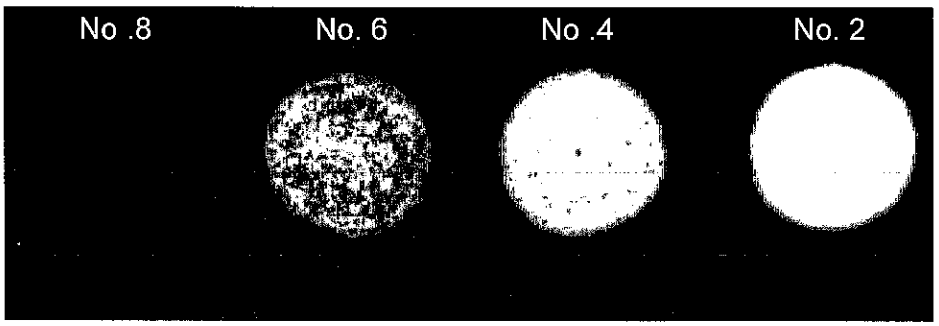
Chart 4 - Chalking The figure below depicts the photographic standards referenced in ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Method D659, Method C. Generally speaking, chalking is the degradation of a paint's binder leaving behind loose pigments as the binder reacts with the environment, primarily ultraviolet light and oxygen. Evaluating chalking is a means to measure the performance of a coating system and its life cycle projection. It is also important to quantify for consideration of future overcoating options. This test uses these pictorial standards to quantify the amount of chalking present on paint films. The depictions below represent the mount of colored chalk removed onto a cloth during the test. The scale ranges from 2 to 8 with the rating 2 having the most chalk.

Light Colored Paints



Dark Colored Paints

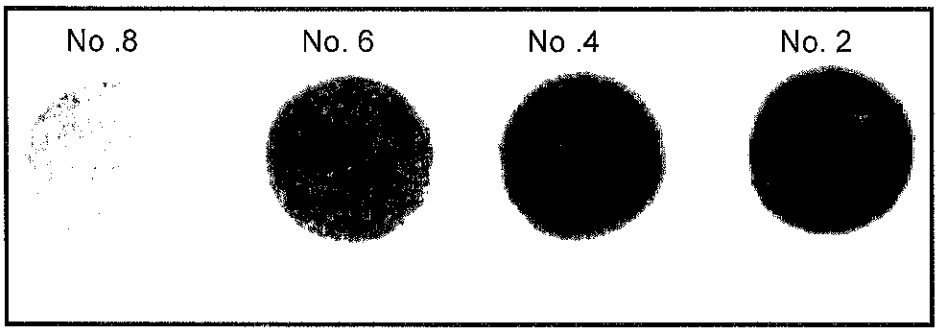


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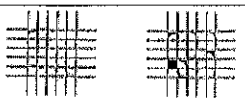
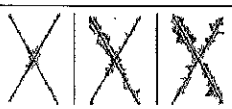
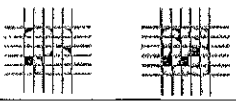
Chart 5 - Adhesion Rating The figures below depict the photographic standards and criteria referenced in ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test" and ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife." Both Standards are used to assess the condition of a paint system for life-cycle projections. It is also used to evaluate an existing paint system's ability to withstand the added stress that any overcoating strategies can create. Depending upon the thickness of the paint system, ASTM D3359 has two different test methods. The rating criteria for both standards follow:

ASTM D3359					
Method A			Method B		
Rating	Observation	Surface of X-cut from which flaking/peeling has occurred	Rating	Percent Area Removed	Surface of cross-cut area from which flaking has occurred for six parallel cuts and adhesion range by percent
5A	No peeling or removal	None	5B	0% none	
4A	Trace peeling or removal along incisions or their intersection		4B	Less than 5%	
3A	Jagged Removal along incisions up to 1/16" on either side		3B	5 – 15%	
2A	Jagged removal along most of incisions up to 1/8" on either side		2B	15 – 35%	
1A	Removal from most of the area of the X under the tape		1B	35-65%	
0A	Removal beyond the area of the X		0B	Greater than 65%	

ASTM D6677	
Rating	Description
10	Fragments no larger than $\frac{1}{32}$" x $\frac{1}{32}$" can be removed with difficulty
8	Chips up to $\frac{1}{8}$" x $\frac{1}{8}$" can be removed with difficulty
6	Chips up to $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight difficulty
4	Chips larger than $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight pressure
2	Once coating removal is initiated by knife, it can be peeled at least $\frac{1}{4}$"
0	Coating can be peeled easily to length greater than $\frac{1}{4}$"

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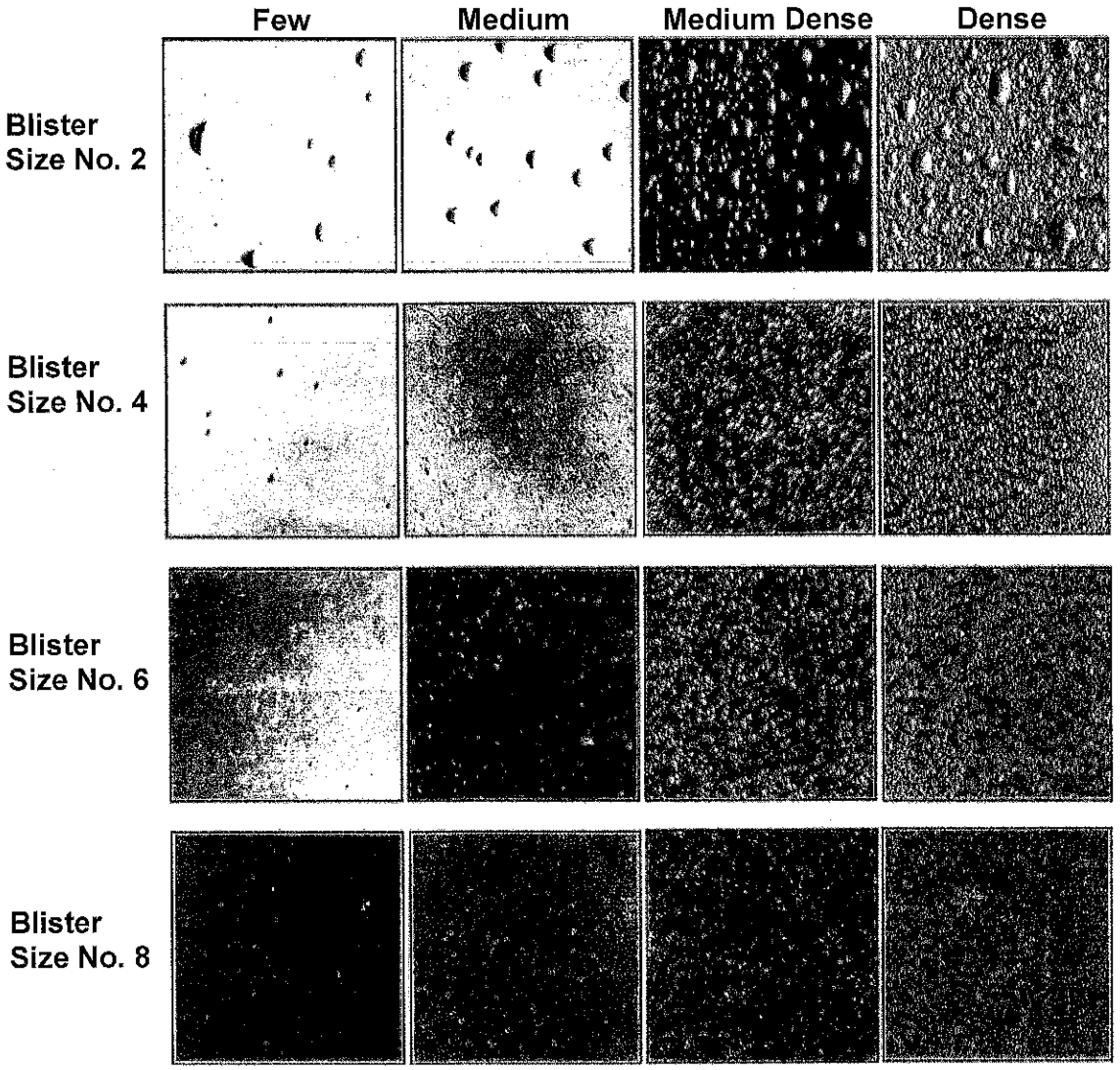
Chart 6 – Blistering Rating The figure below depicts the photographic standards referenced in ASTM D714 "Standard Test Method for Evaluating Degree of Blistering of Paints". This test uses these pictorial standards to quantify both the size and density of blisters that may develop in linings. Although the standard uses a blister size scale of 0 to 10 this chart uses the most common sizes of blisters found in the field. The standard does not use a reference for the size of each of the blisters depicted. CSI used this scale as a means for further quantification by qualifying the largest blister depicted as being 1 inch in width (Blister Size No. 2) and the smallest blister being 1/32 of an inch in width (Blister Size No. 8).



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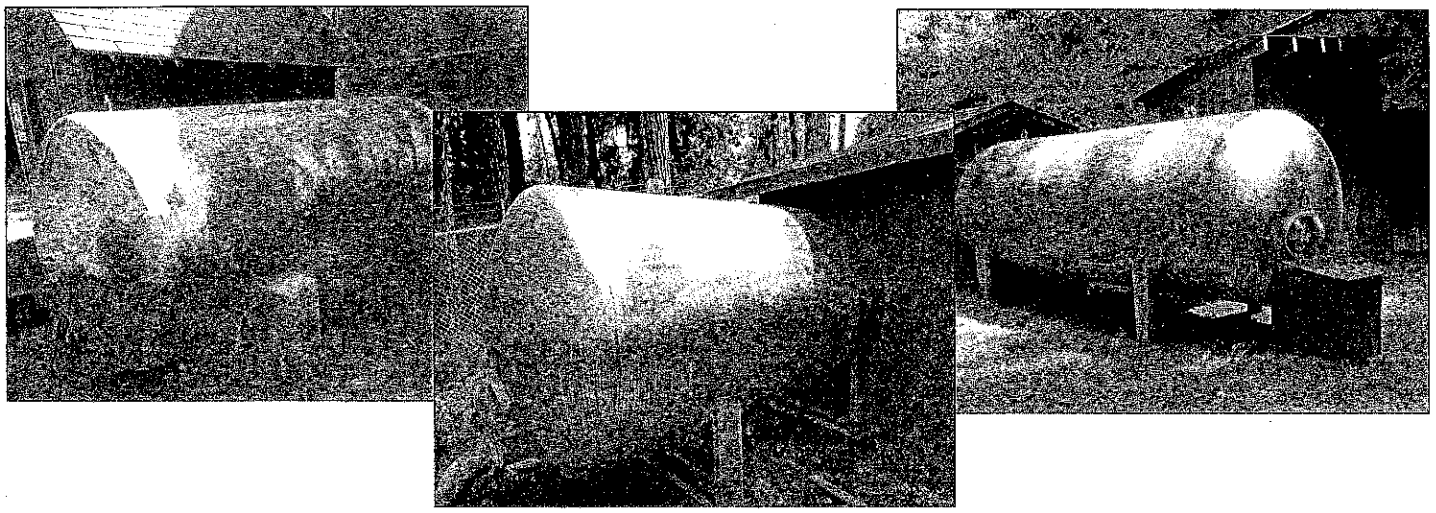
877-274-2422

Final Report
Tank Coating Evaluation
Forest View, Tyler, and Winding Way
Pneumatic Tanks



Prepared for:
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Prepared by:
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August 15, 2013

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Coating Specialists and Inspection Services, Inc.
Consulting Evaluations Tank Diving Inspection

Introduction

The Grizzly Flats Community Services District authorized CSI Services, Inc. (CSI) to conduct a coating maintenance inspection on the Forest View, Tyler, and Winding Way Pneumatic Tanks located within Grizzly Flats, CA. The focus of this evaluation was to examine the tank coatings and develop recommendations for maintenance coating activities.

Coatings maintenance recommendations have been made in accordance with the applicable requirements of American Water Works Association's Standard (AWWA) D102 "Coating Steel Water Storage Tanks," AWWA Standard M42 "Steel Water Storage Tanks, and CSI's experience with evaluating hundreds of water storage facilities. A photo summary has also been included to document the condition of the tanks.

The field-work was completed over a two day period from July 1 and 2, 2013 and involved observations and measurements from the exterior of each tank. The exterior shell observations were made from grade level. Access to the interior of the tanks was not completed due to operational requirements. Mr. Sweeney retrieved the field data and prepared this report and commendations for maintenance work. Mr. Sweeney is a certified SSPC and NACE Level III inspector, an SSPC Certified Protective Coating Specialist, and has evaluated hundreds of water storage tanks.

Summary

With respect to corrosion, the exterior paint system on each of the three tanks is in overall fair condition with some minor rust spots and heavier corrosion in isolated locations. The paint on each tank is relatively thin with satisfactory adhesion. The thin paint is primarily a result of the paint experiencing significant chalking and weathering. On this basis, the focus of any future exterior paint work should be to spot repair and overcoat the tanks.

With respect to the condition of the interior surfaces, the steel thickness measurements obtained from the exterior by the use of ultrasonics provided an indication of the condition on the interior of each tank. Although the condition of the internal surfaces should be verified by opening the tanks, the only tank believed to have a significant amount of corrosion was the Winding Way Tank. It is suspected that this tank has some more advanced metal loss and will require rehabilitation up to including relining and/or tank replacement. Obviously, these additional evaluations should be completed prior to completing any exterior paint work.

Background

The three pneumatic tanks evaluated were the Forest View, Tyler, and Winding Way pressure vessels. The Forest View Tank was built in 1966 by the California Tank and Manufacturing Company, and both the Tyler and Winding Way Tanks were built in 1968 by the United States Steel Corporation. Each is a welded steel structure that sits adjacent to a larger steel water storage reservoir of the same name. Each tank is of a vertical, cylindrical design comprised of a round horizontal shell sealed on each end by end-caps (i.e. heads). The support design on the Forest View tank involves concrete saddles, while the other two tanks have steel legs that are welded to the shell. Each tank's exterior paint systems appears to be an alkyd based paint system that may have received periodic touch up painting. The name plates for each tank noted the following as-built steel thickness measurements: Forest View Tank, Head - 0.375" and Shell - 0.250"; Tyler Tank, Head - 0.283" and Shell - 0.250"; Winding Way, Head - 0.255" and Shell - 0.250".

Field Evaluation

The evaluation involved visual observations (both with and without magnification), non-destructive testing, and destructive testing. Photos were taken and are included in a Photo Summary. Only the exterior surfaces of the tanks were evaluated. The interior of the tanks were not opened or made accessible due to operational requirements. A rating system has been developed to quantify the condition of each tank. Each of the rating criteria is found in the Attachments (Charts 1 through 6).

The condition of the paint systems was rated as being poor, fair, good, or excellent (Chart 1). Where applicable, the extent of any rust defects identified within each of the areas were generally determined using the guidelines set forth in ASTM D610 "Standard Test Method for Evaluating the Degree of Rusting of Painted Steel Surfaces" (Chart 2). Where applicable, the characteristic or stage of corrosion was determined in according to a CSI Corrosion Grade criteria (Chart 3). The degree of chalking was determined in accordance with ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Test Method D659, Method C (Chart 4). Coating adhesion was assessed in accordance with ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test, modified Method A or a modified version of ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife" (Chart 5). The modified version of ASTM D6677 was used in areas where destructive testing was not found to be practical. Any blistering that may have been present was rated in accordance with ASTM D714 "Standard Test Method for Evaluating the Degree of Blistering in Paints" (Chart 6). Spot ultrasonic steel thickness measurements were obtained using a Krautkramer Branson DMS ultrasonic thickness (UT) gage from randomly selected areas of each steel tank.

Forest View Pneumatic Tank

The condition of the tank exterior paint was found to be in fair condition with light chalking (ASTM D4214, No. 8) and numerous colored coats or patches. Areas damaged by mechanical impact was minimal, but dark rust spots (CSI Corrosion Grade 2) are present in some areas (ASTM D610, 9), notably around the manway hatch flange. Biological growth was also present on the tank. The paint dry film thickness on the exterior was measured to range from between 3 and 5 mils, and the adhesion was rated to be satisfactory (ASTM D3359. 4). The amount of corrosion on the tank exterior was rated to be less than 0.1 percent of all areas (8, ASTM D610). No exterior pits, scaling, or other advanced form of corrosion was identified. Spot ultrasonic steel thickness (UT) measurements were obtained from randomly selected areas on both the shell and end caps (i.e. heads). The readings were primarily taken from the lowest half of the vessel. The UT steel thickness measurements obtained from the shell was found to range from between 250 and 260 mils (i.e. 0.250" to 0.260"), and the measurements on the end cap (head) was found to range from between 257 and 260 mils (i.e. 0.257" to 0.260"). The UT measurements were obtained from not only spot areas, but also included continuous readings obtained as the meter's probe was slid across the substrate. No indication of any steel thickness less than those reported above was identified during the measurement process.

Tyler Pneumatic Tank

A portion of the tank was located within a pump house. The condition of the tank exterior paint was found to be in fair to good condition with light chalking (ASTM D4214, No. 8). Areas damaged by mechanical impact were considered minimal, but scrapes with dark rust (CSI Corrosion Grade 2) are present on the end cap that is not in the pump house. Otherwise, the majority of the tank paint system is mostly free of rust. No exterior pits, scaling, or other advanced form of corrosion was identified. The amount of corrosion was approximately 1 percent of the total surface (ASTM D610, 6). Biological growth was also present on the tank. The paint dry film thickness on the exterior was measured to range from between 4 and 7 mils, and the adhesion was rated to be satisfactory (ASTM D3359. 4). Spot ultrasonic steel thickness (UT) measurements were obtained from both randomly selected areas of both the shell and end caps (i.e. heads). The readings were primarily taken from the middle range of the vessel. The UT measurements obtained from the shell was found to range from between 260 and 265 mils (i.e. 0.260" to 0.265"), and the measurements on the end cap (head) was found to range from between 315 and 325 mils (i.e. 0.315" to 0.325"). The UT measurements were obtained from not only spot areas, but also included continuous readings obtained as the meter probe was slid across the substrate. No indication of any steel thickness less than those reported above was identified during the measurement process.

Winding Way Pneumatic Tank

A portion of the tank was located within a pump house. The condition of the tank exterior paint was found to be in fair condition with light chalking (ASTM D4214, No. 8). Areas damaged by mechanical impact were considered minimal, but the topcoat had been

depleted in areas to expose a red primer in many areas. The pattern of exposed primer was similar to a spray pattern. The tank was found to have dark rusting (CSI Corrosion Grade 2) in localized areas, mostly on the underside of the tank. Otherwise, the majority of the tank paint system is free of rust. No exterior pits, scaling, or other advanced form of corrosion was identified. The amount of corrosion was approximately 0.03 percent of the total surface (ASTM D610, 9). Biological growth was also present on the tank. The paint dry film thickness on the exterior was measured to range from between 2 and 7 mils, and the adhesion was rated to be satisfactory (ASTM D3359. 4). Spot ultrasonic steel thickness (UT) measurements were obtained from both randomly selected areas of both the shell and end caps (i.e. heads). The readings were primarily taken from the middle range of the vessel head and the underside of the shell. The UT measurements testing obtained from the shell was found to range from between 165 and 205 mils (i.e. 0.165" to 0.205"), and the measurements on the end cap (head) was found to range from between 183 and 264 mils (i.e. 0.183" to 0.264"). The UT measurements were obtained from not only spot areas, but also included continuous readings obtained as the meter probe was slid across the substrate. No indication of any steel thickness less than those reported above was identified during the measurement process.

Discussion

With respect to corrosion, the exterior paint system on each of the three tanks is in overall fair condition with some minor rust spots and heavier corrosion in isolated locations. The paint on each tank is relatively thin with satisfactory adhesion. The thin paint is primarily a result of the paint experiencing significant chalking and weathering. Chalking occurs as a film's binder degrades in ultraviolet light, which leaves behind the film's pigment in the form of unbound chalk. The weathering is the result of the chalk being slowly removed by cycles of wind and rain. Although there is only a relatively minor amount of corrosion on the tanks, the thin chalky films will soon not provide enough of barrier protection from atmospheric moisture, and this will soon result in more advanced rust development. It is projected that more advanced corrosion will develop within the next few years. Although the paint was not analyzed for heavy metal (e.g. lead, chromium, cadmium) content, it is projected that the films contain heavy metals. This assumption is based on the age of the tanks and the amount of corrosion that is present.

Generally speaking, any maintenance-painting project can include three different operations: spot repairs, spot repairs followed by a full overcoat, or complete removal and replacement. In evaluating the condition of a coating to determine the best painting approach there are a number of different factors to consider. The first set of factors includes the determination of the coating's ability to withstand the added stress of an additional coat(s). Attributes impacting this decision include film thickness and adhesion. If the coating is too thick or has poor adhesion, the increase in internal stress resulting from the application of additional paint layers could exceed the bond strength of the existing coatings to themselves or the

substrate. This would result in a cohesive or adhesive failure of the existing system. The second set of factors to consider when determining what painting approach to take is the amount of surface area requiring repair, the overall difficulty in providing access (rigging) to the structure, and whether the coating system contains heavy metals (i.e. lead, chromium, etc). The final factor influencing the maintenance plan is the condition of the substrate.

When considering whether a spot repair approach is a viable option, a good rule of thumb is, when the area requiring repairs is at or below 10 percent of the total surface area – spot repair. Above 10%, making spot repairs with or without overcoat becomes a diminishing return. With up to 10 percent of defects, spot repair and overcoating may be an option if the adhesion is at least fair to good and the substrate is free from mill scale. Once the percentage of surface area requiring repairs is much in excess of 10%, the cost of cleaning and coating the spots approaches (or exceeds) the total cost of removal and replacement.

On this basis, the focus of any future exterior paint work should be to spot repair and overcoat the tanks (i.e. lead encapsulation) before the existing coating systems degrade to a level where wholesale paint replacement is required. Any work disturbing the heavy metal bearing film will require that the workers and environment are properly protected.

With respect to the condition of the interior surfaces, the steel thickness measurements obtained from the exterior by the use of ultrasonics gives an indication of the condition on the interior of each tank. It should be clear that these spot measurements can not provide a large enough sampling size to truly represent all conditions present on the internal surfaces. They can, however, provide an *indication* of the overall condition of the steel from a corrosion perspective. With this understanding, the steel thickness measurements obtained from the tank exteriors provided the following information:

Tank Name	Area	As-Built	Retrieved Data	Potential Metal Loss
Forest View	Head	375 mils	257 mils to 265 mils	218 mils
	Shell	250 mils	250 mils to 260 mils	0 mils
Tyler	Head	283 mils	315 mils to 325 mils	0 mils
	Shell	250 mils	260 mils to 265 mils	0 mils
Winding Way	Head	255 mils	183 mils to 264 mils	72 mils
	Shell	250 mils	165 mils to 205 mils	85 mils

It is not clear why the readings on the head of the Forest View are so much less and the head of the Tyler Tank are so much more than what is listed on the tank's name plate. It is suspected that perhaps the name plates may have been incorrectly stamped. Nonetheless, these abnormalities should be verified by draining each tank and visually inspecting the interior for signs of significant corrosion. It is suspected that neither of these tanks have a significant amount of metal loss - at least in the areas tested. However, the Winding Way Tank was found to have areas that are consistent with wholesale metal loss on the interior,

and it is recommended that this tank be drained as soon as possible to visually ascertain the internal conditions. It is suspected that this tank has some more advanced metal loss and will require rehabilitation up to including relining and/or tank replacement. Obviously, these additional evaluations should be completed prior to completing any exterior paint work.

Recommendations

In order to complete the most economical approach to maintaining the exterior paint systems on the tanks, the following recommended work should be completed.

1) Prepare all painted surfaces to remove all chalking, contaminants, organic growth, and poorly adhered coatings in accordance with SSPC: The Society of Protective Coatings' Surface Preparation Specification No. 12 Low-Pressure Water Cleaning (SSPC-SP12, LPWC) using 3000 to 5000 PSI using a solution of trisodium phosphate TSP) at 3 ounces to a gallon of clean water and scrubbed with stiff brittle brushes. All areas should then be rinsed with clean water and allowed to dry. Special care should be made to assure that all surfaces are impacted by the full water pressure.

2) Spot repair all bare metal (rust spots) in accordance with SSPC-SP15 "Powertool Cleaning to A commercial Grade Cleanliness". All spot repairs should be feathered back to sound coating a minimum of 3 inches in all directions.

3) Following all proper surface preparation, as noted above apply one of the following coating systems in accordance with the manufacturer's written recommendations:

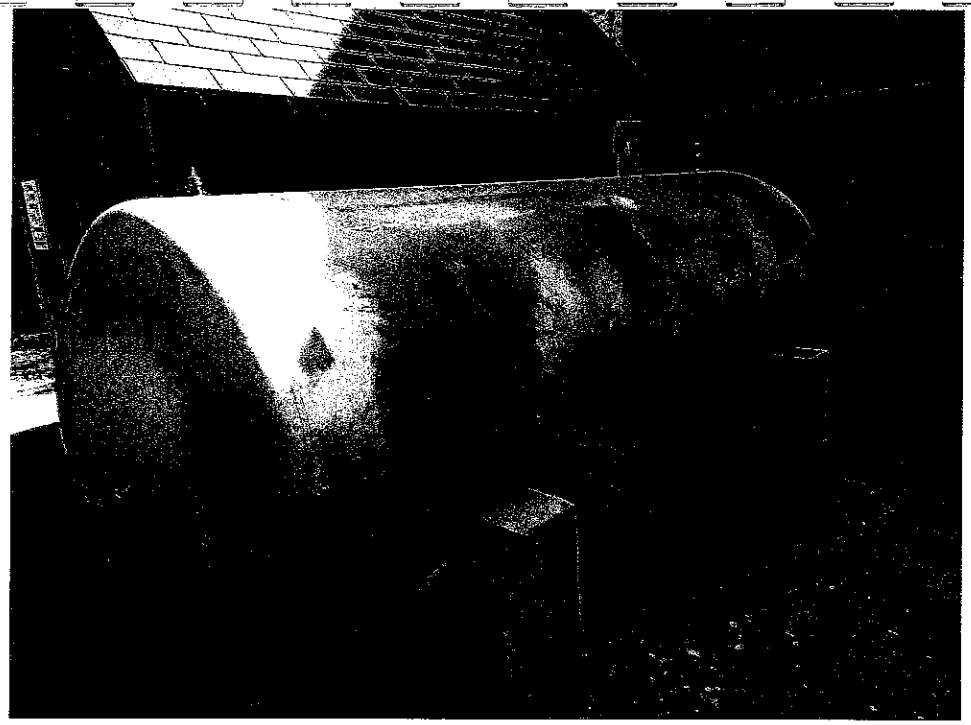
Tnemec

Spot Primer:	Chembuild 135: DFT = 3 to 5 mils
Full Intermediate:	Chembuild 135: DFT = 3 to 5 mils
Full Finish Coat:	Endurashield Series 1080: DFT = 2 to 4 mils

Ellis Paint

Spot Primer Coat:	Maximus Epoxy Primer 5183: DFT = 3 to 5 mils
Full Intermediate	Maximus Epoxy Primer 5183: DFT = 3 to 5 mils
Full Finish Coat:	Maximus Polyurethane 5500: DFT = 2 to 4 mils

NOTICE: This report represents the opinion of CSI Services, Inc. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, and materials afforded. While the inspections were performed in accordance with industry standard practices and a reasonable indication of proper serviceability has been provided, our inspection does not guarantee a leak proof tank.



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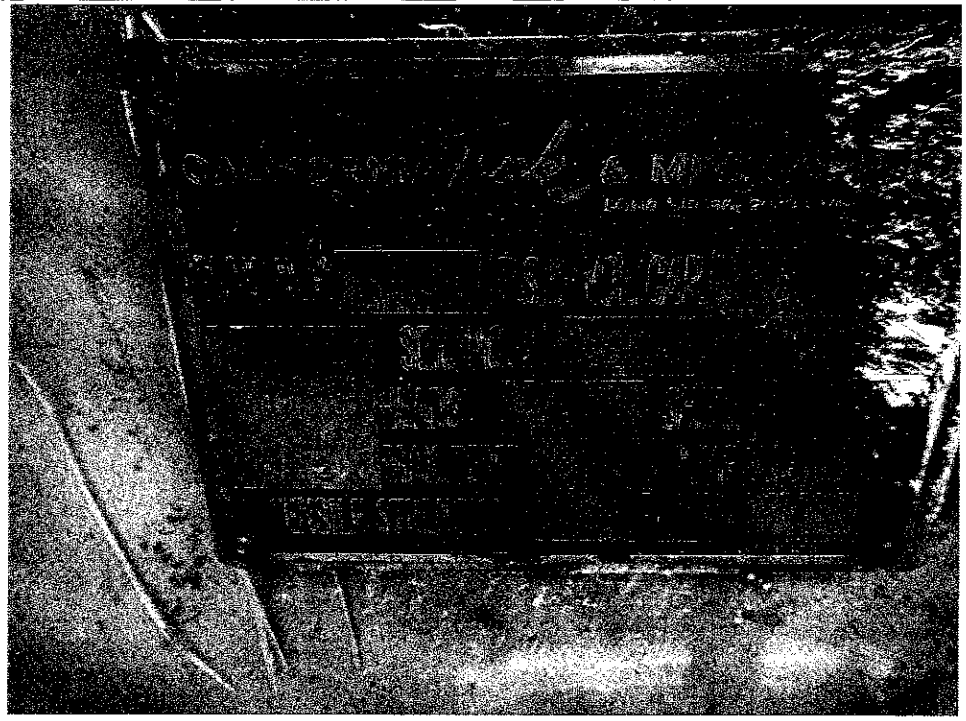

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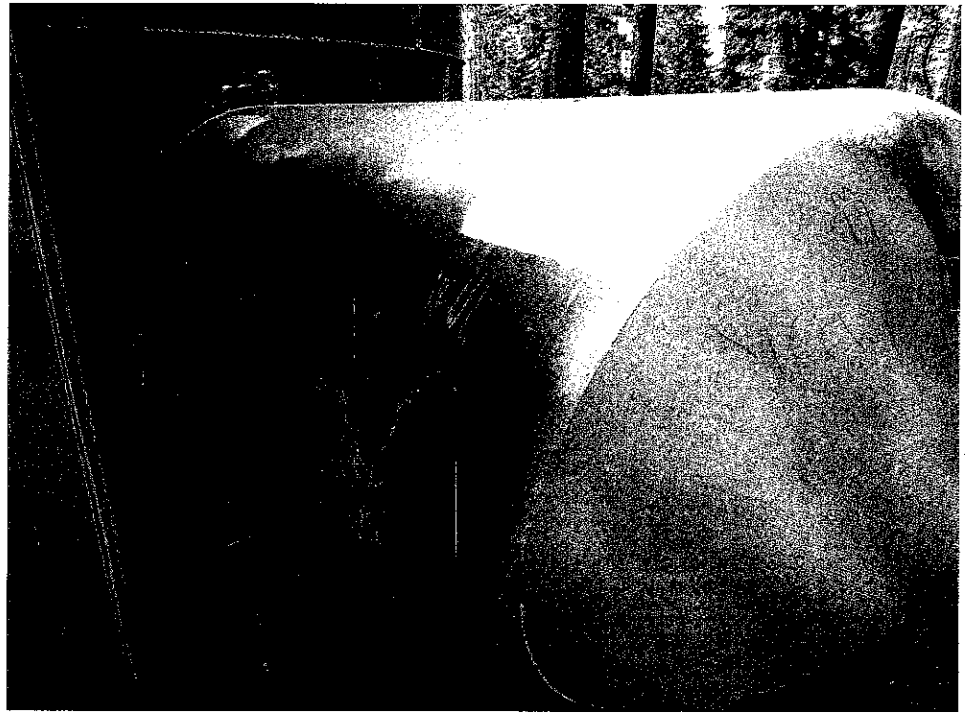

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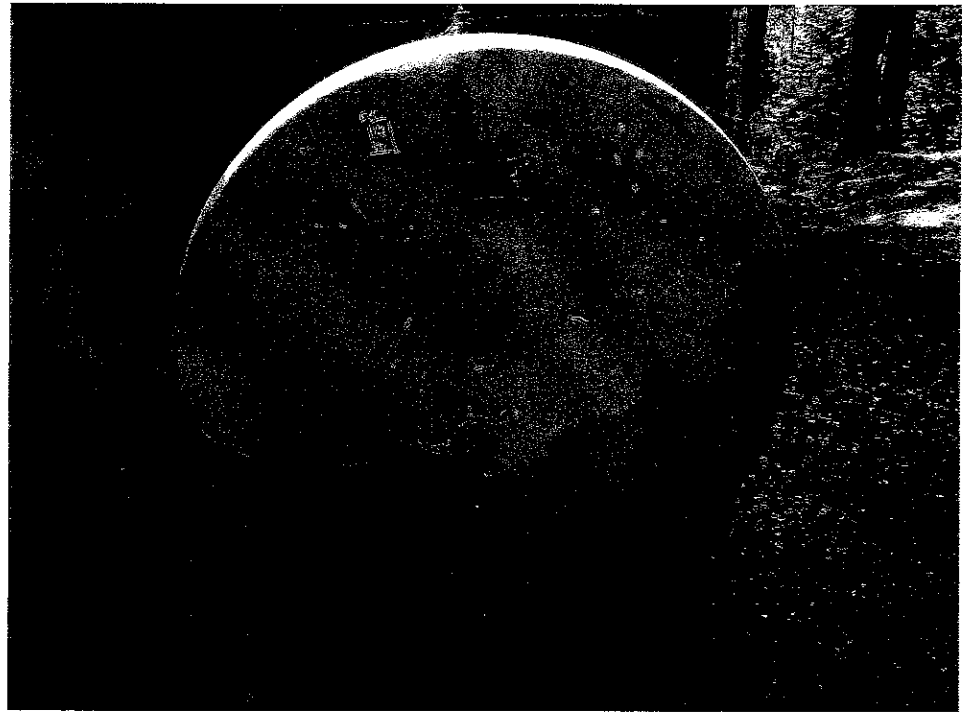

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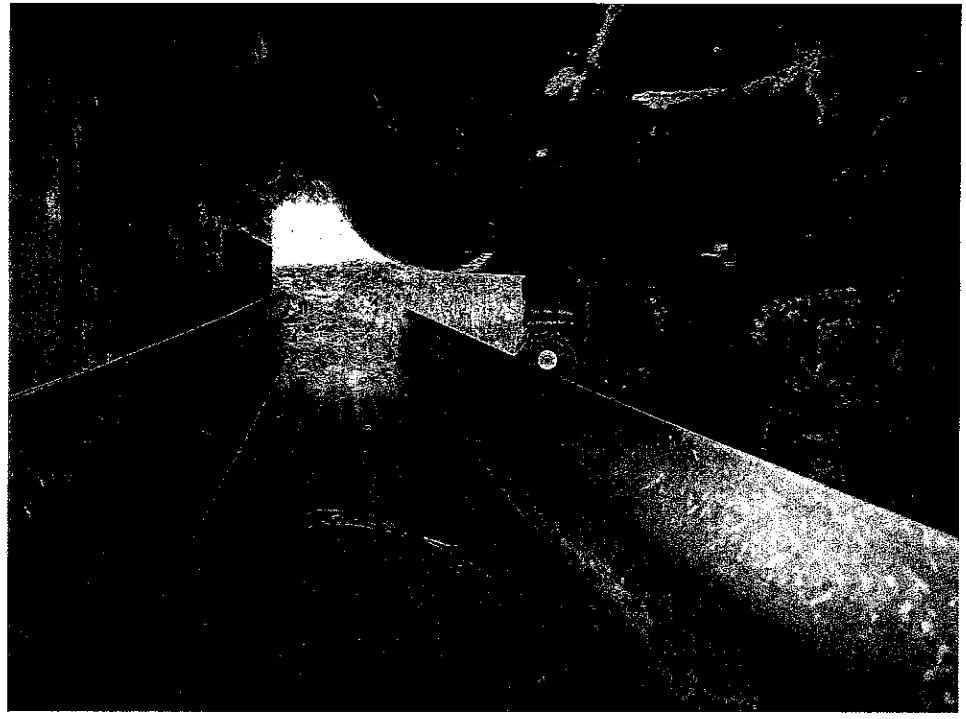

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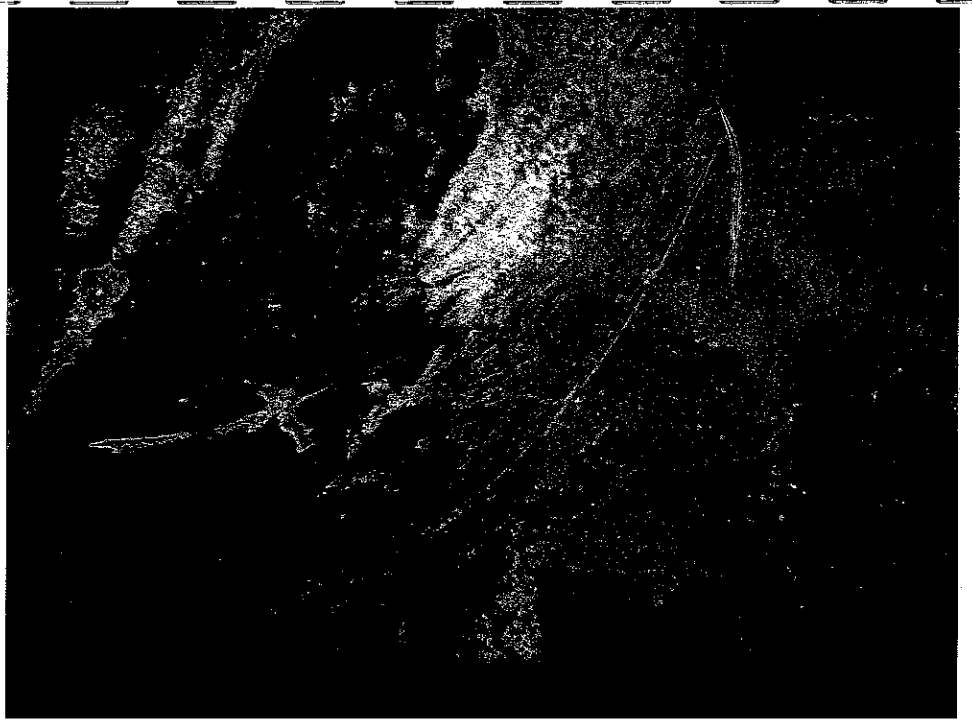

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Forest View Hydro Photo 10

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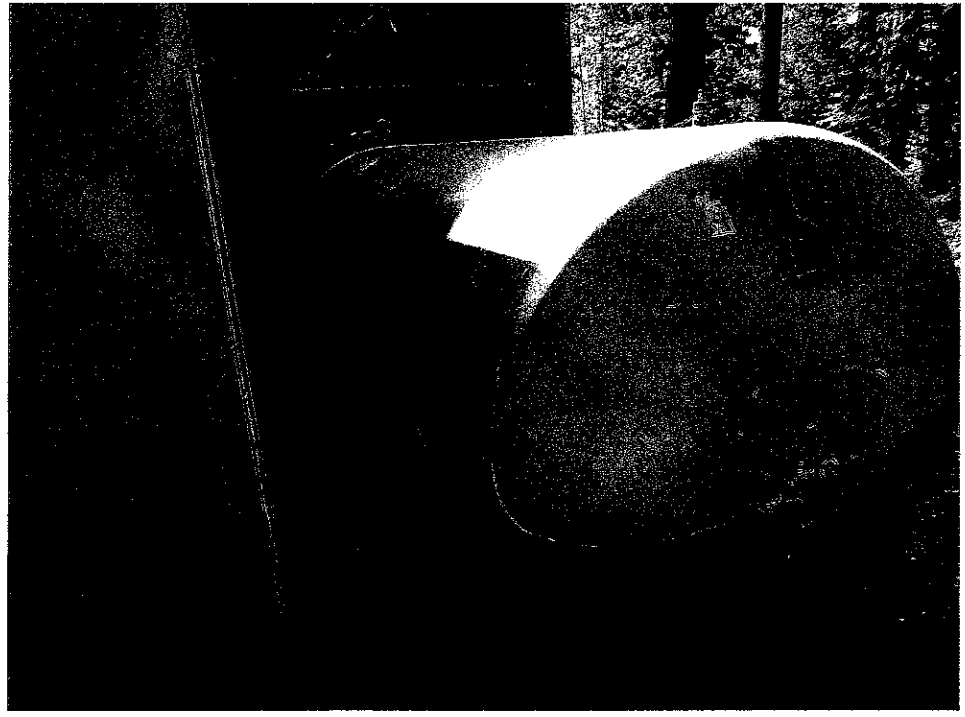

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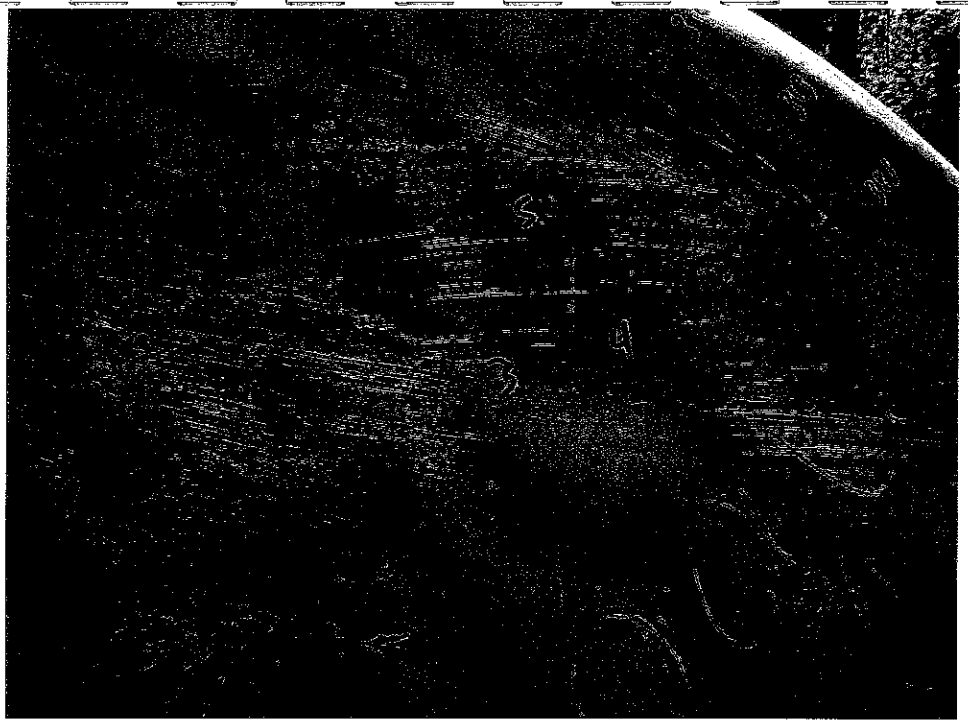

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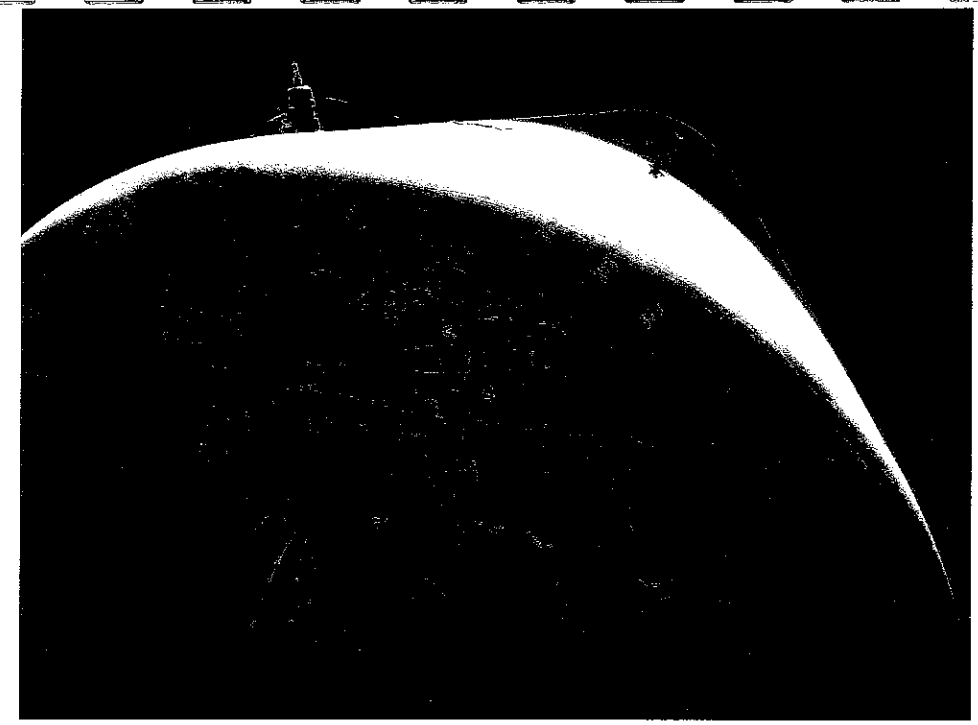

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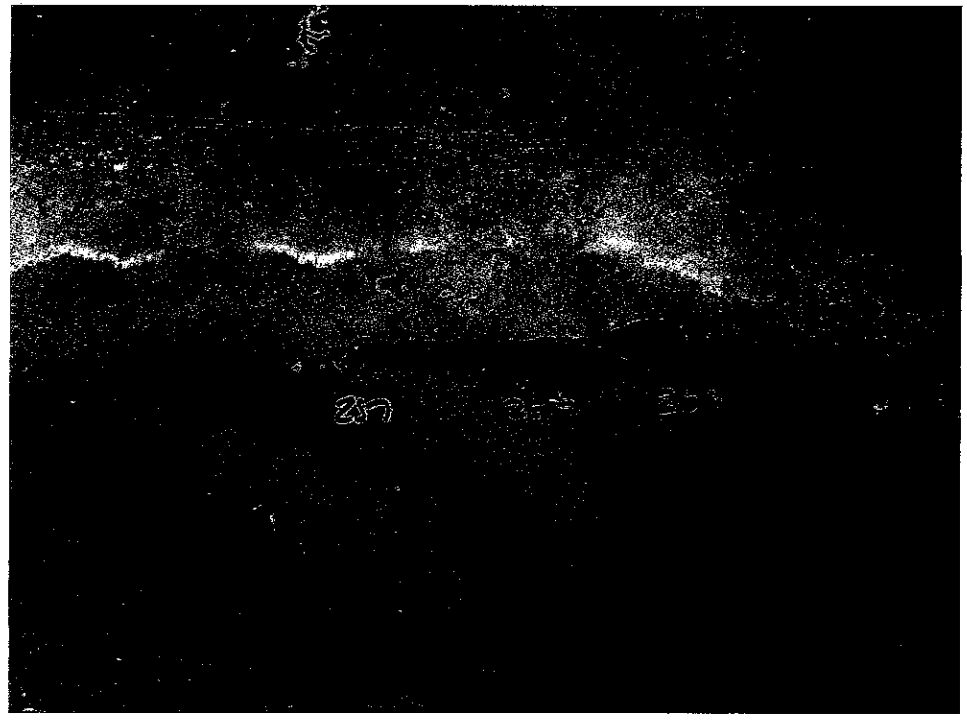

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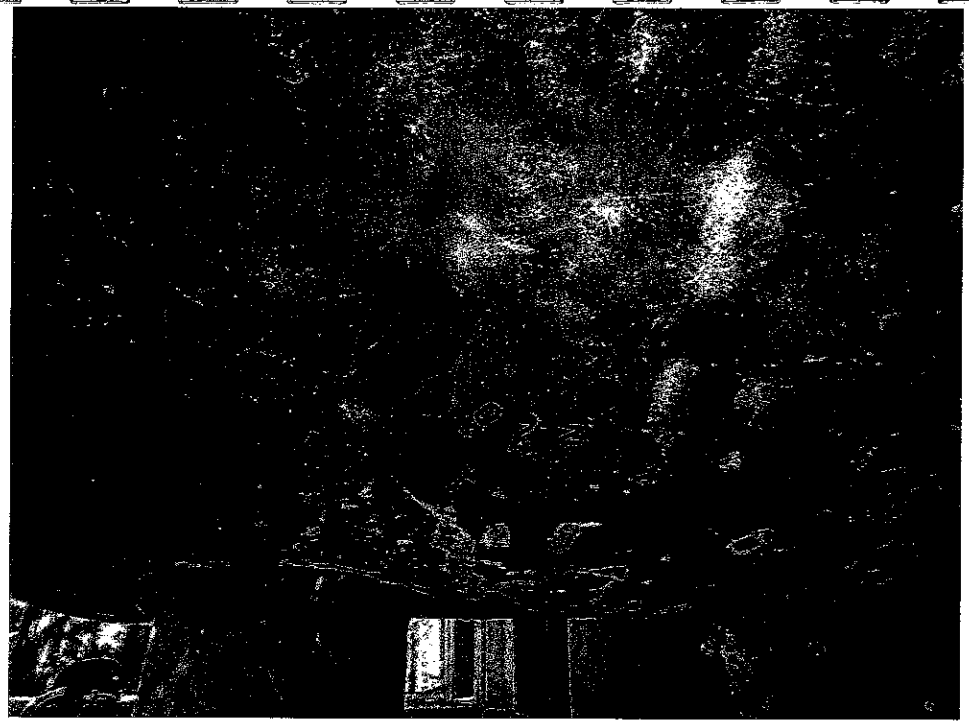

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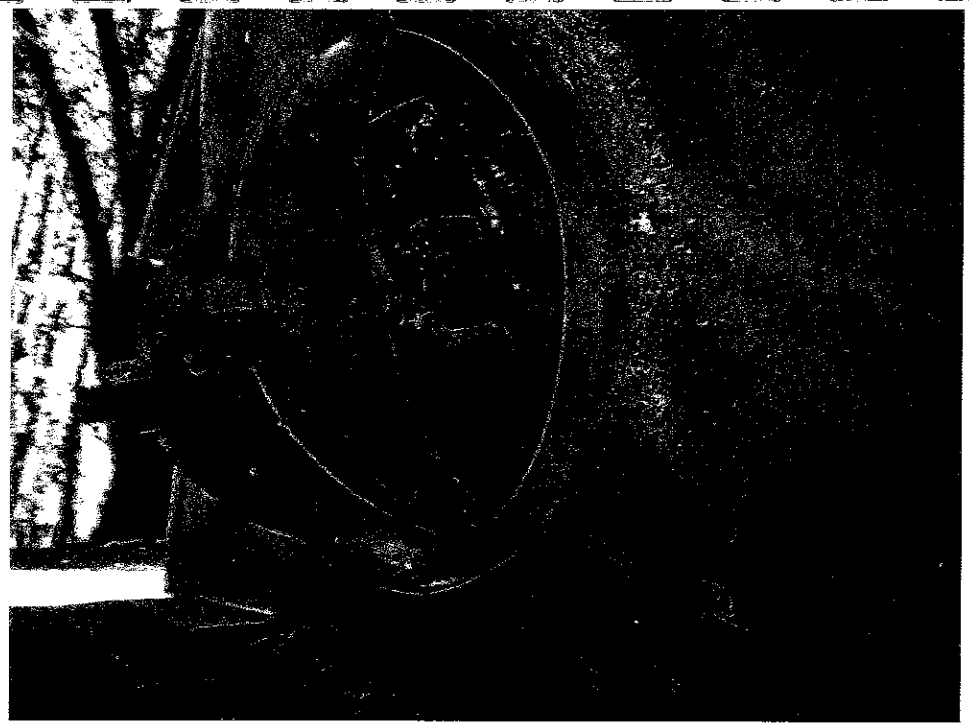

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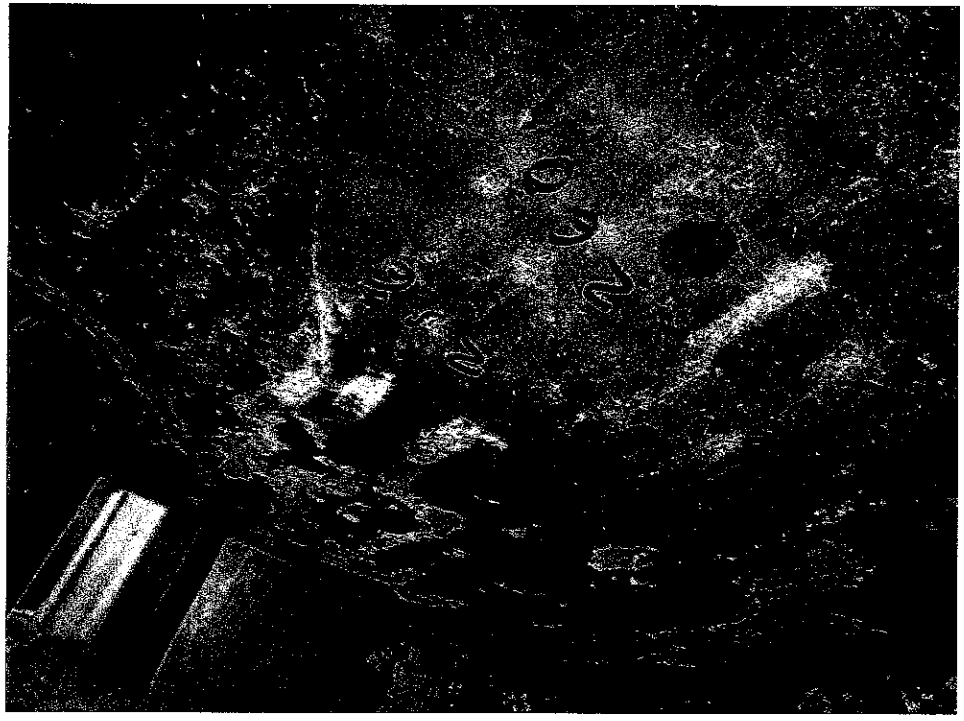

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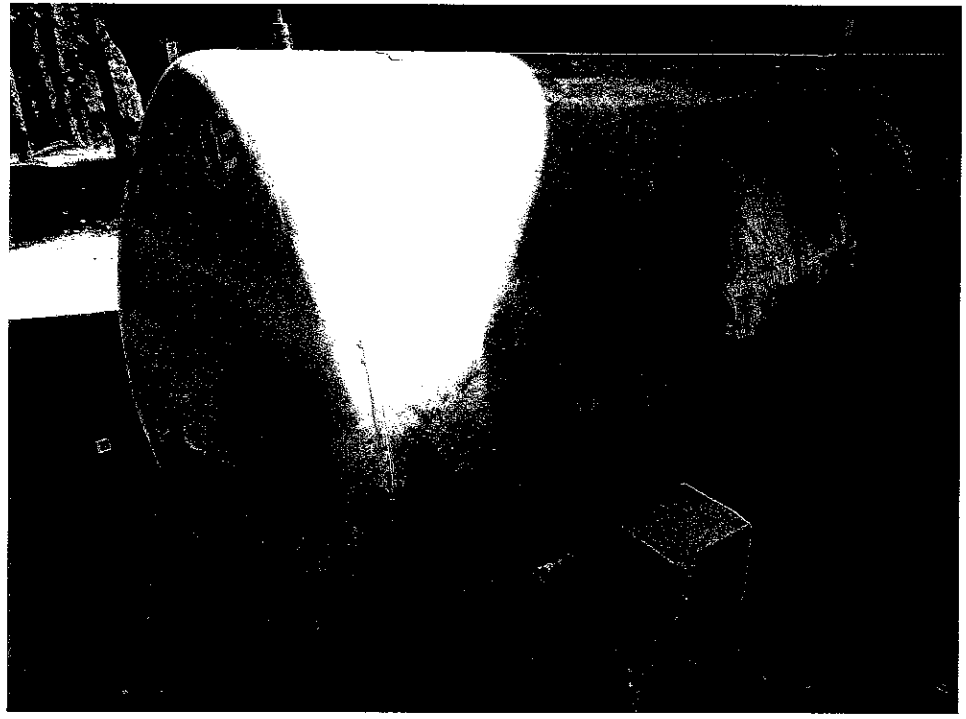

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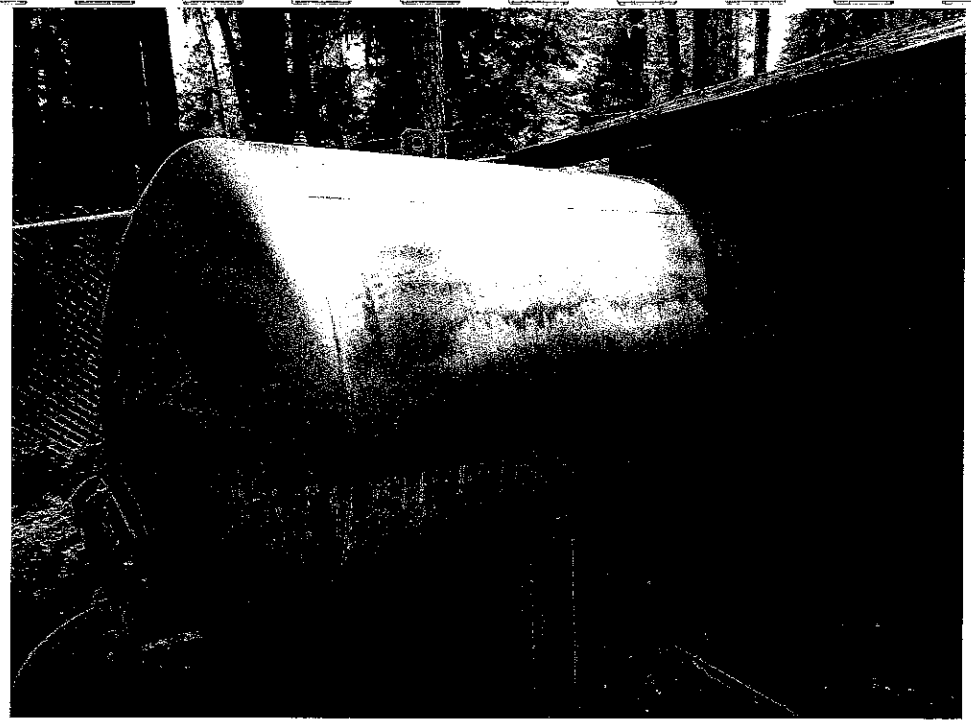

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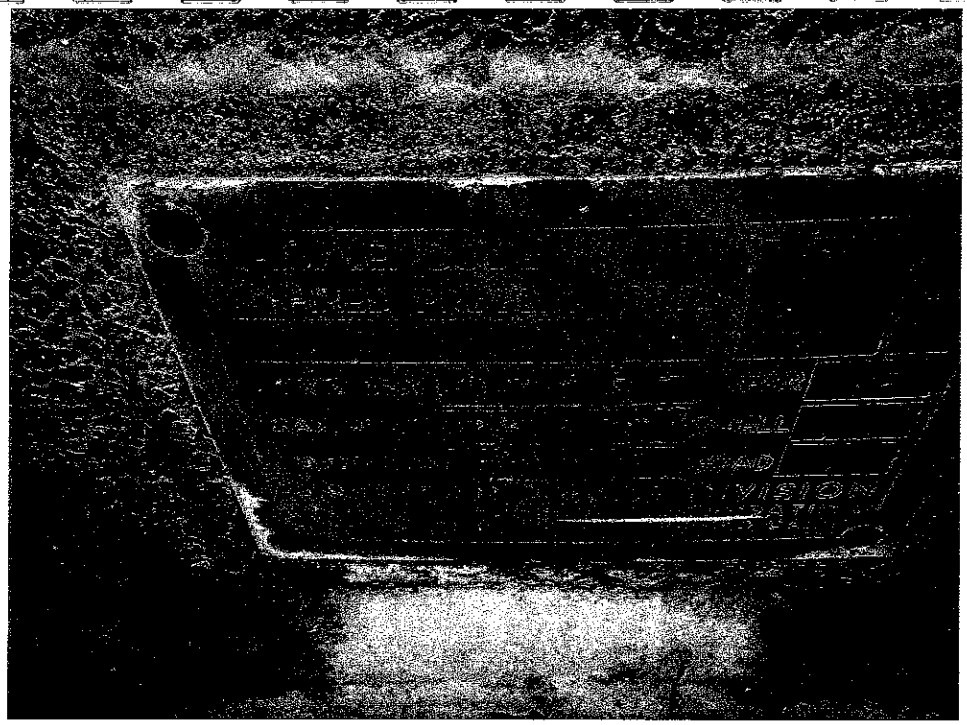

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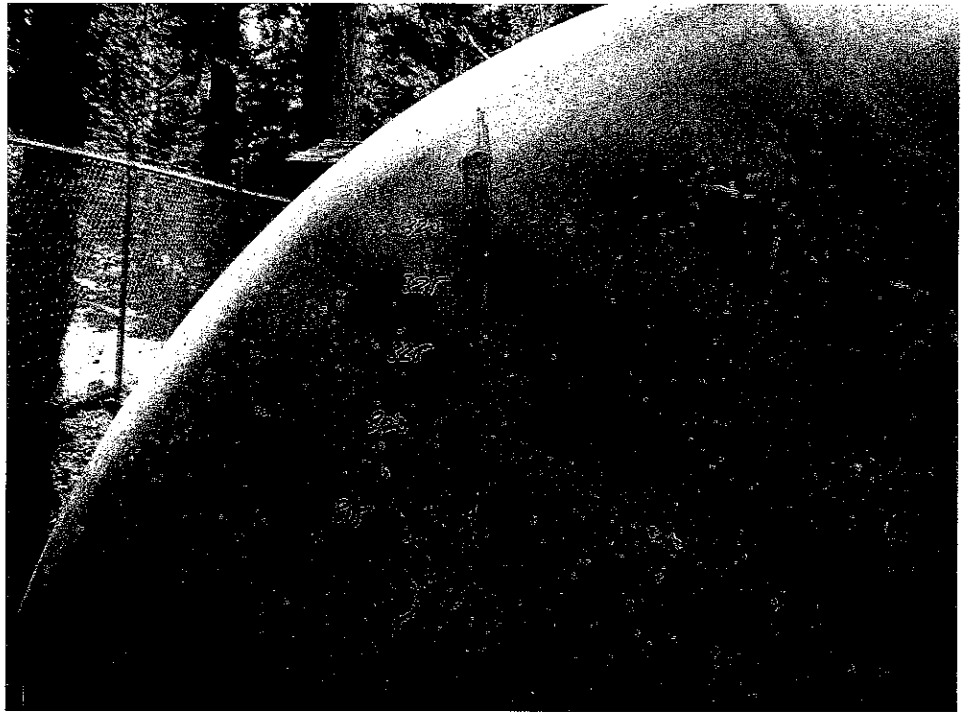

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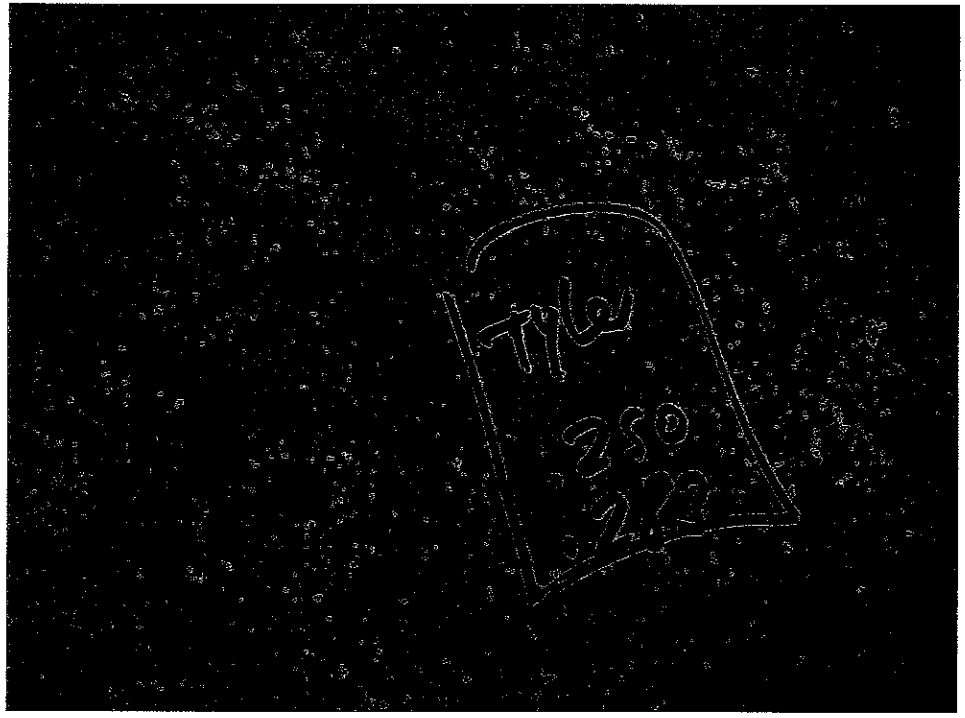

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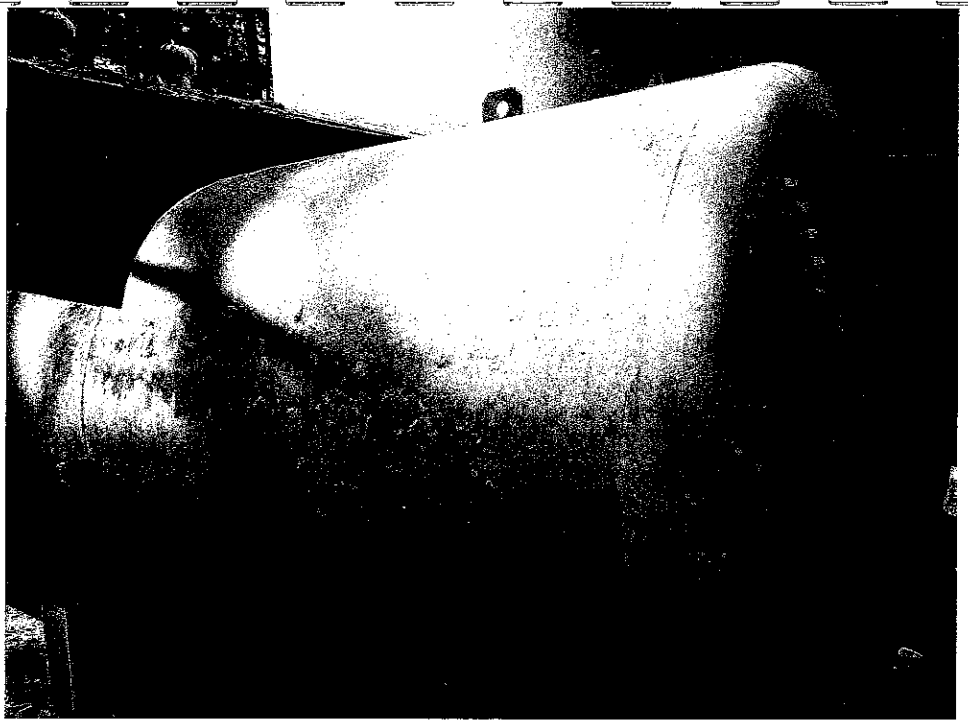

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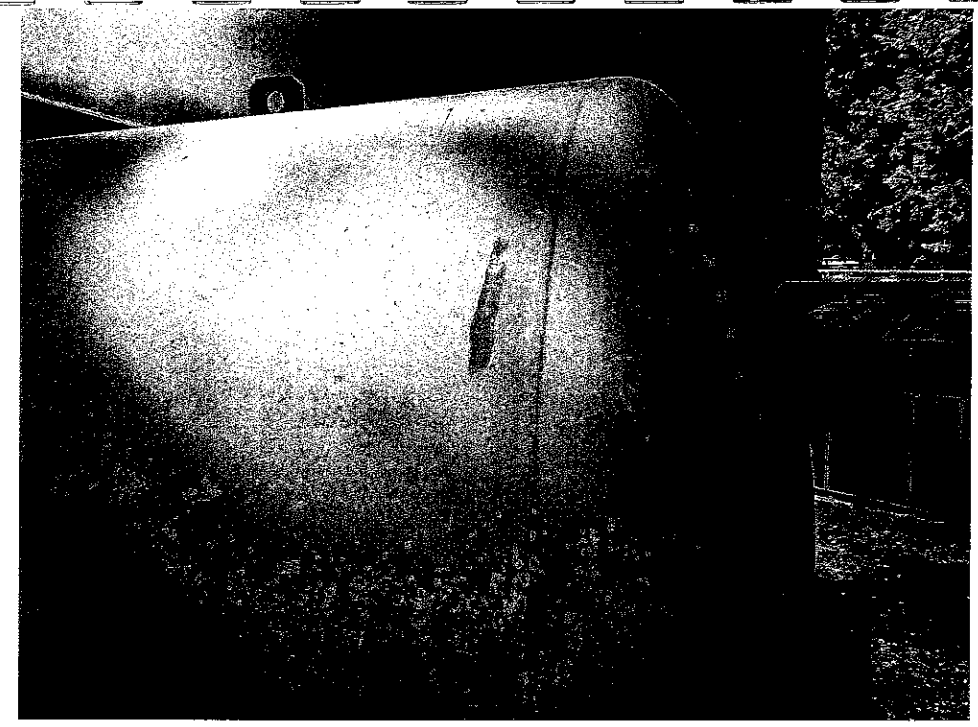

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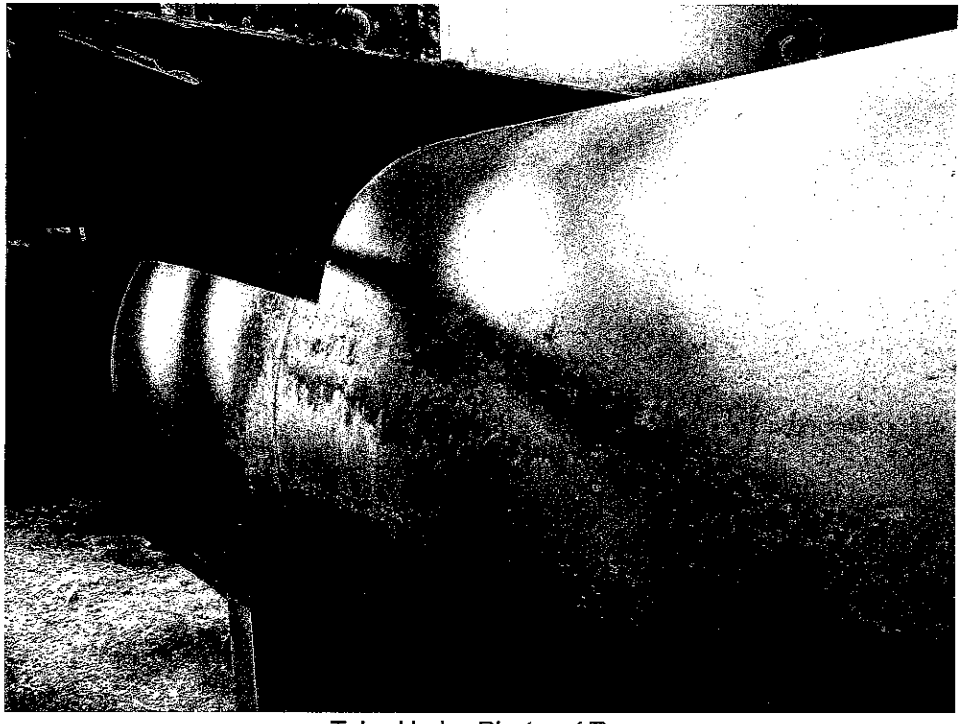

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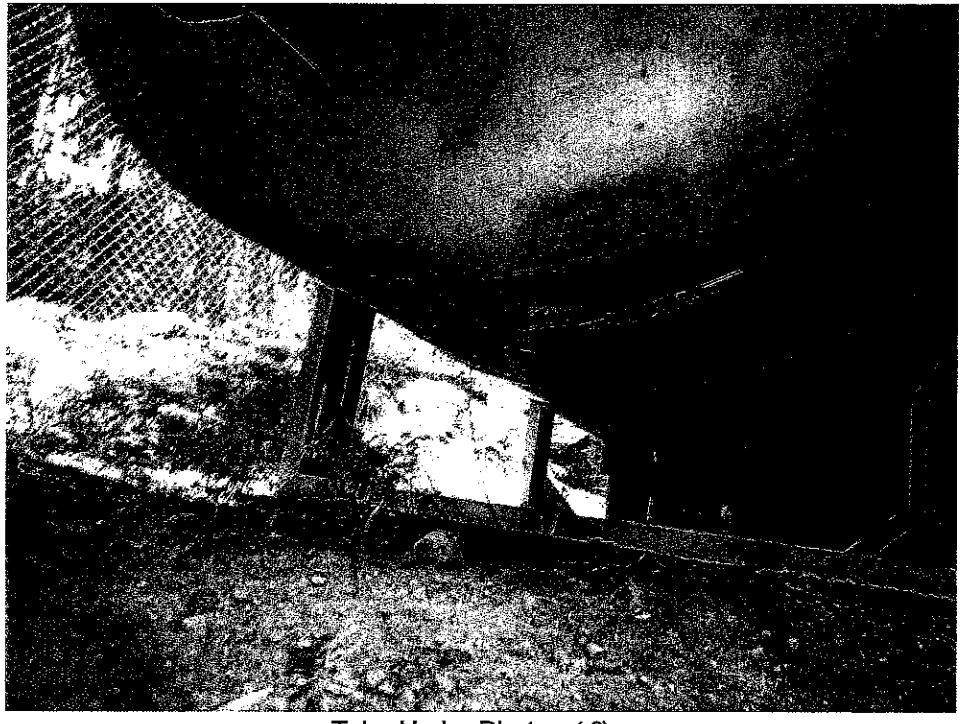

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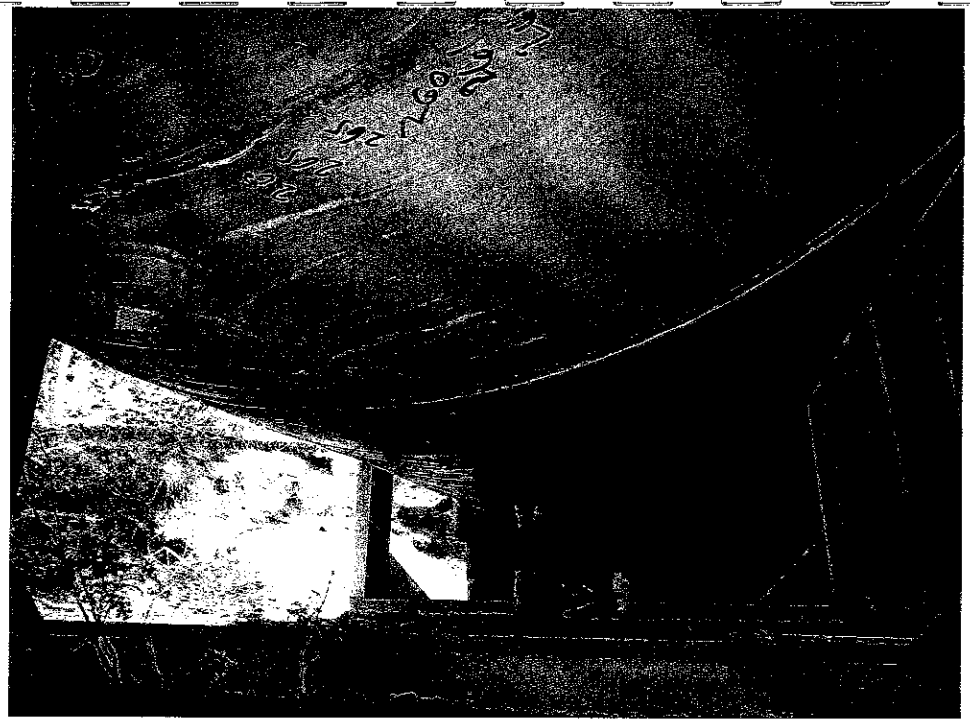

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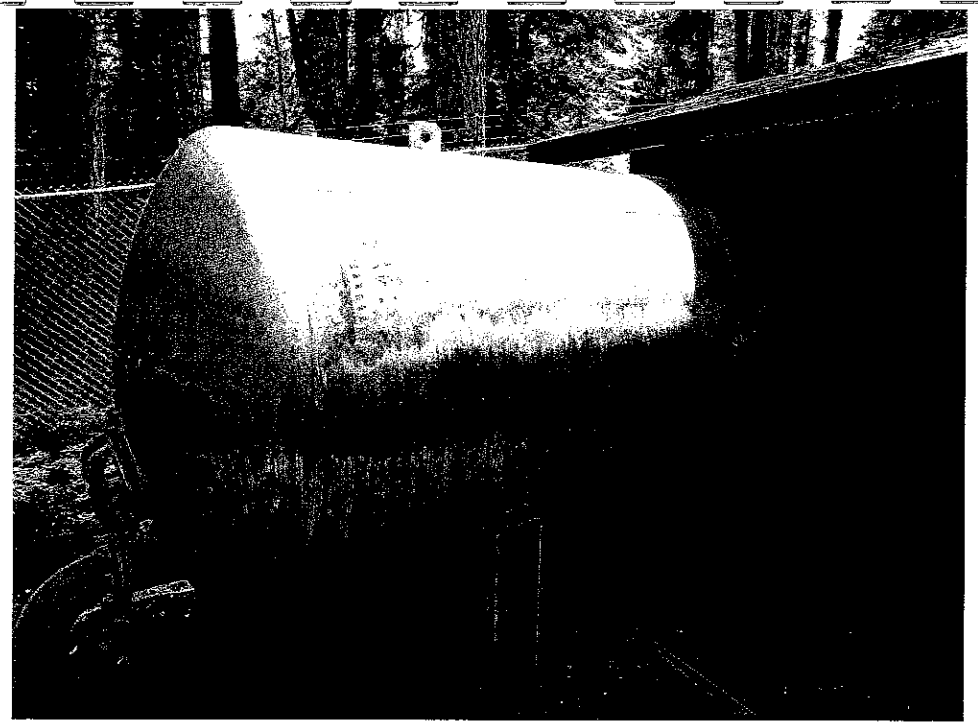

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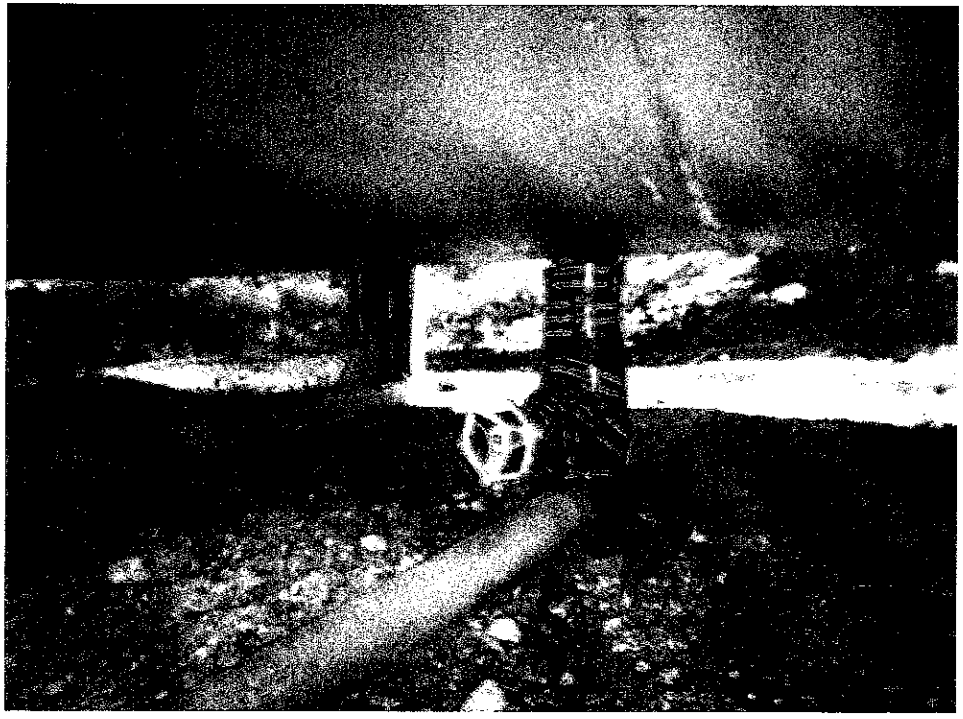

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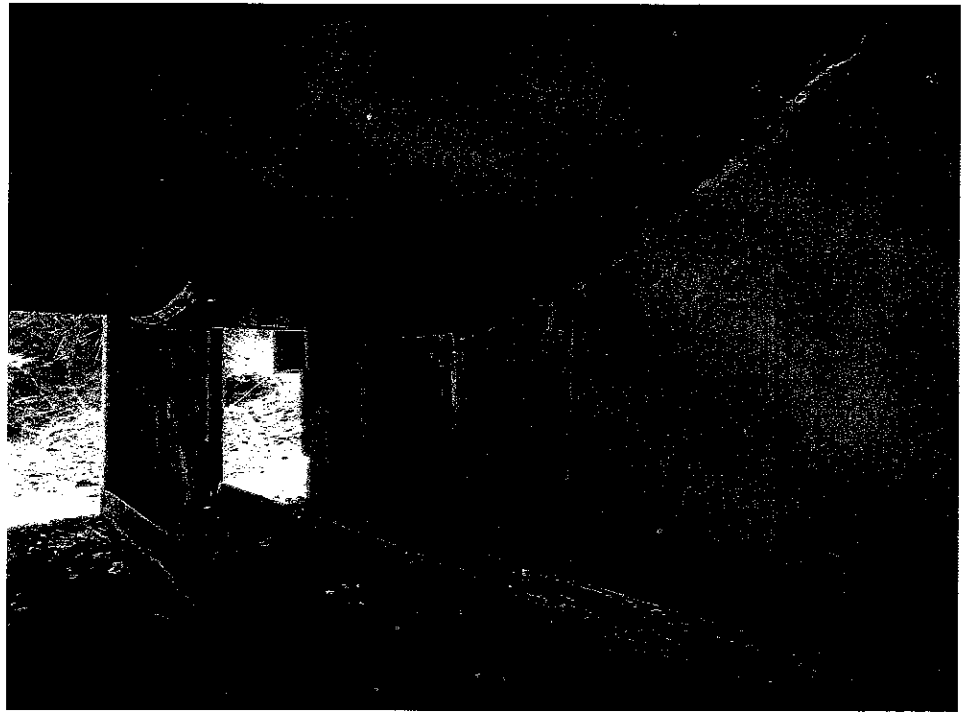

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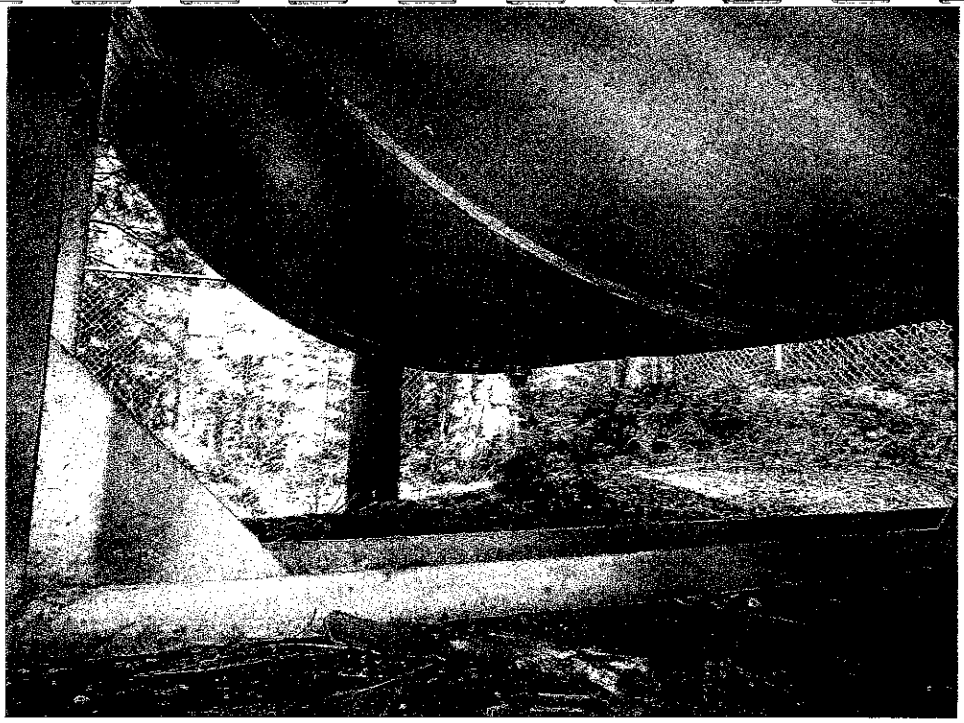
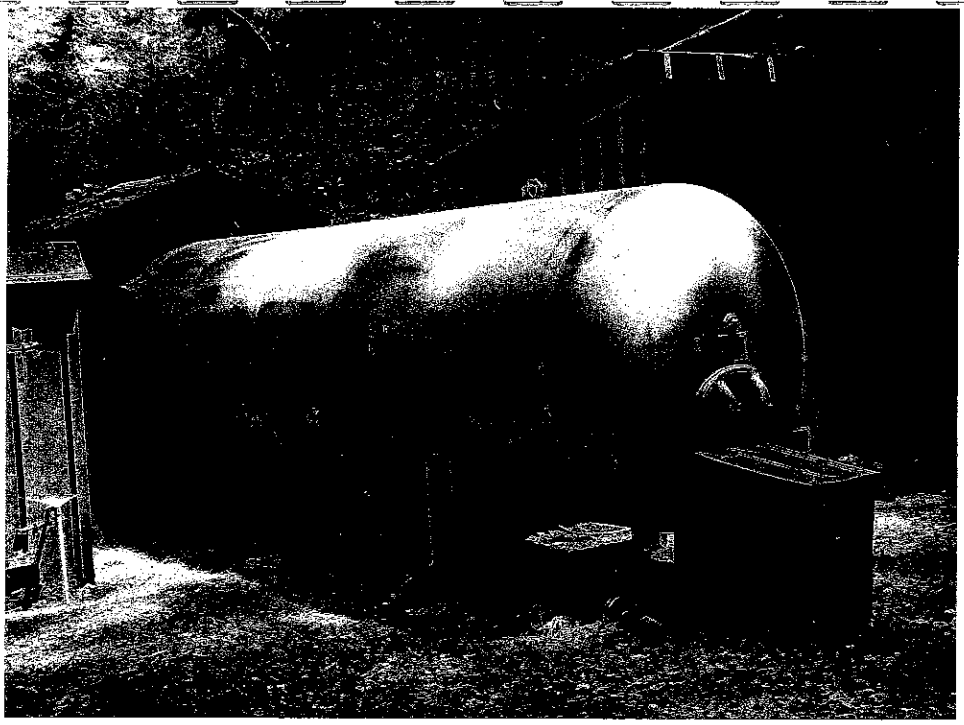


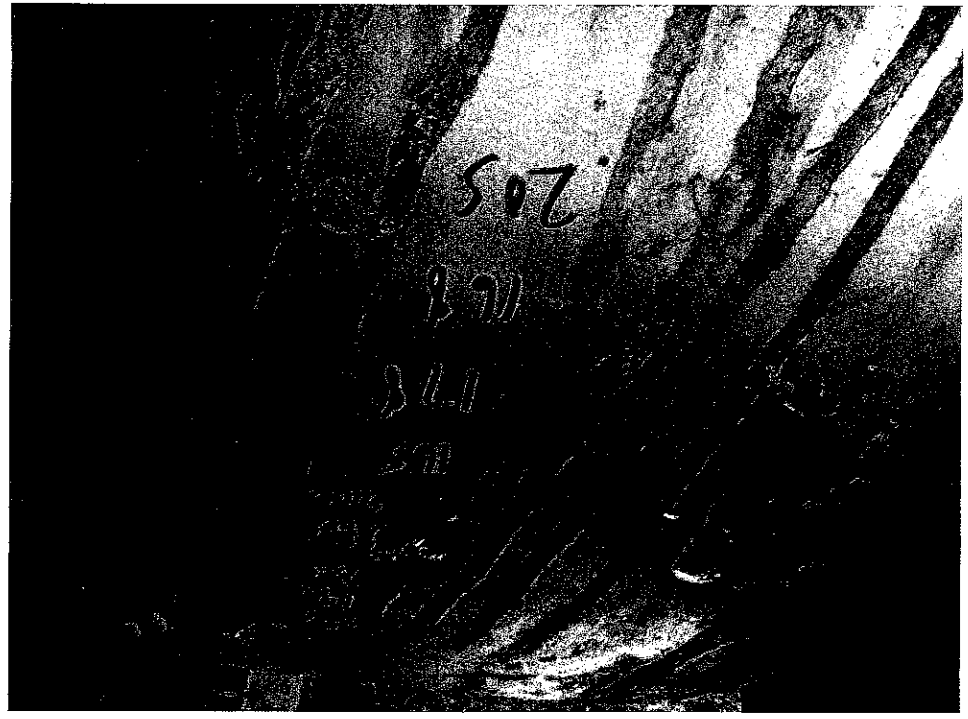
Tyler Hydro Photo 13



Winding Way Hydro Photo (1)

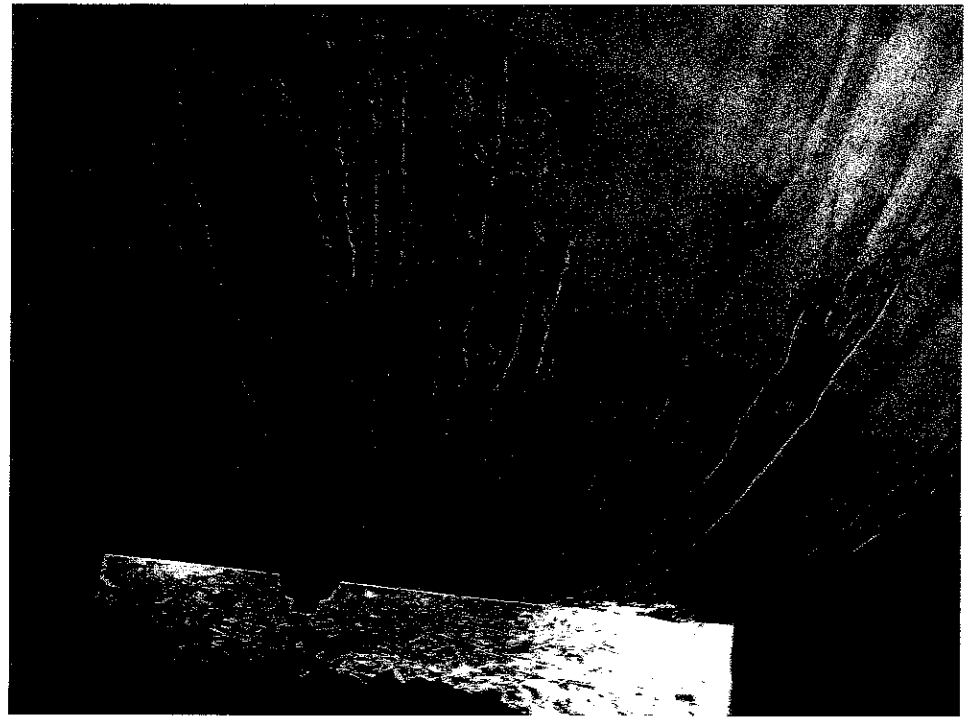
Winding Way Hydro Photo (2)

Winding Way Hydro Photo (3)



Winding Way Hydro Photo (4)

Winding Way Hydro Photo (5)



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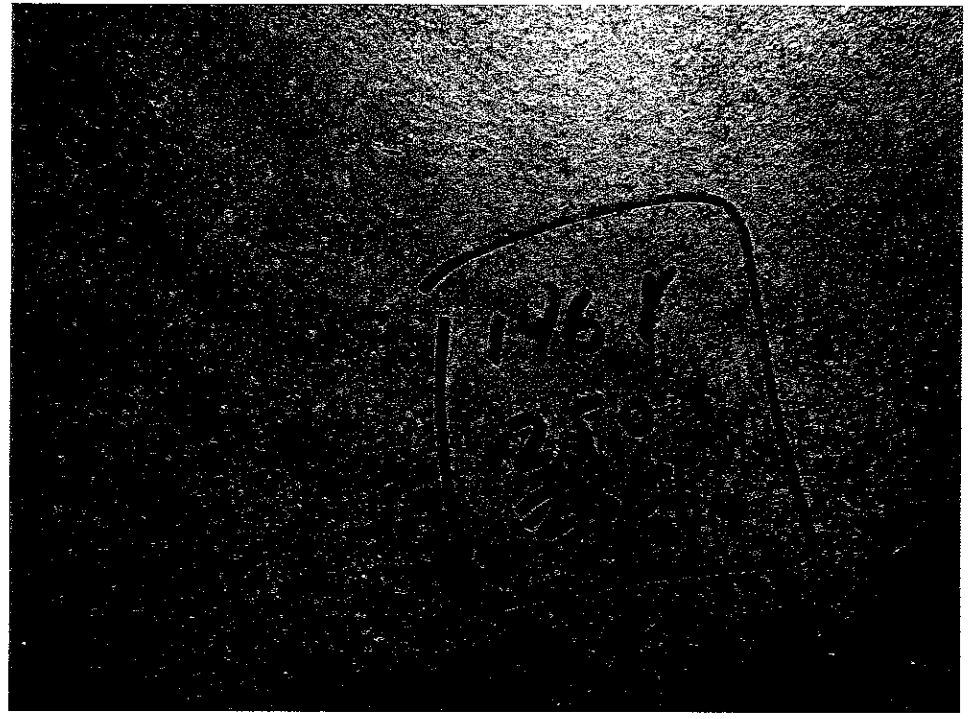
Winding Way Hydro Photo (7)



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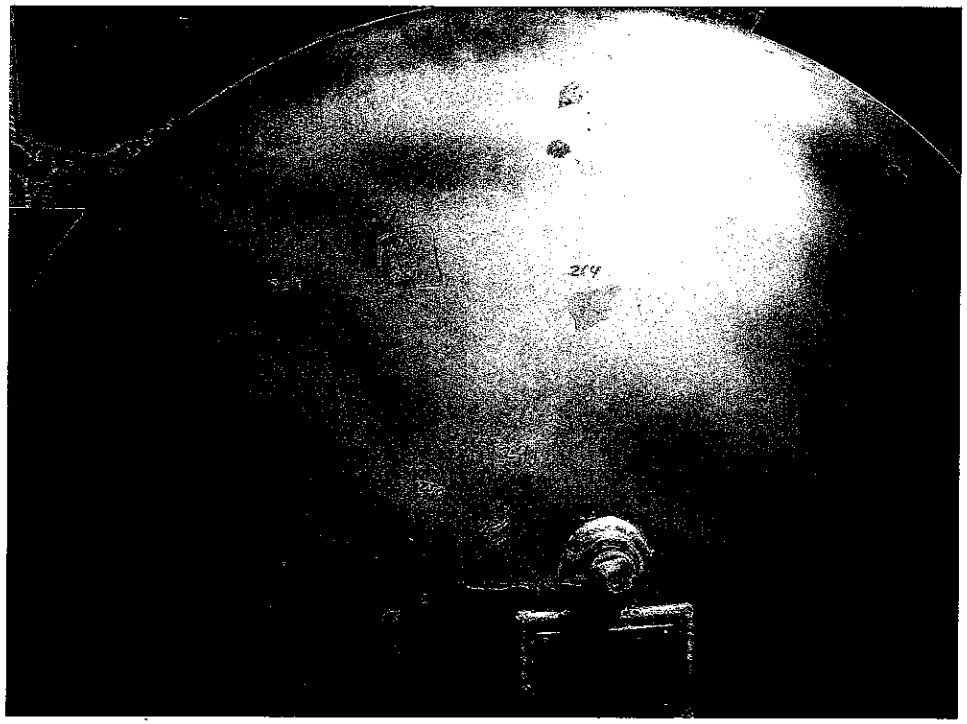

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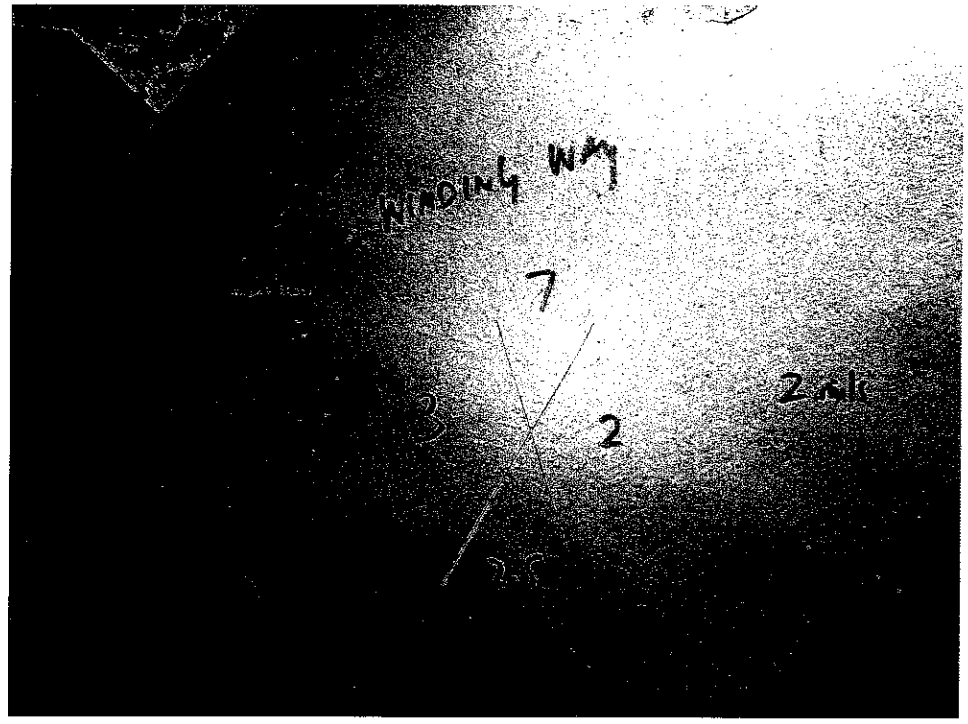

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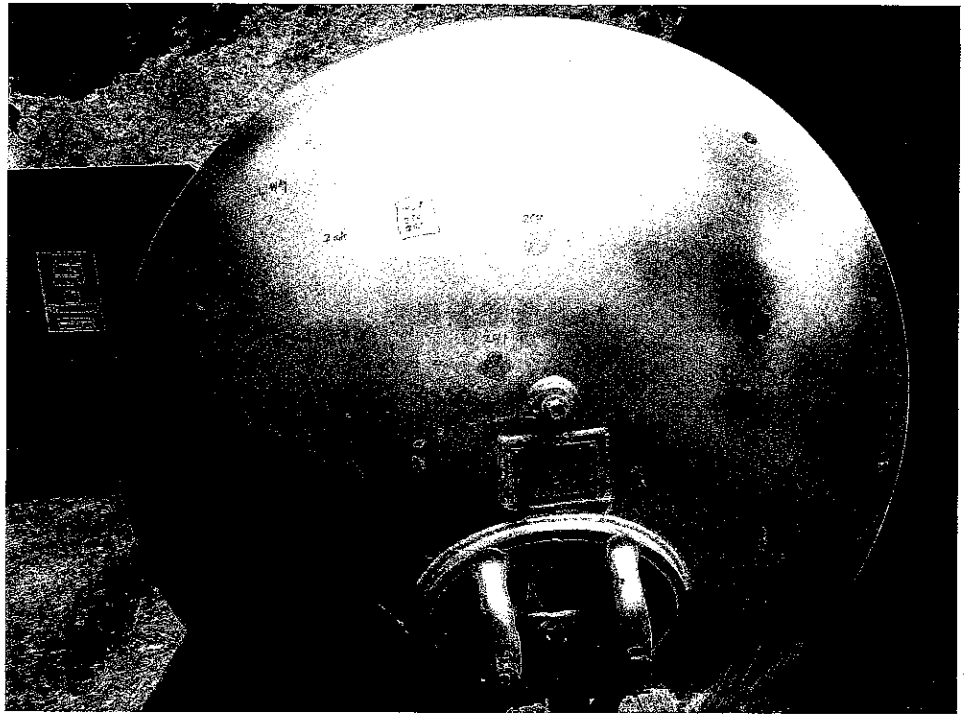
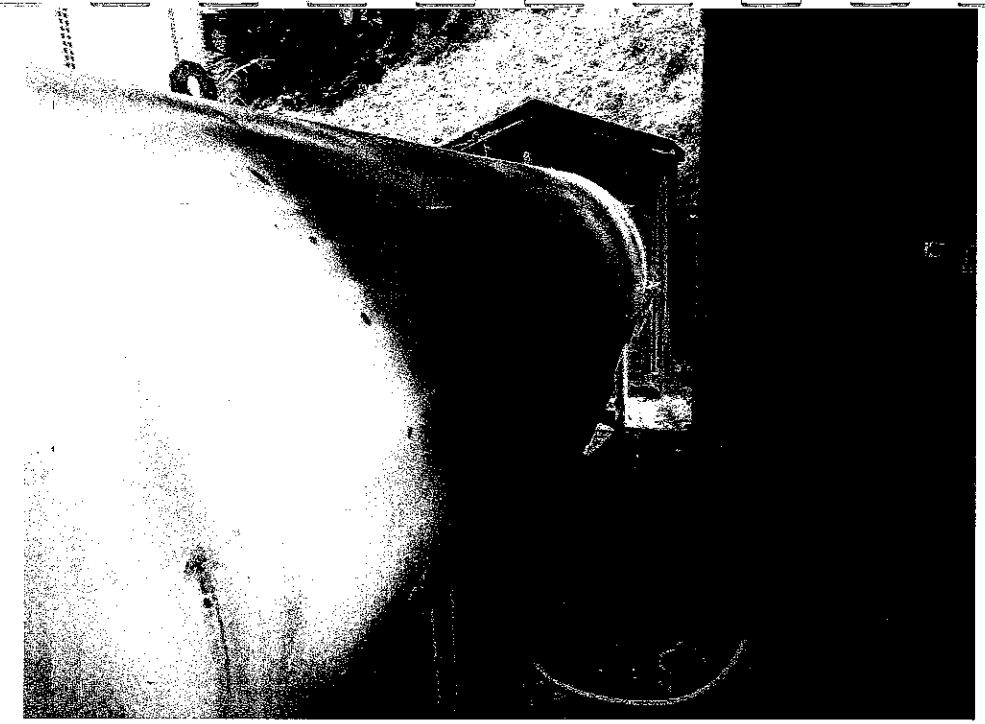


Winding Way Hydro Photo 11

Winding Way Hydro Photo 12



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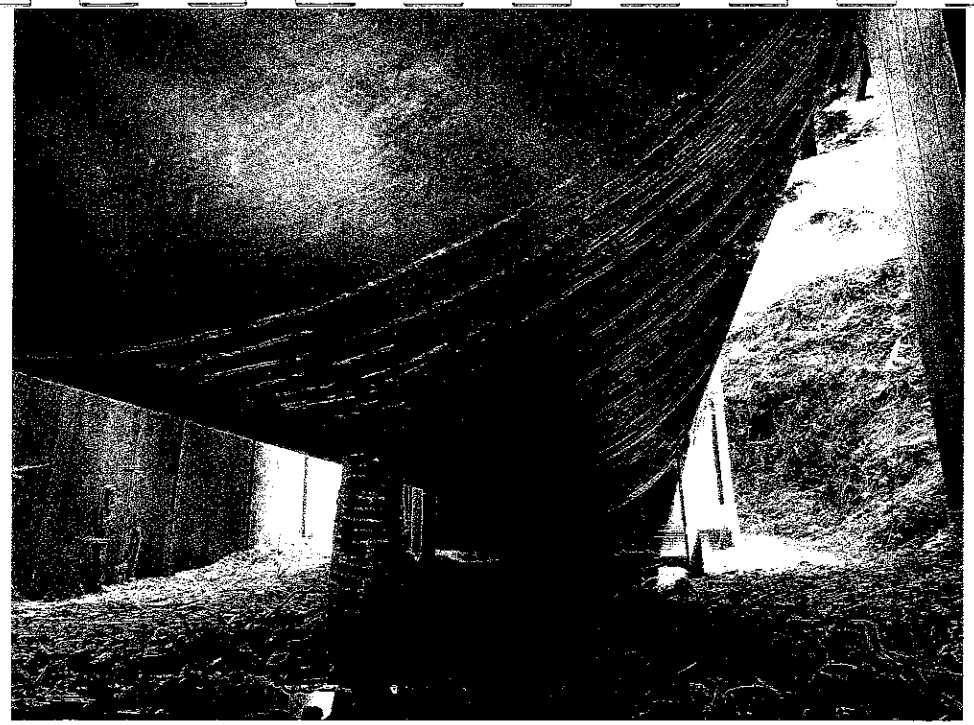

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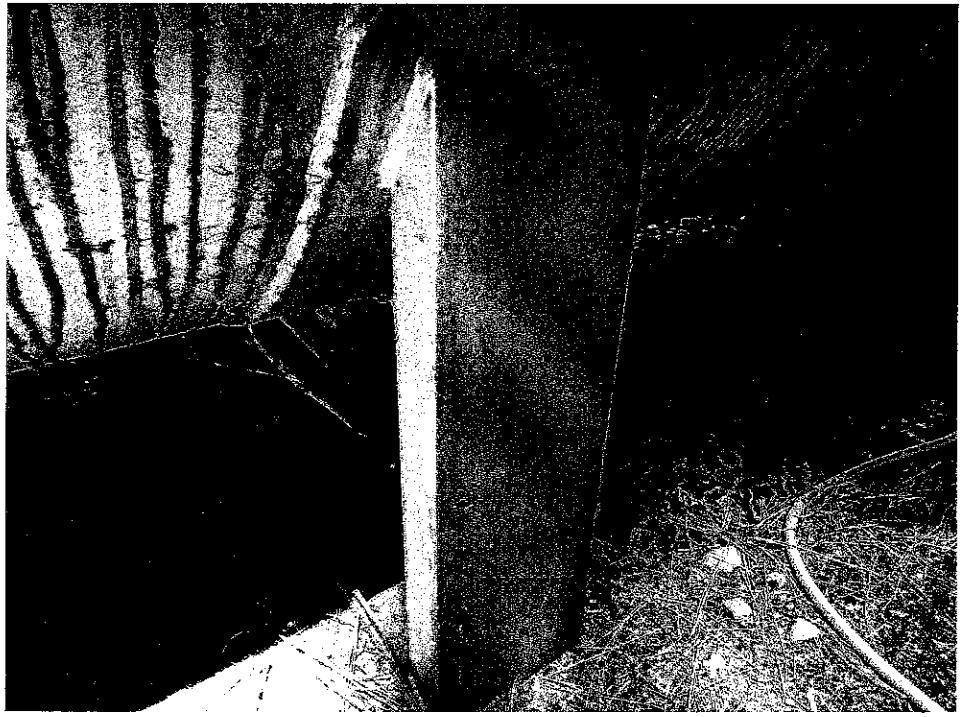
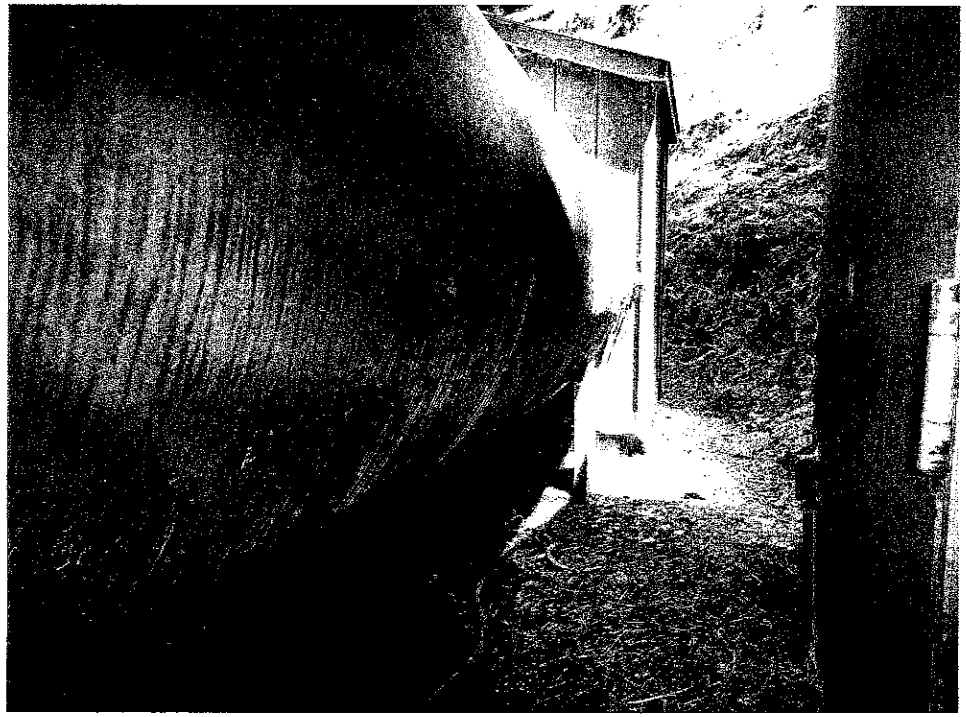
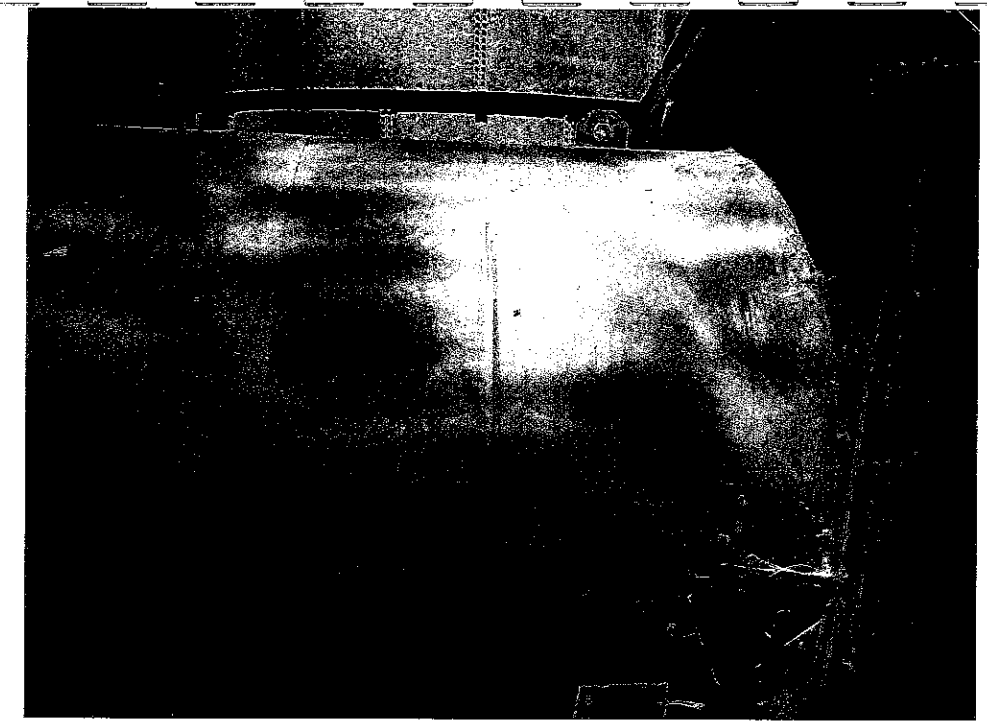


Winding Way Hydro Photo 15



Winding Way Hydro Photo 16



Winding Way Hydro Photo 17

Winding Way Hydro Photo 18

Winding Way Hydro Photo 19

Winding Way Hydro Photo 20

Chart 1 - Condition Rating The table below gives a basic description of the four different categories that CSI Services, Inc. uses to provide a general depiction of the condition of each defined area of a structure. The categories are Poor, Fair, Good, or Excellent. The development of these categories is based on historical knowledge and experience of various paint and lining systems over given periods of time in certain service environments. Basically, the rating is determined based on what should be expected of the paint or lining system at that point in its life cycle. As a result, different determinations are made for maintenance inspection versus warranty inspections. A detailed description of each rating with relative consideration addressed follows:

Rating	General Description of Conditions	
	Maintenance Inspection	Warranty Inspection
Poor	This condition is usually prioritized for rework in the short-term. Typically, these surfaces have considerably more coating defects and/or corrosion than what is expected for the age of the system.	This condition identifies an area with wholesale coating defects or corrosion concerns that will typically require significant removal and replacement of the coatings in the area.
Fair	Typically, these surfaces have a level of coating defects and/or corrosion that is slightly worse than what should be expected for the age of the system. This condition is placed on a short-term monitoring schedule.	This condition identifies an area with partial coating defects or corrosion concerns that will require significant rework.
Good	This condition is rated for areas without any considerable coating defects or corrosion. These surfaces are in a condition that is typical for the age of the coating system.	This condition identifies areas with coating defects or corrosion that is typically seen in one-year warranty inspections. Typically, only minor spot repairs are required.
Excellent	This condition is for areas without any considerable coating defects or corrosion. Typically, these surfaces are in a condition that is better than expected for the age of the system.	This condition identified areas that typically are in perfect condition and require no repair work.

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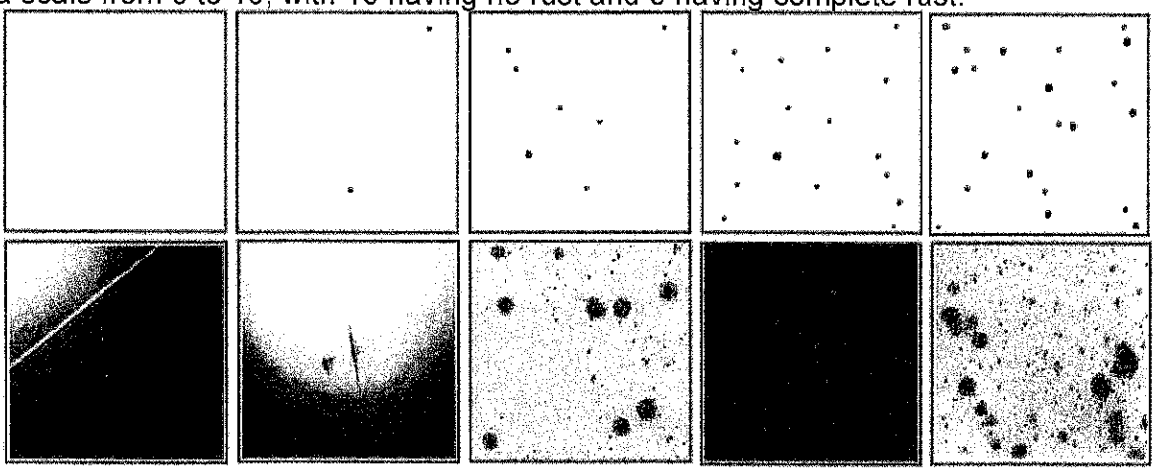
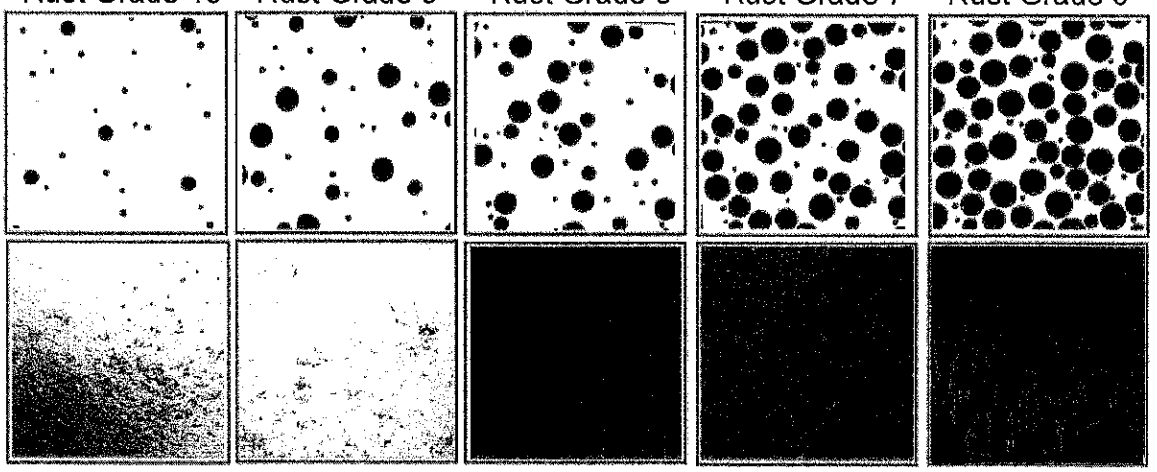
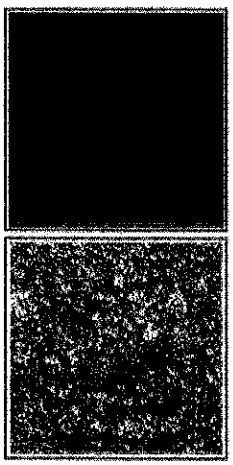
Chart 2 -Rust Grade The black and white figures below depict the standards referenced in ASTM D610 "Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces." Below each standard is a photographic depiction of each level of corrosion, as used by CSI Services, Inc. The standards depict the percentage of rust on a scale from 0 to 10, with 10 having no rust and 0 having complete rust.



Rust Grade 10 Rust Grade 9 Rust Grade 8 Rust Grade 7 Rust Grade 6



Rust Grade 5 Rust Grade 4 Rust Grade 3 Rust Grade 2 Rust Grade 1



Rust Grade 0

Rust Grade	Description
10	No rusting or less than 0.01% of surface rusted
9	Minute rusting, less than 0.03% of surface rusted
8	Few isolated rust spots, less than 0.1% of surface rusted
7	Less than 0.3% of surface rusted
6	Excessive rust spots, but less than1% of surface rusted
5	Rusting to the extent of 3% of surface rusted
4	Rusting to the extent of 10% of surface rusted
3	Approximately one-sixth of the surface rusted
2	Approximately one-third of the surface rusted
1	Approximately one-half of the surface rusted
0	Approximately 100% of the surface rusted

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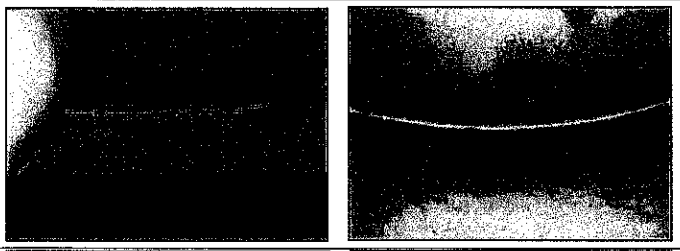
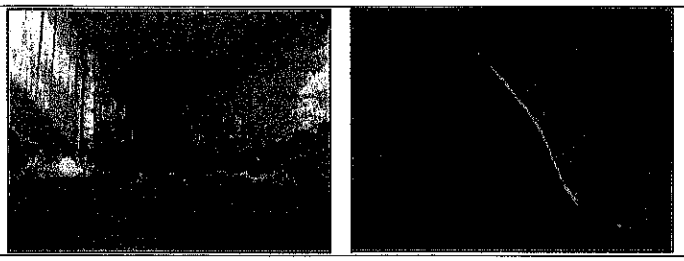
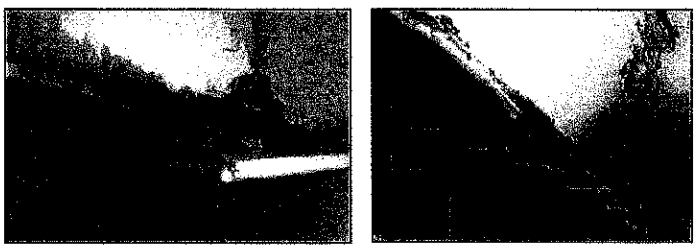
Chart 3 - Corrosion Grade The figure below depicts the photographic standards referenced by CSI Services, Inc. in the determination of the characteristics and stages of corrosion progression. This standard is used to better quantify the level of corrosion once it has progressed to Rust Grades 3, 2, 1, or 0 (see Chart 2). When applicable, CSI classifies an area as one or more of the five different Corrosion Grades. Corrosion Grades 1 through 5 are described below:

Grade	Description	Photo Examples
1	Light Rust - This condition involves relatively light colored rust that does not have any significant metal loss.	
2	Dark Rust -This condition involves relatively dark colored, thicker rust that is progressing towards the next phase, significant metal loss.	
3	Pitting - This condition involves isolated or widespread deep spot corrosion (pitting).	
4	Scale - Also known as lamellar or exfoliation corrosion. The edges of the affected area are leaf like and resemble the separated pages of a wetted book.	
5	Structural Loss - This condition involves metal loss or failure where components will require structural consideration	

The photos depicted are examples and were not taken on this project.

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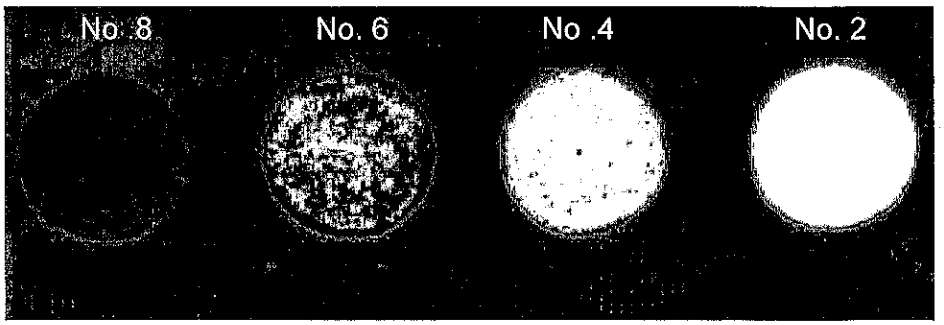
Chart 4 - Chalking The figure below depicts the photographic standards referenced in ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Method D659, Method C. Generally speaking, chalking is the degradation of a paint's binder leaving behind loose pigments as the binder reacts with the environment, primarily ultraviolet light and oxygen. Evaluating chalking is a means to measure the performance of a coating system and its life cycle projection. It is also important to quantify for consideration of future overcoating options. This test uses these pictorial standards to quantify the amount of chalking present on paint films. The depictions below represent the mount of colored chalk removed onto a cloth during the test. The scale ranges from 2 to 8 with the rating 2 having the most chalk.

Light Colored Paints



Dark Colored Paints

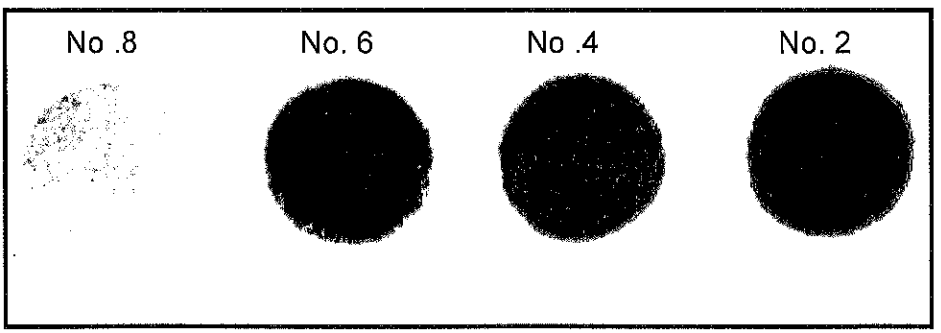


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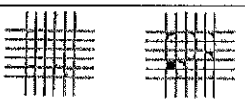
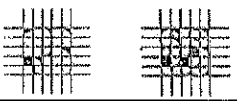
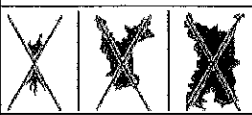
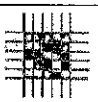
Chart 5 - Adhesion Rating The figures below depict the photographic standards and criteria referenced in ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test" and ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife." Both Standards are used to assess the condition of a paint system for life-cycle projections. It is also used to evaluate an existing paint system's ability to withstand the added stress that any overcoating strategies can create. Depending upon the thickness of the paint system, ASTM D3359 has two different test methods. The rating criteria for both standards follow:

ASTM D3359					
Method A			Method B		
Rating	Observation	Surface of X-cut from which flaking/peeling has occurred	Rating	Percent Area Removed	Surface of cross-cut area from which flaking has occurred for six parallel cuts and adhesion range by percent
5A	No peeling or removal	None	5B	0% none	
4A	Trace peeling or removal along incisions or their intersection		4B	Less than 5%	
3A	Jagged Removal along incisions up to 1/16" on either side		3B	5 – 15%	
2A	Jagged removal along most of incisions up to 1/8" on either side		2B	15 – 35%	
1A	Removal from most of the area of the X under the tape		1B	35-65%	
0A	Removal beyond the area of the X		0B	Greater than 65%	

ASTM D6677	
Rating	Description
10	Fragments no larger than $\frac{1}{32}$" x $\frac{1}{32}$" can be removed with difficulty
8	Chips up to $\frac{1}{8}$" x $\frac{1}{8}$" can be removed with difficulty
6	Chips up to $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight difficulty
4	Chips larger than $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight pressure
2	Once coating removal is initiated by knife, it can be peeled at least $\frac{1}{4}$"
0	Coating can be peeled easily to length greater than $\frac{1}{4}$"

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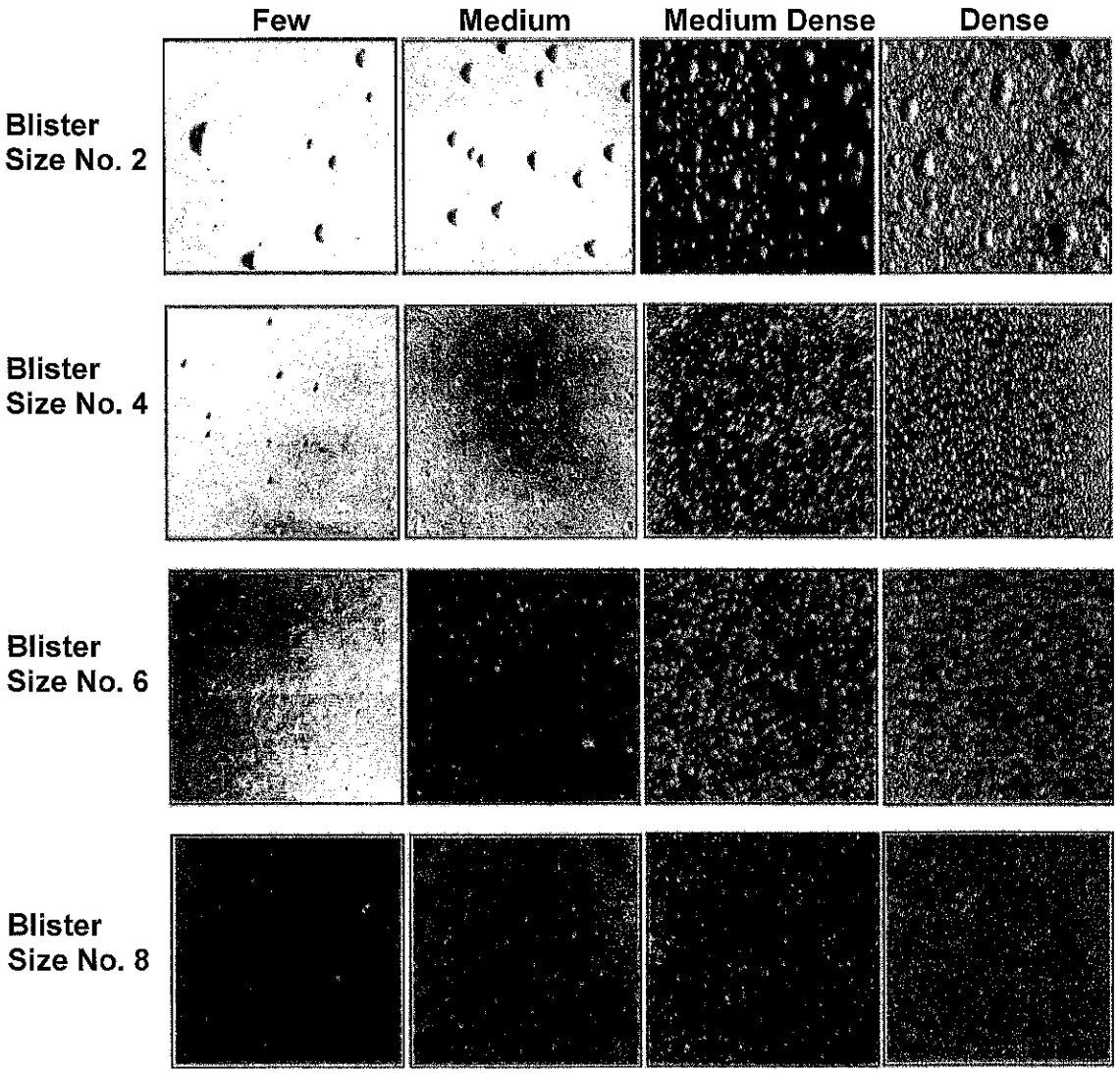
Chart 6 – Blistering Rating The figure below depicts the photographic standards referenced in ASTM D714 "Standard Test Method for Evaluating Degree of Blistering of Paints". This test uses these pictorial standards to quantify both the size and density of blisters that may develop in linings. Although the standard uses a blister size scale of 0 to 10 this chart uses the most common sizes of blisters found in the field. The standard does not use a reference for the size of each of the blisters depicted. CSI used this scale as a means for further quantification by qualifying the largest blister depicted as being 1 inch in width (Blister Size No. 2) and the smallest blister being 1/32 of an inch in width (Blister Size No. 8).



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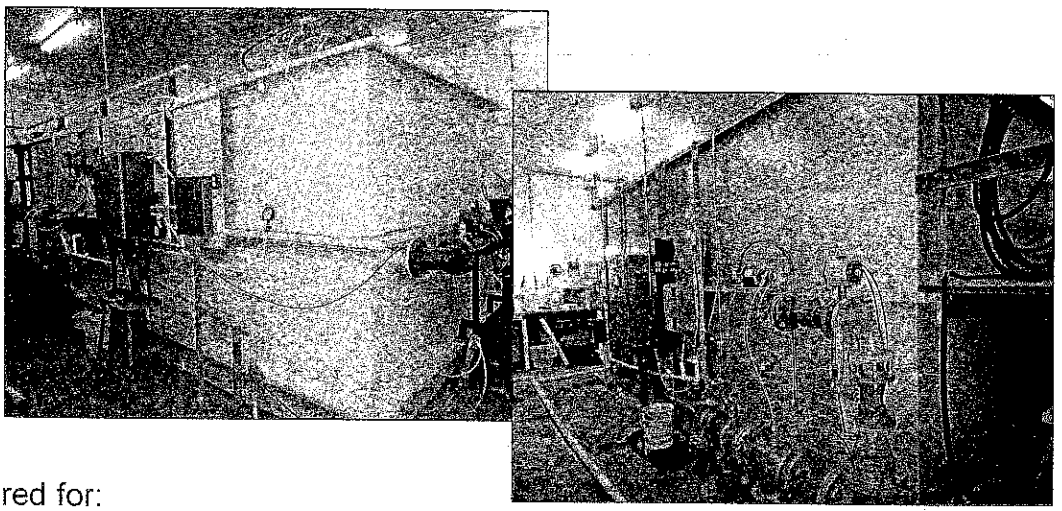
877-274-2422

Final Report
Tank Coating Evaluation

Water Treatment Plant Tank No.'s 1 and 2
Grizzly Flats Community Services District



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Prepared by:
CSI Services, Inc.

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NACE Certified Inspector No.4324
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August 12, 2013

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Coating Specialists and Inspection Services, Inc.

Consulting **Evaluations** **Tank Diving** **Inspection**

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- Exterior Photos - Backwash Tank No. 2
- Interior Photos - Backwash Tank No. 2
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Introduction

The Grizzly Flats Community Services District authorized CSI Services, Inc. (CSI) to conduct a coating maintenance inspection on the Water Treatment Plant (WTP) Tanks No. 1 and No. 2 located within a room adjacent to the main district office on 4765 Sciaroni Road, Grizzly Flats, CA. The focus of this evaluation was to examine the tank coatings and develop recommendations for maintenance coating activities. Tank No. 1 is the structure with the blue exterior finish and Tank No. 2 is the structure with the white finish.

Coatings maintenance recommendations have been made in accordance with the applicable requirements of American Water Works Association's Standard (AWWA) D102 "Coating Steel Water Storage Tanks," AWWA Standard M42 "Steel Water Storage Tanks, and CSI's experience with evaluating hundreds of water storage facilities. A photo summary has also included to document the condition of the tank.

The field-work was completed on Monday, July 2, 2013 by Mr. Patrick Sweeney. The exterior shell observations were made from grade level and adjacent midlevel wood platforms. The interior inspections were carried out after the tanks were mostly drained of water. Mr. Sweeney retrieved the field data and prepared this report and commendations for maintenance work. Mr. Sweeney is a certified SSPC and NACE Level III inspector, an SSPC Certified Protective Coating Specialist, and has evaluated hundreds of water storage tanks.

Summary

With a few minor exceptions, the two tanks are in mostly satisfactory condition. The exceptions involve some isolated internal pitting on Tank No. 1 and external scaling on Tank No. 2. The remaining coating defects involve a moderate amount of scattered spot rust. It is recommended that the corrosion pits be repaired as soon as possible and the remaining spot rust be spot repaired within the next few years.

Background

Both tanks are located within a room that is adjacent to the main district office, and both are of the same general design. Each tank is welded carbon steel horizontal rectangular structure with multiple cells. A few of the exterior seams have skip welds. The tanks have many different horizontal and vertical stiffeners, as well as piping and instrumentation. Each tank has a few stainless steel components that are directly connected. Tank No. 2 also includes a double bottom that has inspection ports that were not opened as part of this evaluation. The different cells contain weirs and other internal mechanisms. The tanks rest on a concrete slab without any anchoring, and both tanks have an open crevice between the concrete floor and tank bottom. The tank interiors are lined with a thin film epoxy and

the exteriors are painted with what appears to be a urethane finish coat. The tanks did not have any cathodic protection systems installed.

Field Evaluation

The purpose of this survey was to assess the conditions of the existing coatings and recommend remedial work where applicable. The evaluation mainly involved visual observations and destructive/non-destructive testing procedures. A photo summary has been included with this narrative report.

For survey purposes, the tank evaluations have been segmented into defined areas: exterior shell, interior shell, and interior bottom. The various appurtenances within each of these areas have also been evaluated. A rating system has been developed to quantify the condition of the various tank areas. Each of the rating criteria is found in the Attachments (Charts 1 through 6).

The condition of the coating systems was rated as being poor, fair, good, or excellent (Chart 1). The extent of any rust defects identified within each of the areas were generally determined using guidelines set forth in ASTM D610 "Standard Test Method for Evaluating the Degree of Rusting of Painted Steel Surfaces" (Chart 2). Where applicable, the characteristic or stage of corrosion was determined according to CSI Corrosion Grade criteria (Chart 3). The degree of chalking was determined in accordance with ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Test Method D659, Method C (Chart 4). Coating adhesion was assessed in accordance with ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test, modified Method A or ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife" (Chart 5). Any blistering that may have been present was rated in accordance with ASTM D714 "Standard Test Method for Evaluating the Degree of Blistering in Paints" (Chart 6). The results of the evaluations for each tank follow:

Water Treatment Plant Tank No. 1

Exterior

The exterior blue paint on the shell is in good condition with light chalking (ASTM D4214, 8). Areas damaged by mechanical impact were minimal, but dark rust spots (CSI Corrosion Grade 2) are present in some areas (ASTM D610, 8). The majority of all exterior corrosion or coating defects was located within the lowest 6 inches of the tank. No significant corrosion in the form of pitting or scaling was identified within this condition. The remaining painted surfaces were found to have scattered dark rust spots on edges and in areas that had been mechanically dinged. The paint dry film thickness on the exterior was measured to range from between 10 and 15 mils with an average thickness of 12 mils, and paint adhesion was estimated to be satisfactory (ASTM D6677, 8).

Interior

With a few exceptions, the condition of the interior lining of the tank is in fair to good condition. No evidence of chemical attack was present, and overall the vast majority of the tank lining was free of any coating defects. The exceptions involve some localized spots of dark corrosion (CSI Corrosion Grade 2) with some of these areas having developed into corrosion pits (CSI Corrosion Grade 3). The pits were measured and found to approach 150 mils deep. Otherwise, the majority of all other rust spots were primarily located on the edges of the structure. There was also evidence of past coating patches, notably on some edges and corners of the structure. Many of these patches had isolated dark rust spots that had come through the patch material. The amount of corrosion in the tank was rated to be less than 0.03 percent of all areas (ASTM D610, 9). The tank lining film adhesion was estimated to be satisfactory (modified ASTM D6677, 8), and the lining film thickness was found to range between 15 and 67 mils with an average of 18 mils.

Water Treatment Plant Tank No. 2

Exterior

The exterior white paint on the shell is in fair condition with light chalking (ASTM D4214, 8). Areas damaged by mechanical impact were minimal, but dark rust spots (CSI Corrosion Grade 2) are present in many areas (ASTM D610, 6). The most severe corrosion was located along the lowest few inches of the shell. A few areas of minor pitting and scaling (CSI Corrosion Grades 3 and 4) were found to be present. The underside of many of the stiffeners was also commonly found to be free of any paint, which has resulted in dark corrosion being common. The remaining painted surfaces were found to have both isolated and clusters of dark rust spots notably on the top side of many stiffener flanges. None of these rusting areas above the lowest few inches of the shell were found to have any severe corrosion. The paint dry film thickness on the exterior was measured to range from between 12 and 19 mils with an average thickness of 14 mils, and paint adhesion was estimated to be satisfactory (ASTM D6677, 8).

Interior

The condition of the interior of the tank is in fair condition. No evidence of chemical attack was found, and overall the vast majority of the tank lining was free of any widespread lining defects. The lining was found to commonly have some dark corrosion (CSI Corrosion Grade 2) along the edges and within corners of the structure. No advanced corrosion in the form of pitting or scaling was identified. There was also evidence of past coating patches, notably on some edges and corners of the structure that have peeled away from the original lining. Many of these patches had isolated dark rust spots that had come through the patch material. The amount of corrosion in the tank was rated to be less than 0.3 percent of all areas (ASTM D610, 7). The tank lining film adhesion was estimated to be satisfactory (modified ASTM D6677, 8), and the lining film thickness was found to range between 11 and 64 mils with an average of 17 mils.

Discussion

With a few minor exceptions, the two tanks are in mostly satisfactory condition. The exceptions involve some isolated internal pitting on Tank No. 1 and external scaling on Tank No. 2. The remaining coating defects involve a moderate amount of scattered spot rust.

The largest concern is located on Tank No. 1, where the internal tank bottom was found to have less than 15 isolated corrosion pits with some of the largest pits measuring approximately 1/8" (150 mils) deep. The tank bottom is suspected of being 1/4" thick steel plate. As a result, if left unrepaired the pits have the potential to create a thru hole within the next 4 to 5 years. It is believed that the pitting may be a result of galvanic corrosion associated with dissimilar metals since a few of the tank mechanisms include directly connected stainless steel. The other concern is the scaling corrosion that *may* be present on the underside of the tank bottom of Tank No. 2. Scaling was observed on the outer edge of the tank above the crevice between the floor and tank bottom.

It is recommended that the corrosion pits be repaired. Each should be either plate-patched or puddle welded within the next few years. In the mean time, it would be prudent to clean and then patch each pit with some NSF certified 100 percent epoxy to assure that the pits do not continue to grow to where they extend through to the tank underside.

It is not clear how the scaling that is developing on Tank No. 2 can be repaired without considerable effort, and it is not known how far this condition extends up under the tank. Since the tank also has a double bottom that is not necessarily required for the tank to properly operate, it is suspected that this issue is not critical. Nonetheless, it would be prudent to slow the rate of corrosion at this area by cleaning and patching the accessible areas with surface tolerant epoxy mastic on a best-effort basis. This work should be completed within the next few years. Additionally, the future corrosion rate at this area can be reduced by sealing the crevice so that oxygen and moisture is limited to the area.

Otherwise, the remaining rust spots on the interior of both tanks should be spot repaired within the next 3 to 4 years. This repair work should include the powertool cleaning of each area to a white metal condition (SSPC-SP11) followed by a patch of NSF certified epoxy. The exterior surfaces should be spot repaired within the next 4 to 6 years. This repair work should include the powertool cleaning of each area to a commercial cleanliness (SSPC-SP15) followed by a patch of epoxy. These patches can also be finish coated with a urethane or acrylic for a better appearance.

Recommended Work

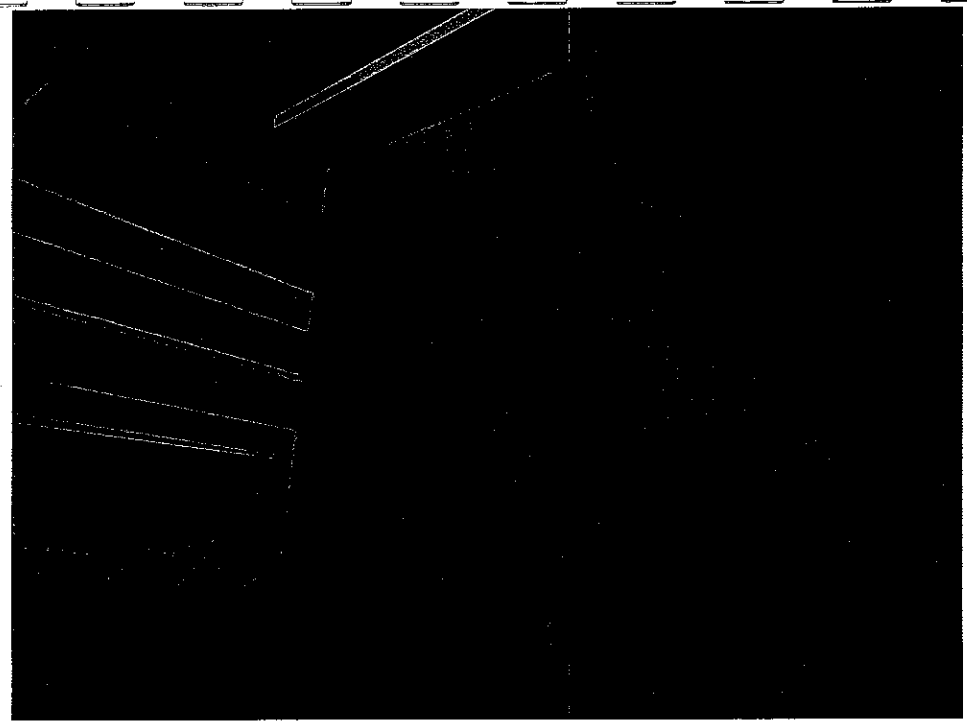
The following work is recommended for the tanks:

1. Within the next 3 to 4 years, repair all rusting defects on the internal surfaces. These repairs should be completed in accordance with SSPC–SP11 "Powertool Cleaning to Bare Metal" followed by at least one coat of a compatible NSF certified epoxy lining material. Special care should be made during any preparation for overcoating to assure that all existing coating has been properly scarified and that any oil residues are properly removed prior to coating.

2. Within the next 4 to 6 years, the exteriors of both tanks should be spot repair. This work should include powertool cleaning of all exterior rust spots in accordance with SSPC-SP15. All bare metal areas should be primed with a high-solids low-shrinkage epoxy followed by a urethane or acrylic finish coat.

NOTICE: This report represents the opinion of CSI Services, Inc. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, and materials afforded. While the inspections were performed in accordance with industry standard practices and a reasonable indication of proper serviceability has been provided, our inspection does not guarantee a leak proof tank.

WTP Tank 1 Exterior Photo (1)



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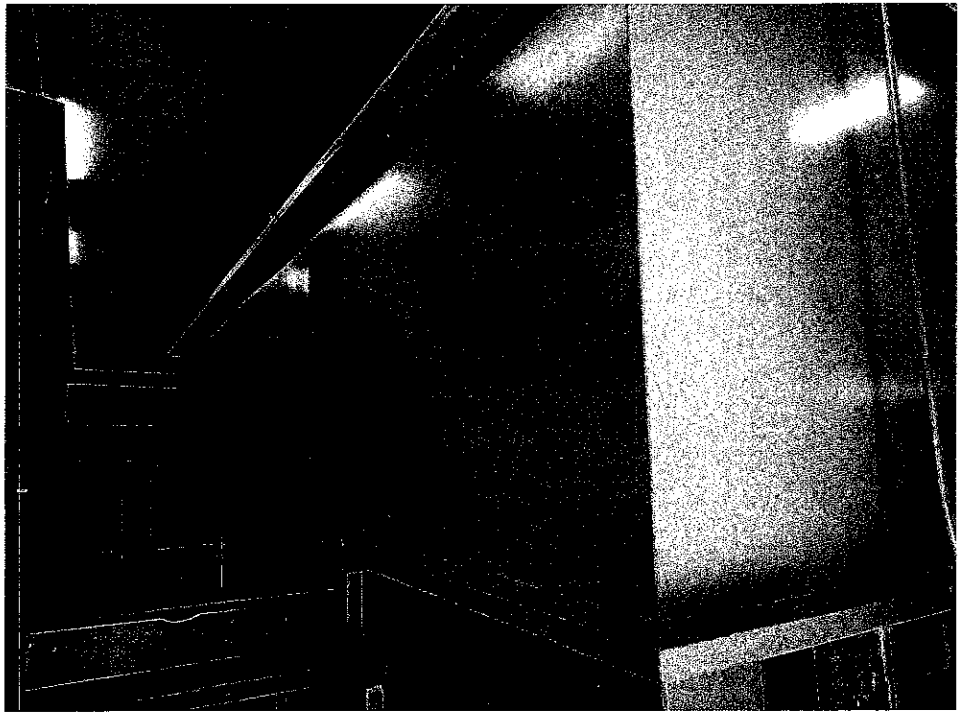

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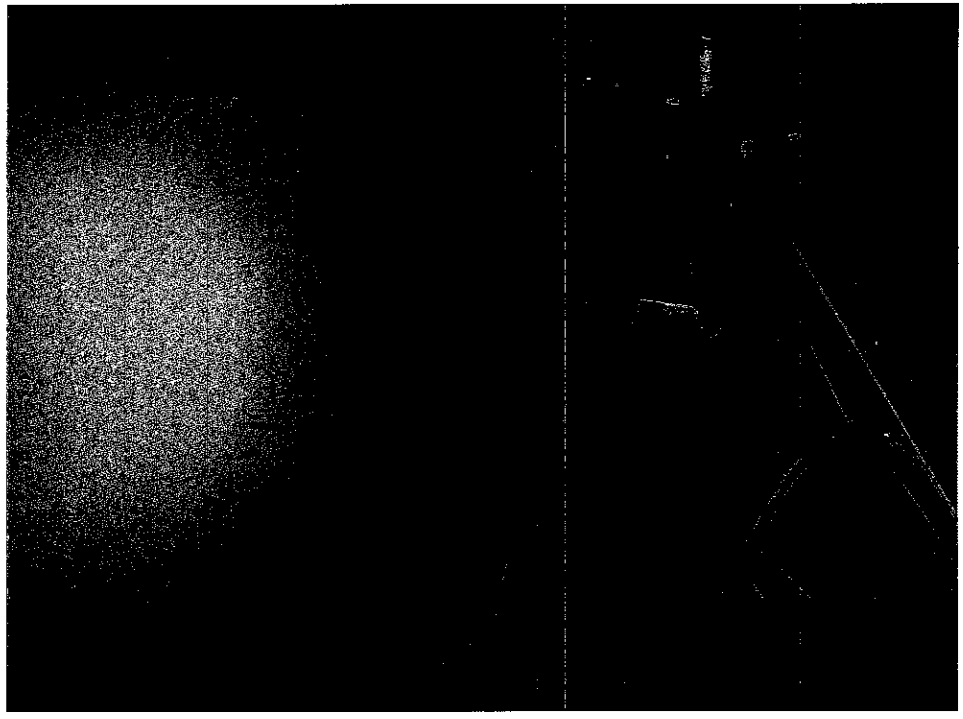

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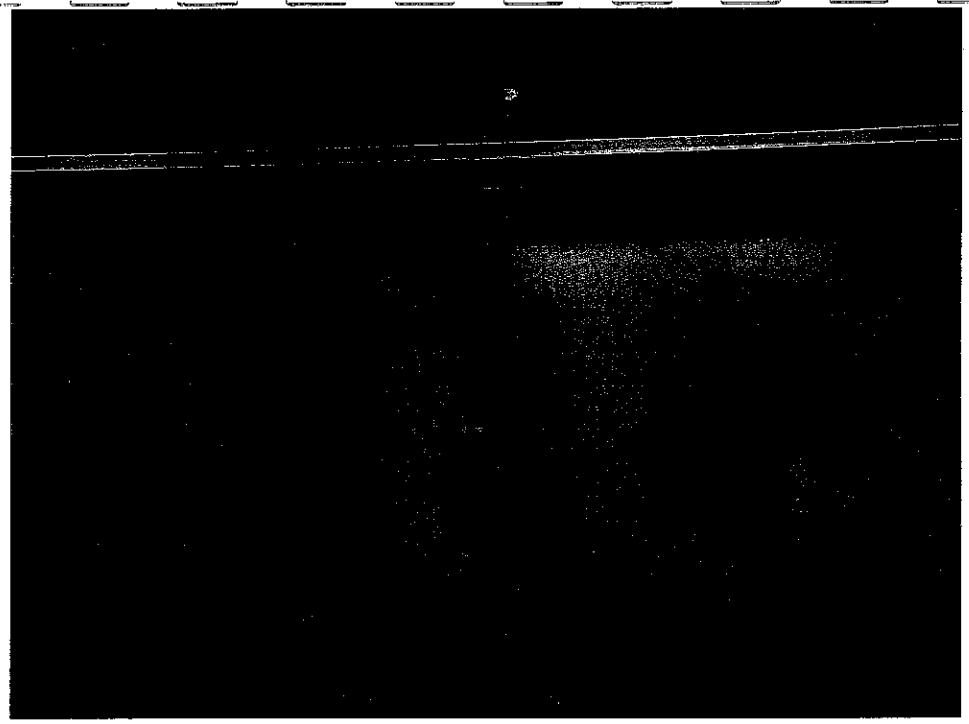

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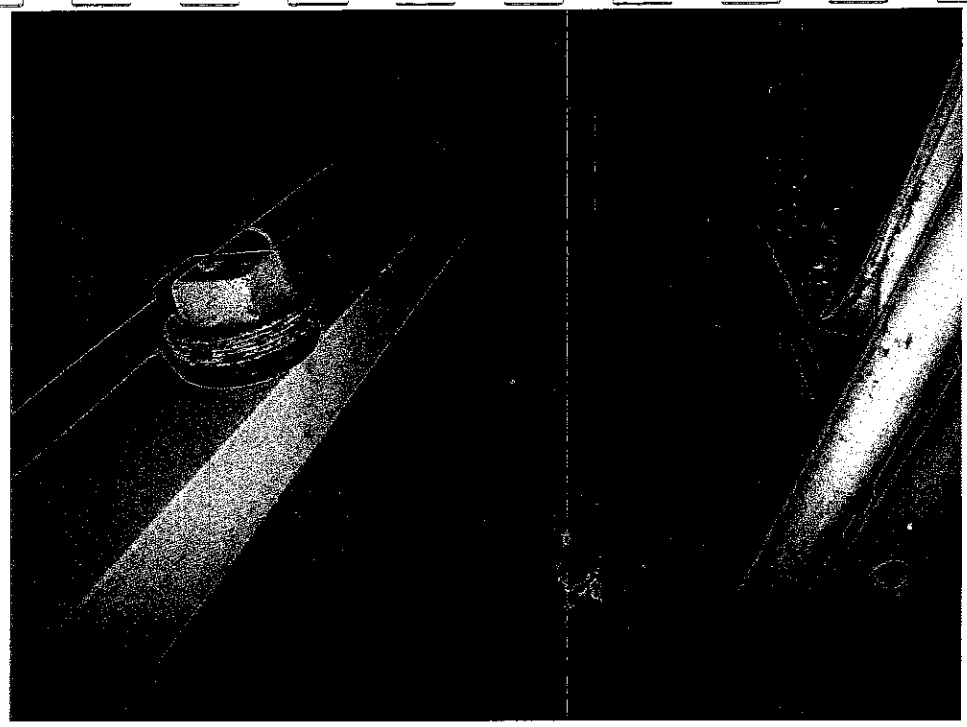

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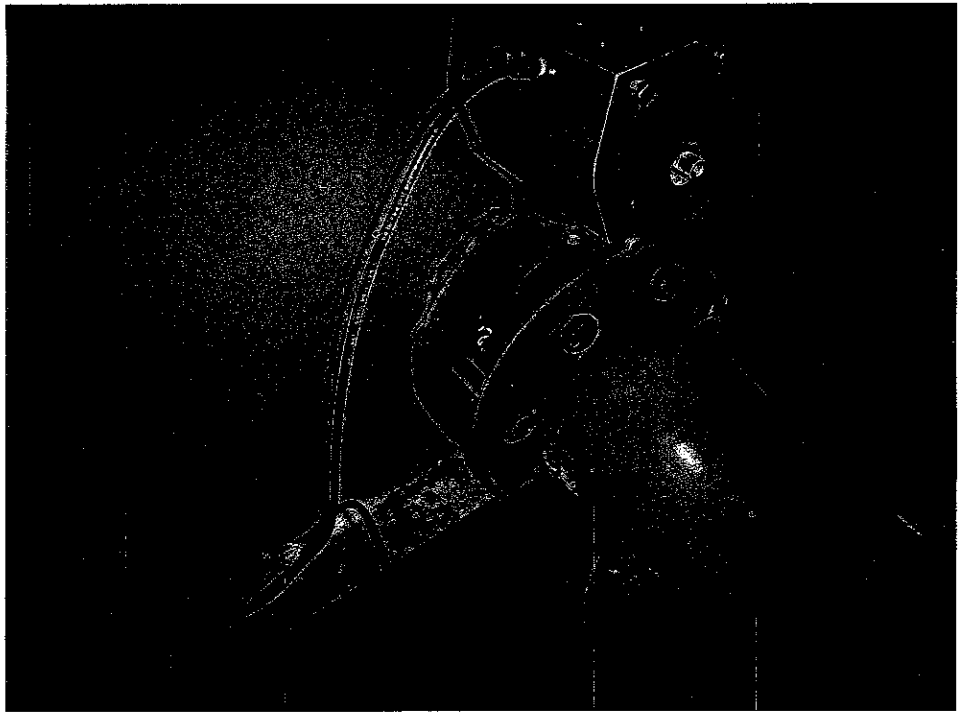

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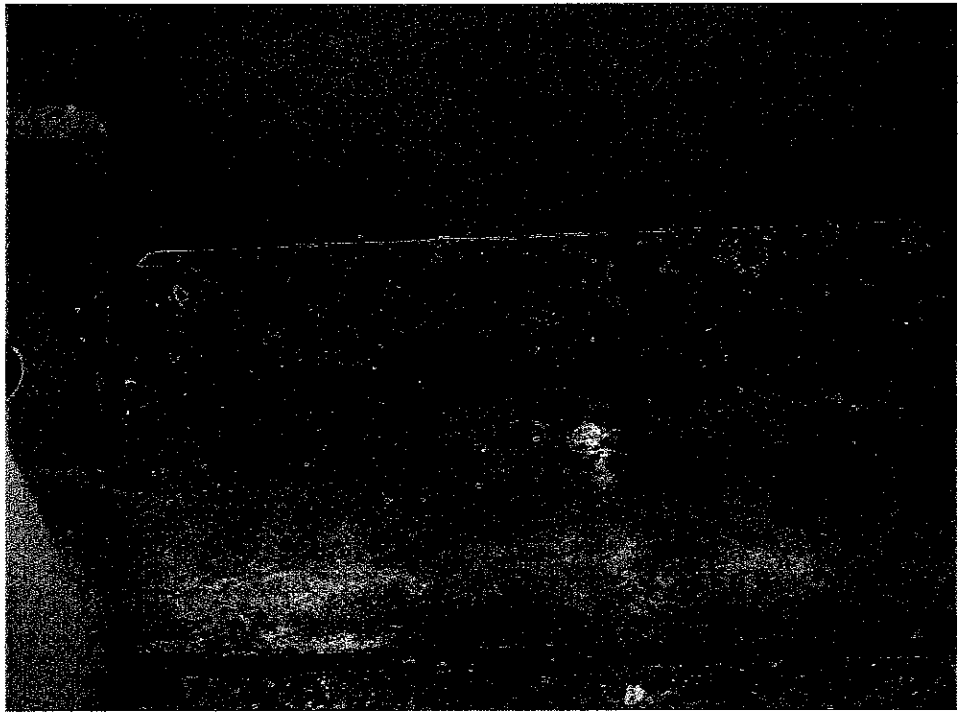

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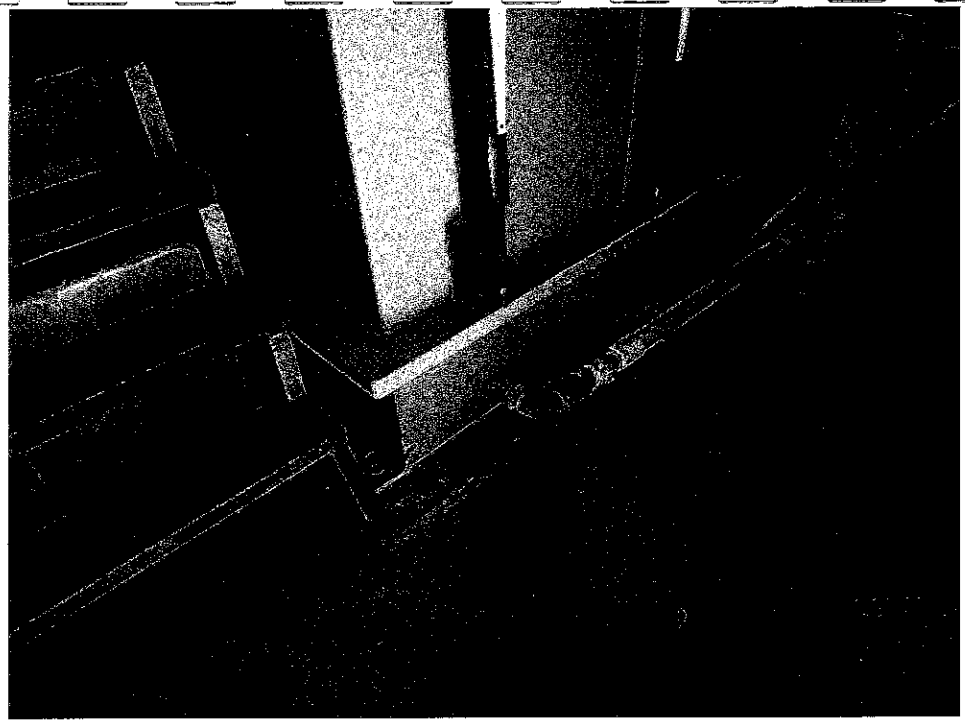

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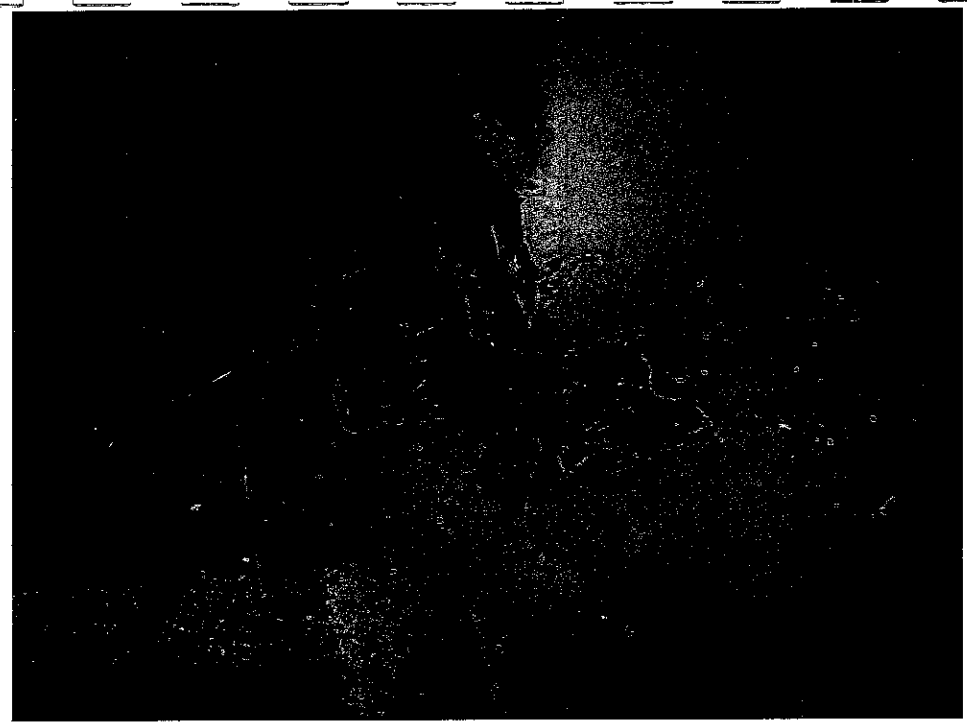

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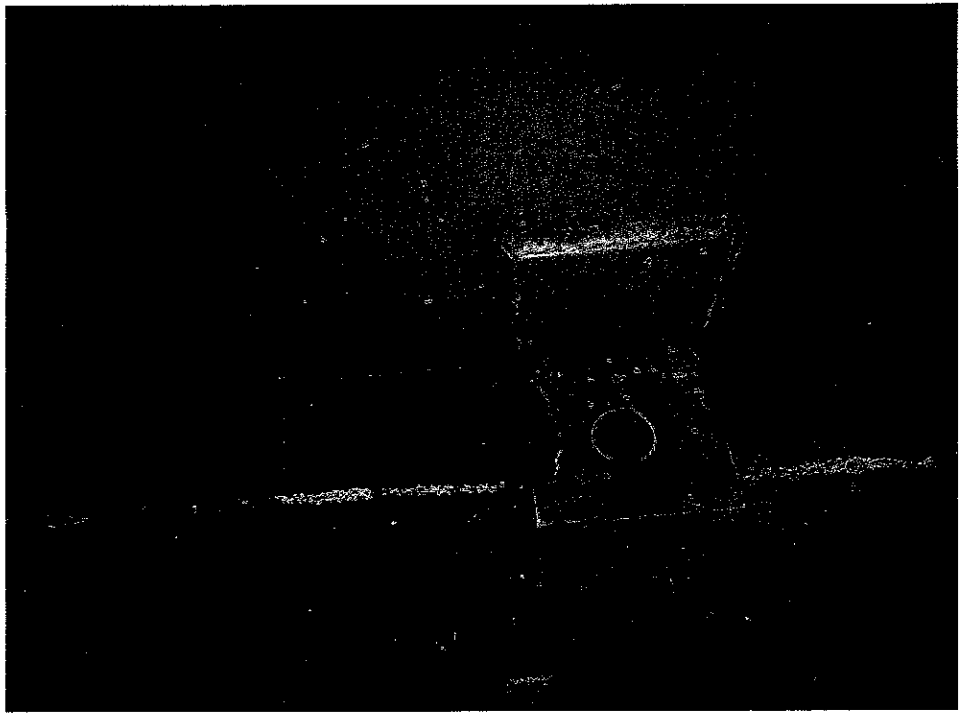

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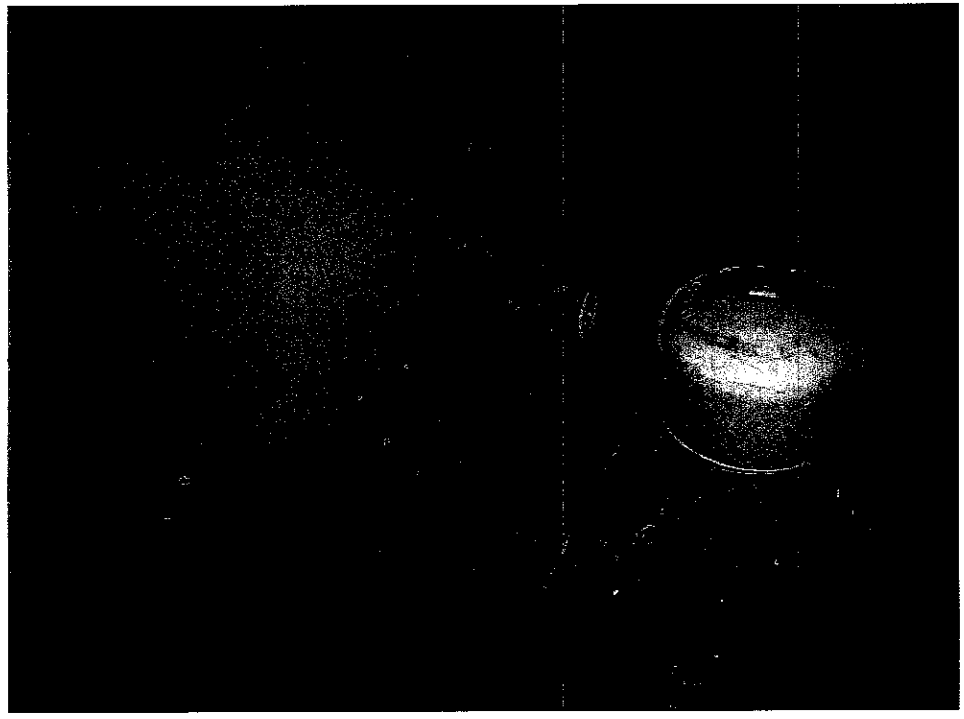

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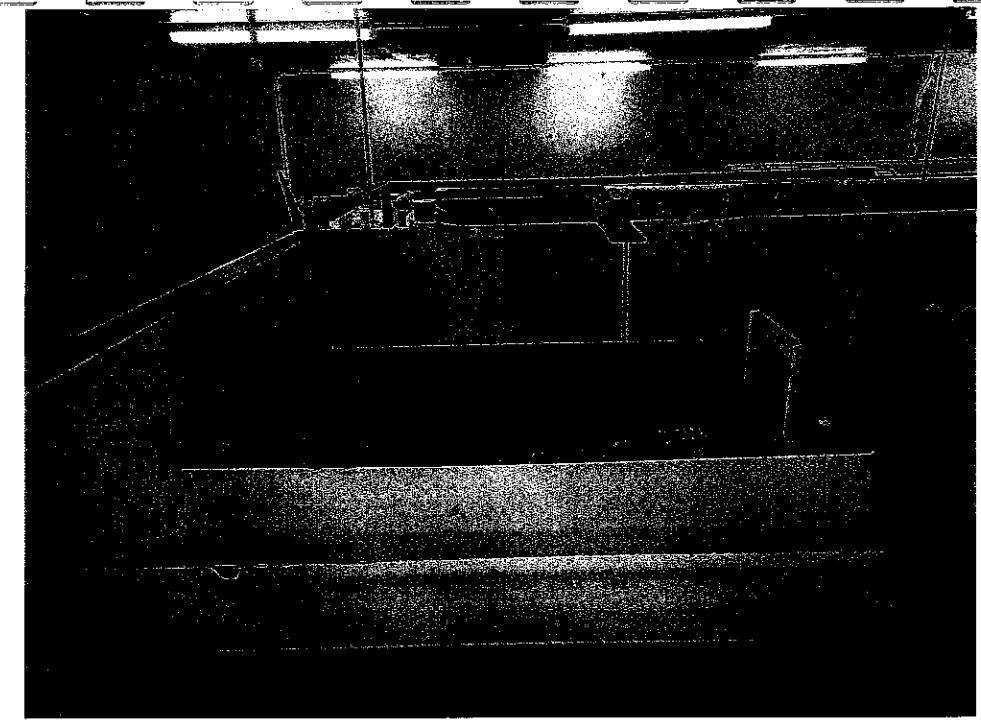

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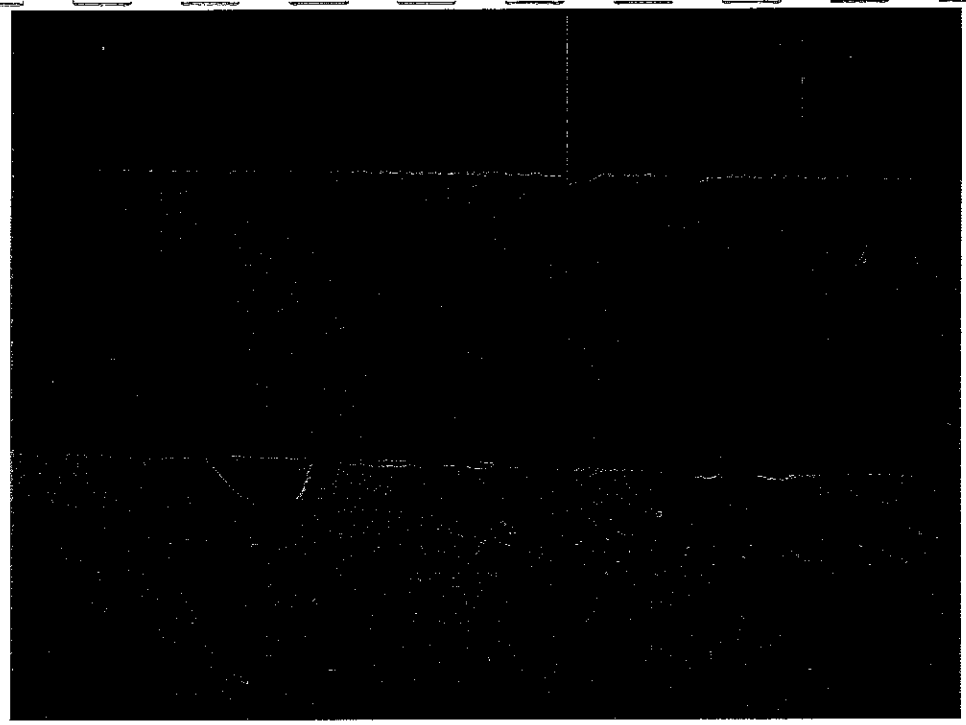

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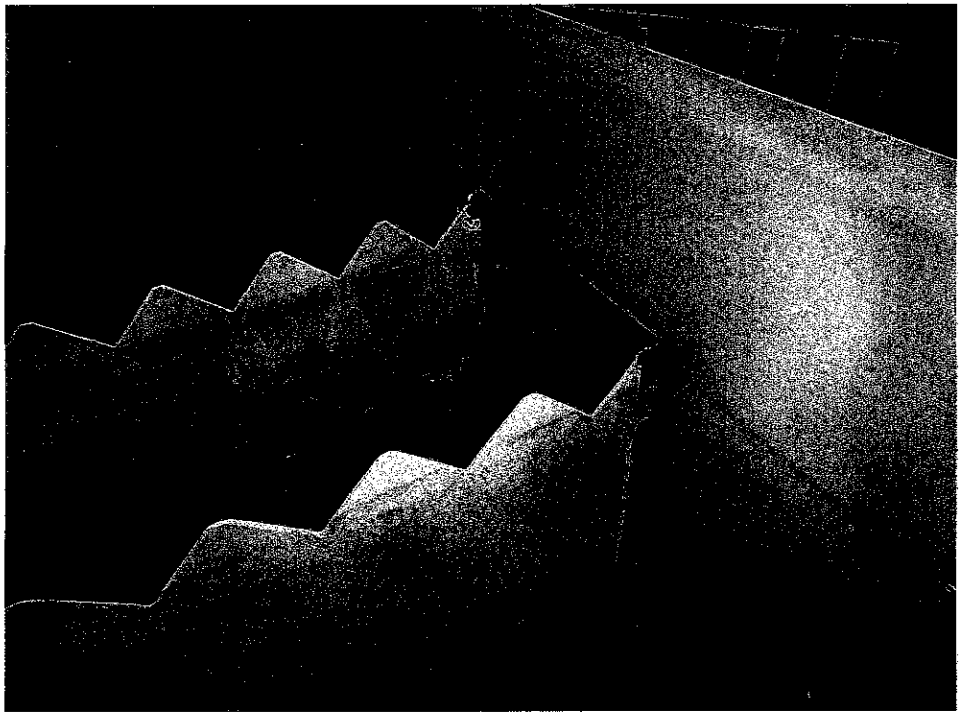

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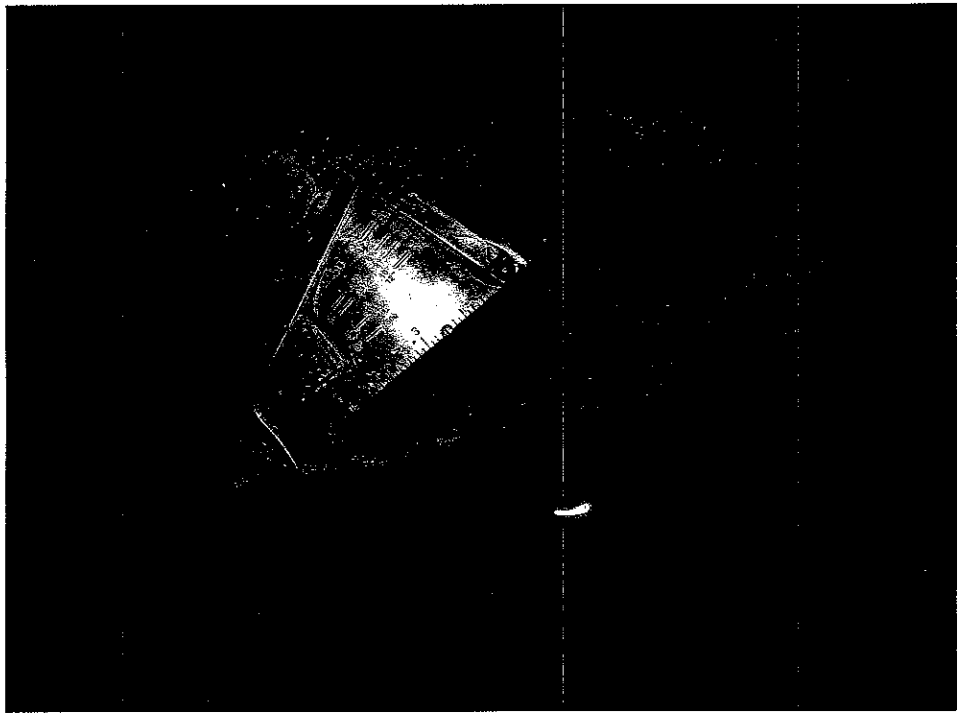

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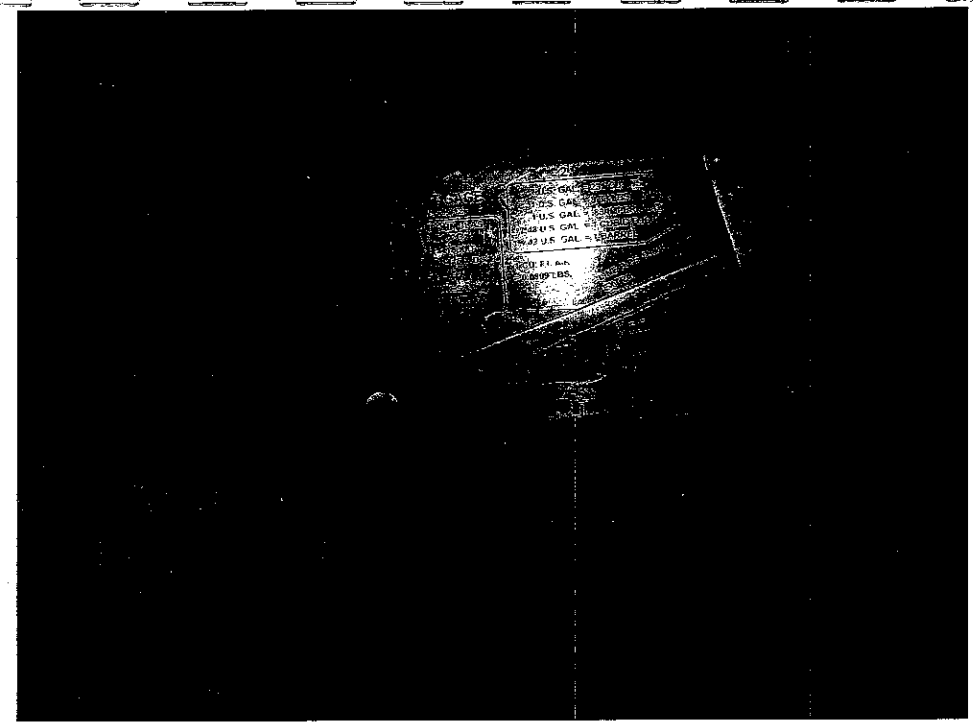

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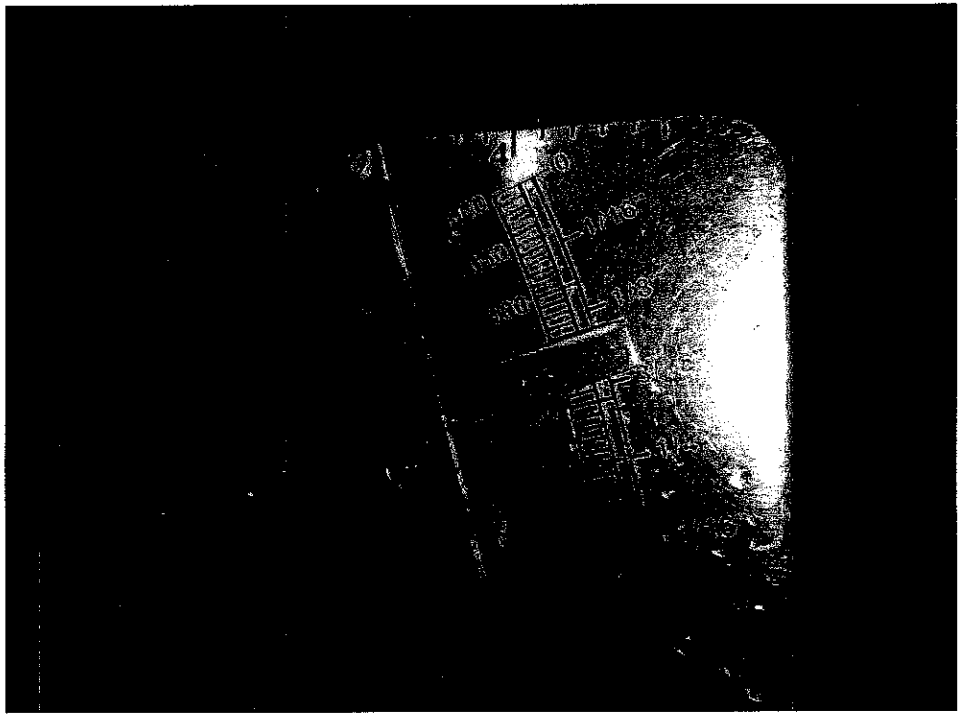

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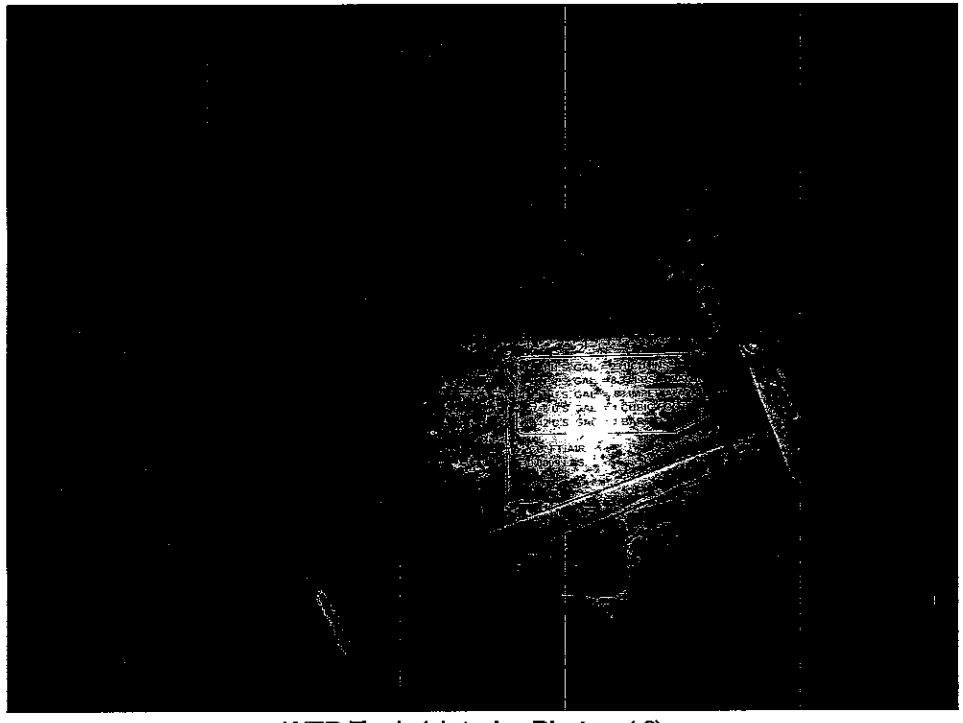

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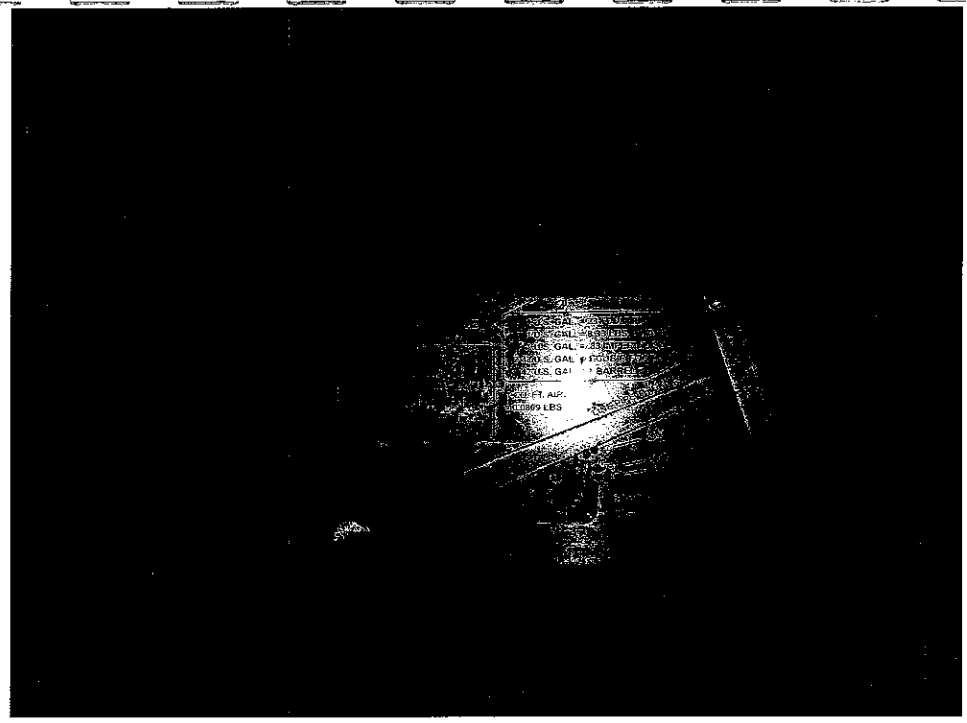

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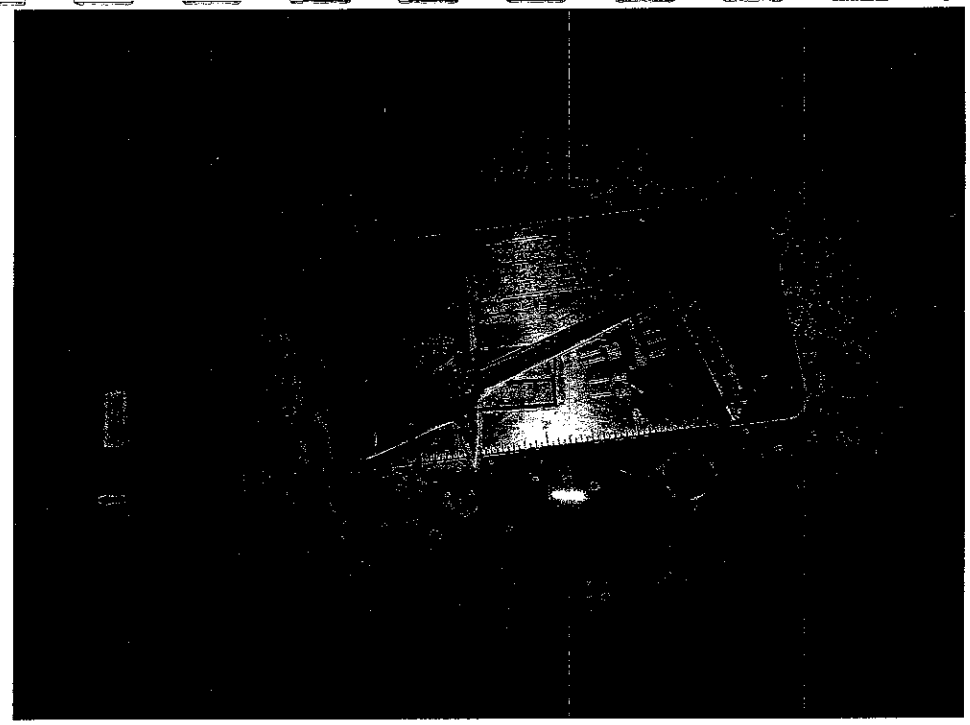

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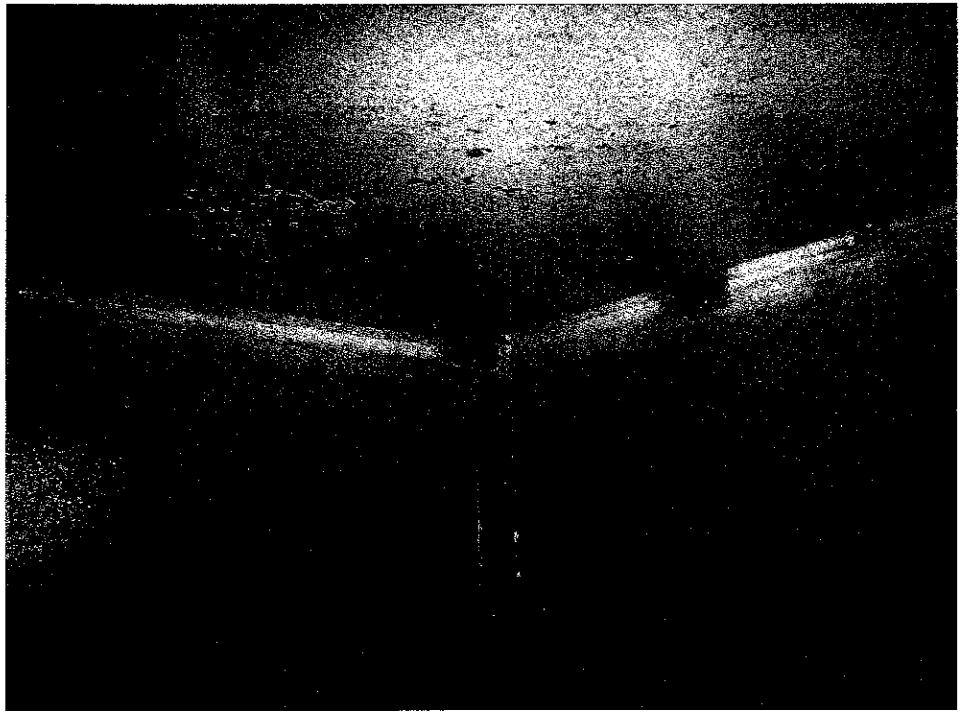

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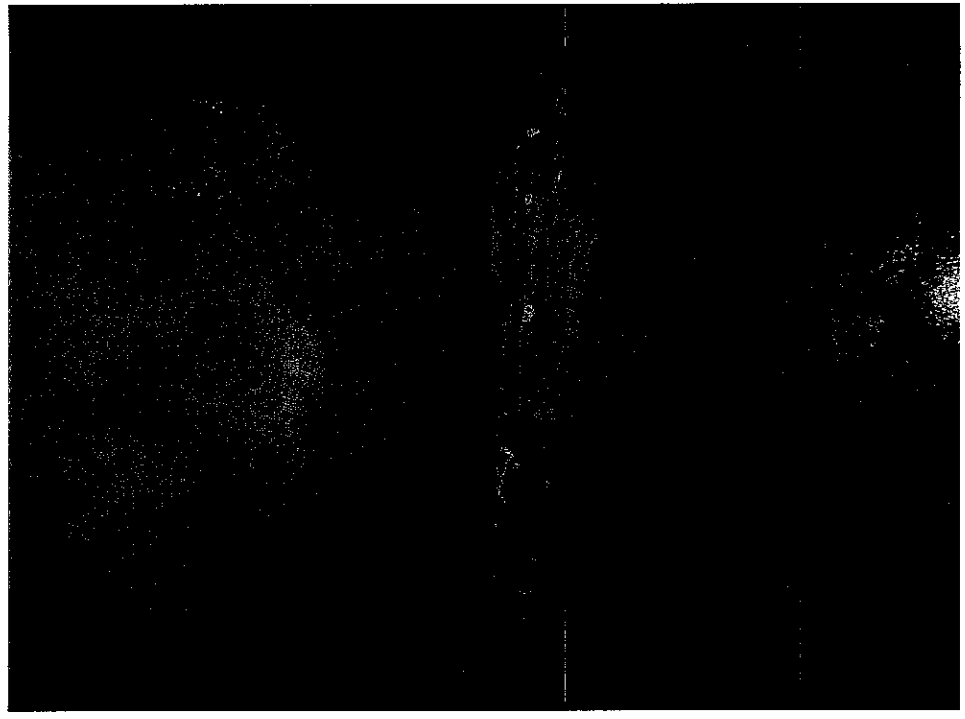

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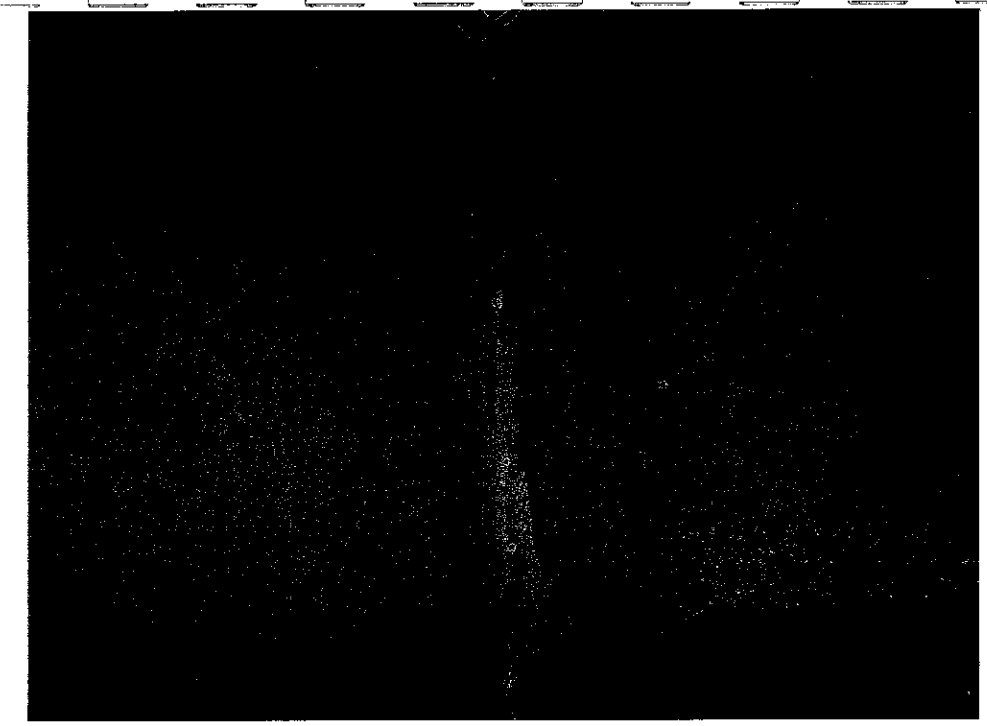

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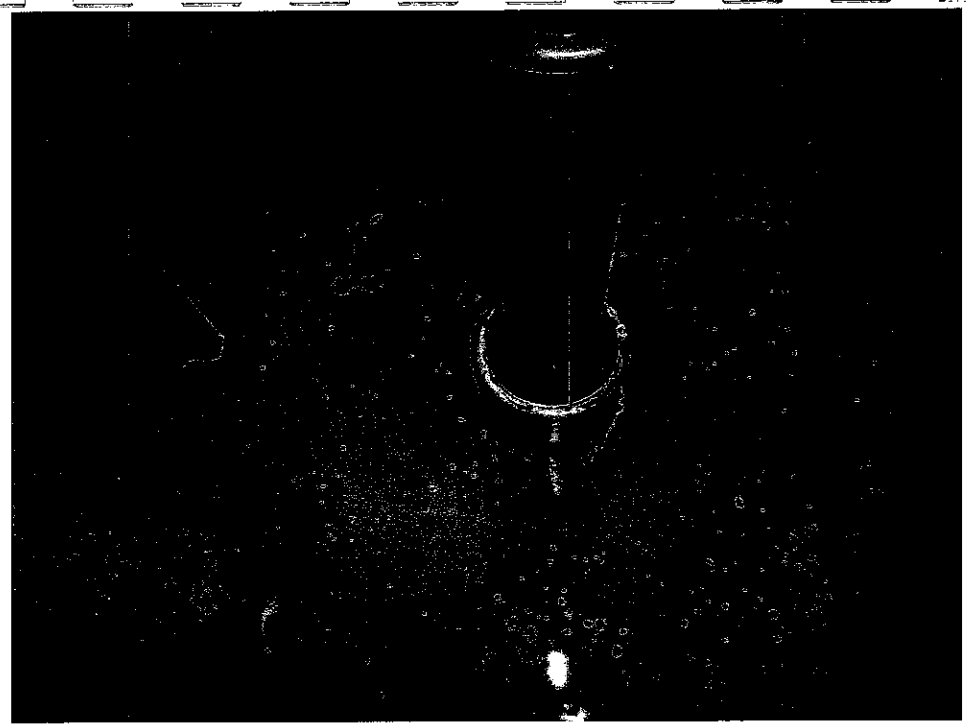

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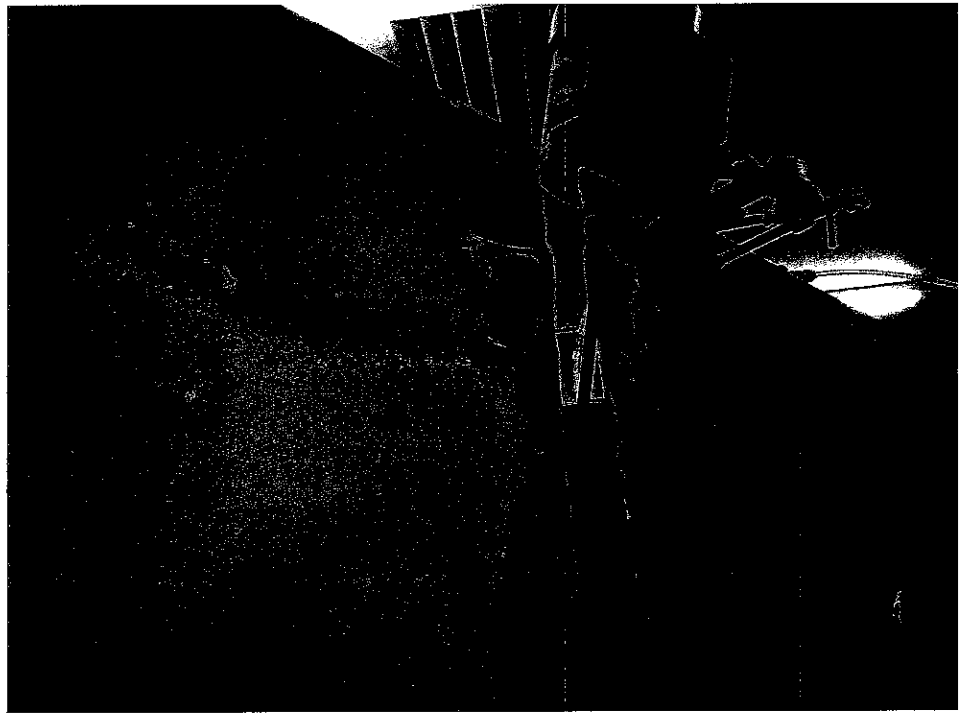

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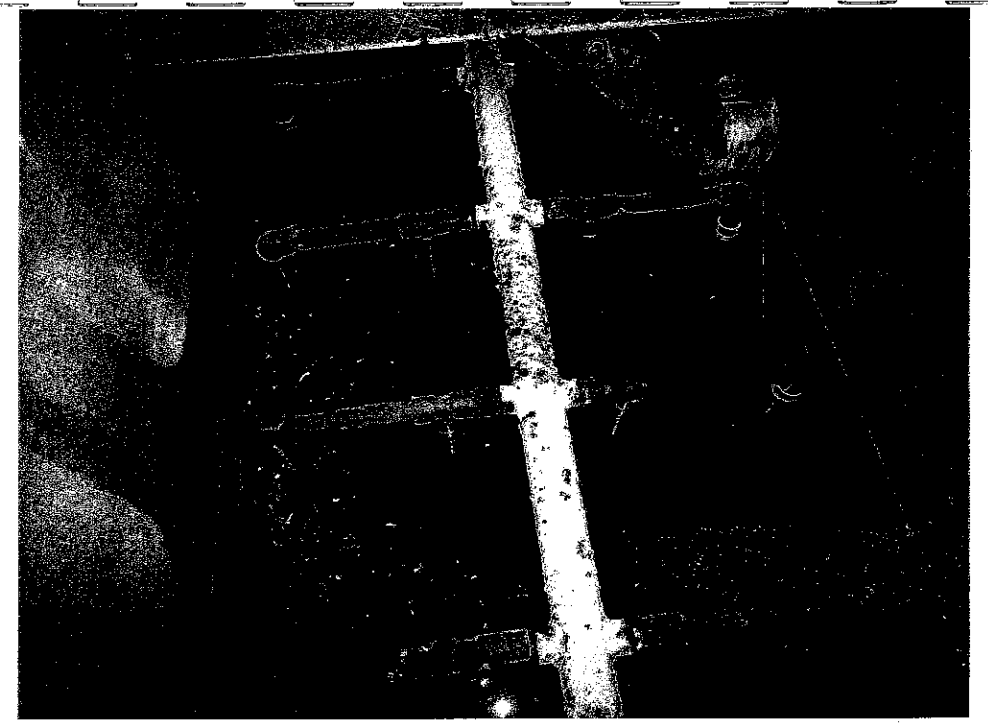

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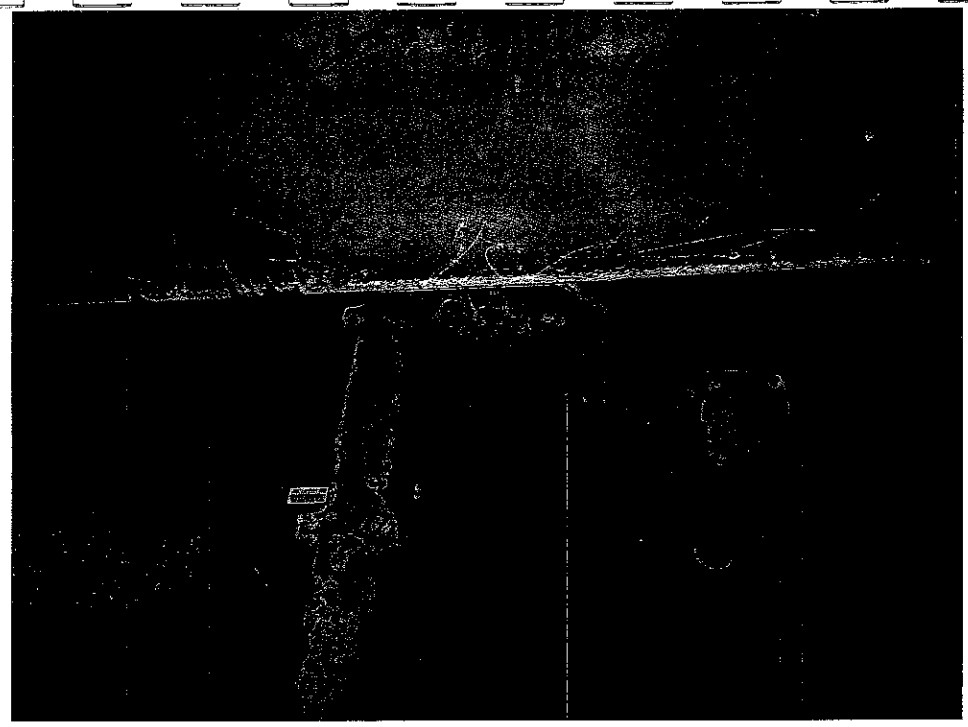

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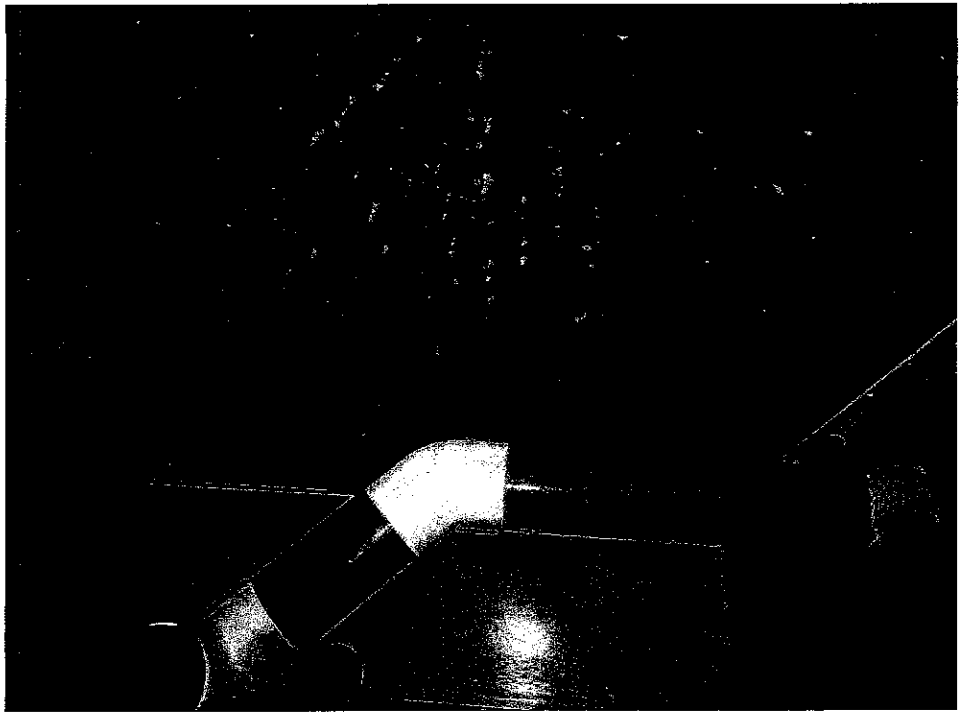

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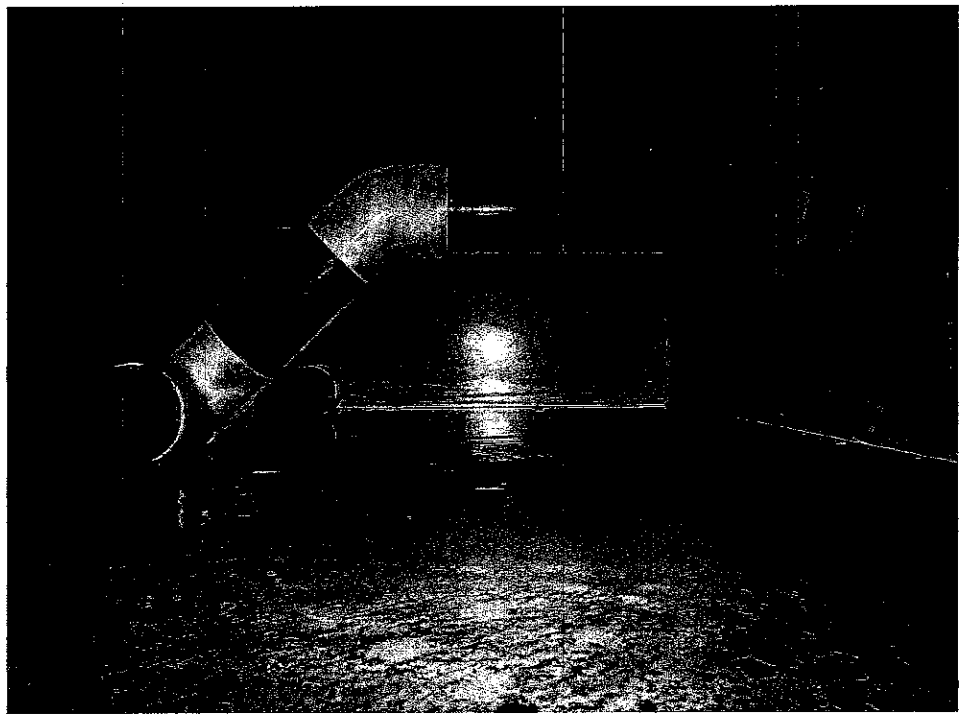

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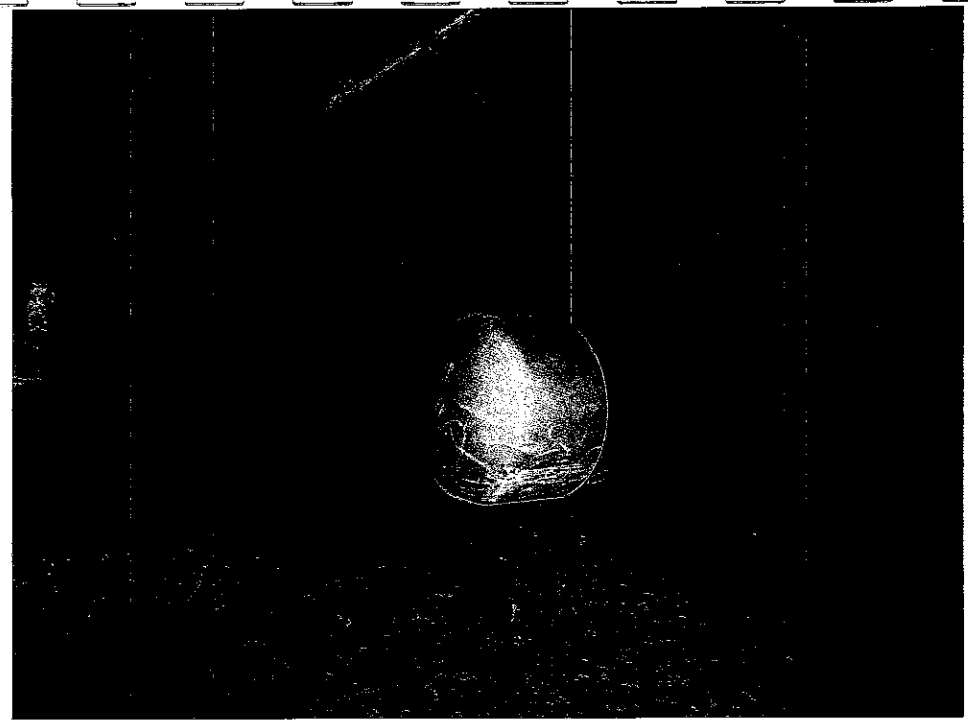

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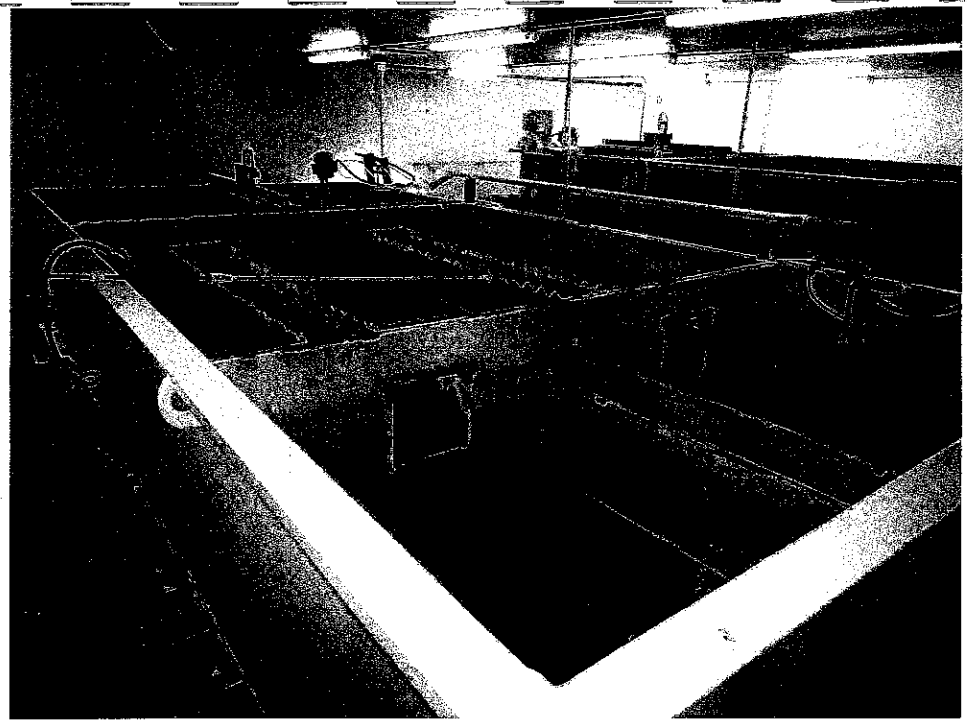

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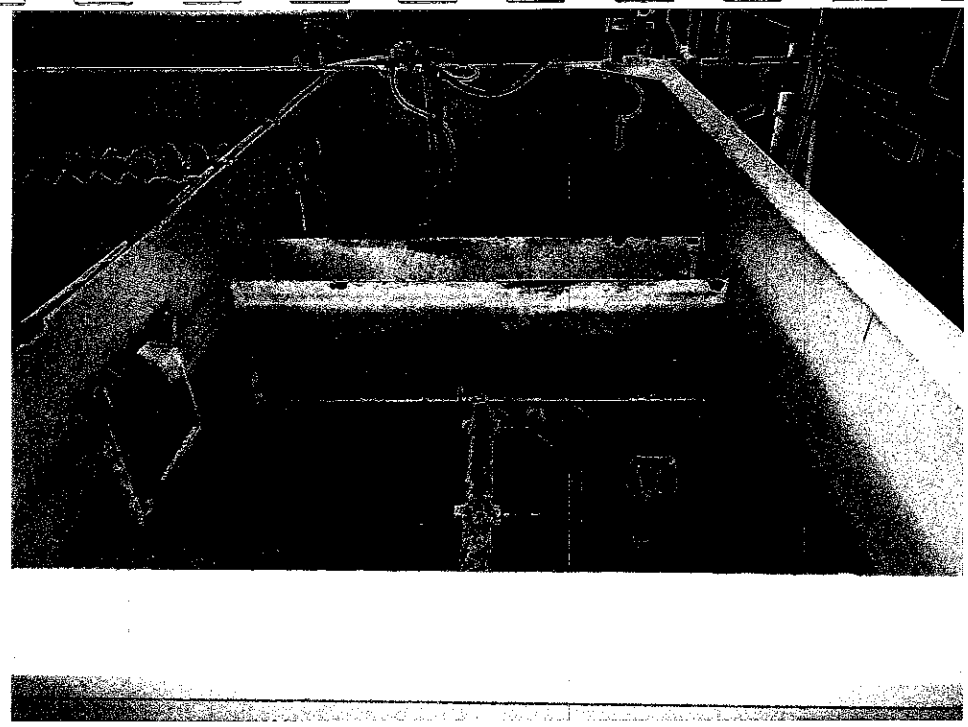

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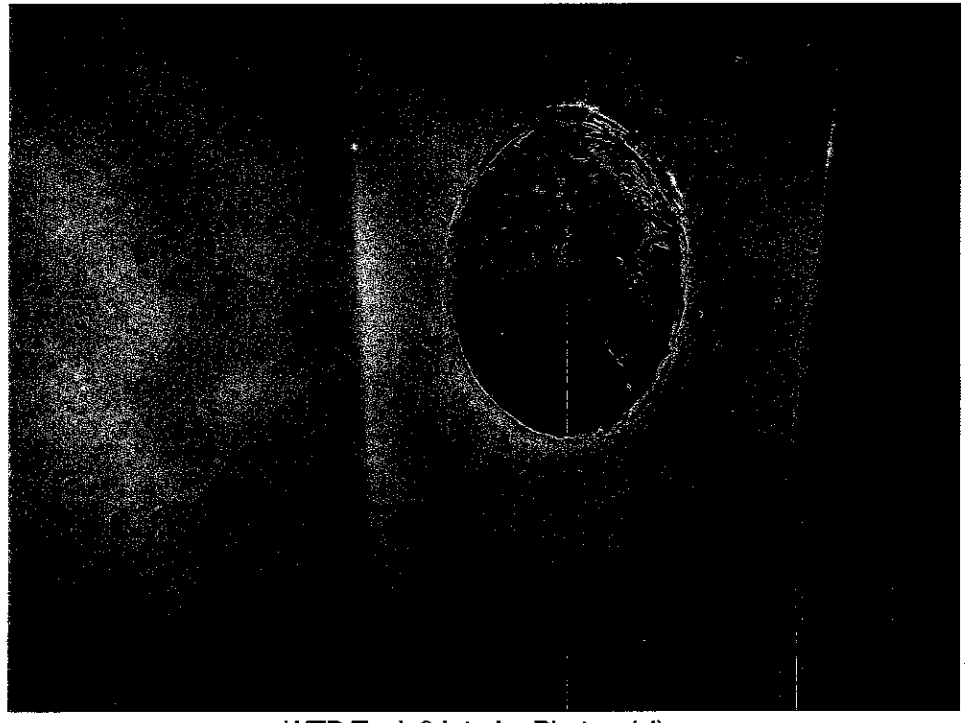

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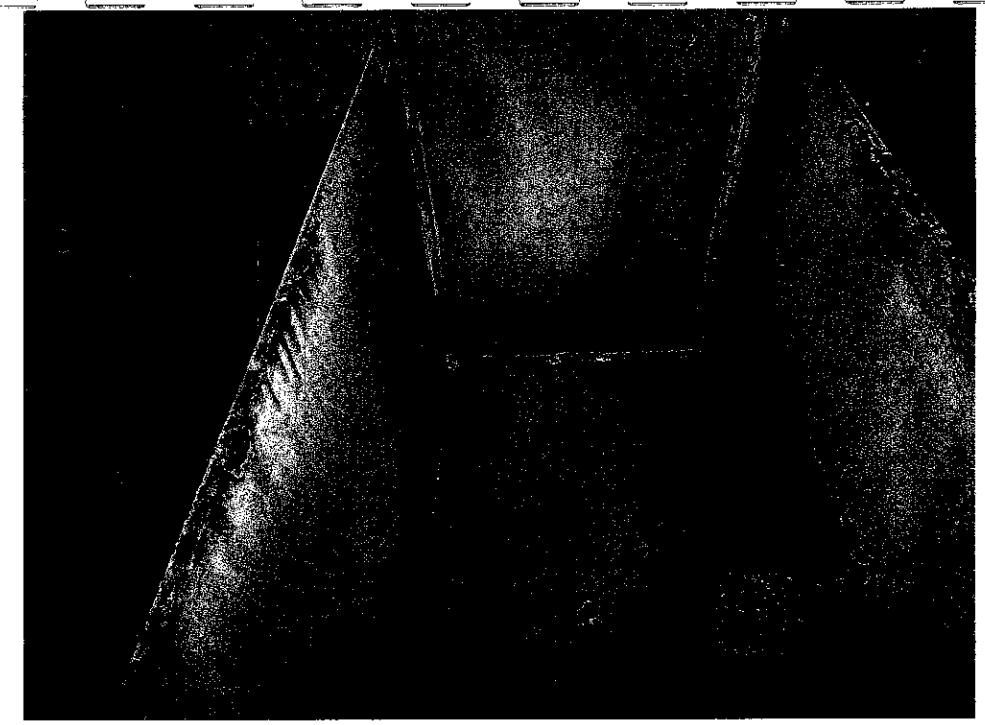

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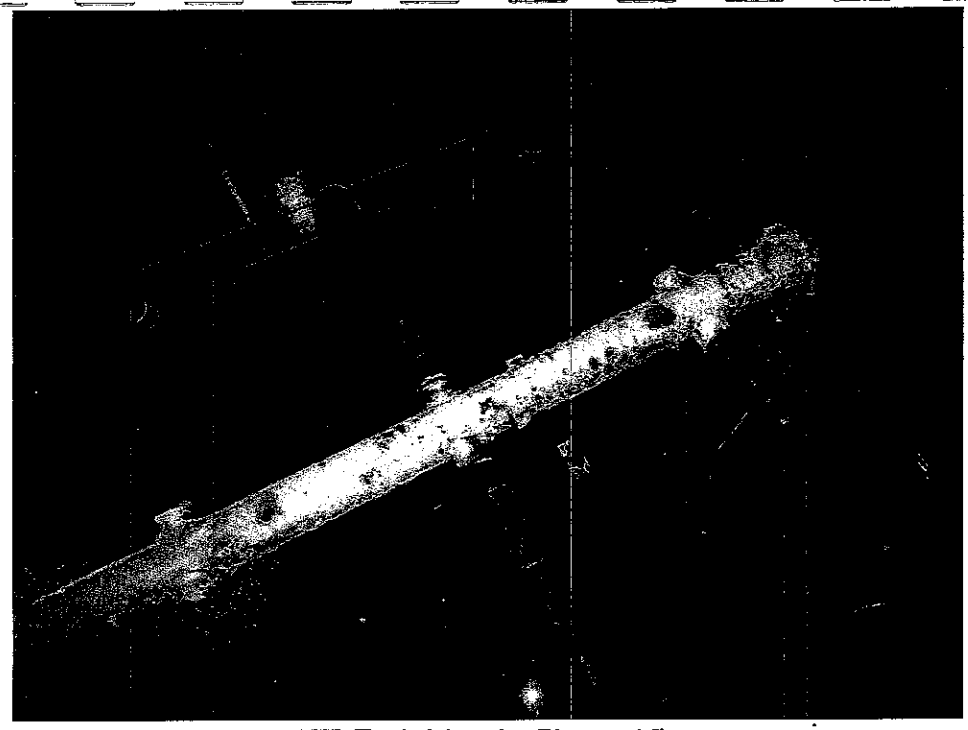

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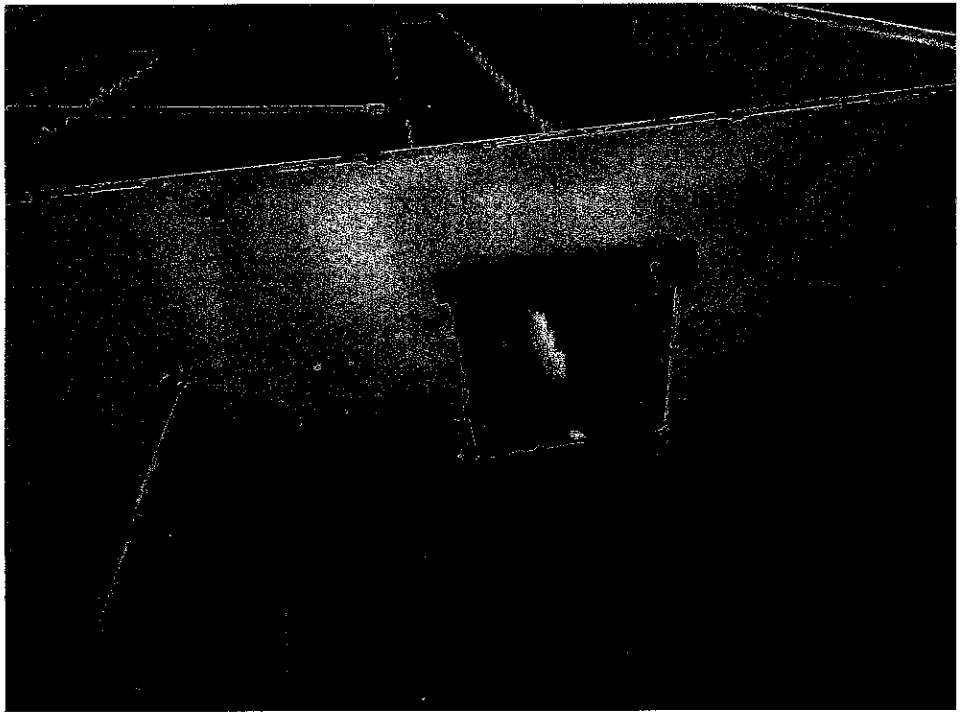

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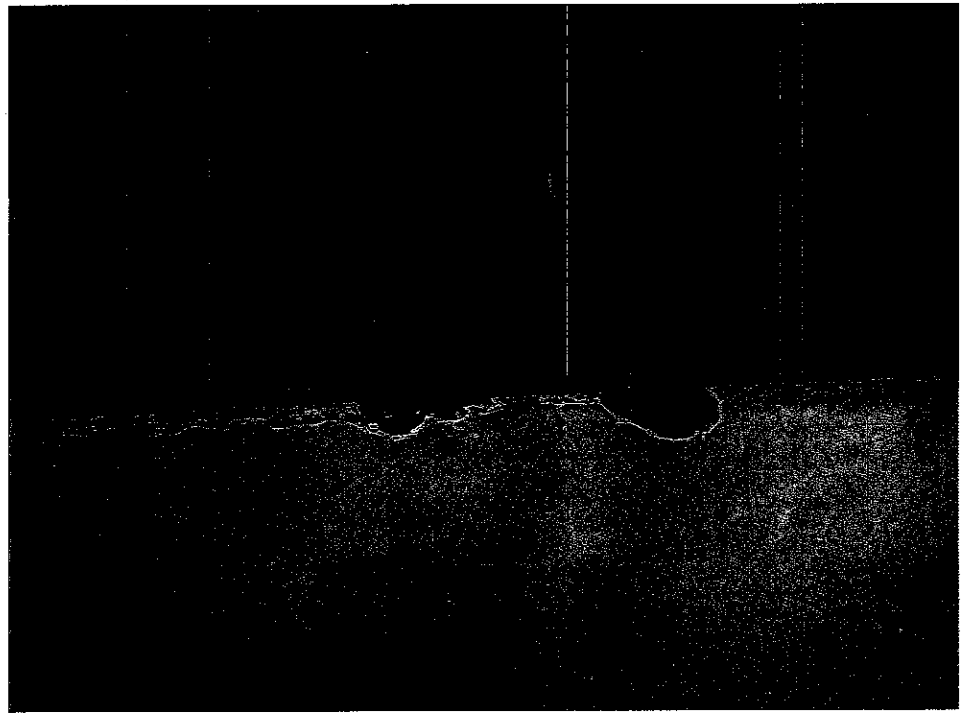

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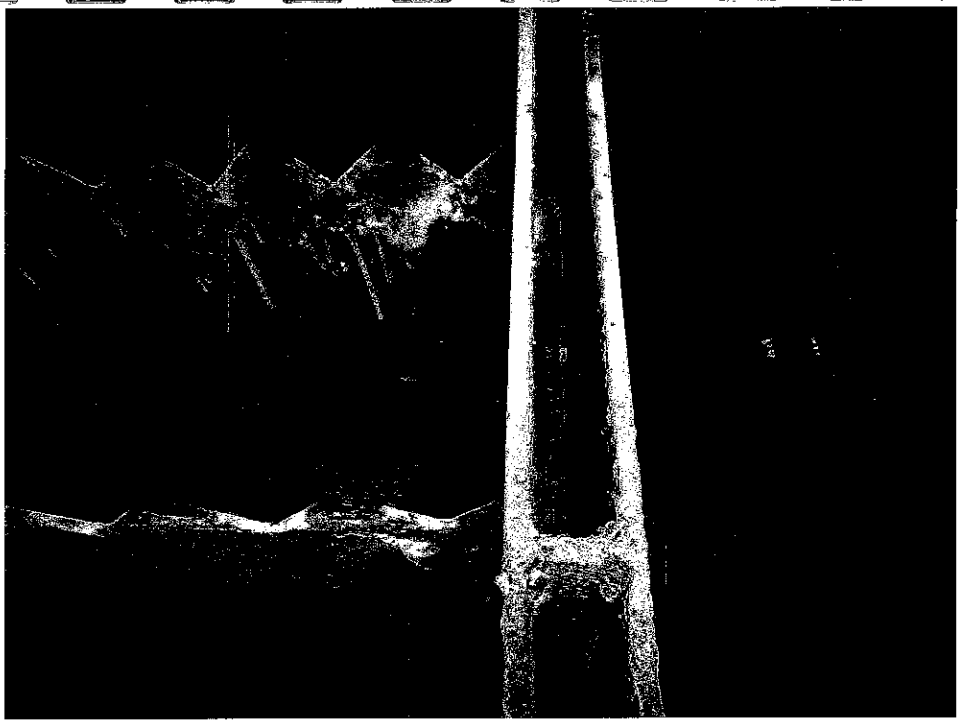

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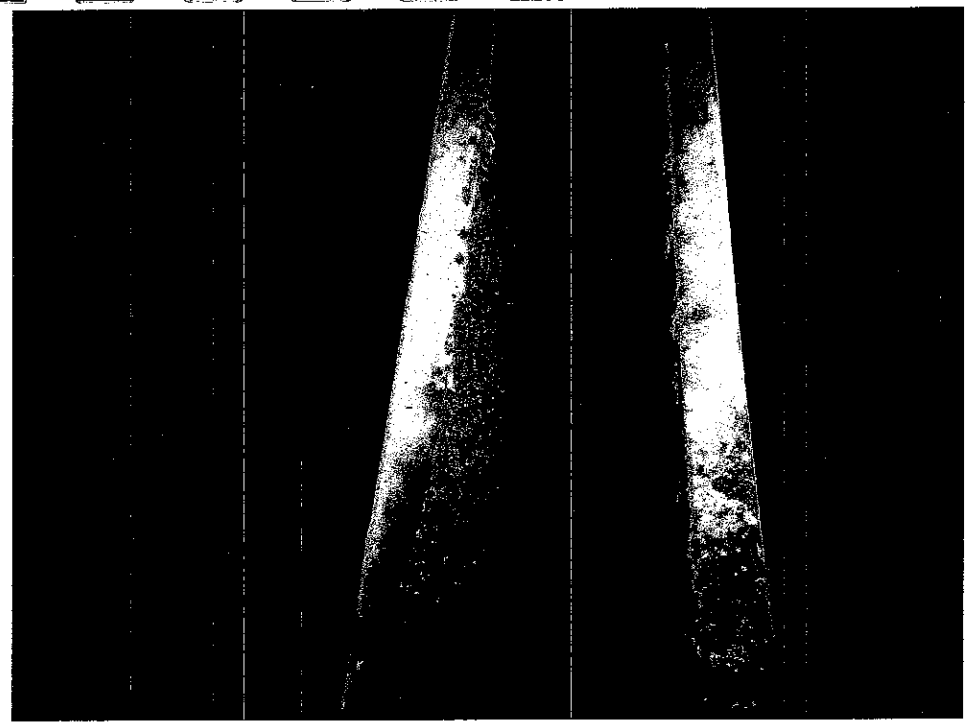

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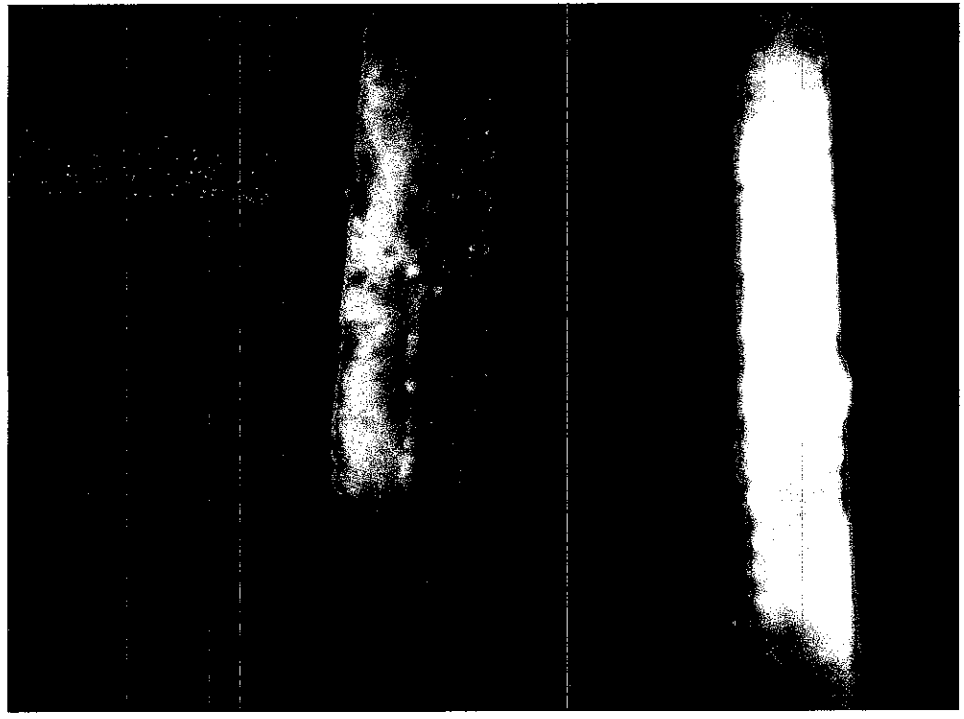

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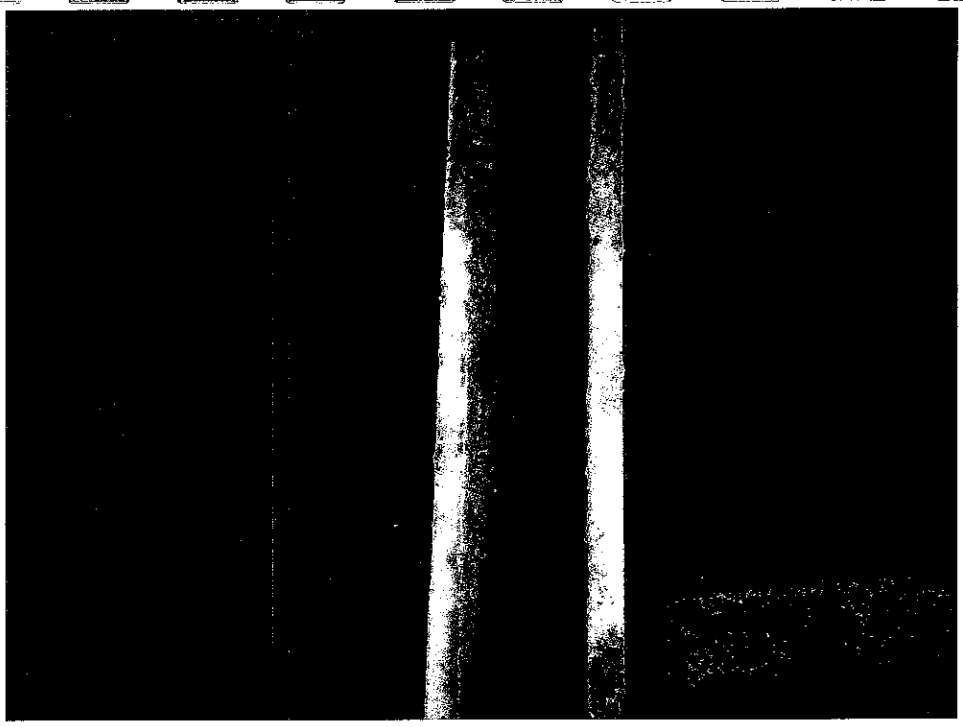

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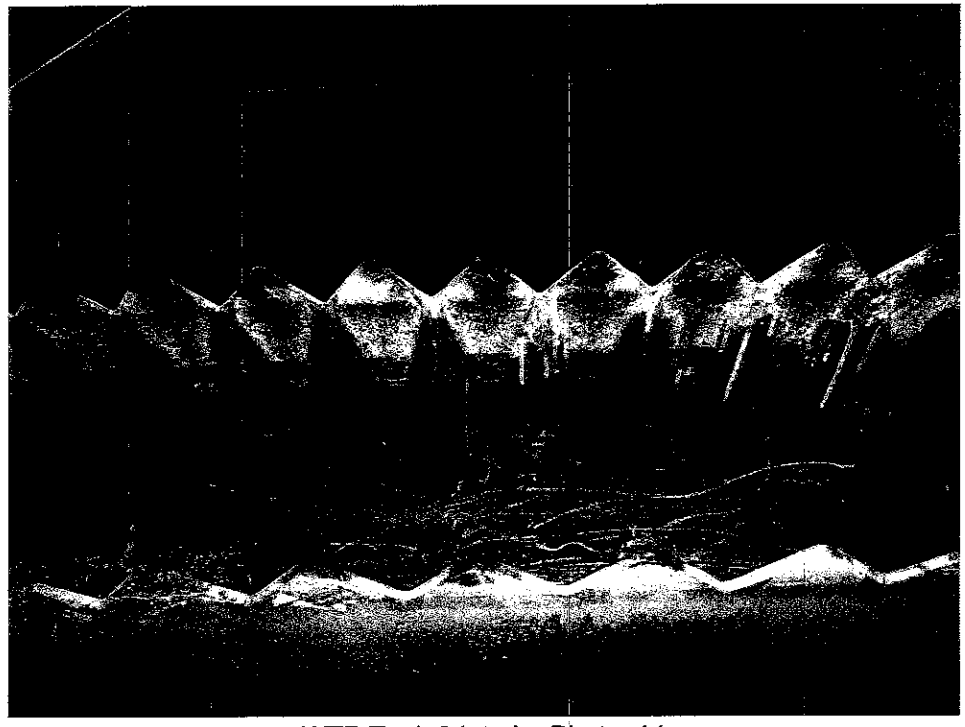

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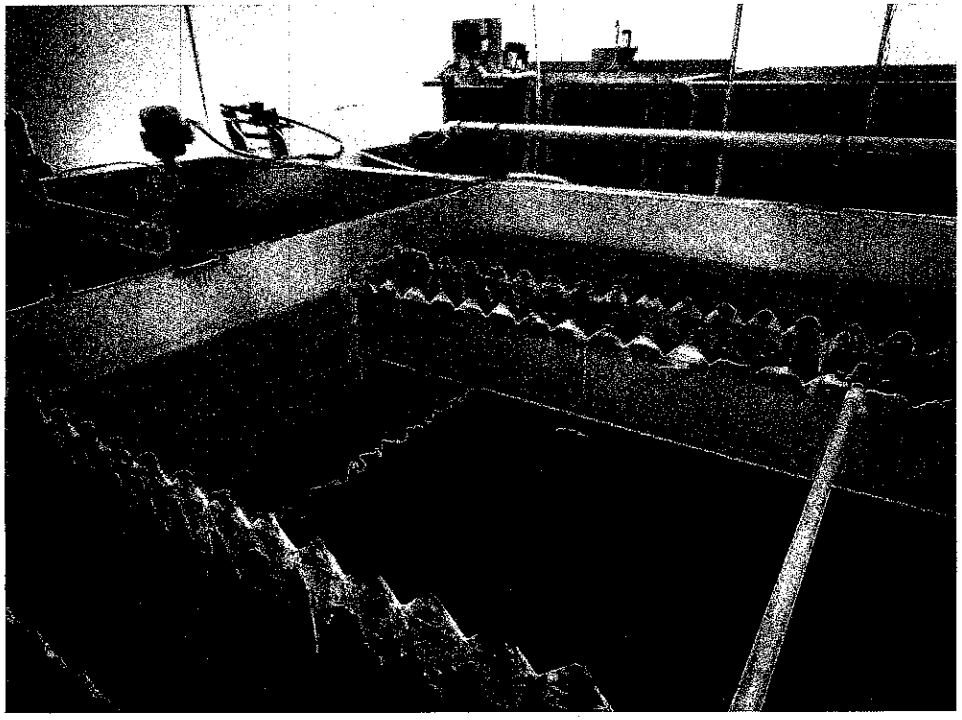

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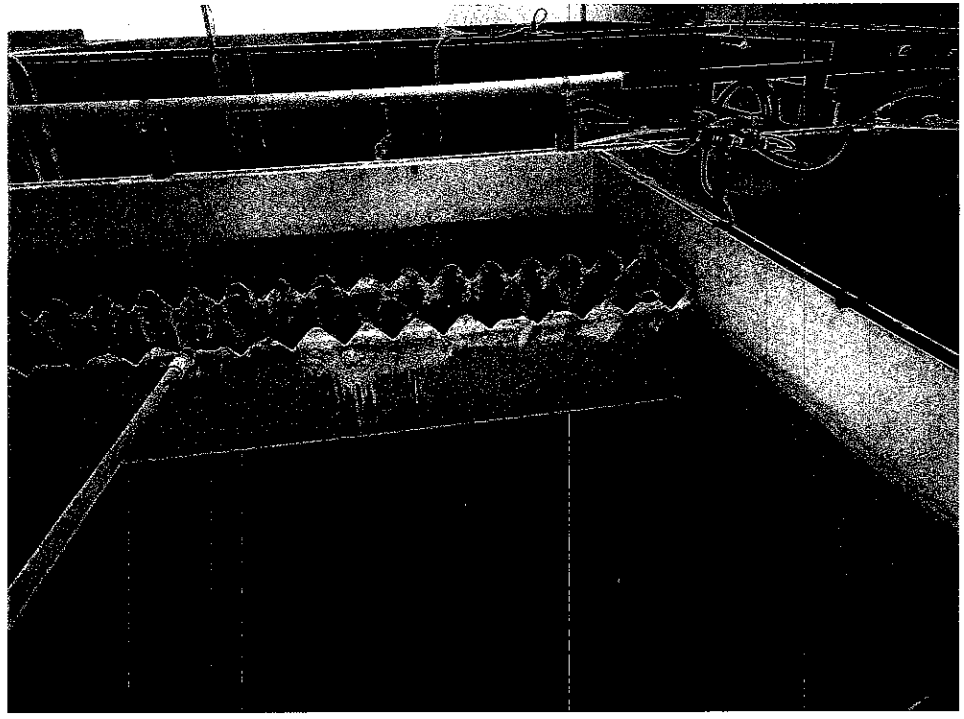

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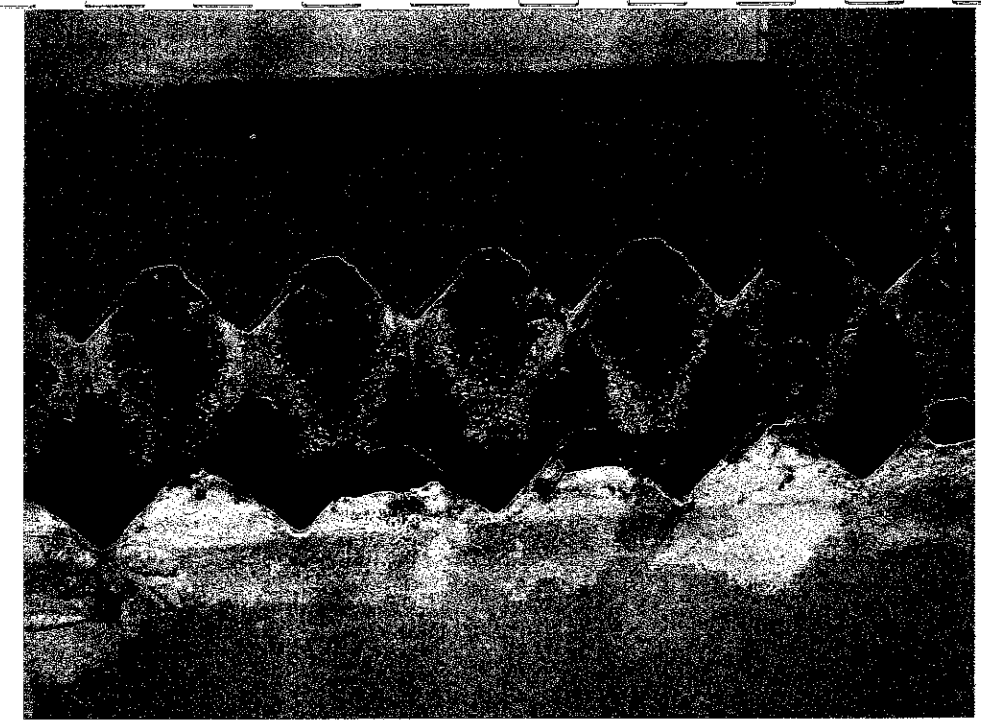

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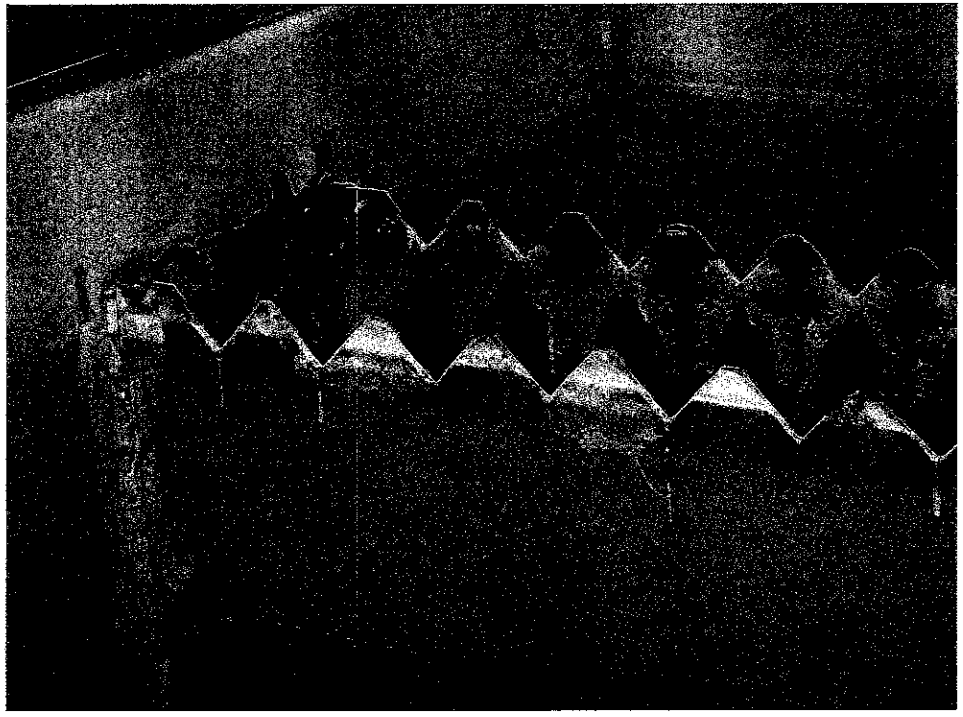

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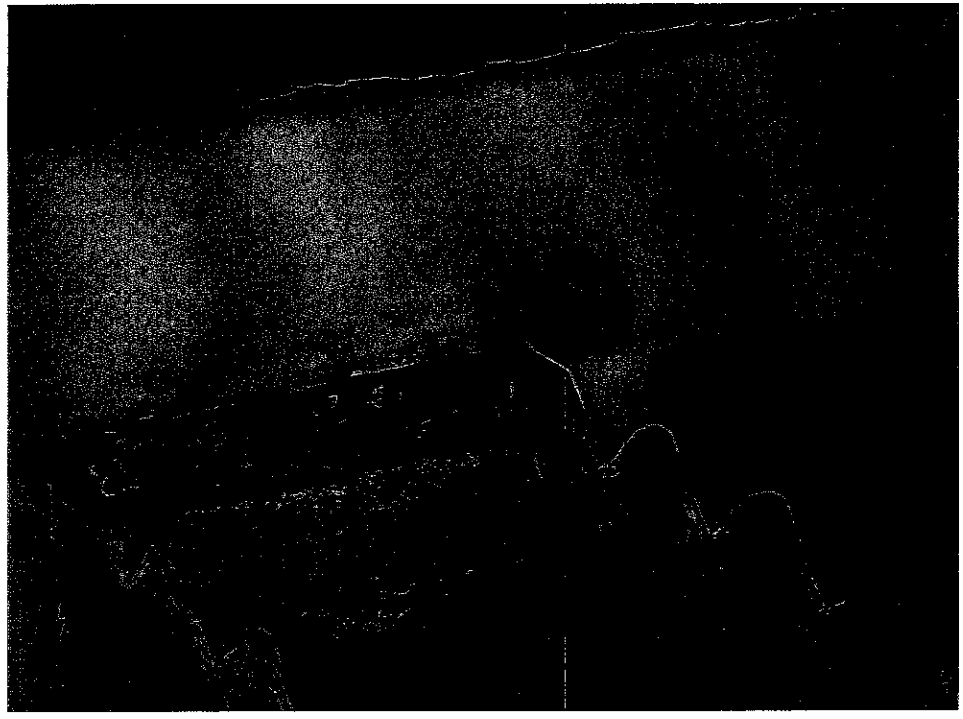

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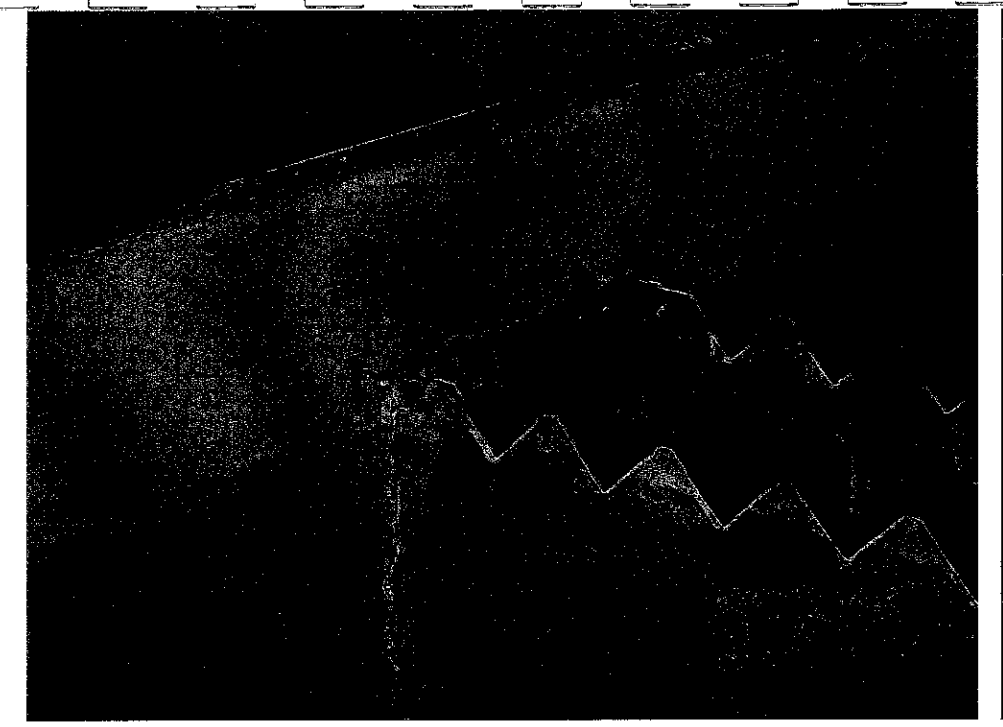

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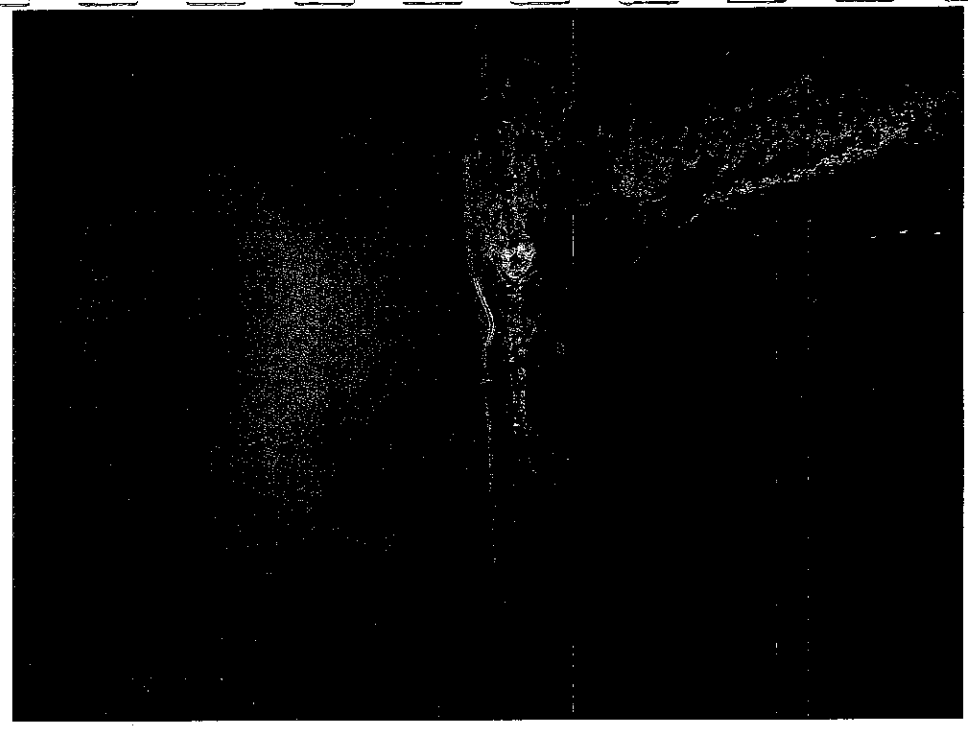

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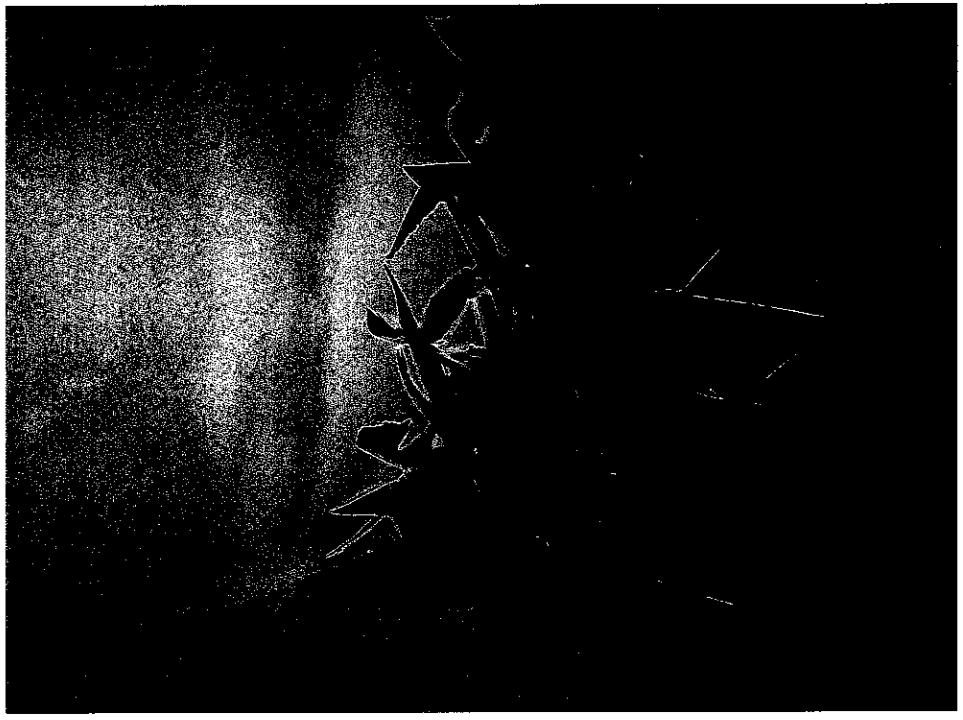

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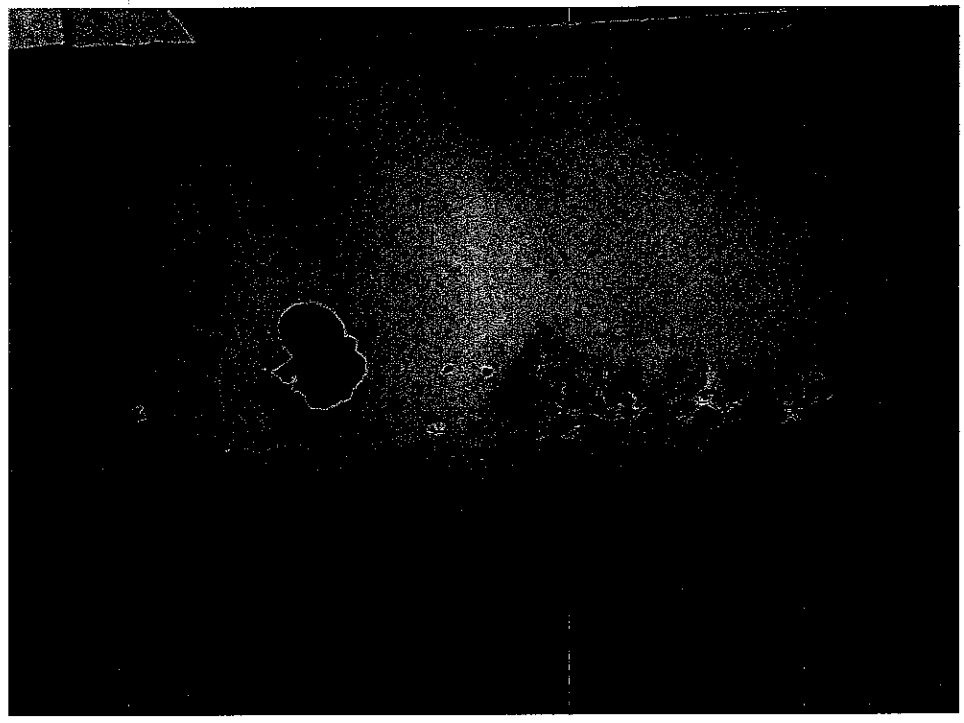

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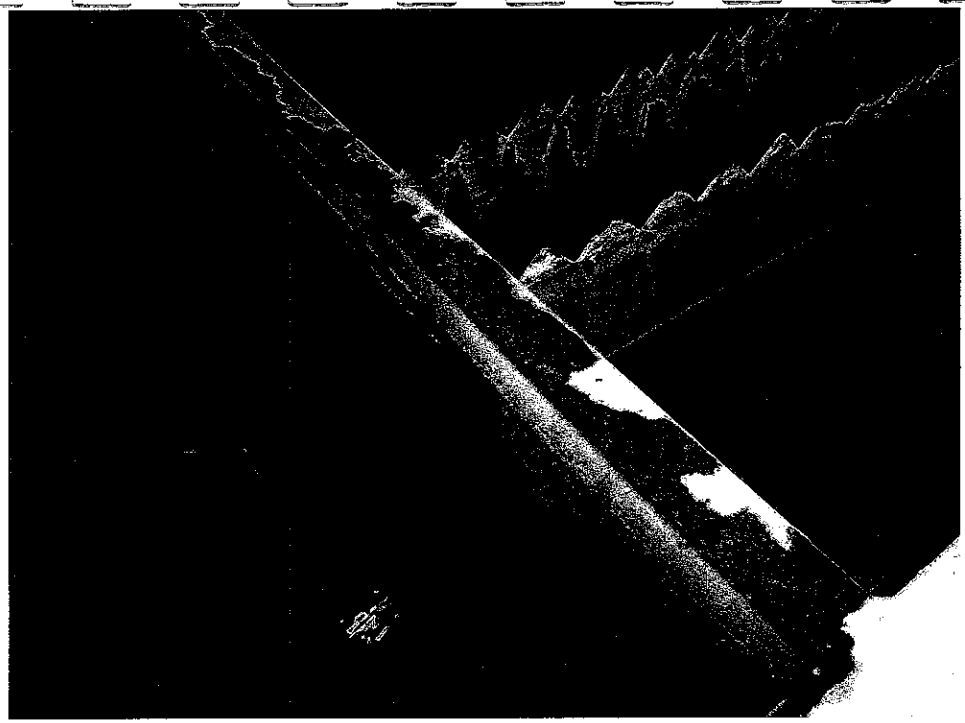
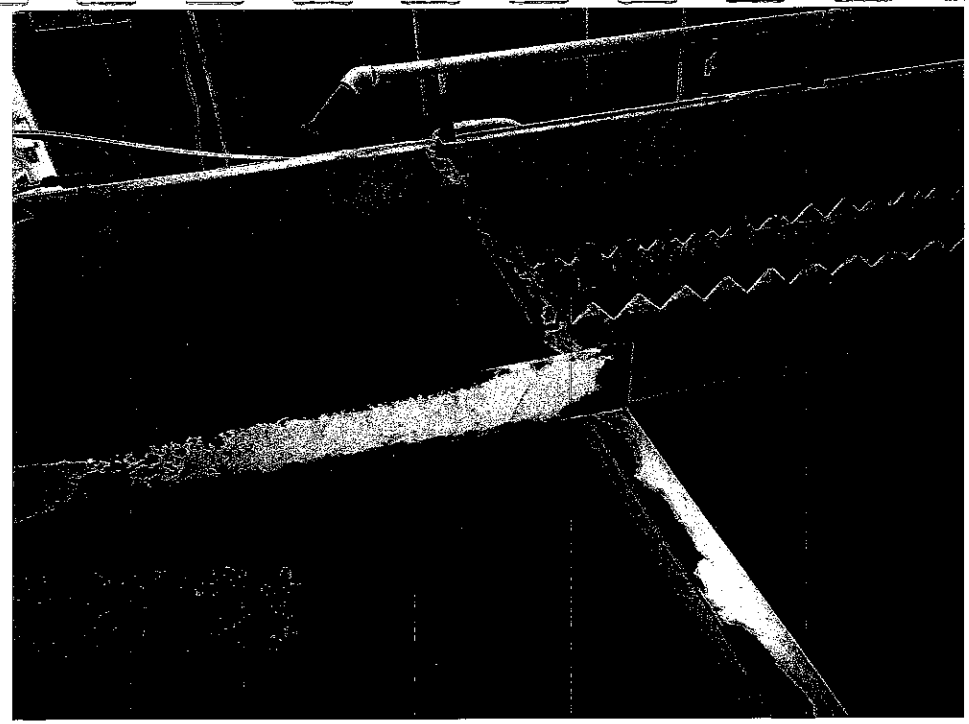


WTP Tank 2 Interior Photo 29



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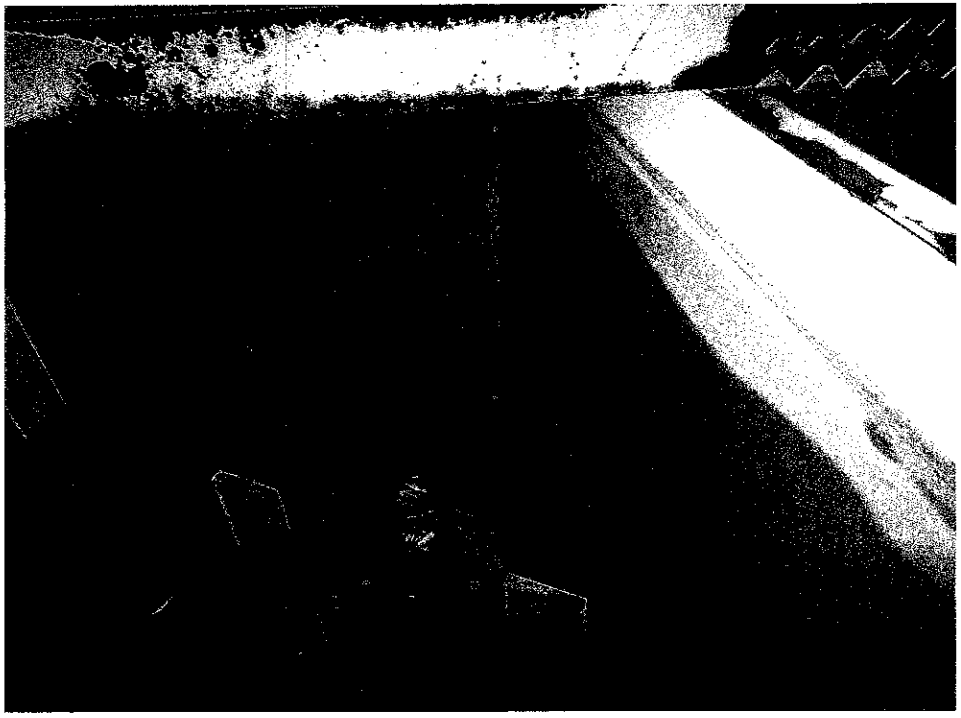

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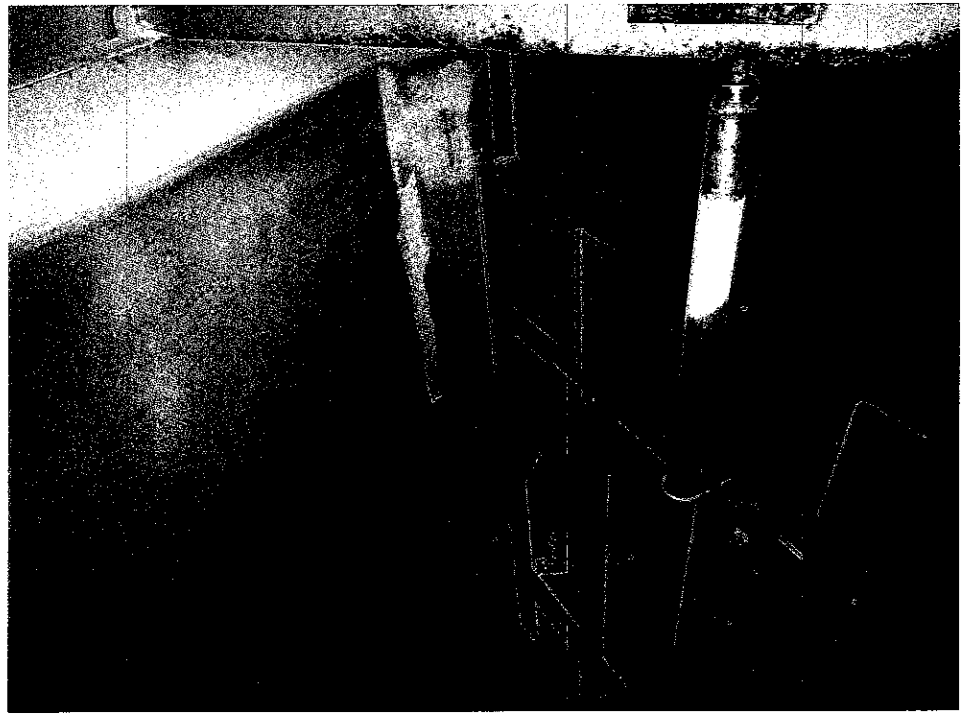
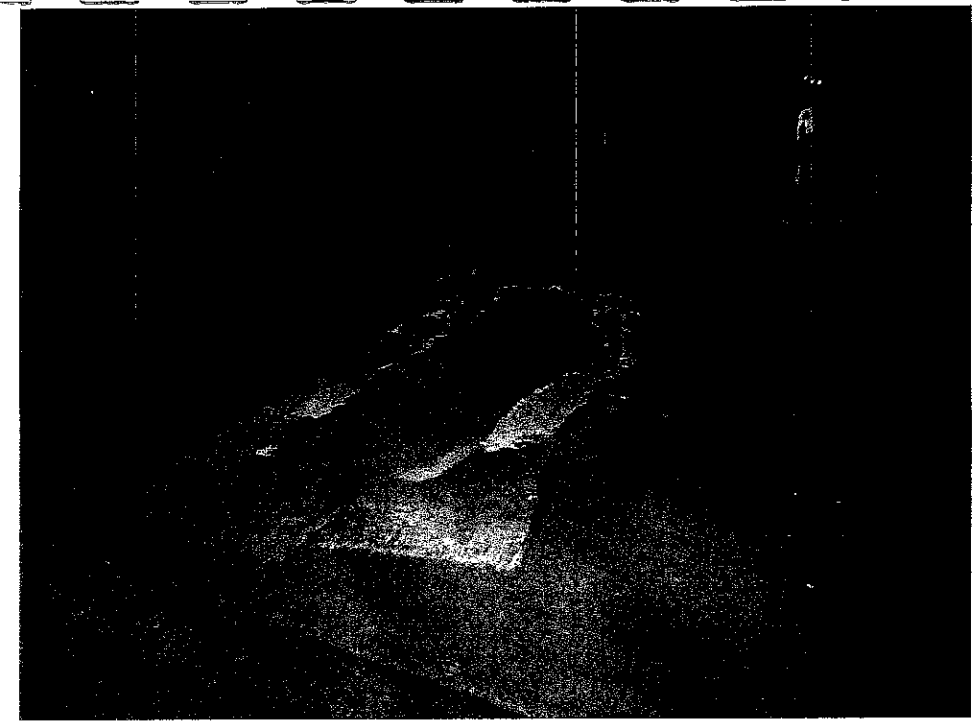


WTP Tank 2 Interior Photo 32

WTP Tank 2 Interior Photo 33



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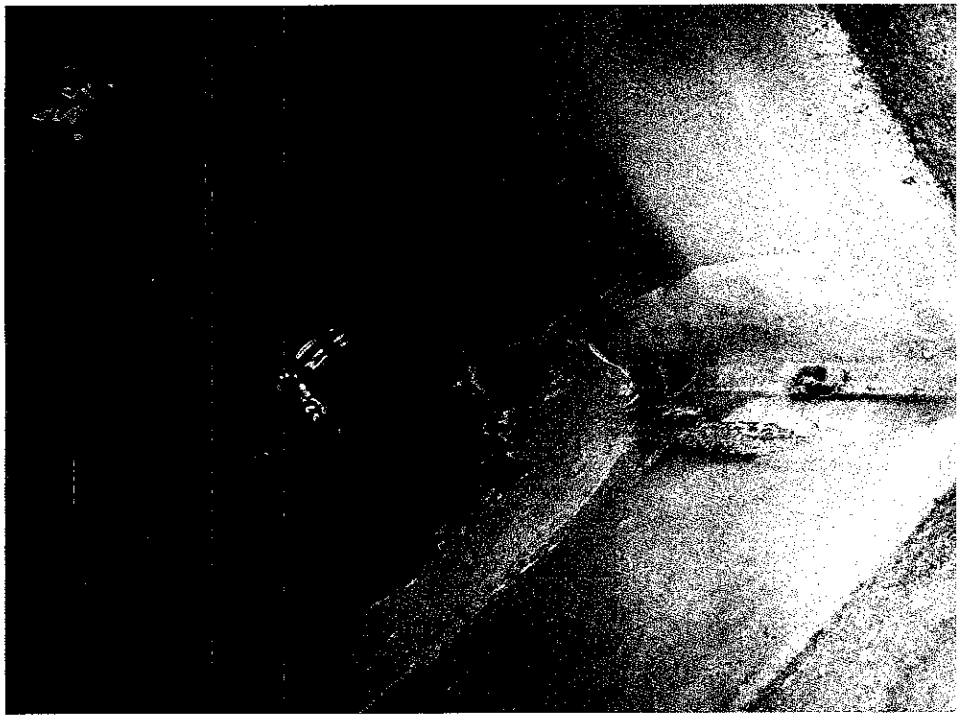

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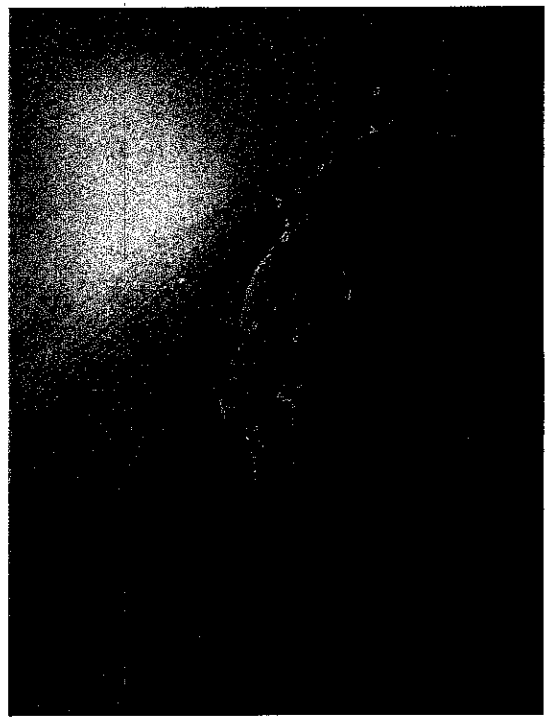
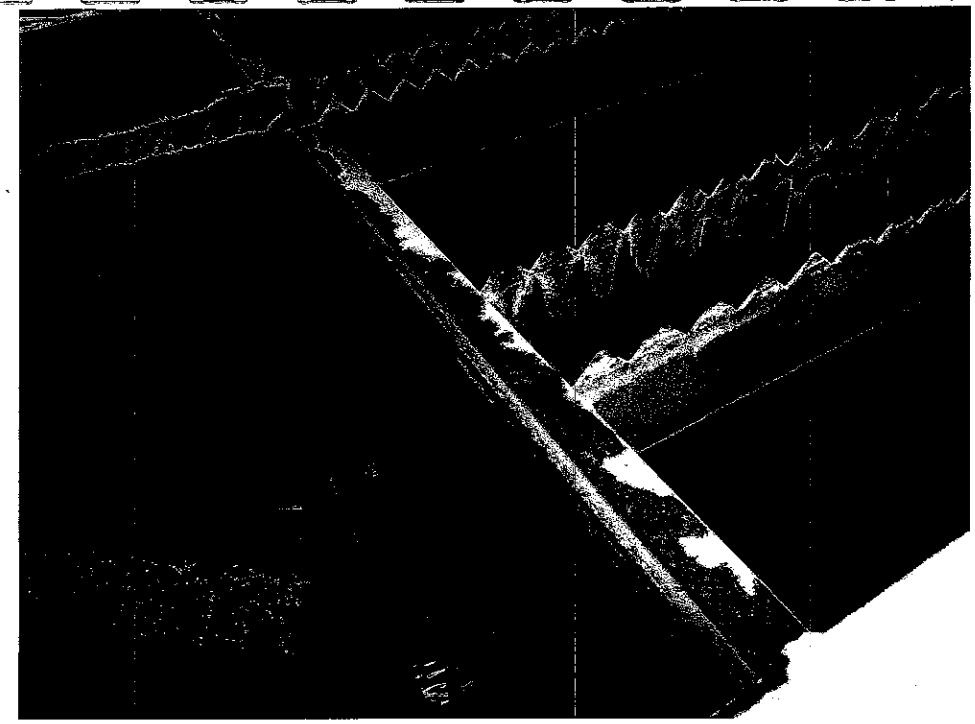
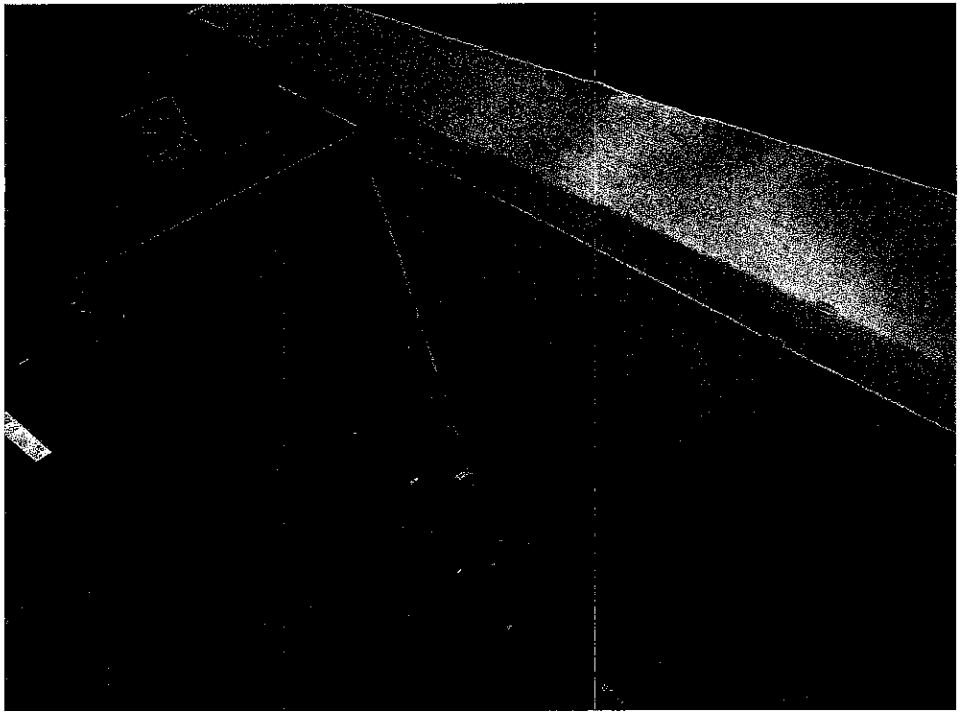


WTP Tank 2 Interior Photo 36

WTP Tank 2 Interior Photo 37



WTP Tank 2 Interior Photo 38



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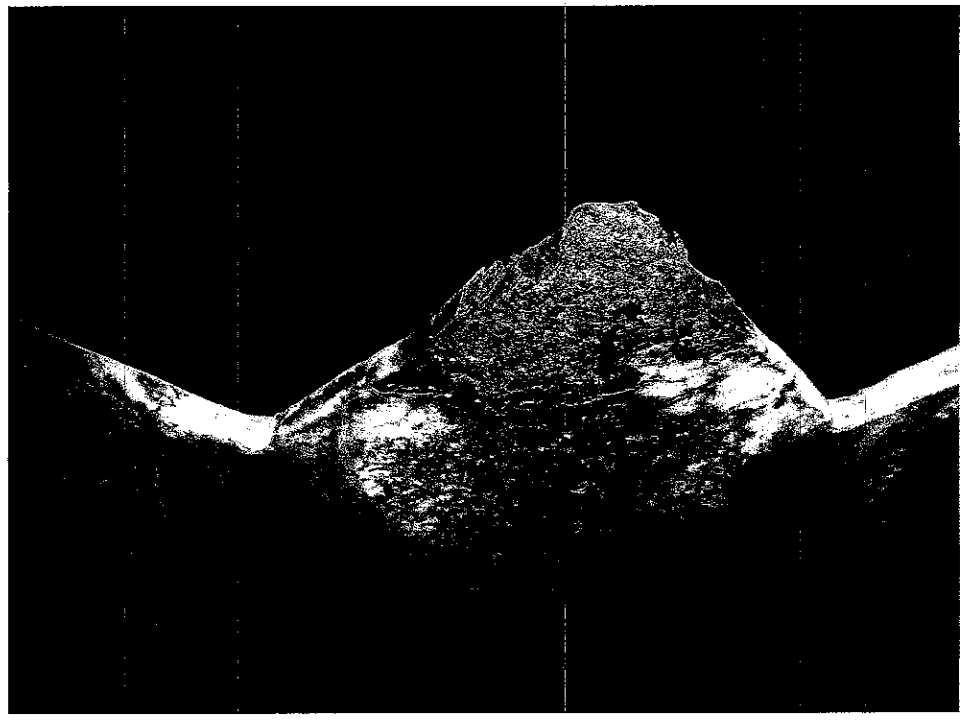
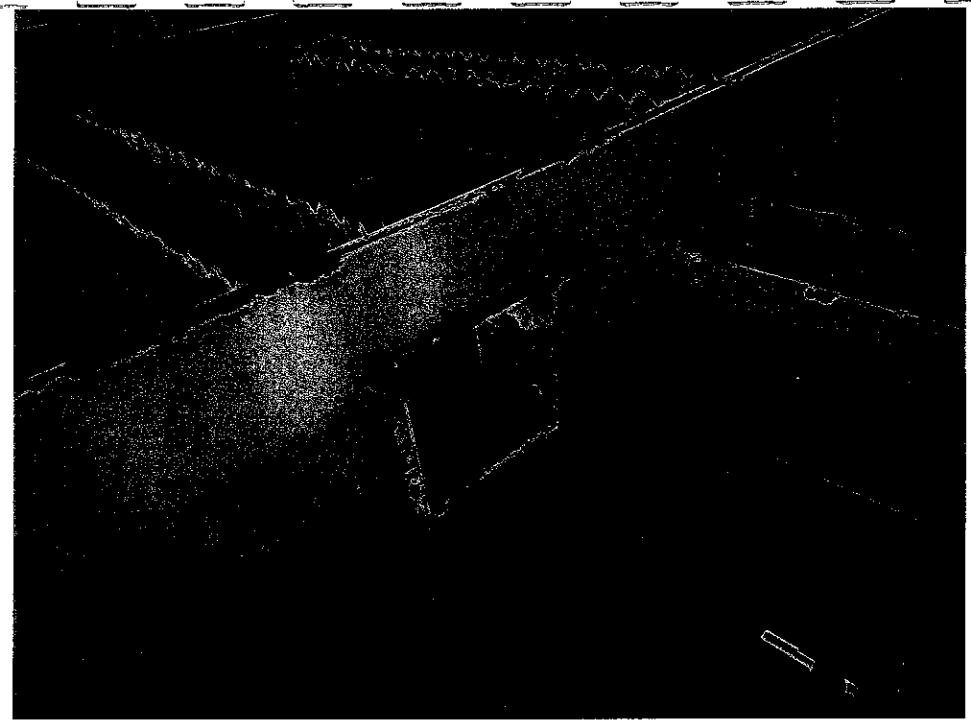
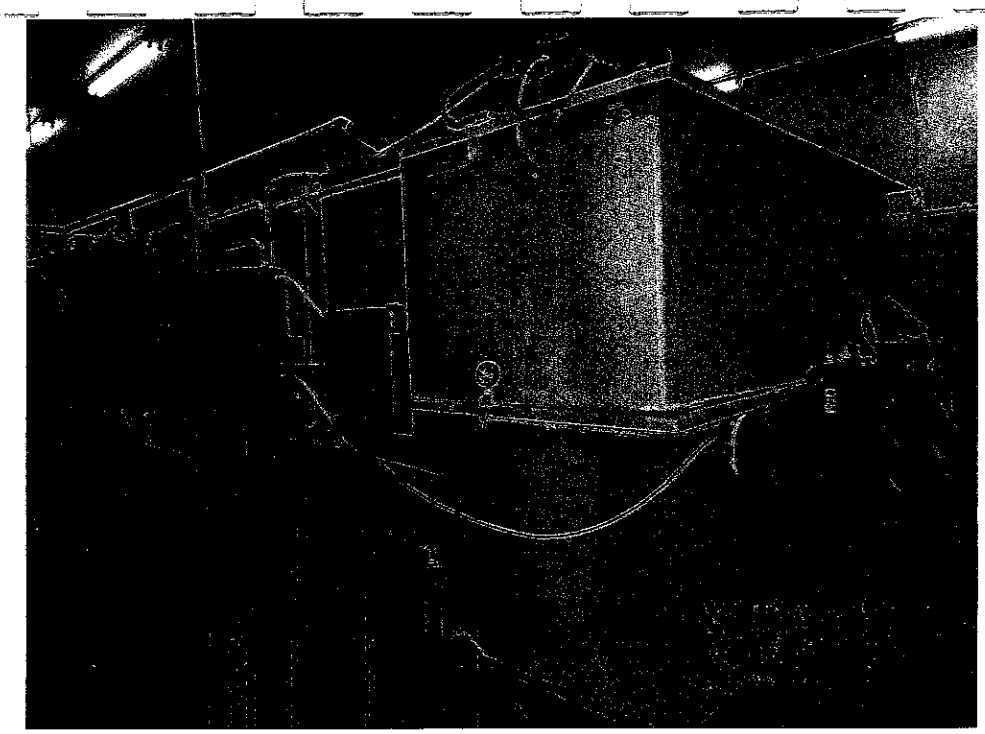


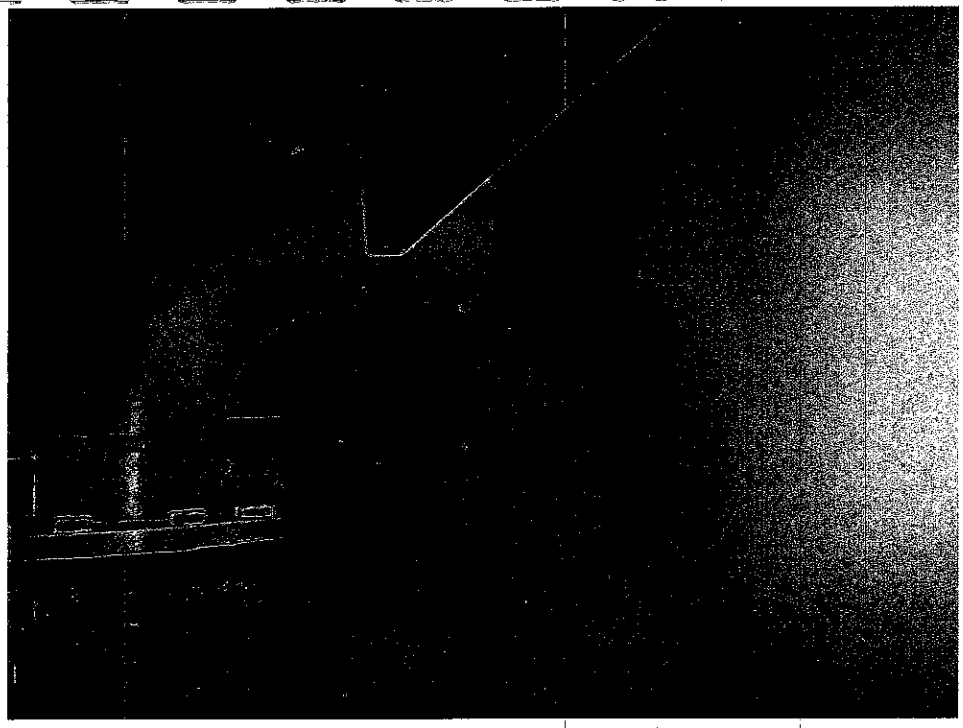
WTP Tank 2 Interior Photo 40



WTP Tank 2 Interior Photo 41



WTP Tank 2 Exterior Photo (1)



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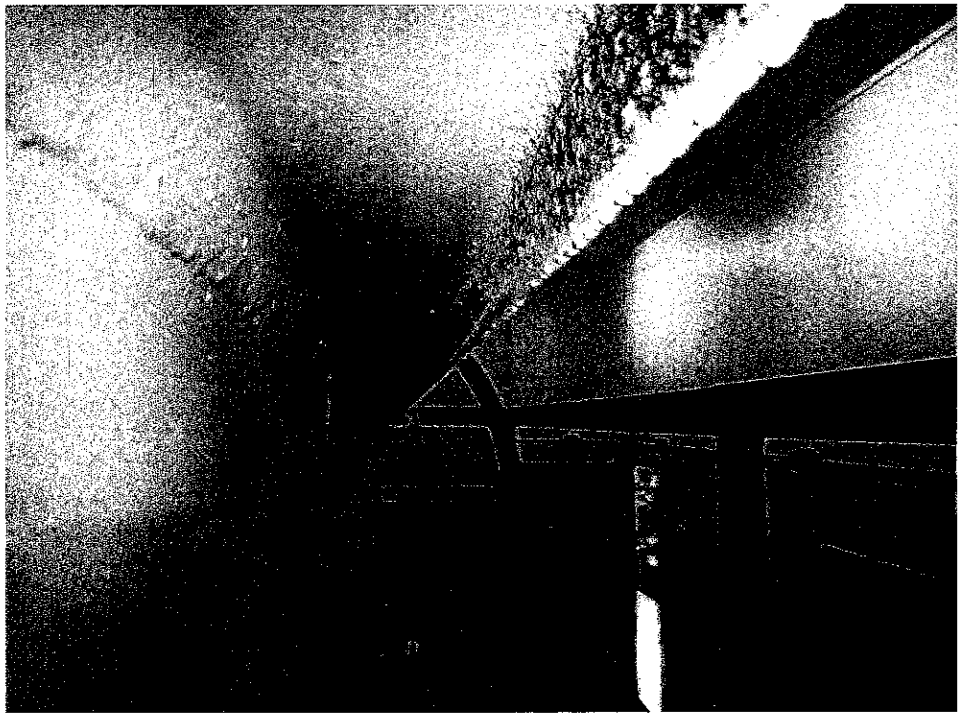

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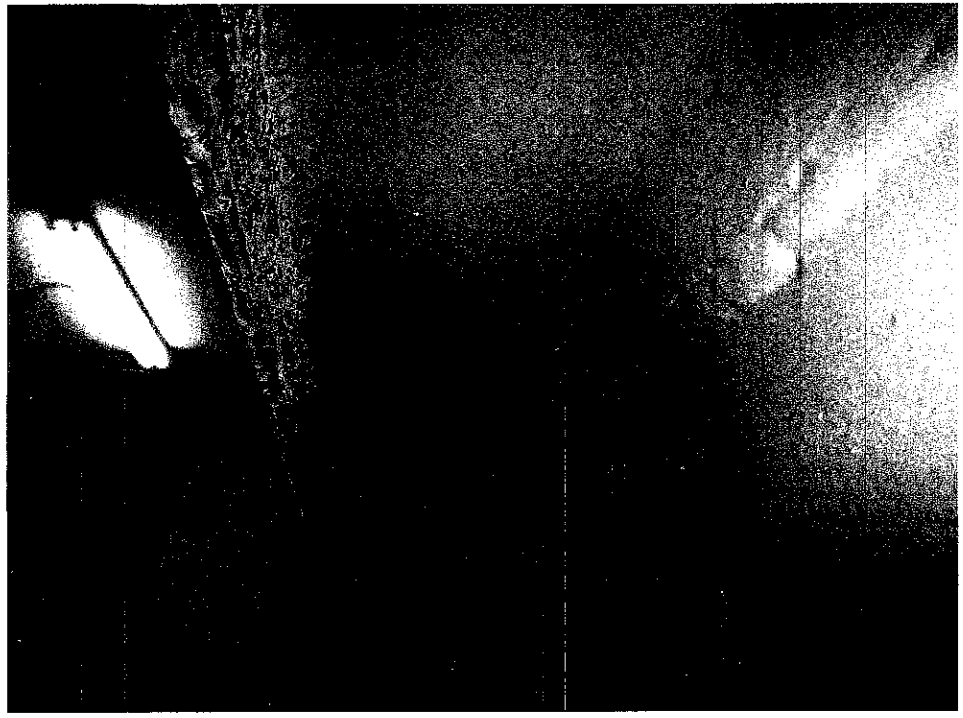
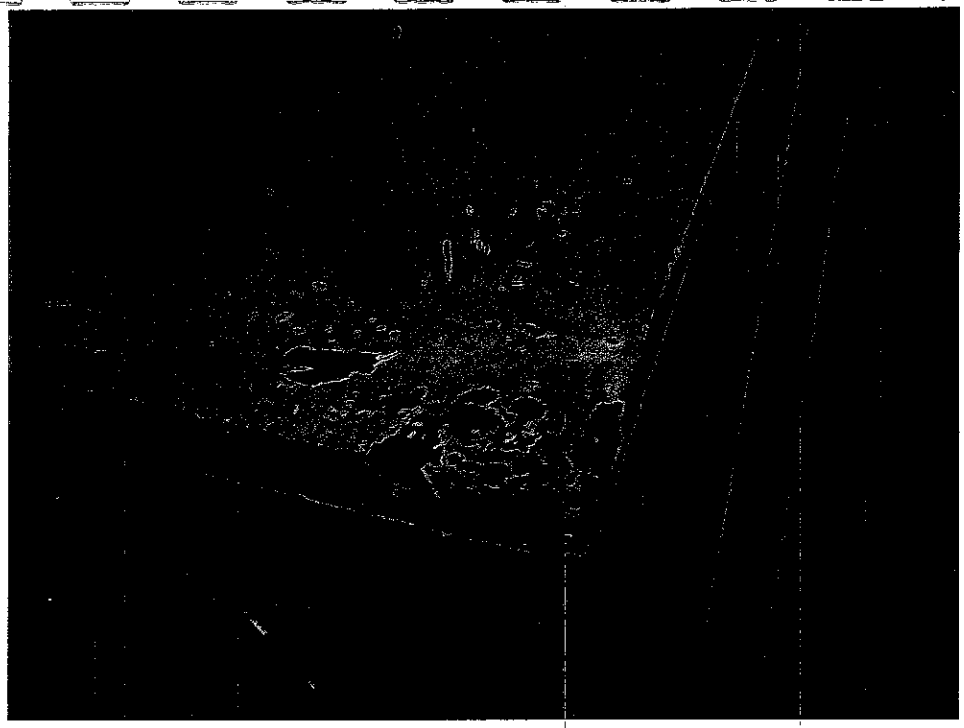


WTP Tank 2 Exterior Photo (4)

WTP Tank 2 Exterior Photo (5)



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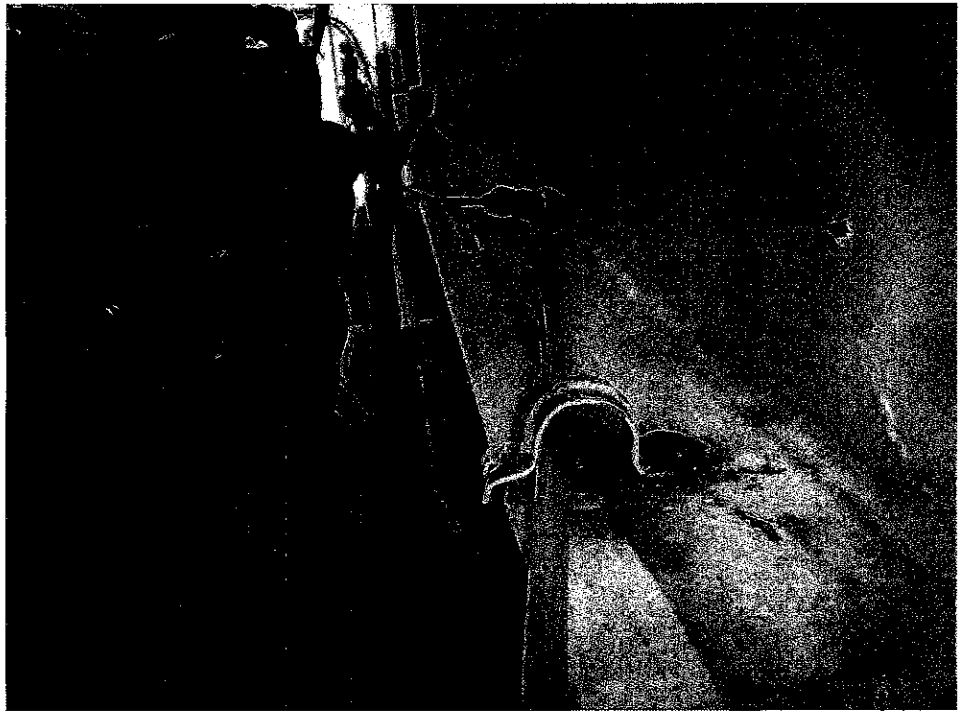

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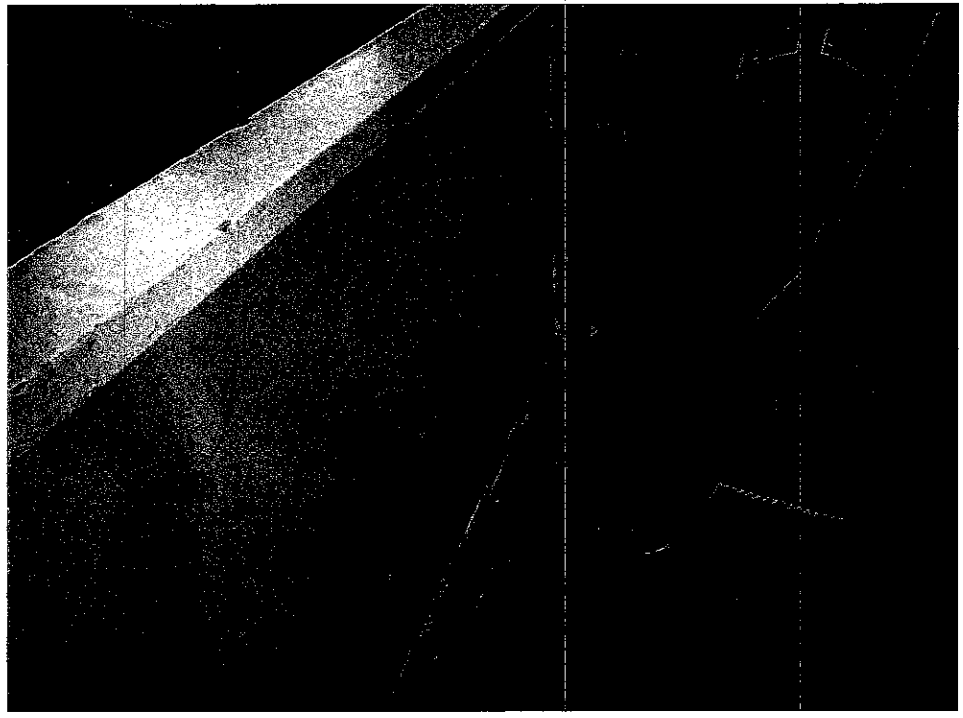
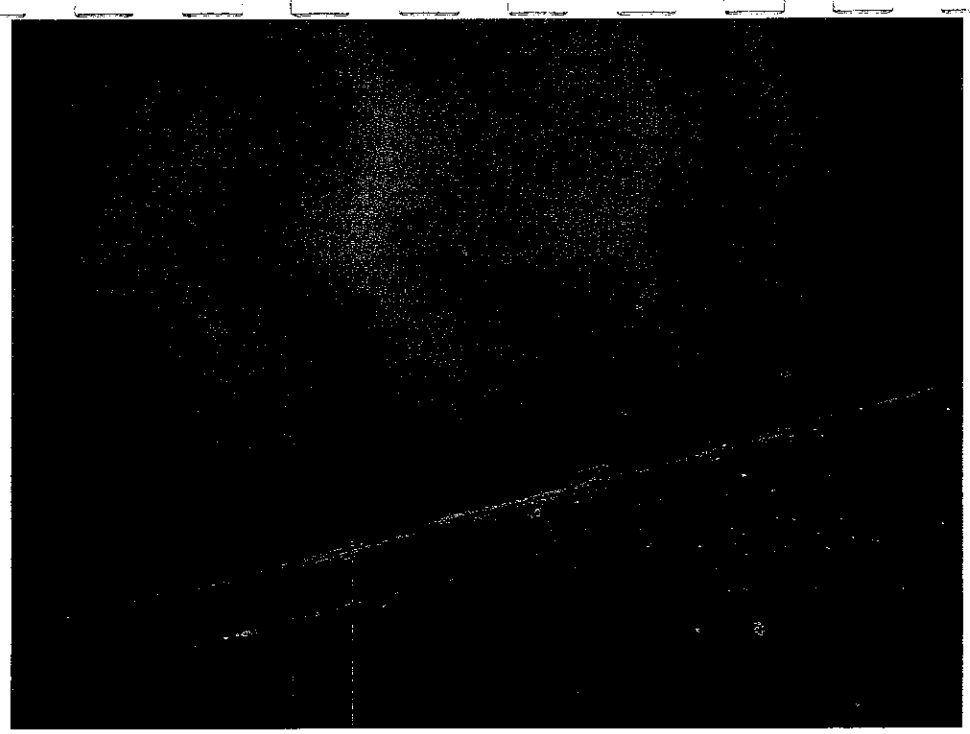


WTP Tank 2 Exterior Photo (8)



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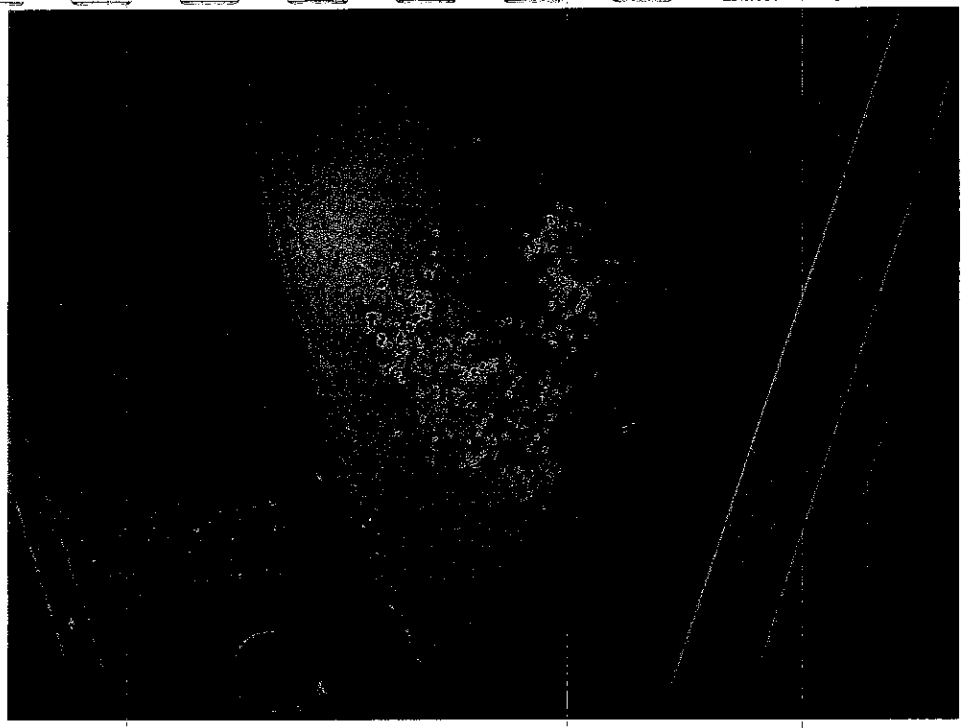
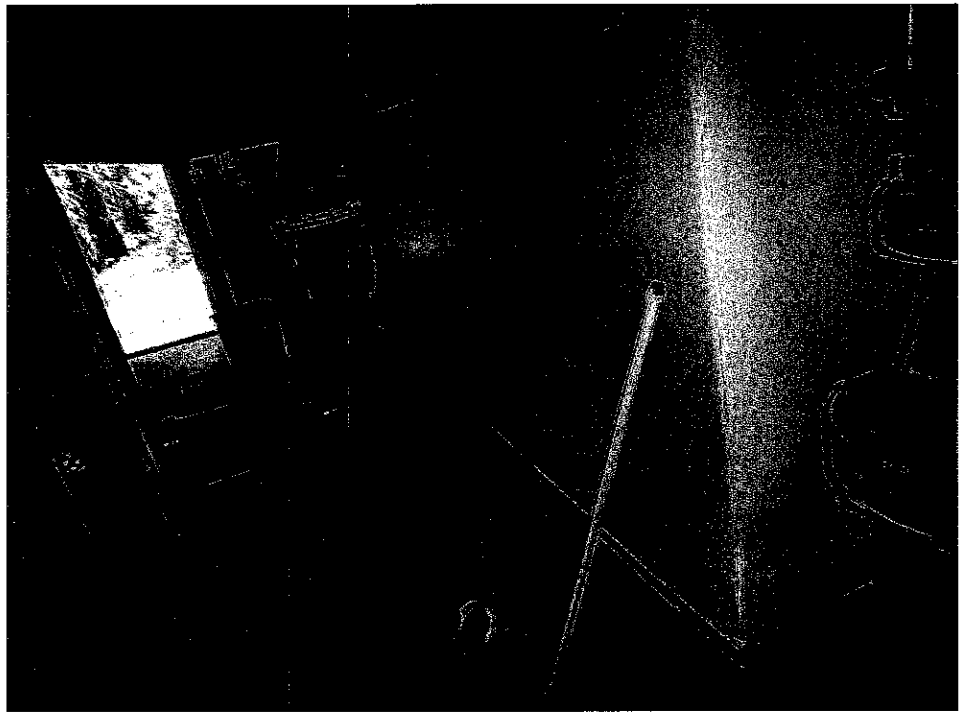
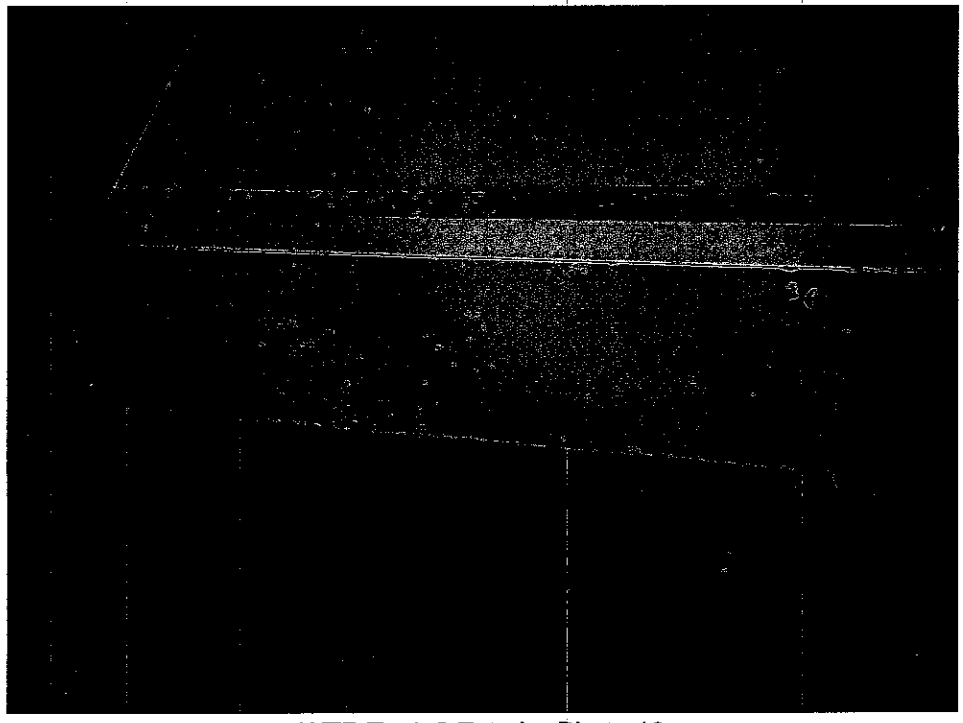


WTP Tank 2 Exterior Photo 10



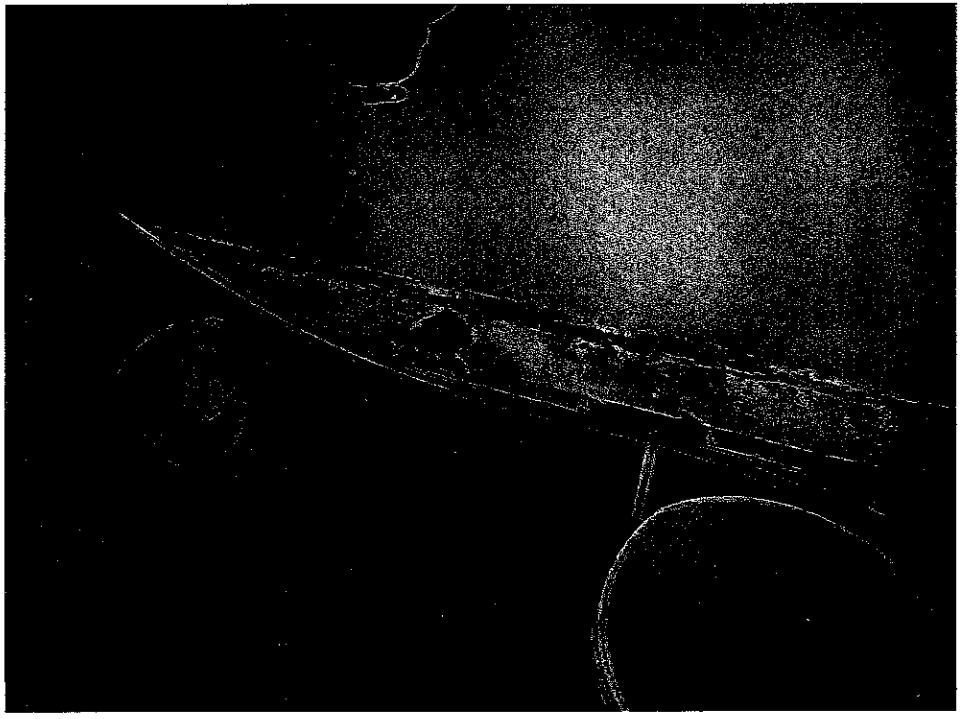
WTP Tank 2 Exterior Photo 11



WTP Tank 2 Exterior Photo 12

WTP Tank 2 Exterior Photo 13

WTP Tank 2 Exterior Photo 14



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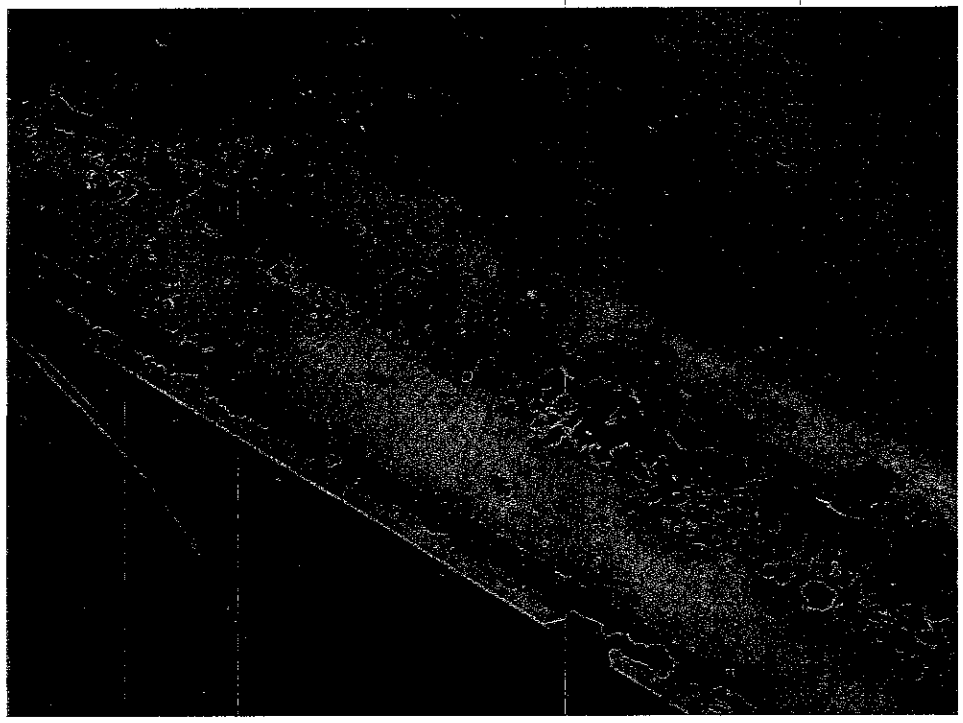

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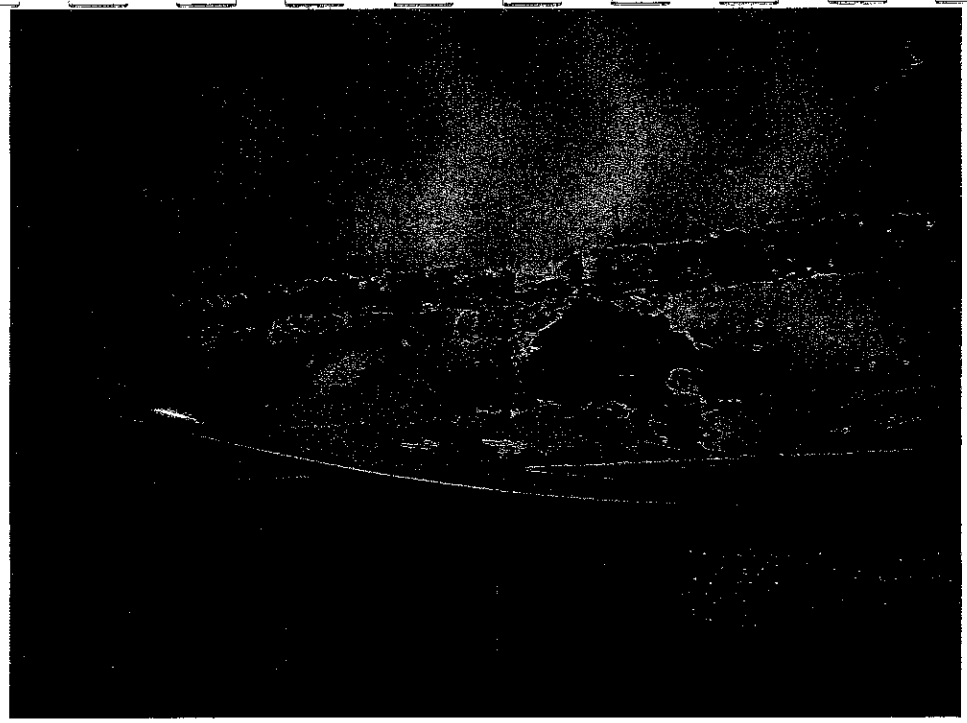
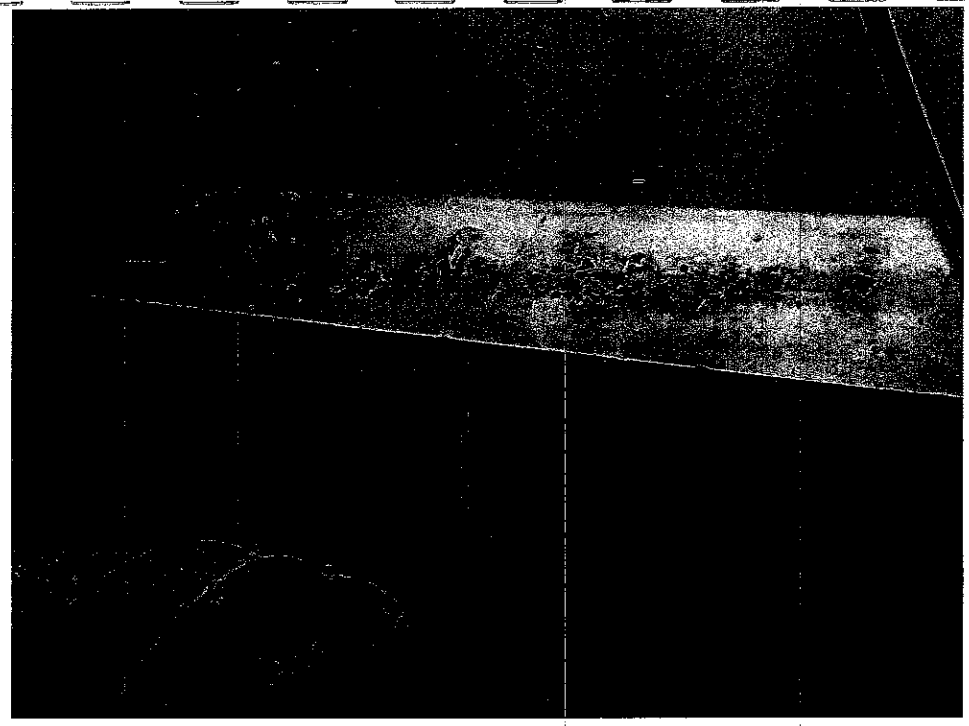


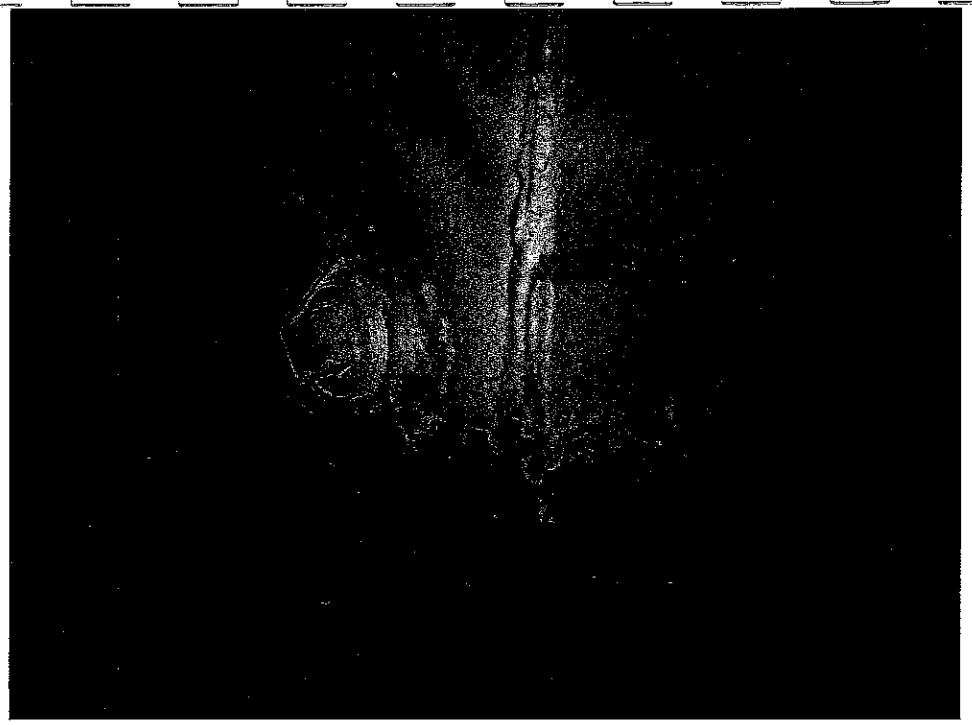
WTP Tank 2 Exterior Photo 17



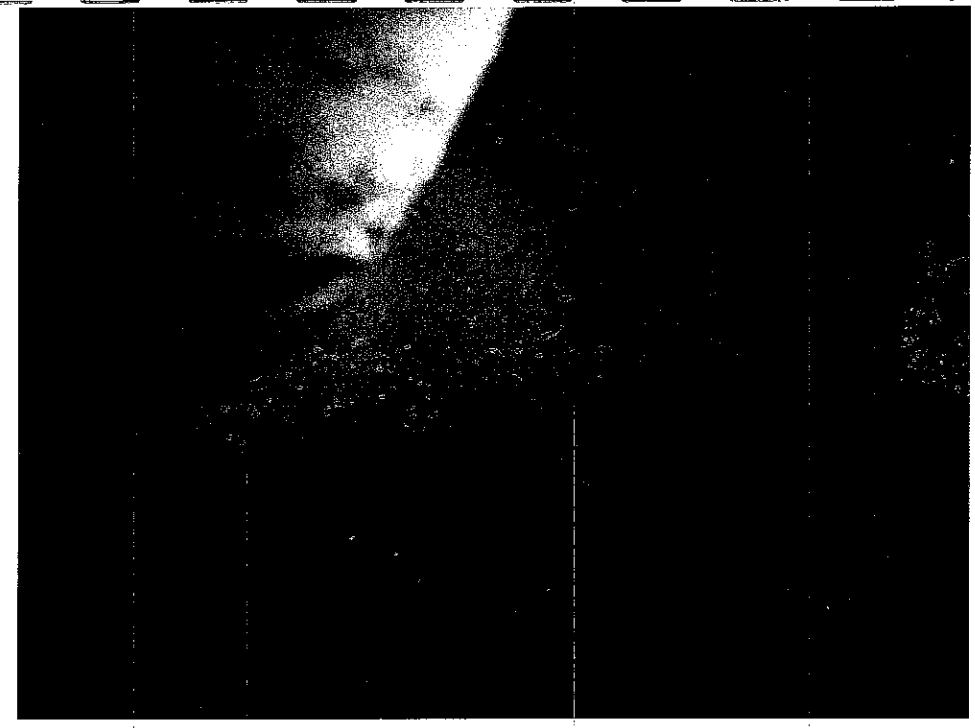
WTP Tank 2 Exterior Photo 18

WTP Tank 2 Exterior Photo 19

WTP Tank 2 Exterior Photo 20

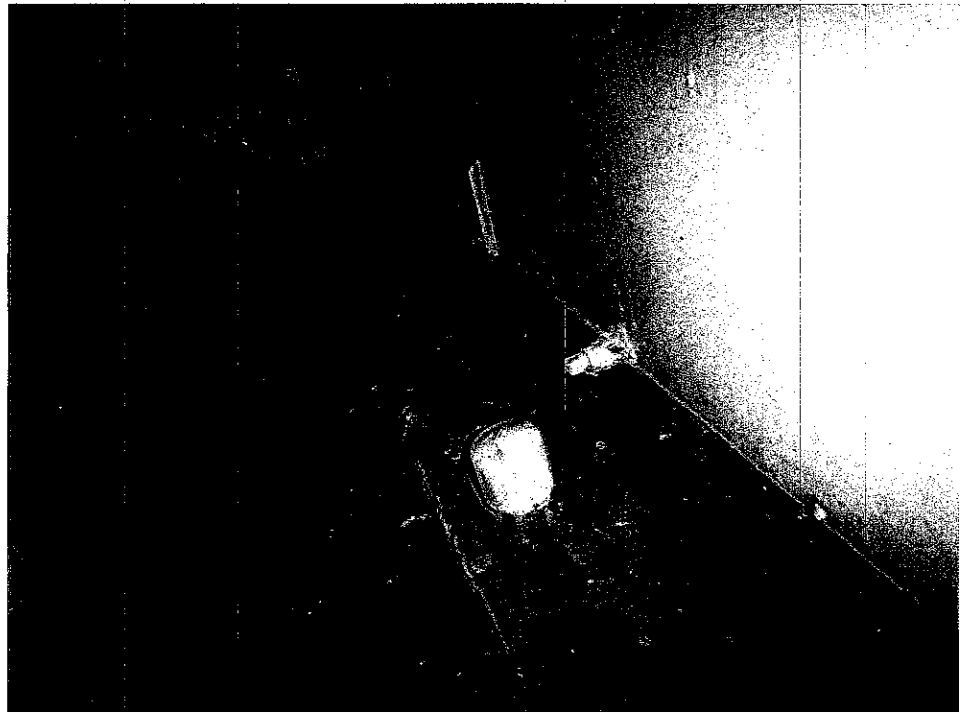


WTP Tank 2 Exterior Photo 21



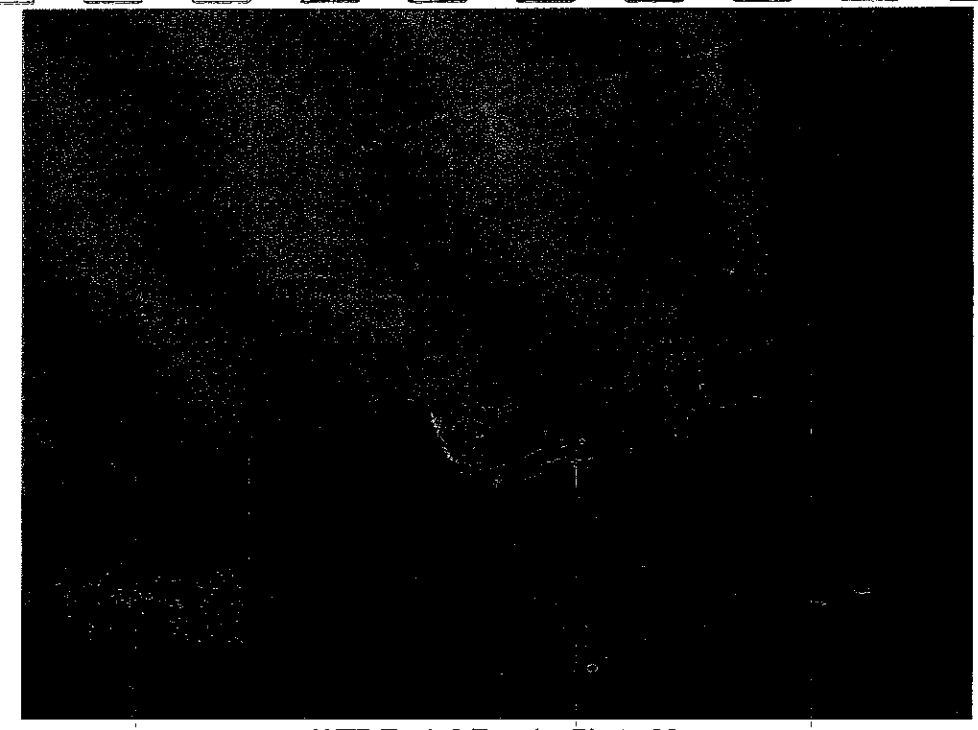
WTP Tank 2 Exterior Photo 22

WTP Tank 2 Exterior Photo 23



WTP Tank 2 Exterior Photo 24

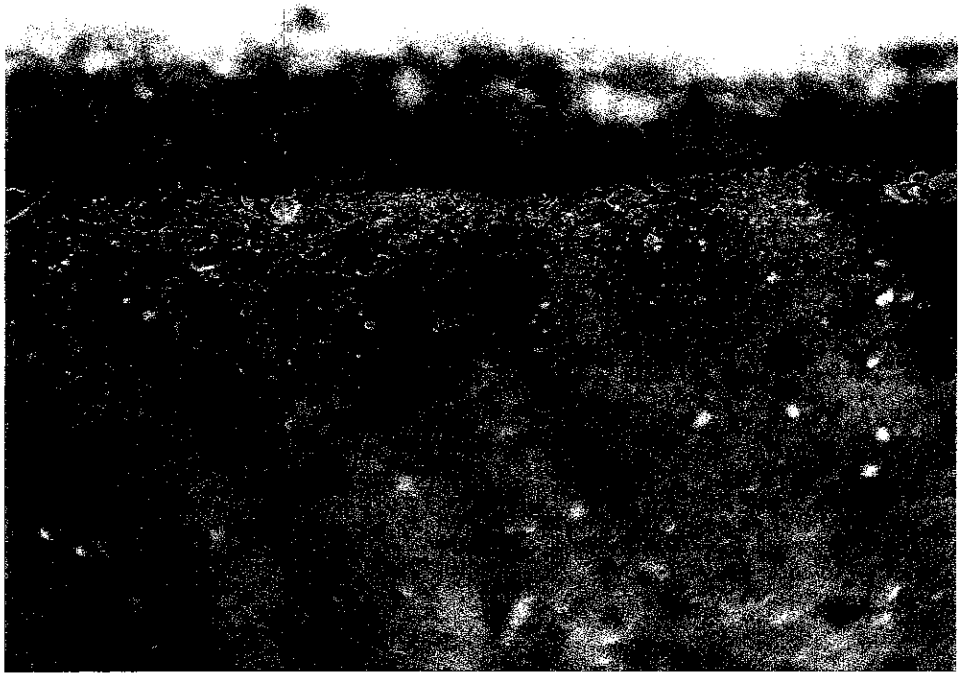
WTP Tank 2 Exterior Photo 25



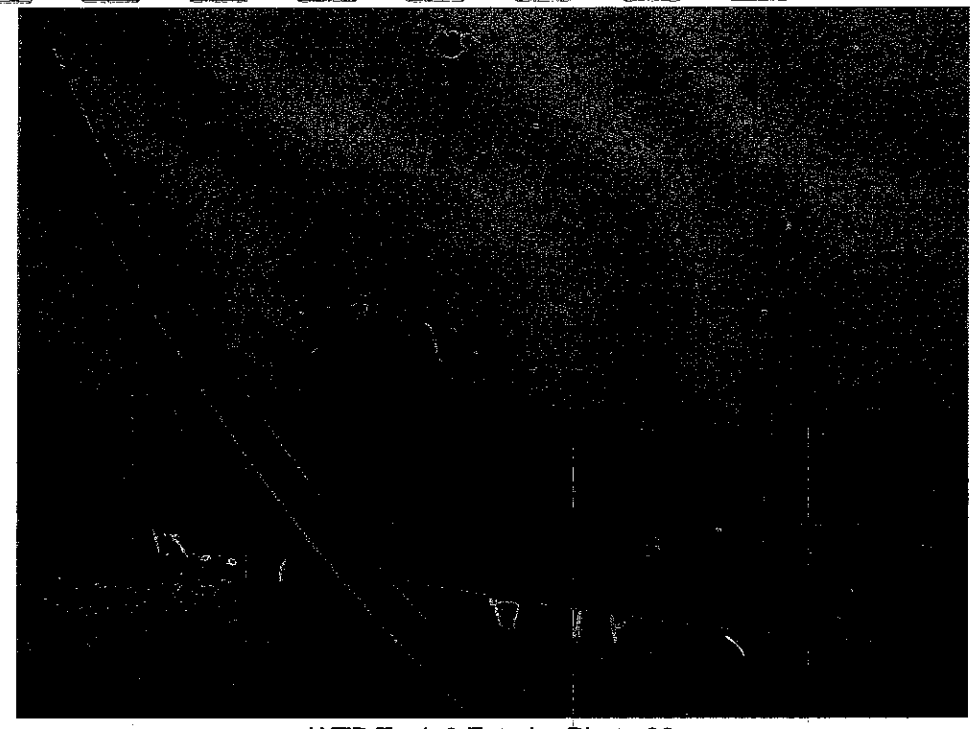
WTP Tank 2 Exterior Photo 26

WTP Tank 2 Exterior Photo 27

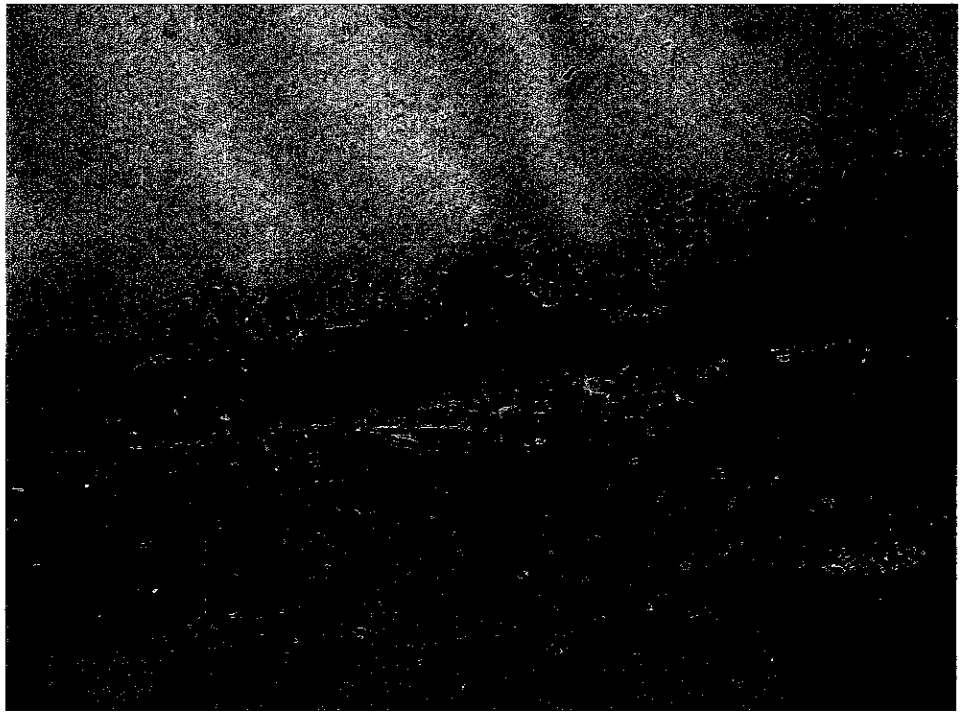
WTP Tank 2 Exterior Photo 28



WTP Tank 2 Exterior Photo 29



WTP Tank 2 Exterior Photo 30



WTP Tank 2 Exterior Photo 31

Chart 1 - Condition Rating The table below gives a basic description of the four different categories that CSI Services, Inc. uses to provide a general depiction of the condition of each defined area of a structure. The categories are Poor, Fair, Good, or Excellent. The development of these categories is based on historical knowledge and experience of various paint and lining systems over given periods of time in certain service environments. Basically, the rating is determined based on what should be expected of the paint or lining system at that point in its life cycle. As a result, different determinations are made for maintenance inspection versus warranty inspections. A detailed description of each rating with relative consideration addressed follows:

Rating	General Description of Conditions	
	Maintenance Inspection	Warranty Inspection
Poor	This condition is usually prioritized for rework in the short-term. Typically, these surfaces have considerably more coating defects and/or corrosion than what is expected for the age of the system.	This condition identifies an area with wholesale coating defects or corrosion concerns that will typically require significant removal and replacement of the coatings in the area.
Fair	Typically, these surfaces have a level of coating defects and/or corrosion that is slightly worse than what should be expected for the age of the system. This condition is placed on a short-term monitoring schedule.	This condition identifies an area with partial coating defects or corrosion concerns that will require significant rework.
Good	This condition is rated for areas without any considerable coating defects or corrosion. These surfaces are in a condition that is typical for the age of the coating system.	This condition identifies areas with coating defects or corrosion that is typically seen in one-year warranty inspections. Typically, only minor spot repairs are required.
Excellent	This condition is for areas without any considerable coating defects or corrosion. Typically, these surfaces are in a condition that is better than expected for the age of the system.	This condition identified areas that typically are in perfect condition and require no repair work.

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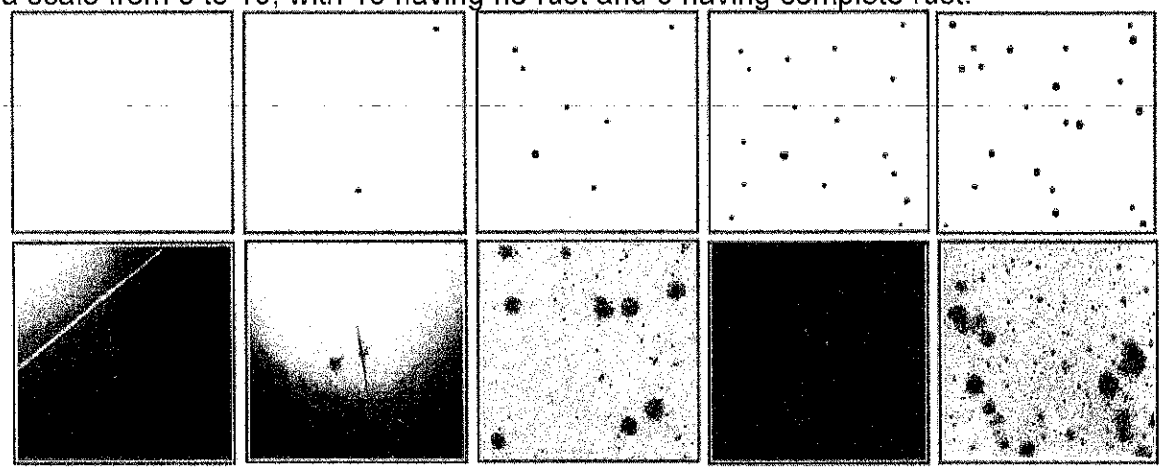
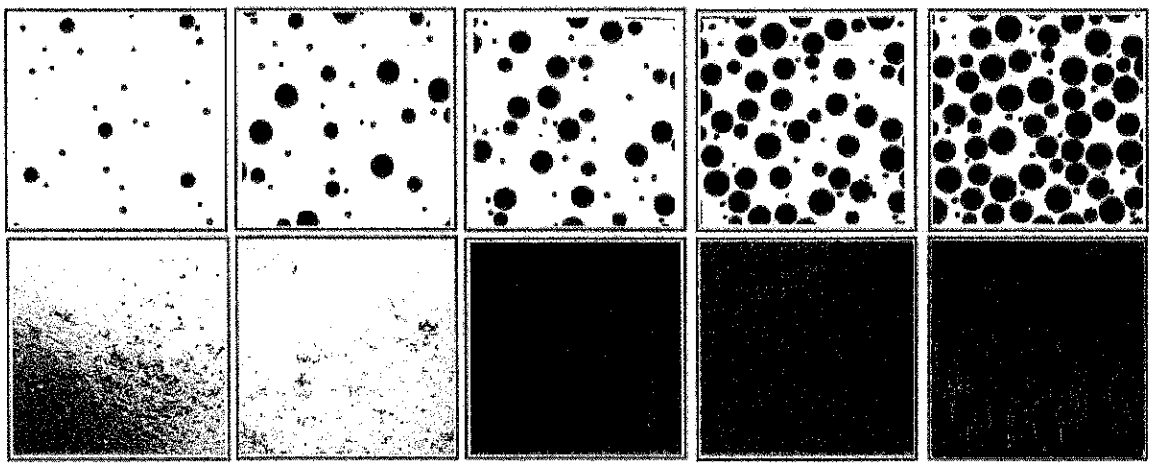
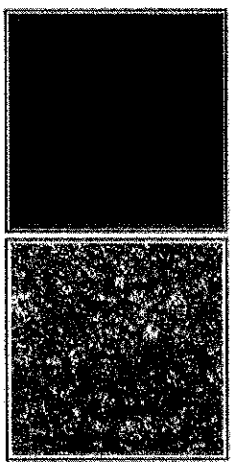
Chart 2 -Rust Grade The black and white figures below depict the standards referenced in ASTM D610 "Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces." Below each standard is a photographic depiction of each level of corrosion, as used by CSI Services, Inc. The standards depict the percentage of rust on a scale from 0 to 10, with 10 having no rust and 0 having complete rust.



Rust Grade 10 Rust Grade 9 Rust Grade 8 Rust Grade 7 Rust Grade 6



Rust Grade 5 Rust Grade 4 Rust Grade 3 Rust Grade 2 Rust Grade 1



Rust Grade 0

Rust Grade	Description
10	No rusting or less than 0.01% of surface rusted
9	Minute rusting, less than 0.03% of surface rusted
8	Few isolated rust spots, less than 0.1% of surface rusted
7	Less than 0.3% of surface rusted
6	Excessive rust spots, but less than1% of surface rusted
5	Rusting to the extent of 3% of surface rusted
4	Rusting to the extent of 10% of surface rusted
3	Approximately one-sixth of the surface rusted
2	Approximately one-third of the surface rusted
1	Approximately one-half of the surface rusted
0	Approximately 100% of the surface rusted

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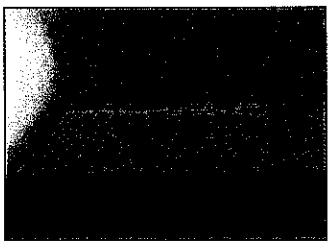
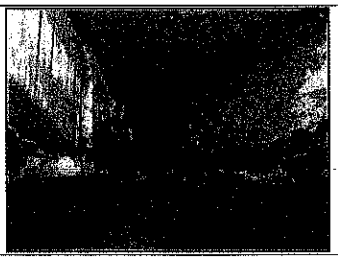
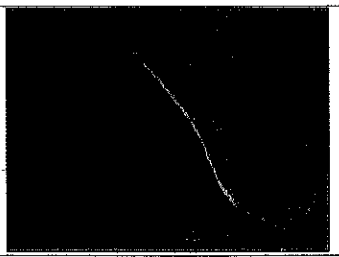
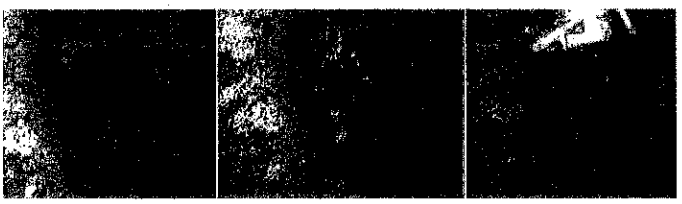
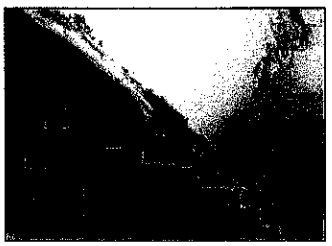
Chart 3 - Corrosion Grade The figure below depicts the photographic standards referenced by CSI Services, Inc. in the determination of the characteristics and stages of corrosion progression. This standard is used to better quantify the level of corrosion once it has progressed to Rust Grades 3, 2, 1, or 0 (see Chart 2). When applicable, CSI classifies an area as one or more of the five different Corrosion Grades. Corrosion Grades 1 through 5 are described below:

Grade	Description	Photo Examples
1	Light Rust - This condition involves relatively light colored rust that does not have any significant metal loss.	
2	Dark Rust -This condition involves relatively dark colored, thicker rust that is progressing towards the next phase, significant metal loss.	 
3	Pitting - This condition involves isolated or widespread deep spot corrosion (pitting).	
4	Scale - Also known as lamellar or exfoliation corrosion. The edges of the affected area are leaf like and resemble the separated pages of a wetted book.	
5	Structural Loss - This condition involves metal loss or failure where components will require structural consideration	

The photos depicted are examples and were not taken on this project.

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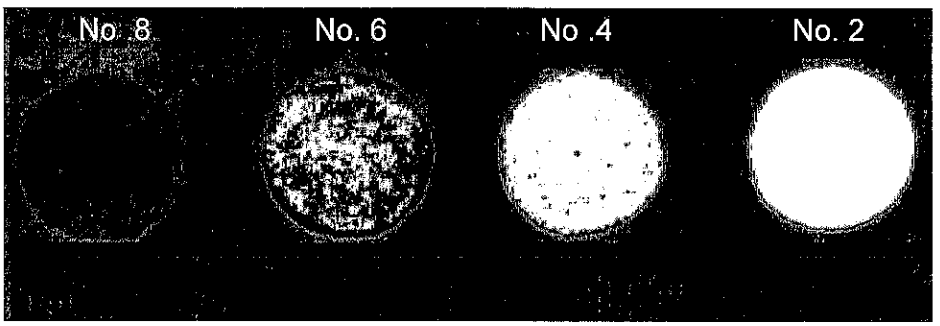
Chart 4 - Chalking The figure below depicts the photographic standards referenced in ASTM D4214 "Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films," Method D659, Method C. Generally speaking, chalking is the degradation of a paint's binder leaving behind loose pigments as the binder reacts with the environment, primarily ultraviolet light and oxygen. Evaluating chalking is a means to measure the performance of a coating system and its life cycle projection. It is also important to quantify for consideration of future overcoating options. This test uses these pictorial standards to quantify the amount of chalking present on paint films. The depictions below represent the mount of colored chalk removed onto a cloth during the test. The scale ranges from 2 to 8 with the rating 2 having the most chalk.

Light Colored Paints



Dark Colored Paints

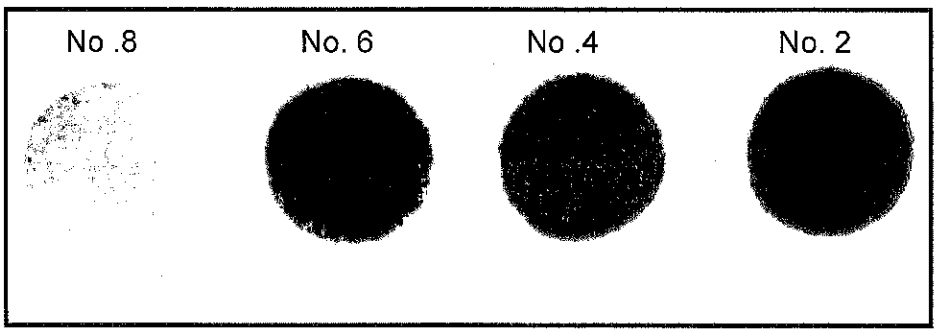


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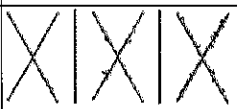
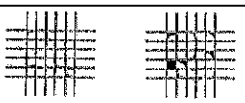
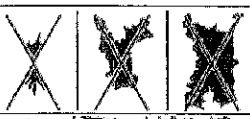
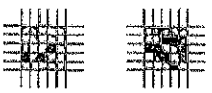
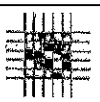
Chart 5 - Adhesion Rating The figures below depict the photographic standards and criteria referenced in ASTM D3359 "Standard Test Method for Evaluating Adhesion by Tape Test" and ASTM D6677 "Standard Test Method for Evaluating Adhesion by Knife." Both Standards are used to assess the condition of a paint system for life-cycle projections. It is also used to evaluate an existing paint system's ability to withstand the added stress that any overcoating strategies can create. Depending upon the thickness of the paint system, ASTM D3359 has two different test methods. The rating criteria for both standards follow:

ASTM D3359					
Method A			Method B		
Rating	Observation	Surface of X-cut from which flaking/peeling has occurred	Rating	Percent Area Removed	Surface of cross-cut area from which flaking has occurred for six parallel cuts and adhesion range by percent
5A	No peeling or removal	None	5B	0% none	
4A	Trace peeling or removal along incisions or their intersection		4B	Less than 5%	
3A	Jagged Removal along incisions up to 1/16" on either side		3B	5 – 15%	
2A	Jagged removal along most of incisions up to 1/8" on either side		2B	15 – 35%	
1A	Removal from most of the area of the X under the tape		1B	35-65%	
0A	Removal beyond the area of the X		0B	Greater than 65%	

ASTM D6677	
Rating	Description
10	Fragments no larger than $\frac{1}{32}$" x $\frac{1}{32}$" can be removed with difficulty
8	Chips up to $\frac{1}{8}$" x $\frac{1}{8}$" can be removed with difficulty
6	Chips up to $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight difficulty
4	Chips larger than $\frac{1}{4}$" x $\frac{1}{4}$" can be removed with slight pressure
2	Once coating removal is initiated by knife, it can be peeled at least $\frac{1}{4}$"
0	Coating can be peeled easily to length greater than $\frac{1}{4}$"

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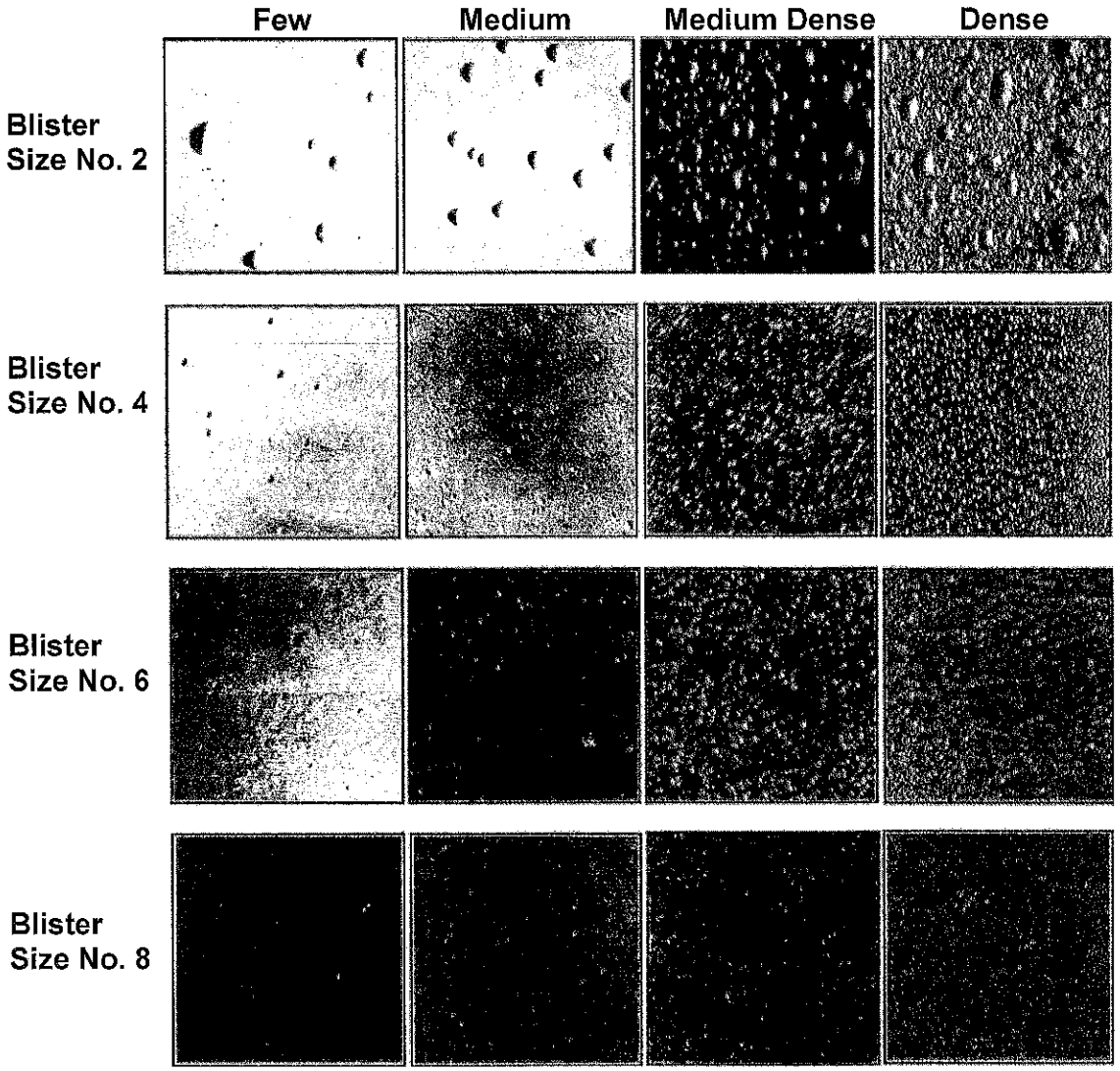
Chart 6 – Blistering Rating The figure below depicts the photographic standards referenced in ASTM D714 "Standard Test Method for Evaluating Degree of Blistering of Paints". This test uses these pictorial standards to quantify both the size and density of blisters that may develop in linings. Although the standard uses a blister size scale of 0 to 10 this chart uses the most common sizes of blisters found in the field. The standard does not use a reference for the size of each of the blisters depicted. CSI used this scale as a means for further quantification by qualifying the largest blister depicted as being 1 inch in width (Blister Size No. 2) and the smallest blister being 1/32 of an inch in width (Blister Size No. 8).



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Grizzly Flats CSD
Meter Reading History Report

Note: Shaded Area represents GFCSD meters with the highest usage.
GFCSD will replace these with new Sensus Meters.

cur_read	meter_no	serv_id	cur_date
800445	28157765	09083	6/18/2014
741220	22767230	07101	6/18/2014
706341	45174116	02045	6/20/2014
696223	29497379	06126	6/18/2014
669200	22767233	01082	6/18/2014
590598	22819895	51107PARCEL	6/18/2014
514397	28152292	03107PARCEL	6/20/2014
495155	29497419	08155	6/18/2014
493781	45174083	01042	6/18/2014
488888	28157890	62006PARCEL	6/20/2014
487897	31510352	08033	6/18/2014
484040	29497375	06070	6/20/2014
472205	28157762	01007	6/18/2014
471987	30290063	04052PARC1	6/20/2014
470523	38518687	02114	6/20/2014
461505	54050751	07070	6/18/2014
460108	27680278	01011	6/18/2014
458123	40855729	04039	6/20/2014
455489	27336227	01019	6/18/2014
451788	40044453	08010	6/18/2014
446768	28156678	45017PARCEL	6/18/2014
440368	28156712	03010	6/18/2014
440334	28157767	25019PARCEL	6/20/2014
439718	29723968	86107PARCEL	6/18/2014
427470	28152290	09029	6/18/2014
426996	4212234	09081	6/18/2014
423659	43174115	01037	6/18/2014
423041	45174081	06046	6/20/2014
422250	42122344	86109PARCEL	6/18/2014
413204	34925994	08021	6/18/2014
408654	28157889	04004	6/20/2014
403680	28157758	02106	6/20/2014
395212	28156716	06082	6/20/2014
380658	45880744	04102	6/20/2014
363713	34925889	06068	6/20/2014
358545	28152272	03005	6/18/2014
357651	28152288	08038	6/18/2014
353337	55322715	03030	6/18/2014
346223	31510346	04036	6/20/2014
339782	28152287	09013	7/14/2014
338270	27217537	01078	6/18/2014
337219	44010474	06089	6/20/2014
335806	47180496	07051	6/18/2014
335017	55322712	05020	6/18/2014
334089	28156711	06103	6/18/2014
331140	34611835	04056	6/20/2014
330689	47180536	07119	6/18/2014
328041	48413118	06018	6/18/2014

Grizzly Flats CSD
Meter Reading History Report

325787	34611836	01065	6/18/2014
322893	41396953	01047	6/18/2014
309497	43097478	01038	6/18/2014
308947	29498510	01022	6/18/2014
306595	31129443	08050	6/18/2014
305974	40044450	04066	6/20/2014
302671	43097464	03139	6/18/2014
298548	48413246	06110	6/18/2014
296336	28152291	10014	6/18/2014
296088	44010462	02034	6/20/2014
293654	27680274	09085	6/18/2014
293416	31510347	01100	6/18/2014
291562	28157892	08012	6/18/2014
291351	45963059	01091	6/18/2014
291307	29497353	02049	6/20/2014
289243	45174100	01111	6/18/2014
287506	27680276	09088	6/18/2014
284252	43097481	09007	6/18/2014
284167	52785727	05032	6/18/2014
283850	44788649	03056	6/18/2014
283238	42122342	06117	6/18/2014
276849	44010463	06032	6/20/2014
274749	42122319	02097	6/20/2014
267906	48413189	04113	6/20/2014
267236	48413328	09003	6/18/2014
266996	45174093	03140	6/18/2014
265208	45174110	06118	6/18/2014
263773	47180559	07023	6/18/2014
262911	4479679	29014PARCEL	6/20/2014
261986	28156680	06031	6/20/2014
261179	31510345	07102	6/18/2014
259829	47180538	07016	6/18/2014
259163	48413122	06063	6/20/2014
256083	41396948	08136	6/18/2014
254953	45174097	02094	6/20/2014
251735	29497876	01058	6/18/2014
248767	44788677	04126	6/20/2014
248291	44902230	02018	6/18/2014
246138	45880748	09036	6/18/2014
244653	47180489	02010	6/18/2014
244310	44788660	04140	6/20/2014
242422	47180485	07053	6/18/2014
240778	52785717	09058	6/18/2014
239934	40855730	45014PARCEL	6/20/2014
239729	42122318	04104	6/20/2014
238510	44010459	07033	6/18/2014
237418	34611833	09040	6/18/2014
232694	44788685	02087	6/20/2014
231623	28152269	09059	6/18/2014
230963	44788676	08073	6/18/2014
230637	34611834	02128	6/20/2014
229738	43097467	01030	6/18/2014

228861	52785719	08053	6/18/2014
228424	44788661	07017	6/18/2014
227139	47180539	07059	6/18/2014
225958	53624280	01026	6/18/2014
224606	48413331	02047	6/20/2014
223642	47180487	09076	6/18/2014
222798	44788657	07084	6/18/2014
218221	49166929	07061	6/18/2014
216840	44010470	02058	6/20/2014
216321	28157766	04032	6/20/2014
216275	53624279	06020	6/20/2014
213866	44010467	09035	6/18/2014
213088	31510349	10007	6/18/2014
212346	31129440	09064	6/18/2014
210080	34925988	07019	6/18/2014
210042	45174105	03134	6/18/2014
208842	31129441	88225PARCEL	6/18/2014
208106	44010458	03094	6/18/2014
207913	49166908	02050	6/20/2014
207087	40855733	06042	6/20/2014
206806	BLANK LID	03023	6/18/2014
203355	47180488	01067	6/18/2014
201255	34611811	07071	6/18/2014
200958	55322707	45010PARCEL	6/20/2014
200554	44788662	01080	6/18/2014
200445	34925997	09096	6/18/2014
200262	45174122	02060	6/20/2014
199204	48413158	06073	6/20/2014
197320	48342257	02061	6/20/2014
196989	44788684	09008	6/18/2014
196841	65395121	08040	6/18/2014
195723	40855728	08025	6/18/2014
195628	54050736	04072	6/20/2014
192955	48413470	06097	6/18/2014
192177	55322678	08004	6/18/2014
191224	44788680	09063	6/18/2014
191152	29497652	04075	6/20/2014
191029	31510343	03061	6/18/2014
189481	44788653	07007	6/18/2014
188403	45174092	62011PARCEL	6/20/2014
187488	46047942	08158	6/18/2014
187336	34925998	08036	6/18/2014
185638	47480537	02120	6/20/2014
184734	47180490	01070	6/18/2014
184413	44902231	06043	6/20/2014
182826	48413156	09016	6/18/2014
181393	22834658	07035	6/18/2014
180769	34611808	05010	6/18/2014
180719	41396962	04107	6/20/2014
179756	28157893	03047	6/18/2014
179422	44902229	02093	6/20/2014
179185	52323014	10002	6/20/2014

178792	44010460	04009	6/20/2014
178669	42122343	03142	6/18/2014
177947	39397924	09067	6/18/2014
176892	45174095	04156	6/20/2014
176531	28156706	08079	6/18/2014
176122	54050753	08128	6/18/2014
175514	46047934	01009	6/18/2014
174769	34611809	05023	6/18/2014
174154	44788678	04052	6/20/2014
173624	45174108	02015	6/18/2014
173484	29497380	01108	6/18/2014
172815	59744456	08132	6/18/2014
172093	65576749	01020	6/18/2014
172025	34925992	09028	6/18/2014
171332	28157888	04148	6/20/2014
170512	44010461	04034	6/20/2014
170499	48413252	02127	6/20/2014
170465	48413159	01024	6/18/2014
169893	44010466	04094	6/20/2014
169740	49166907	05031	6/18/2014
167940	55322709	01081	6/18/2014
167769	43594110	06008	6/20/2014
167730	48413254	02016	6/18/2014
167603	45174001	02116	6/20/2014
166601	46047940	06001A	6/18/2014
166295	48413117	03091	6/18/2014
166056	55322694	45020PARCEL	6/18/2014
165948	54050754	08130	6/18/2014
164337	31510350	08111	6/18/2014
164293	40855735	04071	6/20/2014
163650	45880749	04110	6/20/2014
163204	55322700	09010	6/18/2014
163079	53625185	10011	6/18/2014
162823	54050757	04024	6/20/2014
162525	49166906	09052	6/18/2014
162436	28157764	08016	6/18/2014
161406	5552080	06132	6/18/2014
160458	45880747	06001	6/20/2014
160167	29497351	01121	6/18/2014
160166	46047933	06121	6/18/2014
159476	53624266	08064	6/18/2014
157426	66470434	09041	6/18/2014
156768	49166924	06098	6/18/2014
156185	55861037	08041	6/18/2014
154907	63061864	06021	6/20/2014
154209	52323016	09094	6/18/2014
153706	45174111	03018	6/18/2014
152208	55861044	07068	6/18/2014
150901	45174086	04062	6/20/2014
150878	48413160	08100	6/18/2014
149834	55322708	07110	6/18/2014
149574	44902234	08072	6/18/2014

149276	62243451	01063	6/18/2014
149061	23543066	08134	6/18/2014
148426	45963234	06069	6/20/2014
148408	43097468	03022	6/18/2014
147971	54050752	08131	6/18/2014
146011	54050758	04049	6/20/2014
144721	53624259	05029	6/18/2014
144661	34925995	01109	6/18/2014
144518	46047932	03050	6/18/2014
143628	48413164	03089	6/18/2014
143621	54050759	04160	6/20/2014
143532	48413161	03044	6/18/2014
142987	26796475	51104PARCEL	6/18/2014
142825	34611812	08151	6/18/2014
140086	48413247	07067	6/18/2014
139354	53624263	06005	6/20/2014
137847	40044454	01040	6/18/2014
137252	63061866	01090	6/18/2014
136689	44010468	08161	6/18/2014
136520	28152289	07048	6/18/2014
136473	31510344	09027	6/18/2014
136080	55322690	45012PARCEL	6/20/2014
135598	28152274	01014	6/18/2014
135471	47784694	26028PARCEL	6/20/2014
135375	55322692	62010PARCEL	6/20/2014
134455	53624260	06128	6/18/2014
133896	52235562	02082	6/20/2014
133367	44788682	08076	6/18/2014
133337	45963058	09015	6/18/2014
132126	48418163	08144	6/18/2014
131925	15963163	94012PARCEL	6/18/2014
131070	44010472	04146	6/20/2014
130266	22767231	01061	6/18/2014
129728	46047938	03093	6/18/2014
129598	44010475	04128	6/20/2014
129056	46047936	03037	6/18/2014
128766	55322687	10015	6/18/2014
128526	53624276	10004	6/20/2014
128322	64498512	03111	6/18/2014
127410	NO LID	09024	6/18/2014
127088	234056	04073	6/20/2014
126953	44788659	01069	6/18/2014
126899	55322713	08088	6/18/2014
126547	52785723	08047	6/18/2014
126299	44788683	03092	6/18/2014
125587	44788656	01004	6/18/2014
125074	63195136	09062	6/18/2014
124849	63195146	03075	6/18/2014
124812	63994117	06100	6/18/2014
124552	65395126	08084	6/18/2014
124045	45174082	03002	6/18/2014
122106	23543067	25004PARCEL	6/20/2014

121056	44788658	09034	6/18/2014
121000	48413329	03133	6/18/2014
120947	34611837	06025	6/20/2014
120483	49166909	09073	6/18/2014
120121	48413253	03053	6/18/2014
118811	54050766	04125	6/20/2014
115930	22819896	45011PARCEL	6/20/2014
115848	48413330	06116	6/18/2014
115664	44788681	04047	6/20/2014
115578	53624277	09097	6/18/2014
115115	44788652	86110PARCEL	6/18/2014
114500	53625274	06130	6/18/2014
114363	52979530	04052PARC2	6/20/2014
113856	55322682	02124	6/20/2014
112402	29723870	08082	6/18/2014
111987	48413455	04135	6/20/2014
110535	45615985	02104	6/20/2014
110429	45615010	06081	6/20/2014
109921	38518695	02132	6/20/2014
109327	48413120	08140	6/18/2014
109168	55322701	76101PARCEL	6/18/2014
107815	62243447	10013	6/18/2014
107784	45174113	08013	6/18/2014
107699	47784699	07029	6/18/2014
107312	54050737	25006PARCEL	6/20/2014
106377	45880745	03109	6/18/2014
106145	55861013	08007	6/18/2014
105737	43097480	06011	6/20/2014
105447	48413249	02102	6/20/2014
105126	29497354	10003	6/20/2014
104505	38518688	09092	6/18/2014
104321	60922372	09045	6/18/2014
104245	44788675	03009	6/18/2014
103901	53624272	04030	6/20/2014
103429	4401471	03001	6/18/2014
102990	60922369	02100	6/20/2014
102744	38518690	06060	6/20/2014
101963	45174106	07002	6/18/2014
100338	55322696	07082	6/18/2014
99381	59744453	05009	6/18/2014
99095	41396960	04059	6/20/2014
96340	48413244	04002	6/20/2014
95474	48413250	07100	6/18/2014
95189	53624281	25002PARCEL	6/20/2014
94923	54050735	08045	6/18/2014
94870	55861039	02079	6/20/2014
94594	53624256	06106	6/18/2014
94278	49166910	03079	6/18/2014
94222	47180491	07041	6/18/2014
93224	55322705	23006PARCEL	6/18/2014
92856	45963068	23005PARCEL	6/18/2014
92728	45174107	07011	6/18/2014

92521	59744448	01079	6/18/2014
92489	64498508	08159	6/18/2014
91926	65099192	08064A	6/18/2014
91733	44010473	45009PARCEL	6/20/2014
91725	54050755	08044	6/18/2014
91391	31510348	03049	6/18/2014
91186	55322693	04029	6/20/2014
90953	65099194	06137	6/20/2014
90352	49166911	09089	6/18/2014
90163	62243450	03118	6/18/2014
89717	45047939	02011	6/18/2014
87914	63994111	01119	6/18/2014
87379	63061862	03107	6/18/2014
86924	42122323	08109	6/18/2014
86887	59744454	08061	6/18/2014
86797	59744452	02107	6/20/2014
86623	63195147	02111	6/20/2014
86562	53624261	04087	6/20/2014
86472	45963097	07088	6/18/2014
85563	45963067	03027	6/18/2014
85432	63195143	03073	6/18/2014
85133	55861038	09026	6/18/2014
84384	64498515	03008	6/18/2014
84246	49089108	09053	6/18/2014
83644	34825893	08069	6/18/2014
83579	34611810	08152	6/18/2014
83384	63195141	08101	6/18/2014
83205	63994118	04042	6/20/2014
82789	47180540	85002PARCEL	6/20/2014
82430	45174094	08094	6/18/2014
81809	48413162	06088	6/20/2014
80045	60922370	08164	6/18/2014
79115	34925990	08042	6/18/2014
79032	63061867	07117	6/18/2014
78882	55322681	03117	6/20/2014
78689	55861042	01074	6/18/2014
78192	34611832	02139	6/20/2014
78142	40044451	07065	6/18/2014
78125	52785722	06135	6/18/2014
78112	48413180	07073	6/18/2014
77165	63195142	06015	6/20/2014
77045	42122320	07038	6/18/2014
76912	29497355	01015	6/18/2014
76526	60922364	03070	6/18/2014
76430	28152283	07091	6/18/2014
74284	64498507	03088	6/18/2014
74052	39066980	08081B	6/18/2014
73559	65395120	02105	6/20/2014
73512	55322688	09069	6/18/2014
73453	65099196	08087	6/18/2014
72757	55322686	06101	6/18/2014
72680	28156709	09033	6/18/2014

71879	54050762	04143	6/20/2014
71287	28156708	04142	6/20/2014
70280	65395122	01073	6/18/2014
69923	65395124	03060	6/18/2014
69691	54050732	07012	6/18/2014
69411	63994115	06099	6/18/2014
69246	63994110	06066	6/20/2014
69204	45174114	09093	6/18/2014
68963	63061861	02086	6/20/2014
67727	48413182	08028	6/18/2014
67347	48413181	02088	6/20/2014
67228	65099189	07030	6/18/2014
67177	54050733	07113	6/18/2014
66387	46047941	08120	6/18/2014
66069	53624271	06016	6/20/2014
66025	65093380	01030A	6/18/2014
65998	55861014	01116	6/18/2014
65940	62243448	02077	6/20/2014
65820	64498511	04043	6/20/2014
64509	49166927	01072	6/18/2014
64235	45174085	07015	6/18/2014
64117	63061860	04137	6/20/2014
63439	53624264	06027	6/20/2014
63400	53624265	05028	6/18/2014
63146	66471004	10009	6/18/2014
63040	47180494	07056	6/18/2014
62826	65093377	03032	6/18/2014
62629	64498513	09032	6/18/2014
62362	60922368	04134	6/20/2014
62086	53624273	04158	6/20/2014
62043	48413157	03011	6/18/2014
61842	65099798	04057	6/20/2014
61560	59744447	04040	6/20/2014
61002	52785724	07003	6/18/2014
60991	52785720	03144	6/18/2014
60912	49166925	04122	6/20/2014
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52960	53624270	03113	6/18/2014
52262	45963070	07103	6/18/2014
52162	45130997	08081	6/18/2014
51799	55322716	08114	6/18/2014
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51297	65093371	01018	6/18/2014
51251	55322711	05004	6/18/2014
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49956	48413466	06138	6/20/2014
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47116	55322689	06071	6/20/2014
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46880	54050767	04124	6/20/2014
46686	65099197	01032	6/18/2014
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46507	46047943	07093	6/18/2014
46100	22767235	03107-B	6/20/2014
45985	65093372	07036	6/18/2014
45285	48413177	25014PARCEL	6/20/2014
44907	48413178	08096	6/18/2014
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44289	64498510	02735	6/18/2014
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42349	55322699	07081	6/18/2014
42294	65093375	08002	6/18/2014
41925	44788655	26012PARCEL	6/20/2014
41870	40855725	06004	6/20/2014
41667	47180498	62008PARCEL	6/30/2014
41635	47180498	62008PARCEL	6/20/2014
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40148	23387424	04054	6/20/2014
39756	63061858	01015A	6/18/2014
39684	65576745	08009	6/18/2014
39633	23543071	07115	6/18/2014
39203	65576748	04055	6/20/2014
39200	65576742	09026A	6/18/2014

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38682	47180497	06039	6/20/2014
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37919	23387425	01120	6/18/2014
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34205	40855727	01107	6/18/2014
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32604	63994116	02013	6/18/2014
32329	65099193	02121	6/20/2014
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32006	69847987	09023	6/18/2014
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19321	45880746	07107A	6/18/2014
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18184	52235564	09065	6/18/2014
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Grizzly Flats

GRIZZLY FLATS

Founded in 1966, the Grizzly Flats Community Services District (GFCSD) provides domestic water service to 611 residential customers in a geographically remote foothill community in El Dorado County. The system is classified as a "Small Community Water System" by the Department of Health Services. While not officially a disadvantaged community, the median income of the community is only $3000 higher than the disadvantaged level. Consequently, the district has extremely limited financial resources.

The community is served by a small two-source water system constructed in the mid 1960's through the mid 1970's. Water for the community is derived from two local creeks, North Canyon and Big Canyon, which are tributaries to the Cosumnes River. These creeks are diverted and the water is transported roughly two miles via pipeline to a storage reservoir prior to treatment.

The system is extremely vulnerable to low flows as there are only two surface water sources – both of which drain relatively small watersheds. The longer the dry season extends, the lower the base flow drops. The five-month period (July 1–December 1), when stream flows are typically lowest and treated water demand is high, is the most critical period.

The community is entirely dependent on the local reservoir to capture and store water for domestic and fire flow uses. Seasonal and operational storage is limited, in part, to the poor embankment conditions of the existing reservoir lining. In its current state, the reservoir provides limited operational storage and no seasonal carry-over storage.

The lack of seasonal storage and carryover storage puts the residents at risk of water shortages when stream flows are low in the late summer and fall or when an undetected line break or tampering in the distribution system occurs. Additionally, the domestic water system is used for structural fire fighting and the raw water reservoir is available and has been used in the past for wildfire suppression.

The GFCSD water system consists of approximately five miles pipeline that delivers water to over 600 residential accounts, much of which is original piping. The main lines are primarily asbestos cement and the service lines are thin-walled PVC with inadequate pressure ratings.

The pipelines were constructed with native backfill, without the benefit of engineered pipe zone material. As a result, point loads are a common cause of the ever increasing trend of waterline leaks and breaks, with three to five service or main line breaks per year.

Grizzly Flat has long been a community concerned with water conservation due to the constraints of supply that affects the district. In partnership with the El Dorado Irrigation District and the El Dorado County Water Agency, the GFCSD prepared a Drought Action Plan in late 2007. This plan will serve as the template for the communities of Nevada City and Washington (project sponsors within this Proposal) as they prepare similar plans.

The Grizzly Flats project package includes three projects. They are listed below in the same order they can be found in the following pages.

Grizzly Flats Projects:

- Reservoir Relining
- Leak Detection and Repair
- Integrated Water Shortage Contingency, Drought Preparedness, and Comprehensive Water Conservation Planning Program

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Grizzly Flats, CA
Image © 2010 DigitalGlobe
Image USDA Farm Service Agency
© 2010 Google
Image U.S. Geological Survey
88
©2010 Google
Imagery Date: 5/24/2009
38°38'41.12" N 120°30'23.53" W elev 1308 m
Eye alt 31.75 km

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

RESERVOIR RELINING

Infrastructure Reliability, Conservation, and Efficiency Program

Overview

The purpose of this project is to improve system reliability for residential customers, fire suppression and drought protection, protect water quality and achieve a more sustainable water supply for the Grizzly Flats community by reducing water loss in the reservoir, improving security, and monitoring the water system.

Founded in 1966, the Grizzly Flats Community Services District (GFCSD) provides domestic water service to 611 residential customers in a geographically remote foothill community in El Dorado County. The system is classified as a "Small Community Water System" by the Department of Health Services.

The major water infrastructure components of GFCSD were constructed in the mid 1960's through the mid 1970's and the sole source of water for the community include two local creeks, North Canyon and Big Canyon, which are tributaries to the Cosumnes River. These creeks are diverted and the water is transported roughly two miles via pipeline to a storage reservoir prior to treatment. The North Canyon diversion has a 9.4 acre-feet per month (70 gpm) estimated available minimum base flow, while the Big Canyon diversion has a 1.3 acre-feet per month estimated available minimum base flow, making the North Canyon diversion the District's most important source of supply. The longer the dry season extends, the lower this base flow drops. The five-month period (July 1–December 1) when stream flows are typically lowest and treated water demand is high, is the most critical period.

Reservoir erosion resulting from degradation of current lining.

A water treatment facility and 25,248 feet of piping, ranging in size from one-inch to eight-inch, deliver water to households in the Grizzly Flats Subdivision. The reservoir itself currently has a total of 22.81 acre-feet in usable storage; 27.32 acre-feet including dead storage. In its current state, the reservoir provides limited operational storage and no seasonal carry-over storage. Seasonal and operational storage is limited, in part, to the poor embankment conditions of the existing reservoir lining.

Project Need

The lack of seasonal storage and no carryover storage puts the residents at risk of water shortages when stream flows are low in the late summer and fall or when an undetected line break or tampering in the distribution system occurs. Additionally, the domestic water system is used for structural fire fighting and the raw water reservoir is available and has been used in the past for wildfire suppression. The following paragraphs provide further descriptions of these issues.

Condition of Reservoir

Extensive analyses of the reservoir leakage are described in two reports entitled "*Reservoir Studies for the Grizzly Flats Community Services District - Report on Inspection of the Drained Reservoir*" dated September 1997, and "*Reconnaissance Investigation of Off-Stream Storage"* dated May 1998. These reports describe the instability and poor embankment condition of the existing reservoir that establish the need for lining the reservoir. The reservoir has poor foundation conditions, low-density embankment materials, stability considerations, seepage losses, operating head considerations, and its storage capacity is underutilization (Increasing Active Storage Capacity of the Raw Water Reservoir, 2009, page 1). Based on the recommendations outlined in these reports, GFCSD has operated at a reduced capacity to avoid stressing the embankment. This limitation results in reduced seasonal and operational storage even in wet years. Average water loss is currently estimated at 16.2 acre-feet per year, and when the water supply is fully utilized, water loss is estimated at 35 acre-feet per year. Lining the reservoir will eliminate the water loss.

These reservoir-related issues, the recent finding that the CSD's biggest diversion (North Canyon) is reduced 30 percent because of root intrusion at multiple points along its raw water pipeline, and climate change predictions of lower instream flows put the CSD at risk of severe water shortages.

Threat of Drought

Furthermore, recent drought planning efforts in El Dorado County indicate the susceptibility of the GFCSD water supply to drought at current demand levels. GFCSD is facing an estimated shortfall of 45 acre-feet in the second and third year of a design drought that uses 1976, 1977, and a repeat of 1977 hydrology. More efficient use of current water supplies will reduce the impacts of drought.

With limited seasonal storage, the critical issue facing the GFCSD is meeting domestic water demand and fire suppression needs in the late summer and fall months when stream flows are at their lowest stages. The small storage volume in the pretreatment reservoir is compounded by considerable seepage from the partially lined earthen reservoir. Lining the reservoir with a synthetic liner will make that water available to meet existing demands and fire suppression needs.

Seasonal Demand for Fire Suppression

Grizzly Flats' lack of adequate water supply contributes to significant fire exposure. It has been identified in the Federal Register as a "Community at Risk" and was the location of one of seven Healthy Forests Initiative Environmental Assessment Demonstration Projects in the

United States. Past fire history indicates the high likelihood of a major fire threatening Grizzly Flats in the future. Therefore, it is a priority to set aside adequate water and improve the reliability of the system to deliver water for fire suppression.

Monitoring and Security

The Grizzly Flats Reservoir is vulnerable to significant water loss in the distribution system that, if left unchecked, could drain the system and impact the sustainability of the water supply through the late summer and fall. System monitoring at the treatment plant and in the distribution system is needed to detect large-scale water losses resulting from line breaks.

Present degraded state of Grizzly Flats Reservoir lining

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Grizzly Flats, CA
Image © 2010 DigitalGlobe
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Image U.S. Geological Survey
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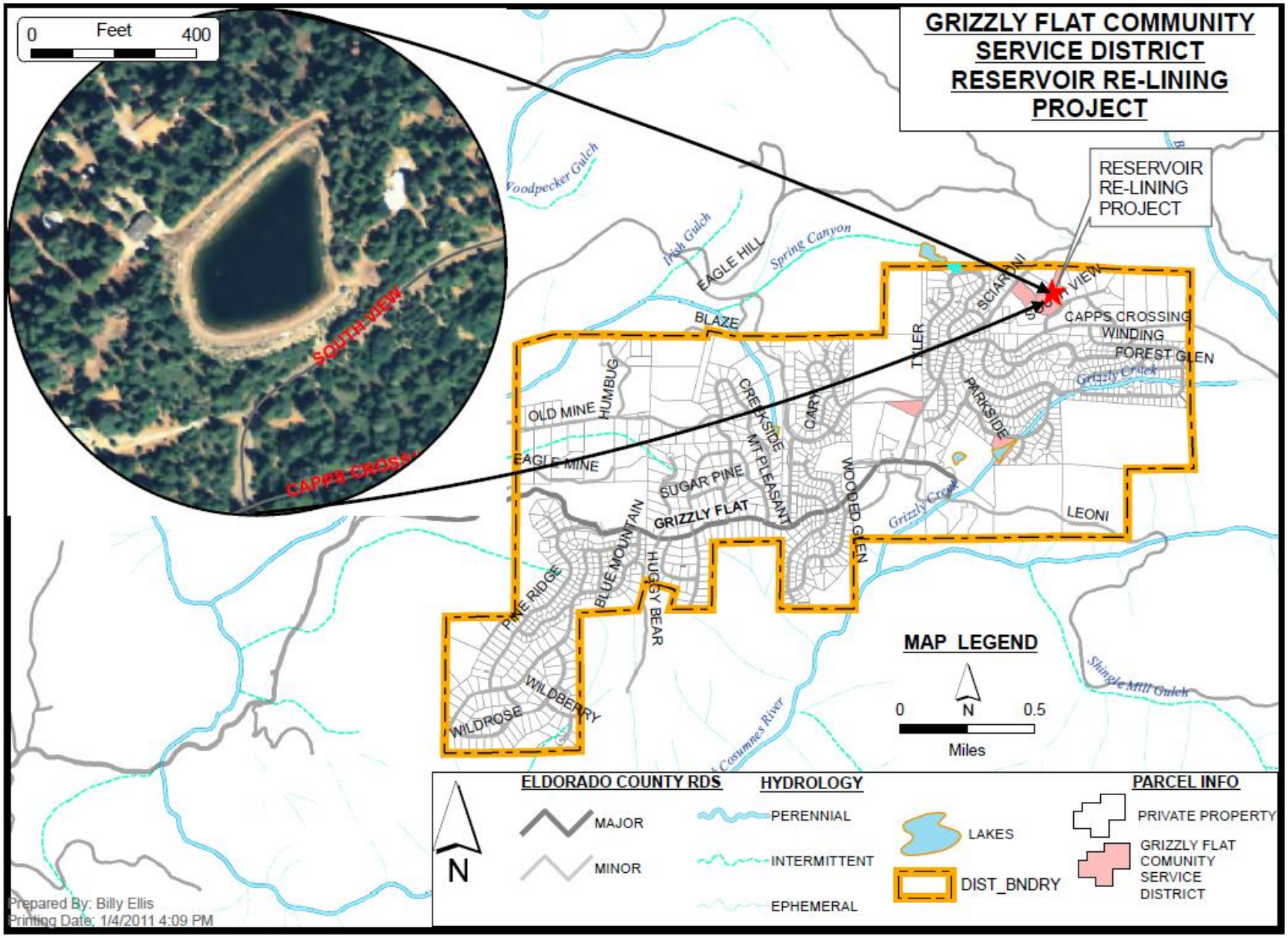
©2010 Google
Imagery Date: 5/24/2009
38°38'41.12" N 120°30'23.53" W elev 1308 m
Eye alt 31.75 km


GRIZZLY FLAT COMMUNITY SERVICE DISTRICT RESERVOIR RE-LINING PROJECT
0 Feet 400
SOUTH VIEW
CAPPS CROSSING
RESERVOIR RE-LINING PROJECT
Woodpecker Gulch
Irish Gulch
EAGLE HILL
Spring Canyon
BLAZE
SCIARONI
SOUTH VIEW
CAPPS CROSSING
WINDING
FOREST GLEN
Grizzly Creek
TYLER
PARKSIDE
HUMBUG
OLD MINE
CREEKSIDE
CARY
MT PLEASANT
EAGLE MINE
SUGAR PINE
WOODED GLEN
GRIZZLY FLAT
Grizzly Creek
LEONI
BLUE MOUNTAIN
HUGGY BEAR
PINE RIDGE
WILDBERRY
WILDROSE
Shingle Mill Gulch
Cosumnes River
MAP LEGEND
0 N 0.5
Miles
N
ELDORADO COUNTY RDS
MAJOR
MINOR
HYDROLOGY
PERENNIAL
INTERMITTENT
EPHEMERAL
LAKES
DIST_BNDRY
PARCEL INFO
PRIVATE PROPERTY
GRIZZLY FLAT COMUNITY SERVICE DISTRICT
Prepared By: Billy Ellis
Printing Date: 1/4/2011 4:09 PM

Work Plan Tasks

The scope of this project is to improve system reliability for the District by increasing the reservoir's storage capacity through the installation of a 60-mil HDPE liner over the complete interior of the reservoir, and the installation of a 200-gallons-per-minute (gpm) pump station at the reservoir outlet to address operation head considerations and underutilization of storage capacity. Ultimately, this project will increase the reservoir's active storage capacity by 33.5 percent (5.07 acre-feet annually) and eliminate seepage, saving 16.2 acre-feet annually under current conditions and 35 acre-feet (Carlton 2009) annually when the water supply is fully utilized. These savings, together with increased storage, increase the CSD's supply yield by approximately 36 acre-feet (URS 2009).

A Supervisory Control and Data Acquisition (SCADA) control system will be installed to monitor and control the water treatment process and distribution system and to improve operational performance of the treatment plant. The SCADA system will include a Human-Machine Interface (HMI) apparatus, a supervisory computer system to gather and acquire data, Remote Terminal Units (RTUs), Programmable Logic Controller (PLCs), and a communication infrastructure to connect the system to the RTUs.

Budget Category (a): Direct Project Administration Costs

Task 1: Administration and Management

The tasks for this budget category will include all non-construction project administration activities performed by Grizzly Flats CSD and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance and final invoice.

Deliverables:

- Preparation of invoices and other deliverables as required.

Task 2: Labor Compliance Program

Grizzly Flats CSD has entered into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all CABY project sponsors and relevant projects.

Deliverables:

- Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

Task 3: Reporting

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the CABY IRWMP-RWMG, and submittal of final report. These activities will include: tracking

of the specific status of each project task, documentation of task status in an easy-to-understand and track format, and creation of quarterly financial reports for the project (including percent complete of project activities).

Deliverables:

- Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- Submission of quarterly reports to the Nevada City Project Manager and to the CABY-RWMG to enable their tracking of project status.

Budget Category (b): Land Purchase/Easement

Land Easements

No land easements are required for project implementation.

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Assessment and Evaluation (Planning)

A preliminary engineering report (PER) was completed by Carlton Engineering in December 2009 (see below). The PER analyzed various project alternatives and made recommendations for final design. A number of other planning documents, studies, and investigations of the reservoir relining project have been previously prepared which provide the engineering planning background required to successfully implement the project. These evaluations are summarized in the following reports:

1) Borcalli and Associates Inc. 1998. *Reconnaissance Investigation of Off-Stream Storage for Grizzly Flats Community Services District.*
2) GFCSD. September 1997. *Reservoir Studies for the Grizzly Flats Community Services District - Report on Inspection of the Drained Reservoir.*
3) Brown and Caldwell. December 2007. *Drought Plan for Grizzly Flats Community Services District*.
4) El Dorado County Water Agency. 2007. *Water Resources Development and Management Plan*.

Engineering and Design

The engineering designs for the Grizzly Flats Reservoir Relining Project were completed by Carlton Engineers in 2010. These designs include reservoir lining, pump station, and SCADA equipment needed to upgrade the Grizzly Flats reservoir. The graphic illustrating the reservoir improvement was prepared as part of this work effort (see below). These designs include:

1) Final civil design;
2) Final mechanical design;
3) Final electrical design;
4) Complete set of drawings;
5) Complete specification set; and
6) Basis for itemized cost estimate.

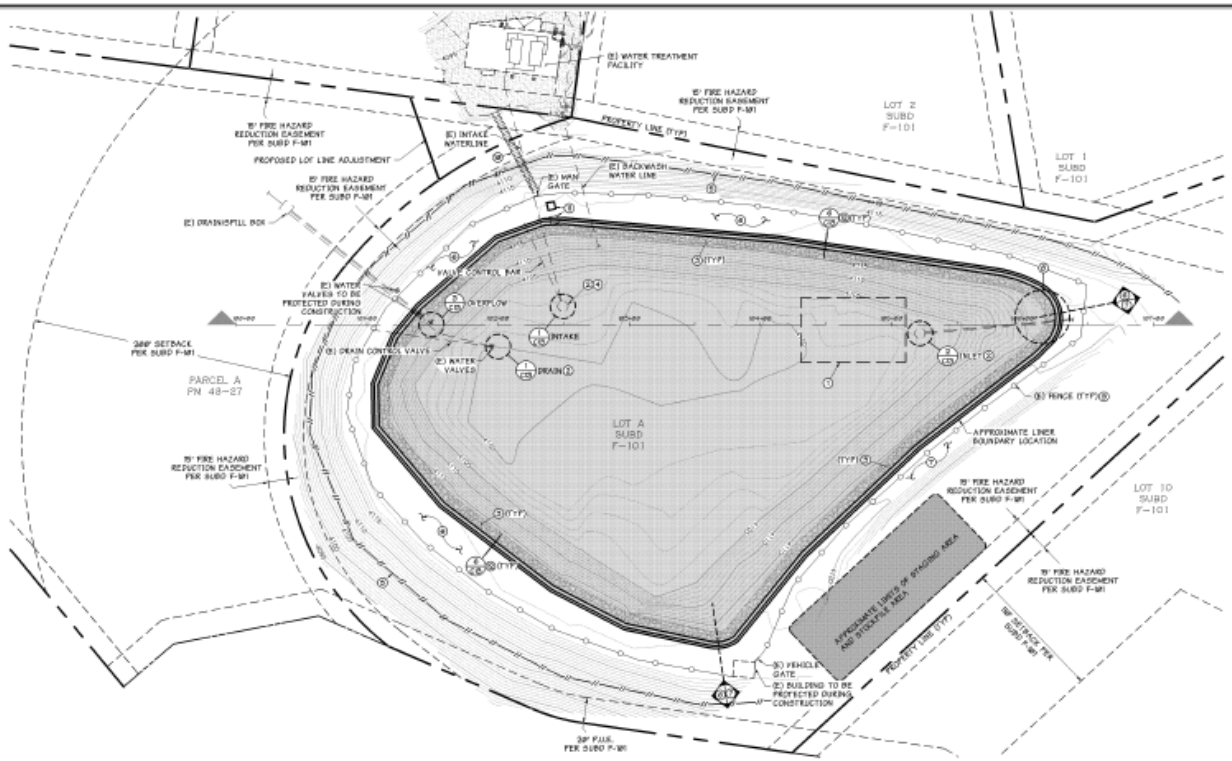
The plans and specifications are bid ready.

Environmental Documentation
A CEQA Categorical Exemption was prepared in 2010. A Notice of Exemption was prepared and sent to the County Clerk's office on April 16, 2009 (see Exhibit 1).

Task 4: Permitting
With the exception of a Stormwater Pollution Protection Plan (SWPPP), no permits are required to install or operate the reservoir relining project.

Internal Deliverables:

- Prepare a Stormwater Pollution Prevention Plan.



1 inch = 40 ft.

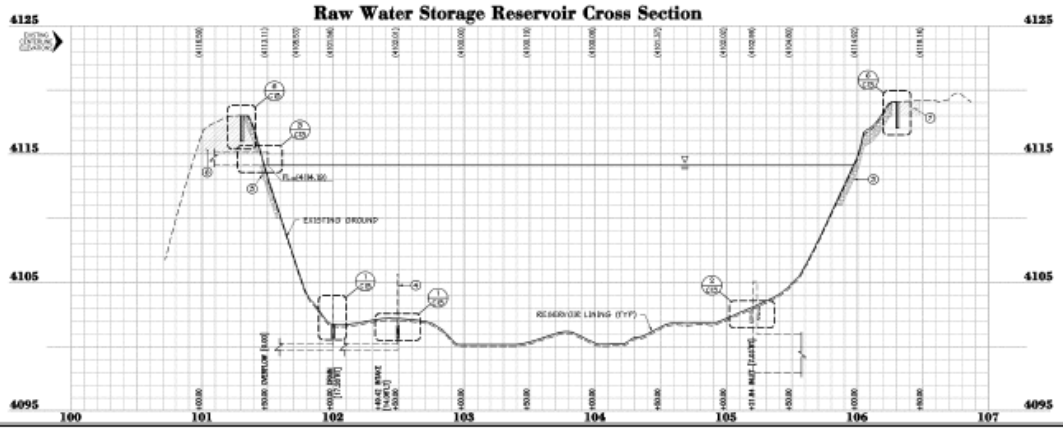
Sheet Notes

1. (E) TARP TO BE REMOVED AND DISPOSED OF BY CONTRACTOR.
2. CLEAN SEDIMENT BUILDUP AROUND INLET, INTAKE, AND DRAIN.
3. REMOVE 8' WIDE x 1' DEEP OF (E) RIP RAP AROUND PERIMETER OF POND AND MIX WITH EMBANKMENT MATERIAL TO CONSTRUCT NEW EMBANKMENT PER SPECIFICATION #22AB.
4. CUT 4' INTAKE TO 2' FROM GRADE AND DISPOSE. RECONSTRUCT WIRE MESH SCREEN.
5. PLACE STRAW WATTLE PER DETAIL 1, SHEET C15 IF RAIN EVENT IS FORECASTED DURING CONSTRUCTION.
6. REMOVE AND REPLACE TOP 3' OF EMBANKMENT AS PER SPECIFICATIONS.
7. SCARIFY, MOISTURE CONDITION, AND COMPACT EAST SIDE TOP OF RESERVOIR EMBANKMENT TO 94% OF MAXIMUM DRY DENSITY (ASTM D 1557).
8. REMOVE AND DISPOSE OF (E) CONCRETE SURFACE LAYER, OR CRUSH AND INCORPORATE INTO SUBGRADE MATERIAL AS PER SPECIFICATIONS.
9. REMOVE AND REPLACE (E) FENCE AND GATES IN ACCORDANCE WITH SPECIFICATIONS.
10. (E) STAIRS TO BE REPLACED PER DETAIL 8, SHEET C15. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STAIRS PRIOR TO CONSTRUCTION.
11. REMOVE AND RELOCATE (E) PUMP HOUSE. PUMP HOUSE TO BE RELOCATED TO 5' MIN FROM OUTSIDE EDGE OF PML ANCHOR TRENCH. CONTRACTOR TO RECONNECT PUMP HOUSE TO EXISTING UTILITIES (WATER, POWER, ETC.)
12. INSTALL 24" ANCHOR TRENCH AROUND RESERVOIR FOR LINER.

Legend

- LIMITS OF 60 MIL PML OVERLAP PER DETAIL 7, SHEET C15. INSTALL IN ACCORDANCE WITH SPECIFICATIONS.
- (E) RIP RAP

Raw Water Storage Reservoir Cross Section



CARLTON Engineering Inc.

PRELIMINARY NOT FOR CONSTRUCTION 100% SUBMITTAL 04/28/2010

Revisions

No.	Description	Date	By

Grizzly Flats CSD
Water System Improvement Project

RAW WATER STORAGE RESERVOIR

Project Location:
Grizzly Flats, Ca 95636
El Dorado County

Ownership Information:
Grizzly Flats CSD
4765 Solomon Road
Grizzly Flats, CA 95636

Drawn	Check	Project No.
MLC	PEM	04-01-09
1" = 40'	1" = 4'	04-01-09

Sheet

C12

Budget Category (d): Construction/Implementation

Task 5: Pre-Construction Contracting – Request for Proposal through Notice to Proceed
GFCSD has established procedures and protocols for advertising, opening, and evaluating bids for construction services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to identify the construction company selected to construct the reservoir relining project.

Project management activities include coordination with the construction manager on impacts to normal operations such as shut downs, bypasses, and customer notifications, review and approval of pay requests, attendance at construction meetings, and budget management.

Internal Deliverables:

- Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Task 6: Mobilization and Site Preparation
Mobilization and site preparation will consist of creating a construction staging yard, purchasing and delivering construction materials and equipment to the site, finalizing the construction schedule and work plan, drawing down the reservoir to enable replacement of the liner and construction of the pump station, and establishing a construction headquarters.

6.1 Water Level Drawn Down
In order for construction to commence, water levels within the reservoir must be drawn down to the maximum extent possible. Every attempt will be made to time this effort with lowest season of water needs by District customers.

Internal Deliverables:

- Site preparation and construction staging.
- Reservoir draw-down.

Task 7: Construction/Installation of Reservoir Lining, Pump Station, and SCADA Equipment
This task will result in the installation of the reservoir lining, the pump station, and SCADA equipment in accordance with the construction plans and specifications. Following is a detailed description of the steps needed to complete the project.

Task 7.1 Construct Pump Station
The existing pump house will be disassembled and relocated to an area outside of the reservoir lining area. Low head pumps and Filter Plant Nos. 1 & 2 upgrades are necessary to sufficiently restore the designed treatment capacity of 200 gpm for each filter. Historic inefficiencies within the filter plant operations and the limitations of gravity operation during low water levels in the reservoir during drought conditions or end-of-summer periods are addressed and restore the ability for each filter plant to process the designed capacity of 200 gpm each. Filter Plant No. 1 improvements will also address the excessive corrosion and other items associated with the aged facility.

Task 7.2 Excavate/Compact Reservoir
As identified in the December 2009 Preliminary Engineering Report (PER), it was determined that the compaction of the top portion of the reservoir was necessary to allow the level maintained in the reservoir to be increased an additional 1.5 to 2.0 feet depending on the maintaining sufficient freeboard. This project provides for compaction of the reservoir bottom and the construction of a smooth, compacted layer for the reservoir liner. All materials will be compacted to a minimum of 90 percent of ASTM D1557 and tested during construction. Excavation is required to remove sediments around intake, remove and replace three feet of embankment, and remove and relocate pump house.

Task 7.3 Construct Reservoir Liner
Approximately 120,000 square feet of reservoir liner will be installed over the compacted bottom. A cushion layer of eight-ounce geotextile fabric will be installed over the compacted subgrade to protect the HDPE liner. A 60-mil HDPE geomembrane liner will be placed over the cushion layer and the HDPE seams will be fusion welded with a certified HDPE seam welder and apparatus. All of the reservoir reliner work will be inspected during construction.

Task 7.4 Pour Concrete Curb and Install Chain-Link Fence
A concrete curb and access stairway and handrail will be constructed to improve access and reduce erosion. Approximately 1,450 lineal feet of new security chain-link fence will be installed around the reservoir.

Task 7.5 Install Reservoir Influent Flow Meter Improvements
An ultrasonic flow meter will be installed to replace the exiting propeller meter.

Task 7.6 Install SCADA Equipment and Test
SCADA System includes all labor, material, and equipment to provide new radio/antenna/SCADA PC at filter plant including, but not limited to: Control Cabinet/Antenna/Solar panels at Reservoir Influent Flowmeter; Control Cabinet/Antenna/Sensors at Tyler Drive.; Control Cabinet/Antenna/Sensors at Winding Way; Radio/Antenna/Sensors at Forest View; associated conduits at all sites; PLC programming at all sites; Wonderware license and programming at filter plant; and startup at all sites.

Task 7.7 Train Operators
District operators will be trained in the appropriate methods, techniques, tasks, and procedures for fully implementing, running, checking, reporting, and otherwise performing the required duties related to the new District infrastructure.

<u>Internal Deliverables</u>:

- Constructed infrastructure improvements.
- "As-built" construction drawings, specifications, and documentation.

Task 8: Demobilization

Task 8.1 Monitoring Plan

Prior to operation of installed components, the GFCSD will gather, collate, and evaluate pre-project reservoir water loss data to create an accurate accounting of water losses and operational characteristics. Operational characteristics, water consumption, and water losses will be estimated for the post-project condition prior to final system installation. These calculations will be reviewed following a full calendar year operation to confirm initial estimates. A final report on water saved through the new supply infrastructure will be given to the Board as well as to CABY members, and made available on the CABY website.

Task 8.2 Final Inspection to Determine Deficiencies

The inspection will be conducted on a schedule mutually determined by the contract manager and the contractor. The duration of the inspection will be a consequence of the punch list and inspection criteria. If necessary, subcontractors will also be present to ensure that all aspects of system performance are evaluated and deficiencies noted. This inspection will cover all aspects of system installation and operation to ensure that all infrastructure and facilities were constructed and installed per contract standards and construction drawings, including change orders and field orders. A final list of deficiencies will be developed jointly by the contract manager and contractor, and a specific work plan for accomplishing remedial action will be developed and approved by both parties (per initial contract).

Task 8.3 Contractor Demobilization and Erosion Control

Following completion of construction, the contractor will formally demobilize the site. As a result of these activities, the staging area will be cleared, equipment and debris removed, surplus construction materials removed, and the required erosion control measures employed.

Task 8.4 Eleven-Month Warranty Inspections (Within First Year of Installation)

The construction manager will conduct a formal 11-month warranty inspection. The inspection will be conducted to determine that all equipment is operational and no defects have surfaced since final inspection.

Task 8.5 Deficiencies Corrected by Contractor

The contractor will remedy all listed deficiencies in a manner, and within a timeframe, acceptable to the contract manager. Seasonal considerations may affect the timing of remediation efforts. However, these constraints will be factored into the final repair/remediation schedule.

Internal Deliverables:

- Executed contract, material submittal, installed reservoir lining, pump stations and SCADA system; 11-month warranty repairs.
- Post-project Demobilization Inspection Report (prior to final contractor payment).

- Pre- and post-project water loss will be calculated to monitor and evaluate the efficacy of the project.

Deliverables to DWR:

- Post-project Demobilization Inspection Report (prior to final contractor payment).

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

Environmental Compliance/Mitigation/Enhancement

This project is a minor modification of an existing facility and is exempt from CEQA and requires no mitigation other than that provided for through industry standard construction practices and adherence to State Water Resources Control Board general requirements associated with storm water discharges. A SWPPP will be prepared and implemented prior to construction. No environmental monitoring or mitigation is required.

Budget Category (f): Construction Administration

Task 9: Direct Construction Administration

To ensure successful completion of the contract, the District will advertise for and retain a construction manager whose responsibility will be to oversee the project from contract initiation through final progress reporting. The consulting engineer's responsibilities will include inspection work through all phases of construction, the facilitation of regular construction meetings, and preparation of meeting minutes. Additional responsibilities will include: managing contractor communications (prepare and process change orders and field orders and respond to requests for information from the contractor); preparation of schedule of values for progress payments; review and approval of progress payments and recommendations for payment; maintenance of a set of drawings that record changes to the contract drawings for use in preparing "as-built" drawings; and oversight of the 11-month warranty inspection and document deficiencies for GFCSD. Below is a bulleted list of major duties and responsibilities of the construction manager.

- Inspect work through all phases of construction.
- Plan, facilitate, and prepare minutes for regular construction meetings.
- Manage contractor communication.
- Preparation of schedule of values for progress payments.
- Review and approve progress payments
- Maintain record drawings
- Conduct 11-month warranty inspection
- Monthly financial and progress reporting

Deliverables:

- The tasks for this budget category would include all construction contract management, staff construction supervision, and direct construction work including: Project Manager(s) duties such as preparation of schedule of values, meeting minutes, direct supervision of all construction activities, daily inspection reports, 11-month warranty inspection report.

- GF Project Manager(s) coordination of project/contract activities.

Budget Category (g): Other

Task 10: Develop and Maintain CABY Project-specific Webpage

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project which is implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Internal Deliverables:

- Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

Task 11: Data Management

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Internal Deliverables:

- Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

- Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

DWR Deliverables:

- Inventory of all data submitted to relevant/applicable state agencies.

Budget Category (h): Construction /Implementation Contingency

A five percent standard contingency is already included in the construction budget and it is calculated based on industry norms.

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

RESERVOIR RELINING

EXHIBITS

1. CEQA Documentation --- Categorical Exemption

Grizzly Flats Community Services District
4765 Sclaroni Road / P.O. Box 250
Grizzly Flats, CA 95636
Ph: 530/622-9626 Fax: 530/622-4806

Resolution No. 2009-3

WHEREAS, the Grizzly Flats Community Services District desires to enhance the provision and protection of the drinking water supplied to the consumers of Grizzly Flats water system with the Grizzly Flats CSD Reservoir Improvements project and;

WHEREAS, this project will install an impermeable material liner in an existing raw water reservoir, construct a small booster pump station at the reservoir outlet, modify existing elevations of the reservoir outlet and spillway piping as determined by an engineer, and install an ultrasonic reservoir level monitoring device to eliminate seepage losses and neutralize the potential effects of subsurface erosion, poor foundation conditions, low density embankment materials, and stability considerations and;

WHEREAS, the project is categorically exempt under section 15301- Existing Facilities and section 15302- Replacement or Reconstruction, therefore;

BE IT RESOLVED by the Grizzly Flats Community Services District that, the Grizzly Flats CSD Reservoir Improvements Project is categorically exempt from CEQA and;

BE IT FURTHER RESOLVED that the President of the Board of Directors and the General Manager of said Grizzly Flats Community Services District is hereby authorized and directed to cause the necessary data to be prepared and the exemption to be signed and filed with the State of California Office of Planning and Research and the Recorder Clerk of El Dorado County.

Passed and adopted at a regular meeting of the Grizzly Flats Community Services District Board of Directors on the 13th of April, 2009

AYES: Englefield, Ball, Kelley, Legrand, Davidson ABSENT: 0

NO: 0 ABSTAIN: 0

Mel Kelley

Mel Kelley, President
Board of Directors
Grizzly Flats Community Services District

I hereby certify that the foregoing resolution was duly and regularly adopted at the Regular Meeting of the Board of Directors of the Grizzly Flats Community Services District held on this 13th day of April, 2009.

Jodi Lauther

Jodi Lauther
Secretary to the Board
Grizzly Flats Community Services District

Notice of Exemption

FILE COPY Form D

To: Office of Planning and Research
P.O. Box 3044, Room 212
Sacramento, CA 95812-3044

County Clerk
County of El Dorado
360 Fair Lane
Placerville, CA 95667

From: (Public Agency) Grizzly Flats Community Services District
PO Box 250 / Grizzly Flats, CA 95636
(Address)

FILED
APR 16 2009
WILLIAM E. SCHULTZ, Recorder-Clerk
By

Project Title: Grizzly Flats CSD Reservoir Improvements Project

Project Location - Specific:
4765 Sciaroni Road

Project Location – City: Grizzly Flats Project Location – County: El Dorado

Description of Nature, Purpose and Beneficiaries of Project:
This project will install an impermeable material liner in an existing raw water reservoir, construct a small booster pump station at the reservoir outlet, modify existing elevations of the reservoir outlet and spillway piping as determined by an engineer, and install an ultrasonic reservoir level monitoring device to eliminate seepage losses and neutralize the potential effects of subsurface erosion, poor foundation conditions, low density embankment materials, and stability considerations. GFCSD customers are the beneficiaries of this project.

Name of Public Agency Approving Project: Grizzly Flats Community Services District

Name of Person or Agency Carrying Out Project: Grizzly Flats Community Services District

Exempt Status: **(check one)**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Existing Facilities- Section 15301 and Replacement or Reconstruction-Section 15302
- ☐ Statutory Exemptions. State code number:

Reasons why project is exempt:
Installation of an impermeable material liner over an existing clay liner to eliminate seepage and address reservoir physical conditions and installation of a reservoir level monitoring device are Class 1 activities under Section 15301. Construction of a small booster pump station at the reservoir outlet is a replacement/reconstruction of an existing utility system/facility involving negligible or no expansion of reservoir capacity. This is a Class 2 activity outlined under Section 15302.

Lead Agency Contact Person: Robert Hovland, General Manager Area Code/Telephone/Extension: (530) 622-9626

If filed by applicant:
1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☒ Yes ☐ No

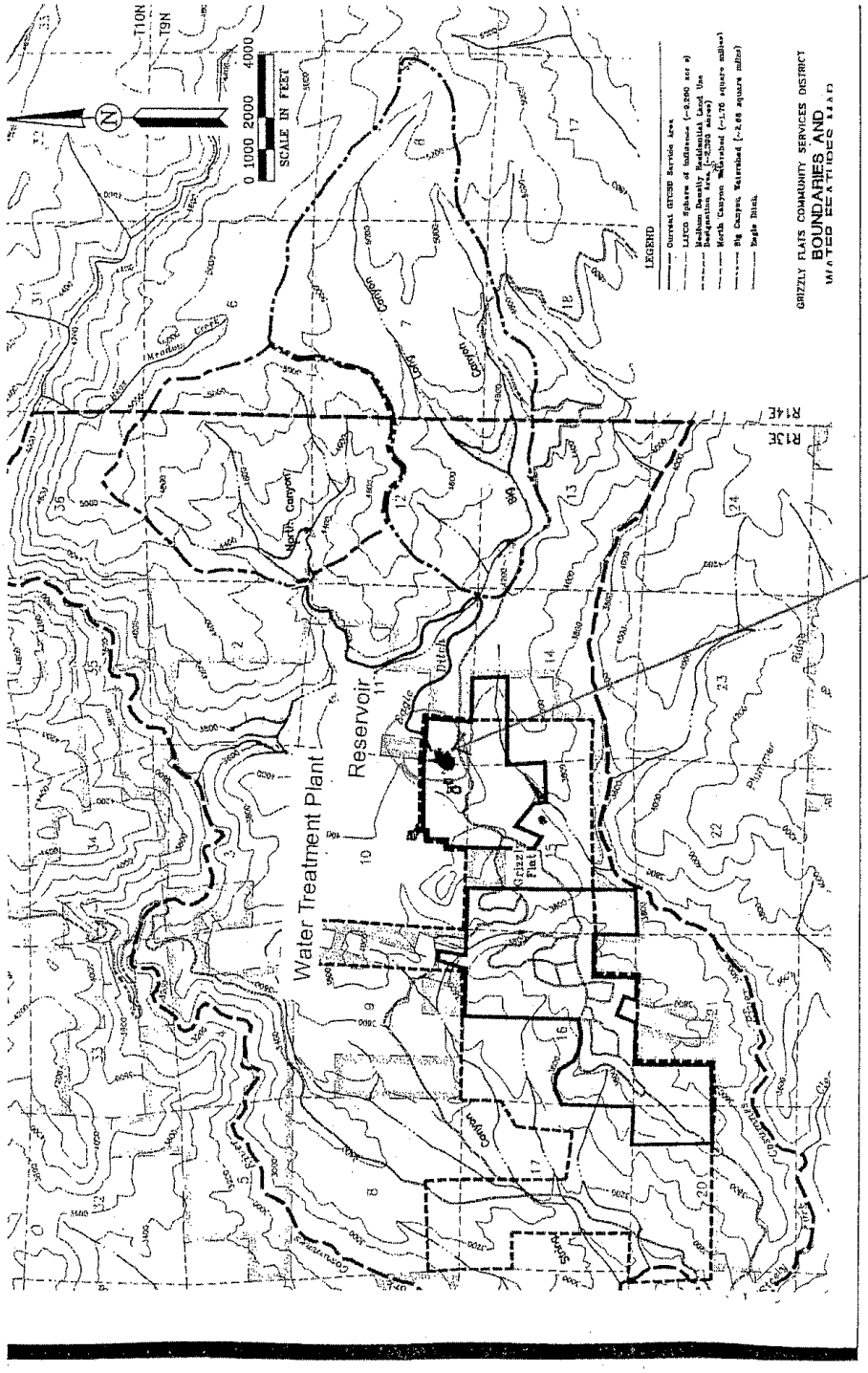
Signature: Date: 4/16/09 Title: GFCSD General Manager

☒ Signed by Lead Agency
☐ Signed by Applicant

Date received for filing at OPR:

Revised 2005

28



Sly Park Quadrangle

(Not to Scale)

Project Location

Grizzly Flats CSD
Reservoir Improvements
Project Location Map

State of California—The Resources Agency
DEPARTMENT OF FISH AND GAME
2009 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# 388791

STATE CLEARING HOUSE # *(If applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY: Grizzly Flats Community Services Dist.

DATE: 4-16-09

COUNTY/STATE AGENCY OF FILING: EDC Recorder clerk

DOCUMENT NUMBER: P09-65

PROJECT TITLE: Grizzly Flats CSD Reservoir Improvements Project

PROJECT APPLICANT NAME: Robert Hovland

PHONE NUMBER: 530 (622) 9629

PROJECT APPLICANT ADDRESS: PO Box 250

CITY: Grizzly Flats

STATE: CA

ZIP CODE: 95636

PROJECT APPLICANT *(Check appropriate box):*
- [x] Local Public Agency
- [ ] School District
- [ ] Other Special District
- [ ] State Agency
- [ ] Private Entity

CHECK APPLICABLE FEES:

[ ] Environmental Impact Report	$2,768.25	$
[ ] Negative Declaration	$1,993.00	$
[ ] Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$
[ ] Projects Subject to Certified Regulatory Programs	$941.25	$
[ ] County Administrative Fee	$50.00	$
[x] Project that is exempt from fees		
[ ] Notice of Exemption		
[ ] DFG No. Effect Determination (Form Attached)		
[ ] Other		$

PAYMENT METHOD:
- [ ] Cash
- [ ] Credit
- [ ] Check
- [ ] Other

TOTAL RECEIVED $ 0

SIGNATURE: X Kristin Vedell

TITLE: deputy

WHITE - PROJECT APPLICANT | YELLOW - DFG/ASB | PINK - LEAD AGENCY | GOLDEN ROD - COUNTY CLERK | FG 753.5a (Rev. 7/08)

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

LEAK DETECTION AND REPAIR

Infrastructure Reliability, Conservation, and Efficiency Program

OVERVIEW

The proposed project would reduce the amount of water loss due to undetected leaks in the treated-water distribution systems in the community of Grizzly Flats with the installation and monitoring of data logging leak correlators. Frequent interrogation and downloading of the data loggers will reduce the amount of time between when the leak occurs and when it is detected and repaired. Timely detection and repair of water leaks will reduce treated-water losses, increasing water use efficiency and optimizing the use of water resources.

With limited seasonal storage, the critical issue facing the GFCSD is meeting domestic water demand and fire suppression needs, especially in the late summer and fall months when stream flows are at their lowest stages. Leak detection and repair will make more efficient use of existing water infrastructure and ensure that water is available to meet existing demands and fire suppression needs (see the GFCSD Leak Detection and Repair Map, below, which illustrates the district's boundaries, line sizes and parcelization).

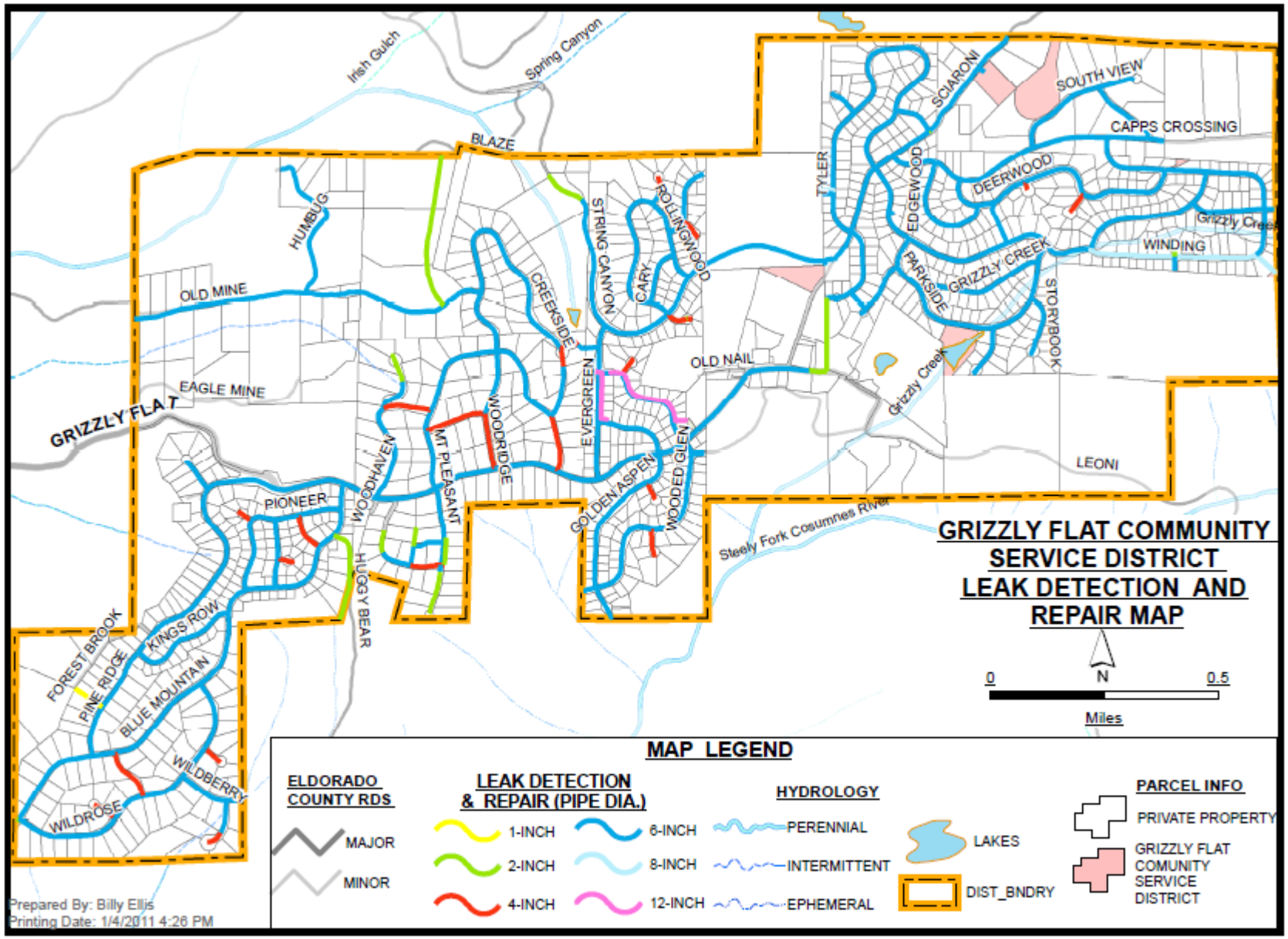
The current GFCSD distribution system has been partially but not entirely mapped using Autocad. An updated and comprehensive electronic database and mapping system is needed in order to develop all types of future planning as well as implementation projects including capital improvement needs assessments and drought preparedness.

Condition of Piping System

The GFCSD water system is over 40 years old and consists of 25,248 feet, or approximately five miles, of one-inch to eight-inch pipeline that delivers water to over 600 residential accounts. The main lines are primarily asbestos cement and the service lines are thin-walled PVC with inadequate pressure ratings (less than Schedule 40). The pipelines were constructed with native backfill, without the benefit of engineered pipe zone material. As a result, point loads are a common cause of the ever increasing trend of waterline leaks and breaks, with three to five service or main line breaks per year. Based on a Las Vegas Valley Water District leak detection summary report, leakage can range from one gallon per minute (gpm) for valve and meter leaks to 30 gpm or more for mainline breaks. Just ten meter/ service line leaks at one gpm equates to 16 acre-feet per year of lost water.

Threat of Drought

Recent drought planning efforts in El Dorado County indicate the susceptibility of the GFCSD water supply to drought with current demand levels. GFCSD is facing an estimated shortfall of 45 acre-feet in the second and third year of a three-year design drought that uses 1976, 1977, and a repeat of 1977 hydrology. More efficient use of current water supplies will reduce the impacts of drought.


GRIZZLY FLAT COMMUNITY SERVICE DISTRICT LEAK DETECTION AND REPAIR MAP
0
0.5
N
Miles
MAP LEGEND
ELDORADO COUNTY RDS
MAJOR
MINOR
LEAK DETECTION & REPAIR (PIPE DIA.)
1-INCH
2-INCH
4-INCH
6-INCH
8-INCH
12-INCH
HYDROLOGY
PERENNIAL
INTERMITTENT
EPHEMERAL
LAKES
DIST_BNDRY
PARCEL INFO
PRIVATE PROPERTY
GRIZZLY FLAT COMUNITY SERVICE DISTRICT
Prepared By: Billy Ellis
Printing Date: 1/4/2011 4:26 PM
GRIZZLY FLAT
Irish Gulch
Spring Canyon
BLAZE
HUMBUG
OLD MINE
EAGLE MINE
CREEKSIDE
STRING CANYON
CARY
ROLLINGWOOD
EVERGREEN
OLD NAIL
WOODRIDGE
MT PLEASANT
WOODHAVEN
PIONEER
HUGGY BEAR
GOLDEN ASPEN
WOODED GLEN
TYLER
SCIARONI
SOUTH VIEW
CAPPS CROSSING
EDGEWOOD
DEERWOOD
PARKSIDE
GRIZZLY CREEK
WINDING
STORYBOOK
Grizzly Creek
LEONI
Steely Fork Cosumnes River
FOREST BROOK
PINE RIDGE
KINGS ROW
BLUE MOUNTAIN
WILDBERRY
WILDROSE

WORK PLAN TASKS

The scope of this project is to improve system efficiency and reliability for the District by reducing water loss due to currently undetected leaks. The proposed project will involve an investigation into leak detection equipment procurement based on the needs of the GFCSD. Staff will be trained how to use and operate the equipment purchased by GFCSD for long-term benefits. An initial leak detection survey will be performed by either the leak detection equipment provider's technical staff or a qualified consultant, while training District staff on the use of the equipment. The survey will identify and locate leaks so that a priority list or "strategy" can be developed to repair the leaks. The high-priority leak repairs will be conducted by private contractors through a bidding process. District crews will make the remaining repairs through their ongoing normal maintenance activities.

After the detected leaks are repaired, annual system surveys will be conducted by District staff, with the grant-purchased equipment, to identify newly developing leaks and reduce the amount of time between when a leak occurs and when it is detected and repaired. With the District's limited operations staff, the surveys and repairs will be done on a five-year rotating schedule. In other words, one fifth of the system will be surveyed and repaired each year. Timely detection and repair of water leaks will reduce treated-water losses, increasing water use efficiency and optimizing the use of water resources.

The GIS component of the project will allow GFCSD to contract with a professional GIS consultant to conduct in-field mapping and data collection of the basic water system infrastructure using Global Positioning Systems (GPS) and ArcPad. The proposed ArcPad software is compatible with the existing Autocad system that display various infrastructure components. ArcPad includes advanced GIS and GPS capabilities for capturing, editing, and displaying geographic information quickly and efficiently and it will develop a comprehensive database by building off and updating the existing Autocad database currently used by Nevada City staff. Using AutoCad, critical data can be checked in and out of a multi-user or personal geodatabase. ArcPad is part of an enterprise GIS solution and integrates directly with ArcGIS Desktop and ArcGIS Server. ArcView is a geographic information system software used for visualizing, managing, creating, and analyzing geographic data. ArcView enhances the ability to understand the geographic context of data, allowing the reader to see relationships and identify patterns in new ways.

Budget Category (a): Direct Project Administration Costs

Task 1: Administration and Management

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by GFCSD and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and

reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

Deliverables:

- Preparation of invoices and other deliverables as required.
- Accurate and accessible records

Task 2: Labor Compliance Program

GFCSD will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are itemized in detail in the Introduction to the CABY Program.

Deliverables:

- Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

Task 3: Reporting

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWMG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

Deliverables:

- Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- Submission of quarterly reports to Nevada City and to the CABY-RWMG to enable their tracking of project status.

Budget Category (b): Land Purchase/Easement

Land Easements

No land easements are required for project implementation. With the exception of one section of pipeline connecting two units of the subdivision, all of the District's facilities are within either dedicated waterline easements or road and public utilities easements. If any repairs are required along the section of pipe that does not lie within an easement, District crews will make the repair under their prescriptive easement authority. Survey work along this section of line can be done from areas that are within easements.

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Task 4: Assessment and Evaluation (Planning)
Grizzly Flats CSD proposes to purchase leak detection equipment and train staff in its use. In this way the District can both proactively and reactively identify leak locations and more efficiently utilize the existing water system infrastructure. The District has determined that developing the capacity to detect leaks will be more cost-efficient than subcontracting an annual leak survey. Furthermore, the capacity to respond immediately to potential leaks will reduce the aggregated cost of leak repair.

The District has conducted preliminary investigations of leak detection equipment and believes that, due to cost and its relatively small system, portable sounding and listening equipment is appropriate. Fluid Conservation Systems has a portable system that includes a Soundsens self-contained correlators, data logger, and Windows-based software that processes data and can play back the audio signals and superimpose the approximated leak location on a map (*see Exhibit 1 for the specifications and capabilities of this system*). The final equipment selection will be determined within this task.

The following tasks outline the steps needed to plan the leak detection program.

Task 4.1: Identify Technical Needs and Requirements
This task will involve a review of the existing water system infrastructure to determine the type of leak detection equipment best suited for the GFCSD.

Task 4.2: Distribute Specifications, Request Proposals, and Negotiate Equipment Purchase Contract
This task will involve an assessment of various manufacturers and negotiation of a contract to purchase leak detection equipment, provide survey services, and train staff.

Task 4.3: Train Staff to Use Equipment
This task will involve District staff receiving classroom and field training as the leak detection contractor surveys the system for leaks.

Task 4.4: Compile Electronic GIS Database of Water System Infrastructure
This task will involve a review of existing data, drawings and maps and consolidating and organizing the existing data as needed. GIS equipment will be purchased that is compatible with existing Autocad files so it can be converted to ArcView and vice-versa, as needed. This task will also collect GPS data of basic water system infrastructure such as distribution lines and water treatment facility using ArcPad software. Data will be manipulated and digitized to create a comprehensive database of the existing infrastructure. The database/maps will be field-verified and updated, as necessary.

<u>Deliverables</u>:

- Final list of technical needs and requirements for system leak detection.
- System specs and RFP.
- Equipment purchase contract.
- Staff training records and meeting notes.

Select Design Plans for Grizzly Flats Leak Detection and Repair Program
The exact characteristics of each leak are not yet known; therefore, the District will use the El Dorado Irrigation District's "Water, Sewer, and Recycled Water Design and Construction Standards" for use by leak repair persons when repairing designated leaks. This document covers a range potential leak types, and therefore will be useful on the Grizzly Flats system. These drawings and specifications will be used as appropriate to direct repair activities. In addition, the engineers and other experts who compiled this information are included in a collaborative water use efficiency group of which GFCSD is a member (the El Dorado County Drought Interagency Coordination Council, or DICC), so any interpretation help needed will be available to the district.

Deliverables:

- Completed EID Water Sewer, and Recycled Water Design and Construction Standards document.

Task 5: Environmental Documentation
A Categorical Exemption for the project has been prepared and will be filed immediately upon negotiation of the contract agreement.

Deliverables:

- Approved and filed CEQA documentation for all projects (Categorical Exemption)

Permitting
No permits are required to detect and repair leaks on the GFCSD system.

Budget Category (d): Construction/Implementation

Task 6: Pre-Construction Contracting for all Projects - Bid Advertisement, Award, Project Management
GFCSD has established procedures and protocols for advertising, opening, and evaluating bids for construction-related services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to identify the construction company selected to construct the repairs.

Pre-construction activities include, but are not limited to: developing technical specifications to support publication of the bid materials, a pre-bid meeting to respond to contractor questions (as required), review of submitted materials for completeness and qualifications/ experience, and award of the contract in accordance with the applicable Public Contract Codes.

Deliverables:

- Advertisement for bids.
- Notes from the pre-bid contractors meeting (if appropriate).

- Records indicating bid evaluation process.
- Board meeting notes with contract award records.

Task 7: Mobilization and Site Preparation
The intent of this task is to initiate the implementation of the leak detection and repair program by purchasing the leak detection equipment and completing the training required for staff to use it. GFCSD staff will have already determined the type and quantity of equipment that will be required to implement the project as part of Task 4.

Task 7.1: Equipment Procurement
The equipment procurement will consist purchasing the equipment that was bid in Task 8.

Task 7.2: System Surveyed
The goal of this task is for the leak detection contractor to fully survey the system to identify and pinpoint the location of leaks using portable listening and correlation equipment. The contractor will magnetically attach correlation pods to fittings within the pipeline network. Data gathering begins after a preset interval; units are then downloaded and processed. In more difficult locations, night work may be required. Data can be downloaded to a laptop in the field or an office PC. The software automatically compares and grades results to produce areas of interest and indicates these on a pipe schematic. The manufacturer's software and water main base maps will be installed on the computer. Monitoring sites need to be determined and located with a GPS unit. When possible, and at least four hours within the grant period, GFCSD staff will attend the leak detection sessions in order to learn how to use the equipment.

Deliverables:
- Leak detection equipment delivered.
- Data logger software delivered and installed.
- Spreadsheet of each monitoring site with GIS location, site number, and correlator on site.
- Data gathering software installed on field laptop.
- Correlators deployed.
- All location information entered into software.
- System analysis report.
- Timesheet or calendar records of staff spending at least 4 hours with the contracted system surveyor.

Task 8: Implement Leak Detection and Repair Program
After the initial system analysis/survey is conducted, the leak detection contractor can begin collecting data to determine if there are any leaks within the system.

Task 8.1: Download Logger Records onto Leak Detection Software
To do this, the operator will download the data at the corrolator site, analyze the data using the software, and then cue the loggers to find the exact location of any identified leaks.

Task 8.2: Prioritize Detected Leaks
Every leak encountered will be reported, and will include location, date of discovery, type of pipe, and estimate of loss volume. The order that detected leaks are repaired is dependent on the severity of the leak and the cost/benefit analysis completed. A better cost/benefit ratio (higher benefits than costs) will indicate a higher repair priority.

Task 8.3: Repair High-Priority Leaks
High-priority leaks will be repaired by a contractor within the grant scope of work and per the EID Water Sewer, and Recycled Water Design and Construction Standards document. Repair information will be submitted as a component of the quarterly reports. The leaks not repaired as "priority" within this evaluation system will be repaired by District crews as part of their normal maintenance activities, and as schedule permits.

Deliverables:

- Records of system components/locations surveyed.
- A record of all leaks detected, including location, date located, approximate size of leak, and where it is in the priority for repair.
- Data detailing the cost/benefit analysis and ratio for each leak.
- Spreadsheet listing all leaks repaired, including date, cost, and type of repair.
- Leak repair reports.

Task 9: Demobilization, Program Evaluation and Reporting
An ongoing program of evaluation and reporting will be undertaken to determine the impact the leak detection program. This program will consist of an annual water audit (to assess the performance of the system and the leak detection equipment and software) using the free AWWA software performance indicators of "gallons per day per service connection" and "gallons per day per mile of water main," evaluation of leak reports to determine the efficacy of the program, and an annual system status report to quantify both leaks repaired and ongoing system maintenance requirements (*see Exhibit 2 at the end of this section for examples of the Leak Detection and Repair reporting forms that will be used by PCWA during project implementation*).

GFCSD will perform annual water audits by utilizing the AWWA Water Audit worksheet. Water audits will be performed prior to project implementation and each year thereafter to assess the performance of each water distribution system. Because the Grizzly Flats system is too small for the AWWA Water Audit to provide an Infrastructure Leakage Index (ILI) value and Unavoidable Annual Real Loss (UARL) calculations, performance indicators are the gallons of loss per service connection per day and gallons of loss per mile of water main per day. The annual audit will be prepared and supplied to CABY for review.

As part of Task 10, reports for each leak repair will be created identifying the location of the leak, estimated leakage rate, pipe material, type of leak (i.e., water main, service lateral, meter connection, etc.), date leak was repaired, estimated water loss, and the labor and materials required to repair the leak. These incidental reports will then be summarized in an Annual Leak Repair Report (ALRR), which will also be provided to CABY for review. The ALRR will serve as an important source for planning future infrastructure projects, analyzing the effectiveness of the project, quantifying the water saved, and as a model for agencies contemplating the suitability of portable data collection equipment.

Deliverables:

- Annual AWWA water audit report.
- Percent loss calculation.
- Annual Leak Repair Report.

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

Environmental Compliance

This project is anticipated to be categorically exempt, and therefore will not require associated environmental compliance or mitigation measures to be implemented. Because GFCSD cannot know for sure the leaks that will be discovered in the system, if any environmental compliance is found to be necessary for leak repair, it will be completed at that time.

Budget Category (f): Construction Administration

Task 10: Direct Construction Administration

Senior GFCSD staff will serve as construction managers for the process, as they have for similar projects successfully completed by the district. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), and in-field problem solving during construction in response to unexpected field or system conditions.

Deliverables:

- Schedule of values, meeting minutes, inspection reports, 11- month warranty inspection report.

Budget Category (g): Other

Task 11: Develop and Maintain CABY Project-specific Webpage

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status update and other similar materials will be posted or linked to this webpage.

Deliverables:

- Project webpage hosted on CABY website, updated with all current project information.

Task 12: Data Management

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not.

Internal Deliverables:

- Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Pos- project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

Budget Category (h): Construction /Implementation Contingency

A 15 percent standard contingency is included in the budget and it is calculated based on industry norms.

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

LEAK DETECTION AND REPAIR

Infrastructure Reliability, Conservation, and Efficiency Program

EXHIBITS

1. Data Logger Description and Specifications
2. Correlating Noise Loggers Description and Specifications
3. Annual Leak Detection and Repair Summary Form

Exhibit 1

LoLog

Data Logger

FLOW MEASUREMENT DATA LOGGING LEAK DETECTION PRESSURE CONTROL ENVIRONMENTAL MONITORING

KEY BENEFITS

- Low cost.
- 5 year battery life in normal use.
- Reed switch type sensors.
- PD10 with inline battery box.
- Uni and Bi-directional flow.
- Internal or external pressure sensor.
- Local data download, via InfraRed interface into Laptop, PC or PDA.
- Rugged metal loaded plastic case.
- Fully sealed & submersible, IP68.

LoLog is highly flexible yet simple and economical data logger designed to provide information on the performance of water supply networks. Highly portable, it can be applied to virtually any data logging application in minutes.

Once installed, LoLog can operate unattended until you need the data. It is ideal for harsh applications. LoLog is available with a single input channel (flow or pressure) and is completely waterproof, submersible and battery powered. Downloaded data can be analysed using supplied software to show data trends, make comparisons, create reports and keep archives.

Typical Applications

Customer Metering Diagnostics
LoLog can be quickly applied when it is necessary to carry out an urgent investigation. Programmed in minutes, LoLog can be attached to any pulse output meter and will immediately start logging.

Demand Management Assessments
LoLog is widely used to help planners assess demand in residential areas. The logger is small and light and fits easily into boundary boxes.

District Monitoring
LoLog is highly economical and is well suited to connection to distribution networks where telemetry is not desirable or appropriate.

5 YEAR BATTERY LIFE | PORTABLE | INFRARED | RUGGED DESIGN

FCS
Fluid Conservation Systems

For more information call (513) 831-9335
or visit www.fluidconservation.com
A HALMA COMPANY

LoLog

Data Logger

FLOW MEASUREMENT DATA LOGGING LEAK DETECTION PRESSURE CONTROL ENVIRONMENTAL MONITORING

Sensor Input Options	Digital	Uni- or Bi-directional pulse.
		Reed switch contact closure type or equivalent sensors including Kent LRP & PU10 pulse heads, Aquamag/Magmaster.
		Up to 64 pulses per second.
	or Analogue	Internal Pressure Transducer
		0-20 bar / 0-200 metres head / 0-300 psig, repeatability <0.1%.
		4-20mA from isolated sensor.
Logging Features	Memory	Recording 16,000 readings in continuous (cyclic) operation.
	Frequency	Sample Periods
		In 1 second increments from 1 to 60 seconds.
		Then 1 minute increments from 1 to 60 minutes.
		Then 1 hour increments from 1 to 24 hours
	Logger ID	Up to 8 alphanumeric characters.
	Site ID	Up to 127 alphanumeric characters.
	Clock	On board 24 hour real time clock with date facility.
	Count and Event Logging Modes.	Count and Event (PIT) logging modes, with bi-directional capability
Communication	Serial	RS232 by infra-red port for connection to a PDA hnd held computer,
		laptop, or desktop PC 9,600 Baud..
Physical	Dimensions	4.5"H x 2.6"W x 1.2"D (115mm H x 67mm W x 35D mm D)
	Construction	Rugged metal loaded plastic enclosure.
	Weight	0.5 lb (210g).
	Operating Temp	-5 to +160°F (-20 to +70°C)
	Ingress protection	IP68 submersible
	Power	Lithium battery operational for 5 years under normal operating conditions.

FCS reserve the right to change the specification of any product without prior notice.

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Exhibit 2

SoundSens "i"

Correlating Noise Loggers

FLOW MEASUREMENT DATA LOGGING LEAK DETECTION PRESSURE CONTROL ENVIRONMENTAL MONITORING

KEY BENEFITS

- User can setup loggers and download data without using PC.
- Quick setup for day or night recordings.
- Custom recording setup available.
- Multiple downloads of data can be stored.
- USB communications with PC.
- Infra-Red wireless connection with loggers.
- Simultaneous communications with all loggers for fast recording setup and data download.
- LCD screen with backlight.
- Push button interface.
- Battery LED indicates when battery is running low.
- 5 year battery life for loggers.
- Multiple cases can link together to set up and download.

The new Soundsens "i" system of correlating loggers and the latest software has been designed for high performance, versatility and speed of operations in the field.

Operators can set up and download data without a PC if preferred. The unit can store up to a weeks survey data before downloading to a PC, thereby making field operations more flexible.

Loggers are downloaded via infra-red signal and so there is no requirement for direct physical connection via wires. This makes deployment and downloading much faster.

Boxes of loggers can be connected together to allow simultaneous programming and downloading of data from all loggers. This, combined with a USB connection for easy communication with a PC means that leak detection is quick and efficient.

With a typical five year battery life, LCD screen with backlight and simple push button interface, the Soundsens "i" is ready for action day or night.

5 YEAR BATTERY LIFE | CASE SET-UP | PORTABLE | INFRARED

Fcs
Fluid Conservation Systems

For more information call (513) 831-9335
or visit www.fluidconservation.com
A HALMA COMPANY

SoundSens "i"

Correlating Noise Loggers

Sensor Input		Internal High Performance Accelerometer to pickup audible noise in pipeline
	Attachment of logger/ sensor	Powerful magnetic coupling to attach Correlator Pod to pipework / valve
Logging Features	Memory	Recording 650,000 readings. (memory expandable to 1.35 million readings on request) Individual measurements can be pre-programmed into a series of 32 separate recordings
	Sample Rate	User adjustable
	Delayed start	Either start at a nominated time, or after set delay period, e.g; for unmanned night-time correlation
	Logger ID	Factory set Logger ID number Also user can enter another logger Identity number to simplify recognition for operators
	Clock	On board 24 hour real time clock with date facility.
	Software	Compatible with Radcom "SoundSens" analysis software
Communications	Case to PC	Via USB connection to PC for faster download
	Case to Pods	Simultaneous communication from case to pod via infra red
	Case to Case	Via 9 pin RS232
Physical	Dimensions	Individual Advanced Correlator Pod now with reduced dimensions: 6.3" H x 2.6" D (160mm H incl Magnet x 67mm D)
	Construction	CPod: Die-cast aluminium enclosure, powdercoat spray painted Carry Case: Rugged construction with Aluminium Cladding
	Weight	Individual Correlator Pod: 1.54 lb (0.7 kg)
	Carry Case	Supplied in 2 - 4 pod case or 6 - 8 pod case (Any number of cases can be connected together)
	Operating temp	14 to +122°F (-10 to +50°C)
	Water protection	Individual Correlator Pods: IP68 submersible
	Power	Correlator pod has Lithium-ion cell operational for 5 years under normal operating conditions. Carry Case interface unit contains NiCad battery which typically requires charging monthly or less. 240 /110v switch mode charger supplied in kit with mains lead.

FCS reserve the right to change the specification of any product without prior notice.

FLOW MEASUREMENT DATA LOGGING LEAK DETECTION PRESSURE CONTROL ENVIRONMENTAL MONITORING

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Exhibit 3

ANNUAL LEAK DETECTION AND REPAIR PROJECT SUMMARY

Year: _____

Agency: Placer County Water Agency

Report Prepared By: _____

LEAK DETECTION SURVEY

Total Number of Days Leak Surveys Were Conducted: _____

First Survey Date: _____ Last Survey Date: _____

Number of Suspected Leaks: _____ Number of Pinpointed Leaks: _____

Survey Time: _____ Hours

Pinpointing Time: _____ Hours

Total number of visible leaks reported from other sources (not discovered during leak detection survey) _____

LEAK REPAIR SUMMARY

First leak repair made: _____ Last leak repair made: _____

Number of Repairs Needing Excavation: _____ Number of Repairs Not Needing Excavation: _____ Total Number of Repaired Leaks: _____

Total Water Losses From Excavated Leaks: _____ gpm Total Water Losses from Non-Excavated Leaks: _____ gpm Total Water Losses: _____ gpm

Excavated Leak Repair Costs		Nonexcavated Leak Repair Costs		Total Repair Costs	
Materials	_____	Materials	_____	Materials	_____
Labor	_____	Labor	_____	Labor	_____
Equipment	_____	Equipment	_____	Equipment	_____
Other	_____	Other	_____	Other	_____
Subtotal		Subtotal		Total	

Grizzly Flats
Integrated Water Shortage Contingency, Drought Preparedness, and Comprehensive Water Conservation Planning Program

As discussed in the introduction and sponsor description, Grizzly Flats is a small community in Nevada County with aging infrastructure delivering water from a single small stream. This supply infrastructure, in many cases, is functionally obsolete.

Integrated Water Shortage Contingency and Conservation Planning

Residents of the Sierra Nevada generally depend on surface water from the watersheds of the mountain range for their water supply. Typically, precipitation in the form of snow is the primary source of water, as the Sierra snowpack serves as natural storage for most of the region's annual precipitation. The Sierra watersheds experience wide variations in annual precipitation and therefore in annual water supply. The region has experienced significant droughts in the past and climate change predictions indicate a potential for wide variability in the future. Population growth in the region will serve to amplify the severity of drought impacts. Without careful planning, small, rural, and disadvantaged water purveyors will be unable to respond to future precipitation variability.

Strategic use of conservation can help extend the value and life of infrastructure assets used in water supply (and wastewater treatment), while also extending the beneficial investment of public and ratepayer funds. Small and disadvantaged water systems can benefit from efficiency and conservation as well as larger systems. In fact, the potential for eliminating, downsizing, or postponing capital improvement projects through strategic supply and demand management may be more important for smaller systems given their unique financial and capacity constraints. At the same time, small systems' ability to devote resources to conservation and efficiency planning may be limited. The demand management component of this project is essential for allowing Grizzly Flats Community Services District the flexibility necessary to deal with realities of climate change and water supply constraints.

The Integrated Water Shortage Contingency and Conservation Plan components, in the case of Grizzly Flats CS, include: 1) integrating the already in-place Grizzly Flats CSD Drought Action Plan with capital improvement planning, and 2) enhancing customer conservation options and behavior. It is the goal of the project management team that the planning activities will be nested, and seek to provide the District with the capacity to use adaptive management

strategies for future water year scenarios. That is, the Customer Water Use Efficiency Implementation Plan, wherein customers work with water agency staff and the project management team to identify best practices to emphasize in the community into the future, will feed priorities into the evolving Drought Action Plan. The Grizzly Flats CSD Drought Action Plan, wherein District priorities for managing water scarcity from climate- or infrastructure-induced shortages are identified and described, will feed into the Capital Improvement Plan (CIP). The CIP is the document that will examine the multi-year, higher-cost projects for water supply management.

The integrated nature of these plans emphasize conservation, customer involvement, reducing vulnerability to climate change, and providing clear and prioritized steps to mitigate the impacts of drought. Successful conservation efforts can also curb peak system demand, deferring the need for construction of new treatment, storage, and conveyance facilities, as well as reducing energy costs and usage and wastewater infrastructure demands, allowing districts to focus on replacement or rehabilitation of older existing infrastructure.

The updated system-wide GIS mapping (described as a component of the Leak Detection workplan) is a necessary precursor to integrating this effort with the Capital Improvement Plan (see below).

Customer Water Use Efficiency Initiative

Although not an Urban Water Agency, Grizzly Flats CSD has determined that meeting the 20%x2020 goals, as well as those articulated in AB 1420 (demand management measures corresponding with the Best Management Practices (BMPs) in the CUWCC) is a desirable and appropriate goal for the District, within its fiscal constraints. To achieve this goal, the District has determined that the preparation of a Water Use Efficiency Plan is a critical activity. The Customer Water Use Efficiency Initiative (Initiative) will include public outreach, education and workshop activities, distribution of retrofit kits, and preparation of an action plan to guide implementation of ongoing conservation activities.

Public Outreach

The Capital Improvement Plans (above) will focus on creating a nexus between conservation, drought response, and infrastructure planning. The Conservation Plans will focus on demand management by reducing water consumption through education and outreach in the local communities. The California Urban Water Conservation Council (CUWCC) foundational Best Management Practices, while designed for implementation by urban water providers, provide reasonable targets for smaller jurisdictions based on their individual context and resources. The goal of this program would be to reduce water consumption on a per capita basis through the provision of information shared with the public to encourage the conservation of the shared resource as a habit, as well as in response to identified drought stages (as defined in the drought action plan above). Effective conservation outreach efforts focus on bridging the gap between thought and action to induce adoption of new behaviors. The American Water Works Association has produced an excellent *Water Conservation Communications Guide* to help water agencies in communicating the conservation message with customers. It is available online:

(http://www.awwa.org/Resources/Waterwiser.cfm?ItemNumber=55474&navItemNumber=55644), along with print resources for mailing information, news article writing, and examples of other successful programs around the nation (AWWA, 2010). See Exhibit 1 for examples of the materials available to Grizzly Flats.

This task will include, at a minimum, the dispersal of print materials in customer bills, available at grocery stores and other high-traffic community gathering places, and the production and dispersal of at least two news releases on the Grizzly Flats CSD water conservation effort.

Education and Workshop Activities

Several workshops will be provided to the customers of Grizzly Flats CSD. These workshops will include topics such as irrigation efficiency, options for water conservation in the home, and the proper maintenance and installation of distributed plumbing fixtures. Options such as turf removal, car and driveway washing disincentives, use of smart irrigation controllers, and general options for conservation will all be considered as part of the local outreach. The AWWA has developed an extensive set of materials in support of conservation. These materials, in the *Water Conservation Communication Guide* (AWWA, 2010), will be used in support of a concerted outreach campaign.

NID has delivered irrigation efficiency workshops throughout their service area since 2008. These materials will be refined to respond to the needs of the CSD service area and customers. The goal of this consumer outreach is to measurably reduce summer irrigation water use and year-round residential water consumption through a series of at least three irrigation and indoor water use efficiency workshops, as well as the offering of lectures, customer-focused Board meetings, and the involvement of customers in planning water use efficiency activities.

Distribution of Retrofit Kits and Toilet Rebates

Within the Grizzly Flats CSD service area, upgrades to original plumbing fixtures usually occur only upon actual failure as opposed to ongoing fixture malfunction (e.g., drips and leaks). There are current State and national standards for plumbing fixtures that result in increased water savings when compared to older fixtures, even when applied/installed in older homes. Water agencies throughout the state often have the dispersal of "retrofit kits" as a component of their water conservation education/outreach efforts. This is even a component of the CUWCC's Best Management Practices (for more information, see the CUWCC website, programmatic BMP 3 [residential]: http://www.cuwcc.org/mou/bmp3-residential.aspx). Grizzly Flats has not done this type of outreach, and therefore has a large capacity for indoor residential water conservation. The table below shows what items will be included in a retrofit kit, and what savings are associated with those items.

Table 1.

Conservation Measure	Savings Effect (gallons per day per household)
Low-flow showerheads	5.8
Information regarding how to displace toilet reservoir water	4.2
Faucet aerators (2-3)	1.5
Toilet leak detection tablets	7.8

* Information taken from Chesnutt, T.W. et al, 1996

A side benefit of these water conservation fixtures is that their installation and use also results in corresponding energy savings from decreased water treatment, conveyance, and heating (Osann and Young, 1998).

The management team for this project will work with Grizzly Flats CSD to develop the specific methods for kit and information distribution. Best methods will be identified in collaboration with the community through the Public Outreach Program.

Toilet rebates have never been offered in the Grizzly Flats area. Accordingly, the potential for water conservation from this effort is broad. Most of the homes served by the Grizzly Flats CSD were built prior to 1992, and so water-conserving fixtures were not installed during the construction process. This proposal includes a request for 50 toilet rebates of $175 apiece. According to the California Urban Water Conservation Council, this size of program will save approximately 1000 gallons per day within the GFCSD service area[1].

Water Use Efficiency Implementation Plan

The goal of this plan is to provide demand-based strategies, methods, and options and District policies and practices for ongoing and durable conservation. The project team will be working with the Board of Directors and the customer base to identify the desired water conservation strategies most appropriate for the District to implement over time.

[1] CUWCC. 2000. BMP Costs and Savings Study. Sacramento, CA. July 2000.

The successes of the activities described above (i.e., public outreach, workshops and education efforts, and the distribution of retrofit kits), will be tracked as they are implemented. The observed and quantified outcomes of these efforts will be integrated with water conservation methods and strategies selected by the Board and customer base in Grizzly Flats for inclusion in the Water Use Efficiency Implementation Plan. The product of this work effort will be a concise, readily implementable description of appropriate policies and implementation actions. The implementation actions will be provided in a format that supports easy, low-co, and reliable implementation.

	Drought Action Plan	Capital Improvement Plan	Customer Conservation	Organizational Audit	Comment
Nevada City	X	X	X		Nevada City currently has no formal drought response policies or plan. Existing CIP addresses ongoing infrastructure improvement, but does not consider drought preparedness. No formal customer conservation, education, or fixture program currently exists.
WCWD	X	X	X	X	No drought action planning has been undertaken. The District does not currently have a CIP. No formal customer conservation, education, or fixture program currently exists. Evaluation of the sustainability and long-term viability of the District to provide adequate service to Washington residents is required. Evaluation will include possible rate structures, revised financial management policies, assessment of operational status of system infrastructure, evaluation of administrative and management systems, etc.
Grizzly Flats		X	X		The Grizzly Flats Drought Action Plan will serve as a model for Nevada City and WCWD. No additional planning is required. Existing CIP addresses ongoing infrastructure improvement, but does not consider drought preparedness. No formal customer conservation, education, or fixture program currently exists.
Alta and Colfax			X		PCWA has included Alta and Colfax in their long-term drought preparedness planning, so no additional planning is required. Likewise, PCWA has integrated CIP and drought response planning. However, no formal customer conservation and education programs currently exist.

Grizzly Flats
Integrated Drought and Conservation Planning Project

Budget Category (a): Direct Project Administration Costs

Task 1: Administration and Management
The goal of this task is to keep the project on-time and on-budget, keep all staff members and project participants informed of the billing procedure and timeline, and generally ensure smooth project implementation. Administrative tasks will include monthly billings to DWR, gathering appropriate documentation and support materials as required by DWR invoicing procedures, monitoring percent spent versus percent complete for each project task, and ensuring compliance with other requirements identified in the grant agreement.

Deliverables:

- Preparation of invoices and other deliverables, as required.

Task 2: Labor Compliance Program
Because there is no construction activity associated with this project, there is no requirement for a Labor Compliance Program.

Task 3: Reporting
In order to track the project's implementation and achievement of performance measures, reports will be prepared to provide DWR with details regarding the project's progress. The content and schedule for these reports will be identified and agreed upon with DWR through the grant agreement. The information compiled as part of the monthly invoice process will be consolidated and augmented as necessary during preparation of the quarterly reports. The final report for this project will be prepared based on the administrative record and the deliverables identified below. The final report will also include any components identified in the grant agreement.

Deliverables:

- Quarterly and final reports.

Budget Category (b): Land Purchase/Easement

This category is not applicable to this project.

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Because of the nature of this project, tasks implementing this project are listed under Budget Category (g): Other Costs, to maintain the programmatic integrity of budget and timeline.

Environmental Documentation
No environmental documentation is required for this project.

Permitting
No permits are required to implement this project.

Budget Category (d): Construction/Implementation

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

This category is not applicable to this project.

Budget Category (f): Construction Administration

Because the project will not result in construction activities, there is no need for construction administration.

Budget Category (g): Other Costs

A key component of the CABY strategy in outreach to rural and disadvantaged communities has been the provision of technical assistance and capacity building to each project sponsor. The goal of this assistance is to ensure that each of the project sponsors has a developed capacity to plan for chronic water shortages; to integrate water shortage contingency priorities into their long-term infrastructure planning; to provide customer-based conservation, and outreach and education, all resulting in measurable conservation outcomes. The tasks have intentionally been developed to progressively identify and refine an integrated, long-term water conservation and water shortage contingency planning capacity.

Task 4: Integrated Customer Water Use Efficiency Initiative
Though Grizzly Flats CSD is not an Urban Water Agency, the Board of Directors has determined that meeting the 20%x2020 goals, as well as those articulated in AB 1420 (demand management measures corresponding with the Best Management Practices (BMPs) in the CUWCC) is a desirable and appropriate goal for the District, within its fiscal constraints. To achieve this goal, the District has determined that the preparation of a Water Use Efficiency Plan is a critical activity. The Customer Water Use Efficiency Initiative (Initiative) will include public outreach, education and workshop activities, distribution of retrofit kits, and preparation of an action plan to guide implementation of ongoing conservation activities.

Task 4.1: Public Outreach
The goal of this task is to create a meaningful avenue of communication between Grizzly Flats water customers, the City Council, and project management team. This task will include the handout of printed educational materials, as well as providing a venue to receive public comments and questions. Because the Grizzly Flats community is so small, it is possible to conduct "town hall" style meeting events in key locations throughout the city. The focus of these meetings will be to provide a conceptual understanding of the various project components, to gather opinions and insights from City customers, to form an advisory committee to assist in completing the various plans and recommendations, and to provide a venue for big-picture water conservation and system operation strategies.

Deliverables:

- Handouts and printed materials.
- Two community "town hall" style meetings.
- Memoranda summarizing public questions and input.

Task 4.2: Education and Workshop Activities

This task is aimed at developing the customer conservation program components including the educational workshops and the water conserving fixture program. The goal of this task will be to deliver a series of workshops addressing irrigation efficiency and opportunities for residential water conservation.

Deliverables:

- Workshop agendas, materials, scheduling, logistics, and advertising materials.
- Post-workshop surveys.
- Two water conservation workshops.

Task 4.3: Distribution of Retrofit Kits and Toilet Rebates

The goal of this task is to distribute retrofit kits, which will include: low-flow showerheads, toilet leak tablets, two or three faucet aerators, and information on how to displace toilet reservoir water. Toilet rebates are also a component of this task. The management team for this project will work with Grizzly Flats to develop the specific methods for kit and toilet rebate distribution. Best methods will be identified in collaboration with the community through the Public Outreach Program, and implemented accordingly.

Deliverables:

- 150 plumbing fixture retrofit kits purchased and distributed (one for each residence plus extra for larger homes).
- 50 ultra low flow toilets purchased by GFCSD customers, installed, and rebated by GFCSD staff.

Task 4.4: Comprehensive Drought and Conservation Action Plan

The goal of this plan is to provide demand-based strategies, methods, and options and District policies and practices for ongoing and durable conservation. The project team will be working with the Board of Directors and the customer base to identify the desired water conservation strategies most appropriate for the District to implement over time.

Deliverables**:**

- Draft Water Use Efficiency Implementation Plan.
- Town hall meeting to discuss the Plan with notes summarizing meeting outcome.
- Final Water Use Efficiency Implementation Plan, including a specific process for implementing the Water Use Efficiency Implementation Plan.

Task 5: Develop and Maintain CABY Project-specific Webpage
The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status update and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverables:

- Project webpage hosted on CABY website, updated with all current project information.

Task 6: Data Management
The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state data bases as well as CABY members and the interested public using Data Management and Monitoring Deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). IN this case the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- Development, activation and maintenance of project-specific web page within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 – 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)
- Post project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56 - 57)

Budget Category (h): Construction /Implementation Contingency

This budget category is not necessary for this project.

Grizzly Flats
Integrated Water Shortage Contingency, Drought Preparedness, and Comprehensive Water Conservation Planning Program

EXHIBITS

1. Examples of AWWA and EPA resources available to Grizzly Flats

User's Guide

Check Up Program for Small Systems

Release 1.3.5

February 2010

EPA 816-R-010-003
February 2010
Office of Water (4606M)
epa.gov/safewater

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American Water Works Association
The Authoritative Resource on Safe Water

AWWA streamlines™

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Water news, advancements and practice — consolidating *MainStream* and *Waterweek*

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Volume 1, Number 10

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» Obama FY2010 budget: water increases in, earmarks out

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» Webcast offers pandemic flu answers

» Tuesday at ACE is for operators, good laughs

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» Journal AWWA: Biological treatment for perchlorate

» Bookshelf: Jar-test video

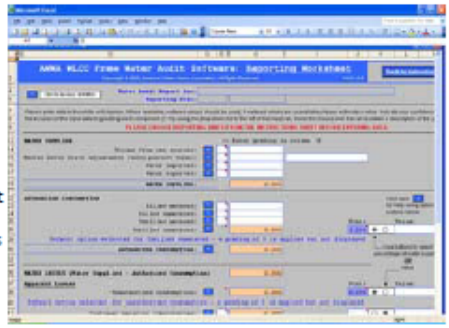
» Revised C203 available

» In memoriam: Peter Cook

TECHNOLOGY & PRACTICE

Free AWWA software makes water audits quick and easy

The AWWA Water Loss Control Committee's Water Audit Software v.4.0 is now available for free download, boasting some big new features.



Version 4.0 of AWWA's free Water Audit Software allows utilities to see which of their data collection efforts need improvement.

Although the software is not intended to provide a full and detailed water audit, it allows utilities to quickly compile a preliminary audit in the standardized and transparent manner advocated by AWWA, its creators say.

The software includes ten worksheets in Microsoft Excel spreadsheet file. Most of the data is entered on the second worksheet, which prompts the user to enter standard water supply information such as supplied water volume, customer consumption, distribution system attributes and loss quantities. Because many utilities don't typically tabulate all this data, the software allows the user to enter either known or estimated values, then calculates a variety of performance indicators useful for comparisons among utilities.

The biggest new feature of Version 4.0 is its "data grading" capability, which provides a basic validation of results. The user can assign a grading value, ranging from 1 to 10, to each piece of information he or she inputs. A 10 represents highly reliable, well validated data, while a grade of 1 reflects very crude data, such as rough estimates. Once all the grading cells have been filled in, a composite grading score is calculated and displayed at the bottom of the worksheet. The grading is based upon a scale of 100, and this score can be used as a basic validation for the audit.

The auditor can determine the status of the utility's data quality by reviewing the Loss Control Planning Worksheet, which provides planning guidance to the water utility. Utilities with a lower composite grading can focus program efforts on data collection and validation until their overall data quality becomes more reliable.

An additional new function is a priority listing of the most important three variables to target to improve the validity of the water audit data.

The AWWA Water Loss Control Committee's Free Water Audit Software Version 4.0 is available for download from AWWA's new Water Loss Control Web pages on AWWA's WaterWiser site.

Posted: 05/12/2009

M36, Third Edition (2009)

Unlock the Secrets of Water Loss Control with AWWA's M36 Water Audits and Loss Control Programs, Third Edition

AWWA is proud to release the much anticipated Third Edition of its popular M36 guidance manual on conducting water audits and implementing proactive water loss control programs.

Water Loss Control Links

WLC Basics
WLC Terms Defined
Apparent & Real Losses
Water Audit Method
Free Water Audit Software

What does M36, Third Edition provide?

- Clear steps to compile the water audit according to the new standard method co-developed by the International Water Association (IWA) and the American Water Works Association (AWWA)
- Rational terms, definitions and performance indicators that give water utilities objective ways to assess their water loss standing and reliably plan loss control activities
- Worksheets, sample calculations and references to AWWA's Free Water Audit Software
- Techniques to capture more revenue by controlling apparent losses in customer metering and billing operations, as well as unauthorized consumption
- Innovative technologies to move from reactive, "break and fix" leakage response to proactive leakage management featuring component analysis, pressure management, leak noise logging and other advanced technologies: successful approaches to minimize unnecessary source water withdrawals and excessive water production costs
- Structured guidance on planning the loss control program
- Considerations for small water utilities
- Case study accounts from small, medium and large water utilities

Why do water utilities need M36, Third Edition?

- High quality source water supplies are dwindling while populations are expanding and shifting
- Every day in the United States over six billion gallons of water withdrawn from rivers, lakes and wells never reaches a billed customer!
- Over 250,000 water main ruptures occur in the United States every year
- Worldwide the value of lost water and revenue is $15 billion annually
- Water utilities continually need to find ways to supply safe, efficient water and manage costs
- The Third Edition of the M36 is the first publication in North America to provide detailed and comprehensive instructions on the IWA/AWWA Water Audit Method
- Regulatory agencies have begun to focus on water utility efficiency in addition to water conservation by consumers
- Customers deserve value for their money; high losses compromise service and indirectly inflate water rates

Order your copy from the AWWA Bookstore

Who wrote M36, Third Edition?

- AWWA's Water Loss Control Committee is responsible to maintain the M36 publication and rewrote the Third Edition
- The Committee has many active members who are involved in water auditing, leakage management and revenue protection programs for water utilities across the world

Alta / Colfax

COMMUNITIES OF ALTA AND COLFAX

LEAK DETECTION AND REPAIR

Infrastructure Reliability, Conservation, and Efficiency Program

OVERVIEW

The small foothill communities of Alta and Colfax are located roughly 29 and 16 miles northeast of Auburn, respectively. These small communities receive water deliveries from Placer County Water Agency (PCWA). Accordingly, PCWA has invested in improvements to these systems, including performing soil identification studies (service areas overlaid on a soil map and types of soils surrounding canals noted), traditional leak detection surveys, and system monitoring. Now PCWA, with the communities of Alta and Colfax, proposes to install a network of correlating leak detection data loggers in these two communities to reduce water losses in the treated-water distribution systems.

These information gathering efforts have shown that the communities are located on cobbly loam soils, which readily absorb water from leaking treated-water lines typically without any above-ground indications. PCWA's metering system allows the agency to observe when water usage trends change; but these changes often do not become evident for several months, and some may have been present for years. In 2007, PCWA analyzed the District's water losses utilizing the American Water Works Association's (AWWA) water audit worksheet and discovered approximate annual treated-water losses of 38.3 percent in Alta and 28.1 percent in Colfax (55.2 and 170.6 acre-feet, respectively). In addition, previous grant projects have resulted in research and bidding regarding the type of data loggers, and the number of data loggers has been calculated. Grant funds are needed now because the cost of the equipment versus the economic cost of the water make the project prohibitive for the agency to implement on its own. Though a substantial amount of water will be saved by the timely detection and repair of leaks, the cost of the lost water compared to the cost of the equipment is prohibitive. Once a

leak (as evidenced by a change in water usage) is observed, it takes significant labor, survey, and construction costs for PCWA to identify the actual location of the leak.

The proposed project will allow PCWA to identify previously undetected leaks with increased accuracy and decreased labor and materials costs. Rather than having to perform a time- and labor-intensive traditional leak survey with a ground microphone and correlators, the proposed system will allow PCWA operators to remotely identify leaks with great accuracy (typically to within one foot of the leak). Once the network of correlating leak detection data loggers are installed, the loggers detect noises in the system on a nightly basis, log the information, and notify operators if leaks are "heard." The estimated annual treated-water savings associated with this project is 80 acre-feet per year.

Base maps have already been constructed for this project. However, during the course of this project, GIS maps with the logger locations will be overlaid onto the existing base map. The project will also identify the exact locations for the loggers, prepare the monitoring locations, deploy the loggers, install the software on a laptop to coordinate/correlate the loggers' data, and conduct ongoing monitoring of the network to identify leaks within a maximum time of two weeks.

The implementation of this project will have two primary outcomes: 1) reducing water loss and 2) increased system data. The project will reduce water loss because the loggers will provide PCWA with an increased ability to detect (and then repair) leaks within Alta and Colfax within a short time of occurrence. The project will increase data because the loggers will provide additional information on the Alta and Colfax water systems and the specific types of leaks occurring. While leak detection and analysis have been completed in the Sierra previously (within the El Dorado Irrigation District service area), it is seldom, if ever, completed on small urban systems (less than 3,000 acre-feet delivered or less than 3,000 connections). From this project, the suitability of the data loggers as a leak detection program on small urban water systems in the Sierra will be assessed and possibly implemented within other service areas with similar challenges of history, topography, and geology.

Map of Project Locations

WORK PLAN TASKS

Budget Category (a): Direct Project Administration Costs

Task 1: Administration and Management

The goal of this task is to keep the project on-time and on-budget, keep all staff members and project participants informed of the billing procedure and timeline, and generally ensure smooth project implementation. The tasks for this budget category will include all non-construction project administration activities performed by PCWA and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance of expense documentation, oversight of project scheduling/budget and contract/agreement compliance, and final invoice.

Deliverables:

- Final contract and any contract changes as agreed to with DWR
- Prepared invoices with supporting documentation
- Up-to-date project schedule
- Current tracking of expenses and project status.

Task 2: Labor Compliance Program

PCWA currently complies with California Labor Code statutes and regulations in all of its operations. As this project will be implemented under PCWA's operational structure, California Labor Codes will be followed. The applicability of prevailing wage law has been reviewed and is reflected in the project budget.

Deliverables:

- Submittal of Labor Compliance Program

Task 3: Reporting

This task includes all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the CABY IRWMP-RWMG, and submittal of final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, and creation of quarterly financial reports for the project (including percent complete of project activities). The final content and schedule for these reports will be identified and agreed upon with DWR through the grant agreement.

Deliverables:

- Submission of quarterly reports to the PCWA General Manager and to the CABY-RWMG to enable their tracking of project status and reporting to DWR per the final grant agreement.

Budget Category (b): Land Purchase/Easement

Task 4: Water Line Easement Confirmation

In order to implement the project, it will be necessary to conduct an easement determination. As described further in Task 5, 50 monitoring stations and 117 loggers will be installed. The installation locations will be identified as part of the design process (see Task 5). Once the locations have been identified, a right-of-way specialist will then conduct an easement determination to clarify whether an existing easement can be used, new easements are required, or expansions of existing easements are necessary.

Deliverables:

- Easement determination.
- Easement acquisition (if required).

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Task 5: Finalize Design of Leak Detection and Repair Program

The goal of this task is to finalize the design of the leak detection and repair program and prepare for the construction of monitoring stations and the deployment of the data loggers. In pursuit of this goal, GIS maps of the water system infrastructure will be finalized and an installation plan for the data loggers and monitoring locations will be completed.

Many of the planning efforts associated with this project have already been completed by PCWA. For example, the required equipment and type of loggers (Gutermann Zonescan 800) have already been identified. These data loggers have been chosen by competitive bid process because the equipment serves two purposes: data logging and correlation (Gutermann loggers are also correlators, which means that they can be programmed and downloaded without removing them from their monitoring locations).

Previous surveys of the Alta and Colfax water systems measured the lengths of water mains and created a base map. In addition, recent engineering work by PCWA staff identified the total length of mains in both Alta and Colfax (20,888 feet and 12,393 feet, respectively) and the number of loggers needed: 117 total: 55 in Alta and 62 in Colfax.

Task 5.1: Finalize and Confirm Maps of the Water System Infrastructure

While base maps of the Alta and Colfax systems exist, the system components must be physically confirmed. This will ensure that the project is implemented as effectively as possible with the minimum amount of ground disturbance. Once the base maps are confirmed and/or updated as necessary, they will be used for the installation of the loggers and monitoring stations, as well as the repair of detected leaks. For this reason, it is imperative that they are accurate. For example, if a water main runs along a long stretch of sparsely developed land, or the distances between established listening points (valves) exceed manufacturer recommendations, the alignment of the water main will need to be determined and a monitoring location constructed. These base maps will be augmented with a GIS layer identifying the installation locations of the loggers and monitoring stations.

Deliverables:

- Confirm and mark water line locations for inclusion in GIS database and maps.
- Final GIS infrastructure system map.

Task 5.2: Finalize Installation Plan for Data Loggers and Monitoring Stations

This task involves identifying, confirming, and mapping the locations for the loggers and monitoring stations, finalizing the equipment list, and determining the appropriate leak repair specifications (*see Exhibit 1 at the end of this section for a description of the standards and specifications for the Zonescan LNC Correlating Radio Loggers and a description of the equipment choice rationale)*.

While preliminary locations for the loggers and monitoring sites have been identified using manufacturing specifications, these locations need to be finalized. The base maps completed in Task 5.1, as well as manufacturing specifications, will be used for this effort. It is estimated that a total of 50 monitoring sites will be installed: 25 in Alta and 25 in Colfax. The other 67 loggers will be installed as additional data/reference points along the water mains throughout the two communities, per manufacturer instructions and recommendations.

The PCWA staff project engineer will review the proposed locations for all of the loggers and monitoring stations. The engineer's review will focus on ensuring that the designs meet the specifications proposed by the manufacturer (Gutermann International), take into account system elements (e.g., main material, location of valves, etc.), and are feasible (i.e., address environmental concerns, easement issues, and construction access).

Once the logger and monitoring station installation locations have been confirmed, the equipment list will be finalized.

Deliverables:

- Map of logger and monitoring station locations.
- Engineer confirmation of logger and monitoring station locations.
- Final equipment list.
- List of appropriate leak repair specifications.

Task 6: Environmental Documentation

The project plan has been reviewed by PCWA's environmental specialist and a Categorical Exemption has been filed. It was adopted by the PCWA Board of Directors and a Notice of Determination is attached (*see Exhibit 2 at the end of this section for copies of the environmental documentation*). Any other documentation necessary for the repair of discovered leaks will be completed as necessary.

Deliverables:

- CEQA Categorical Exemption document as filed.
- Additional environmental documentation as required.

Task 7: Permitting
No permits are required to implement this project in the communities of Alta and Colfax.

Budget Category (d): Construction/Implementation

Task 8: Equipment Procurement, Installation, and Testing
The intent of this task is to initiate the implementation of the leak detection and repair program by purchasing, installing, and testing the equipment.

PCWA staff has already determined the type and quantity of equipment that will be required to implement the project. This determination was based on previous experience with various types of leak detection equipment, including the specific correlators that will be used for this project. After assessing the needs of the system and compatibility with in-place infrastructure, PCWA identified the Gutermann International company as providing the most effective and efficient equipment at the most competitive price (other manufacturers' equipment will detect a leak, but must use separate equipment to correlate the location).

Task 8.1: Equipment Procurement
The equipment procurement will consist of going out to bid for the loggers and related equipment, purchasing the Gutermann Zonescan 800 startup kit, which comes with 40 loggers and the software to map, receive, and analyze data from the loggers; 77 additional Zonescan loggers[1]; a Toughbook laptop for the field, to receive the data from the loggers and run the software; and a pipeline locator to locate the water mains and deploy the loggers.

Deliverables:
- Leak detection equipment purchased and delivered.
- Field laptop purchased and delivered.
- Data logger software purchased and delivered.
- Pipeline locator purchased and delivered.

Task 8.2: System Installation and Testing
The goal of this task is to fully install the leak detection equipment and analyze it to ensure it is working properly. PCWA intends to install 50 monitoring stations: 25 in Alta and 25 in Colfax. The project manager determined that the most efficient implementation of this project would be to monitor only metal water mains. Generally, if an AC or PVC water main leaks, it is a large leak from the start, where metal water mains tend to develop small leaks that run for long periods of time before they are detected.

The monitoring stations will consist of an eight-inch PVC riser tube, valve box, and lid, which will be constructed before the deployment of the loggers. The valves and installed monitoring stations will be marked or otherwise identified in a manner that will inform PCWA personnel

[1] The total number of loggers purchased will be 117, per calculations completed as part of Task 5. However, due mainly to time constraints, installation of 25 of these in Alta and 25 in Colfax will represent the implementation of this project as a first (study) component of the activity.

that this is a monitoring location and to exercise caution when removing the loggers to prevent damage to the logger. The stations will be placed at specific locations along the water main, as specified by Gutermann and confirmed in the engineer's design. Each monitoring site will be given a number corresponding with the system it is on and its place within the system. This will enable the project engineer to better communicate with other project partners, including those non-technical partners and other stakeholders.

Once the monitoring stations are installed, the Zonescan system must be set up. This involves deploying the loggers, installing the software, and performing follow-up fieldwork for both Alta and Colfax.

Prior to the deployment of the loggers, the manufacturers' software and water-main base maps will be installed on the laptop computer per manufacturer instructions and PCWA computer policy. This will be done in accordance with manufacturer's instructions.

Before the loggers are installed, the monitoring sites need to be prepared and installed, the loggers configured, and the monitoring sites located with a GPS unit; then the loggers will be deployed. During this time, a Gutermann representative will train those PCWA personnel who are designated to download and configure the loggers.

In order to effectively track specific information about each logger, the placement of the loggers, the distances between them, and the pipe material and size at each logger location will be recorded in the Toughbook laptop while the loggers are being deployed. As discussed above, the corresponding number of the monitoring site will be recorded onto the digital project base map.

Once all of the loggers are deployed and the set up of the software is complete, the system can be run, evaluated, and then improved as necessary. An operator will be required to drive by each of the logger locations and download the data to determine if the system is running properly and that each logger is reporting. Challenges in logger recording or communication will be met with the appropriate one of several checks: 1) monitoring site location, construction, and installation of loggers will be checked with the manual; 2) the loggers will be reprogrammed or software updated; and/or 3) distances will be re-measured.

Deliverables:

- Equipment installation timeline and implementation for Alta.
- Equipment installation timeline and implementation for Colfax.
- Spreadsheet of each monitoring site with GIS location, site number, and data logger on site.
- Data gathering software installed on field laptop.
- Data loggers deployed.
- All location information entered into laptop software.
- System testing analysis report.

Task 9: Implement Leak Detection and Repair Program

After the initial system analysis is conducted, the operator can begin collecting data to determine if there are any leaks within the system. To do this, the operator will drive to the logger site, download the data, analyze the data using the software, and then cue the loggers to find the exact location of any identified leaks. The Gutermann Zonescan software allows the operator to choose loggers and correlate the leak in real time from the vehicle, without the need to perform a traditional leak survey with a ground microphone and correlators. These may be used, however, if a leak proves particularly difficult to find; PCWA already has these tools on hand and they will be made available if needed. The data will be downloaded and analyzed every two weeks by the operator throughout the first year of the project.

Task 9.1: Prioritize Detected Leaks

Nearly all leaks that are found will be repaired by PCWA staff, with very few exceptions. Staff will track their labor, equipment, and materials costs for each leak; this information will be submitted within the quarterly reports. If a new leak is detected by the correlator, operators will be able to calculate water losses to a more accurate amount. This information will aid in increasing the accuracy of estimates regarding the length of time the leak was running before repair. Estimates of the amount of water loss will be made for each leak repaired.

Every leak encountered will be reported, and will include location, date of discovery, type of pipe, and estimate of volume of loss. The order that detected leaks are repaired is dependent upon staffing and workload. When a repair is completed, the data regarding the type of repair, date, location, and approximate cost will be recorded. See Task 7.2 for more detail.

Deliverables:

- Spreadsheet listing all leaks detected.
- Data regarding the cost/benefit analysis for each leak.

Task 9.2: Repair High-Priority Leaks

Once a suspected leak is detected, this typical process will begin:

1) The leak will be pinpointed using the loggers' correlating capabilities;
2) A work order for the repair will be issued;
3) An Underground Service Alert (USA) will be created to identify and mark all nearby utilities;
4) Crews will expose the water main or service;
5) Crews will determine the leakage rate, pipe material, pipe size, and any other information;
6) Crews will repair the leak with appropriate materials, tools, and equipment;
7) Crews will fill the hole and place temporary asphalt over the repair site if required. A paving contractor will return at a later date to make permanent repairs if asphalt was removed;
8) Leak repair paperwork will be completed that meets the grant's requirements;
9) All information will be placed on the work order; and
10) The work order will be closed out.

Deliverables:

- Leak repair reports.
- Spreadsheet listing all leaks repaired, including date, cost, and type of repair.
- Ongoing leak detection utilizing purchased loggers and software.

Task 10: Program Evaluation and Reporting

An ongoing program of evaluation and reporting will be undertaken to determine the impact of the installed loggers. This program will consist of an annual water audit (to assess the performance of the system and the leak detection equipment and software) using the free AWWA software performance indicators of "gallons per day per service connection" and "gallons per day per mile of water main" evaluation of leak reports to determine the efficacy of the program, and an annual system status report to quantify both leaks repaired and ongoing system maintenance requirements.

PCWA will perform annual water audits in Alta and Colfax by utilizing the AWWA Water Audit worksheet. Water audits will be performed prior to project implementation and each year thereafter to assess the performance of each water distribution system. Because both the Alta and Colfax systems are too small for the AWWA Water Audit to provide an Infrastructure Leakage Index (ILI) value and Unavoidable Annual Real Loss (UARL) calculations, performance indicators are the gallons of loss per service connection per day and gallons of loss per mile of water main per day. The annual audit will be prepared and supplied to CABY for review.

Reports for each repair will be created identifying the location of the leak, estimated leakage rate, pipe material, type of leak (i.e., water main, service lateral, meter connection, etc.), date leak was repaired, estimated water loss, and the labor and materials required to repair the leak. These incidental reports will then be summarized in an Annual Leak Repair Report (ALRR), which will also be provided to CABY for review. The ALRR will serve as an important source for planning future infrastructure projects, analyzing the effectiveness of the project, quantifying the water saved, and as a model for agencies contemplating the suitability of the data logger network in their own district.

Deliverables:

- Annual AWWA water audit report.
- Percent loss calculation.
- Annual Leak Repair Report.

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

This project is anticipated to be categorically exempt, and therefore will not require associated environmental compliance or mitigation measures to be implemented. Because PCWA cannot know for sure the leaks that will be discovered in the system, if any environmental compliance is found to be necessary for leak repair, it will be completed at that time (see Task 6).

Budget Category (f): Construction Administration

Task 11: Direct Construction Administration

Senior City staff will serve as construction managers for the process, as they have for similar projects successfully completed by the City. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), and in-field problem solving during construction in response to unexpected field or system conditions.

Deliverables:

- Schedule of values, meeting minutes, inspection reports, 11- month warranty inspection report.

Budget Category (g): Other

Task 12: Develop and Maintain CABY Project-specific Webpage

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project that is implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverables:

- Project webpage hosted on CABY website, updated with all current project information.

Task 13: Data Management

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines,
page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal

9/28/10, pages 69–72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

- Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

Budget Category (h): Construction /Implementation Contingency

A 15 percent standard contingency is included in the budget and it is calculated based on industry norms.

COMMUNITIES OF ALTA AND COLFAX

LEAK DETECTION AND REPAIR

EXHIBITS

1. Leak Detection Equipment Description
2. Annual Leak Detection and Repair Project Summary Form
3. CEQA Documentation --- Notice of Exemption
4. Colfax Leak Detection and Repair Survey Area Map
5. Alta Leak Detection and Repair Survey Area Map

Exhibit 1

EQUIPMENT DESCRIPTION

The Gutermann Zonescan system is a Correlating Radio Logging system that "listens" to the water main each night at a specified time and assigns a "leak value" to the sounds. A leak value is calculated by the logger, based upon the frequency of the sound and the intensity (loudness) of the sound. A high leak value indicates the presence of a possible leak. The Zonescan loggers can store up to 180 days of leak values and 30 days of noise level distribution data (how intense the noise was and at what frequency) for an operator to use when evaluating the presence of a leak.

The Zonescan loggers were chosen for this project because each logger can be download and/or programmed without the need to remove them from their monitoring location, 5-year battery life (typical), the operator can stop the download, wirelessly connect to a logger and listen to the water main in real time to confirm the presence or absence of a leak, the operator can also stop the download and pinpoint the location of a suspected leak between two loggers without the need of additional equipment.

Each download (leak survey) is expected to take a total of three hours to complete, one and a half hours in each community. Initially downloads will be performed every two weeks with detected leaks repaired within two weeks.

WATER LEAK REPAIR PROCEEDURE

Upon the detection and marking of a possible leak, PWCA treated water maintenance crews will begin the following Leak Repair Procedures:

- Work request (WF) to be generated with Field Services.
- Water main will be located utilizing maps, pipe locators and knowledge of the area.
- Outline the area of excavation with white paint for Underground Service Alert (USA).
- Notify Underground Service Alert with location and date of proposed excavation to notify other utilities to locate their facilities that may interfere or otherwise be impacted from excavation.
- Existing valve maintenance program insures that all isolation valves are exercised and are readily accessible.
- Pipe material and diameter will be confirmed in the field. Repair parts are issued from (PCWA) warehouse.
- All needed equipment and supplies are present on treated water service repair trucks.
- Areas needing traffic control will be set up to divert any vehicular and pedestrian traffic away from construction area.
- Water main will be left in service with positive pressure, to prevent dirt and other debris from entering exposed water main.
- Asphalt and /or concrete will be removed to provide access to leak. Area will be saw-cut by outside contractor for clean edges and repaving at a later date.
- Surrounding leak area will excavated to remove soil from around the water main and placed away from excavation or hauled off for disposal.
- Portable water pumps are utilized to remove water from the excavation.
- The section of water pipe to be repaired is then prepped to produce a clean surface.
- Pipe is then wiped off to remove all other debris and leak clamp installed.

- All pertinent information will be recorded on the work request (WF).
- Excavation will be backfilled according to all AWWA standards and following all City, County, or State encroachment requirements and PCWA Standard Specification Section "T".
- No less than two inches of temporary asphalt is placed and compacted on top of the excavation.
- A completed work request is returned and recorded. Permanent asphalt repairs will be made by Agency sub-contractors.
- If a section of water main is to be replaced the new section of pipe, all fittings will be swabbed with a chlorine mixture 200mg/l of available chlorine as per AWWA Standards for disinfecting water mains (ANSI / AWWA C651-92) Sections 4.5 Cleaning and Swabbing, 9.1 Connections, and 10.0 Disinfection procedures when cutting into or repairing existing mains. New section(s) of pipe will be installed per PCWA Standard Specifications Section "T".

ZONESCAN LNC

CORRELATING RADIO LOGGER

GUTERMANN
find.more.leaks

Product Overview

Deployed at regular intervals throughout the water pipeline network (attached to valves or fire hydrants via the integrated magnetic base), ZoneScan 'leak intelligence units' continuously monitor and analyse noise characteristics within the pipe network and can detect and identify the presence and location of a leak. Once ZoneScan has confirmed the presence of a leak, its precise position can be pinpointed between the two ZS units. The data retrieved from each ZS unit is automatically archived in the ZoneScan PC software database, and can be used to provide detailed reports for repair teams, or a total historic analysis for future pipeline replacement policies. The leak data can also be integrated with GPS and GIS operating systems.

ZoneScan loggers "wake up" to take recordings at user programmable times and also when interrogated by the host software (via a PC, rugged PDA device or automated web browser programme). At all other times the loggers remain "asleep" to conserve the battery life. Based on typical operational patterns, ZoneScan loggers will operate continuously for 5 years before requiring battery replacement. Based on typical operational patterns, ZoneScan units will operate continuously for 5 years before requiring battery replacement, which can be performed locally by an Authorized Distributor or Service Centre.

A Fully Programmable Acoustic Logger

ZoneScan loggers can be individually or collectively programmed to suit each and every different location and environment. The 'industry standard' setting of 02:00am to 04:00am at 3 second sampling is easily achieved or ZoneScan can log up to 23 hours and 59 minutes at any sampling rate from 1 to 180 seconds. These results are then presented in an easy to read format by the Windows based host software, or via a web browser (when used with ALPHA remote GPRS Comm. Links).

By utilising longer recording periods combined with rapid sampling, the ZoneScan equipped water leak Engineer eliminates the phenomenon of "ghost leaks" or "false positives", and avoids wasting considerable time attempting to pinpoint leaks that don't exist.

Drive-By / Vehicle Patrol:

Once in range of a ZoneScan logger, a patrol operator will receive automatic notification from the systems voice embedded host software, first identifying the unit, before announcing the presence or probability of a leak at that point in the water network. If audible confirmation of the leak noise is desired, the operator can, at any time, listen directly to the digitally transmitted leak noise from his vehicle without the need for any physical connection with the loggers.

Advanced Features:

GPS positioning & GIS integration

The ZoneScan is available with fast, simple & precise GPS plotting of each logger at time of deployment. Additionally, the data from the entire ZoneScan project (including full leak pinpointing) can be sent by GPRS, to be automatically integrated to a GIS or satellite mapping program (such as 'Google Earth' or 'Yahoo Maps').

ZONESCAN -	Correlating Radio Logger Specifications Summary:
Casing:	Aluminum, with magnetic attachment
Sensor:	High sensitivity piezo-ceramic sensor
Dimensions:	120 x 40 mm diameter (4.7 x 1.6" diameter)
Weight:	400 gr (0.9lb)
Protection:	IP68, fully submersible to 2m
Power:	Replaceable Lithium battery cell
Battery Life:	Typically 5 years (depending upon operation)
Memory:	180 days leak value for each logger (most recent) 30 days of leak analysis and histogram for each logger (most recent)
Temperature range:	-20 to +55 deg C (-4 to +131 deg F)
Radio Type:	Transceiver for interactive communication
Radio Output:	100mW

The Smallest, Robust & Highly Portable Logger

At only 120mm high, with a flexible carrying handle that houses the aerial, and with an all round alloy casing, the ZoneScan logger is the smallest, lightest and most robust logger available. Other radio loggers that have either fixed plastic aerials or plastic housings, or both, are prone to operational damage e.g. when chamber covers are replaced and press down on the aerial, or when leak inspectors accidentally puncture the logger casing with listening sticks. Weighing less than 0.4kg each, ZoneScan loggers are easily transported and deployed by one engineer.

Exhibit 2

ANNUAL LEAK DETECTION AND REPAIR PROJECT SUMMARY

Year: _____

Agency: Placer County Water Agency

Report Prepared By: _____

LEAK DETECTION SURVEY

Total Number of Days Leak Surveys Were Conducted: _____

First Survey Date: _____ Last Survey Date: _____

Number of Suspected Leaks: _____ Number of Pinpointed Leaks: _____

Survey Time: _____ Hours

Pinpointing Time: _____ Hours

Total number of visible leaks reported from other sources (not discovered during leak detection survey) _____

LEAK REPAIR SUMMARY

First leak repair made: _____ Last leak repair made: _____

Number of Repairs Needing Excavation: _____

Number of Repairs Not Needing Excavation: _____

Total Number of Repaired Leaks: _____

Total Water Losses From Excavated Leaks: _____ gpm

Total Water Losses from Non-Excavated Leaks: _____ gpm

Total Water Losses: _____ gpm

Excavated Leak Repair Costs		Nonexcavated Leak Repair Costs			Total Repair Costs	
Materials		Materials			Materials	
Labor		Labor			Labor	
Equipment		Equipment			Equipment	
Other		Other			Other	
Subtotal		Subtotal			Total	

Exhibit 3

E.5

PCWA

water • energy • stewardship

MEMORANDUM

TO: Board of Directors and General Manager

FROM: Brian Martin, Director of Technical Services

DATE: June 7, 2010 **FILE NO.:** CEQA

RE: Colfax Area Leak Detection and Repair Project, Notice of Exemption

BACKGROUND

PCWA will install leak detection dataloggers (flow monitoring devices) on selected treated water transmission mains within areas of aging pipelines at various locations in the Colfax area within PCWA Zone No. 3. The purpose of this project is to monitor pipelines in order to pinpoint leaks for repair and initiate repair of those leaks utilizing best management practices. Where possible, existing valves will be used as monitoring locations, but a total of 50 additional sites could be needed (25 in Alta and 25 in Colfax). These additional sites will be excavated using a vacuum trailer and a piece of plastic pipe will be installed with a valve cap.

Staff is seeking a grant through CABY for this project. PCWA and its customers will benefit from this project due to increased water system reliability and operational efficiencies.

This project does not require further environmental assessment because it will not result in significant environmental impacts and it is categorically exempt from the California Environmental Quality Act.

RECOMMENDATION

Staff recommends Board authorization for the Clerk to the Board to file the Notice of Exemption.

BCM:HT:ns

Enclosure

z:/os/CEQA/Colfax Leak Detection. 5-1-10

water • energy • stewardship

Notice of Exemption

Form D

To: ☒ Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

☒ County Clerk, County of: Placer

From: Placer County Water Agency
P.O. Box 6570
Auburn, CA 95603
(Public Agency and Address)

Project Title: Colfax Area Leak Detection and Repair Project

Project Location - Specific: Various locations in Colfax area, PCWA Service Area Zone 3, Placer County, California

Project Location - City: Colfax area **Project Location - County:** Placer

Description of Project: PCWA will install leak detection dataloggers (flow monitoring devices) on selected treated water transmission mains within areas of aging pipelines at various locations in the Colfax area within PCWA Zone No. 3. The purpose of this project is to monitor pipelines in order to pinpoint leaks for repair and initiate repair of those leaks utilizing best management practices. Where possible, existing valves will be used as monitoring locations, but a total of 50 additional sites could be needed (25 in alta and 25 in Colfax). These additional sites will be excavated using a vacuum trailer and a piece of plastic pipe will be installed with a valve cap.

PCWA and its customers will benefit from this project due to increased water system reliability and operational efficiencies.

Name of Public Agency Approving Project: Placer County Water Agency

Name of Person or Agency Carrying Out Project: Placer County Water Agency

Exempt Status: *(check one)*

- ☐ Ministerial (Sec. 21080(b)(1); 15268)
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Class 1 (b), Section 15301
- ☐ Statutory Exemption. State code number:

Reasons why project is exempt: The project consists of the maintenance, or minor alteration of existing public facilities involving no expansion of use beyond that previously existing. (Guidelines Article 19, Section 15301 (b))

Lead Agency Contact Person: Mike Nichol, Director of Field Services **Area Code/ Telephone/Extension:** 530-823-4886

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: Heather Trejo Date: 6/21/10 Title: Environmental Specialist
Heather Trejo

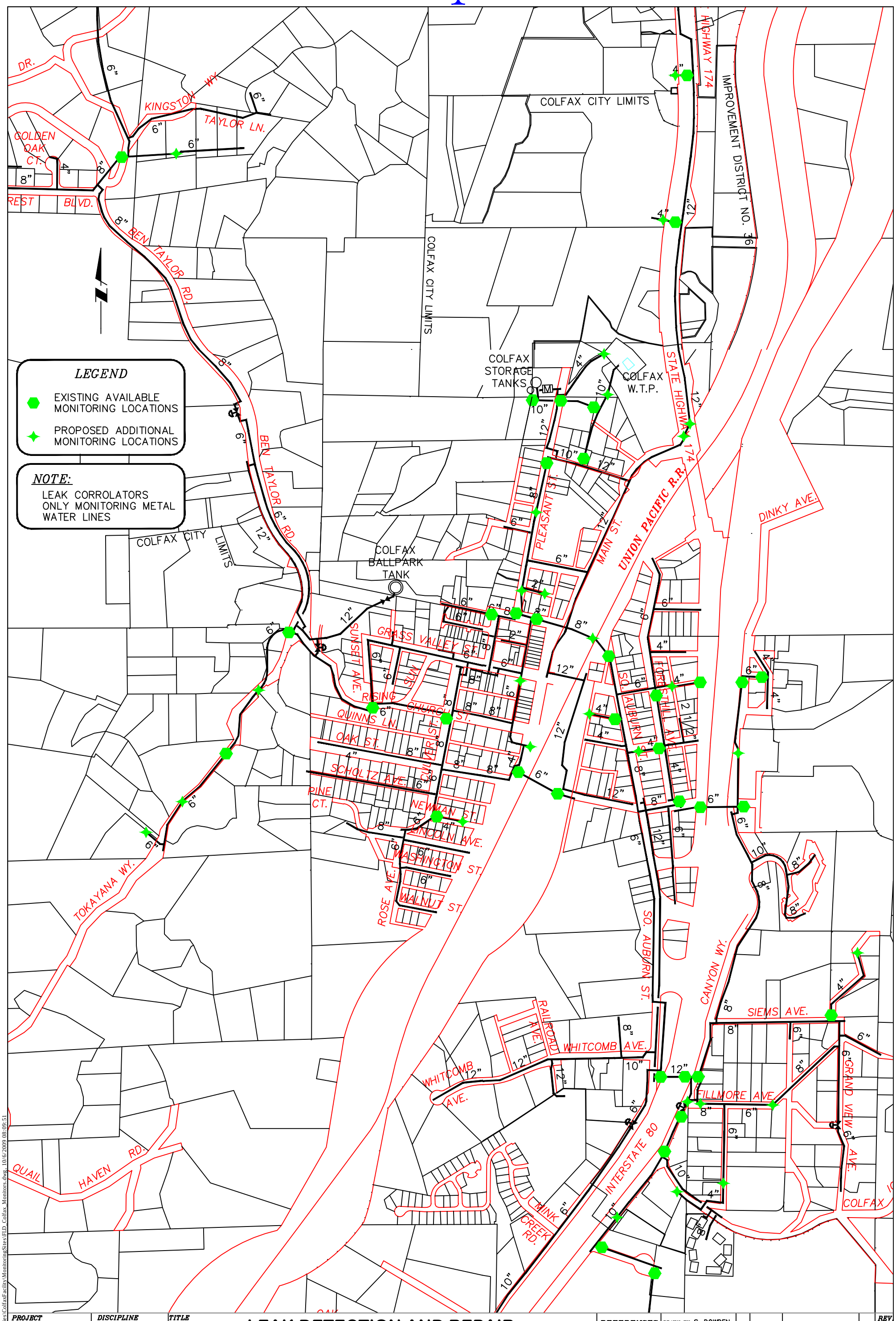
☒ Signed by Lead Agency

Date received for filing at OPR:

☐ Signed by Applicant

z:\ns.CEQA.Colfax leak detection.7-1-10

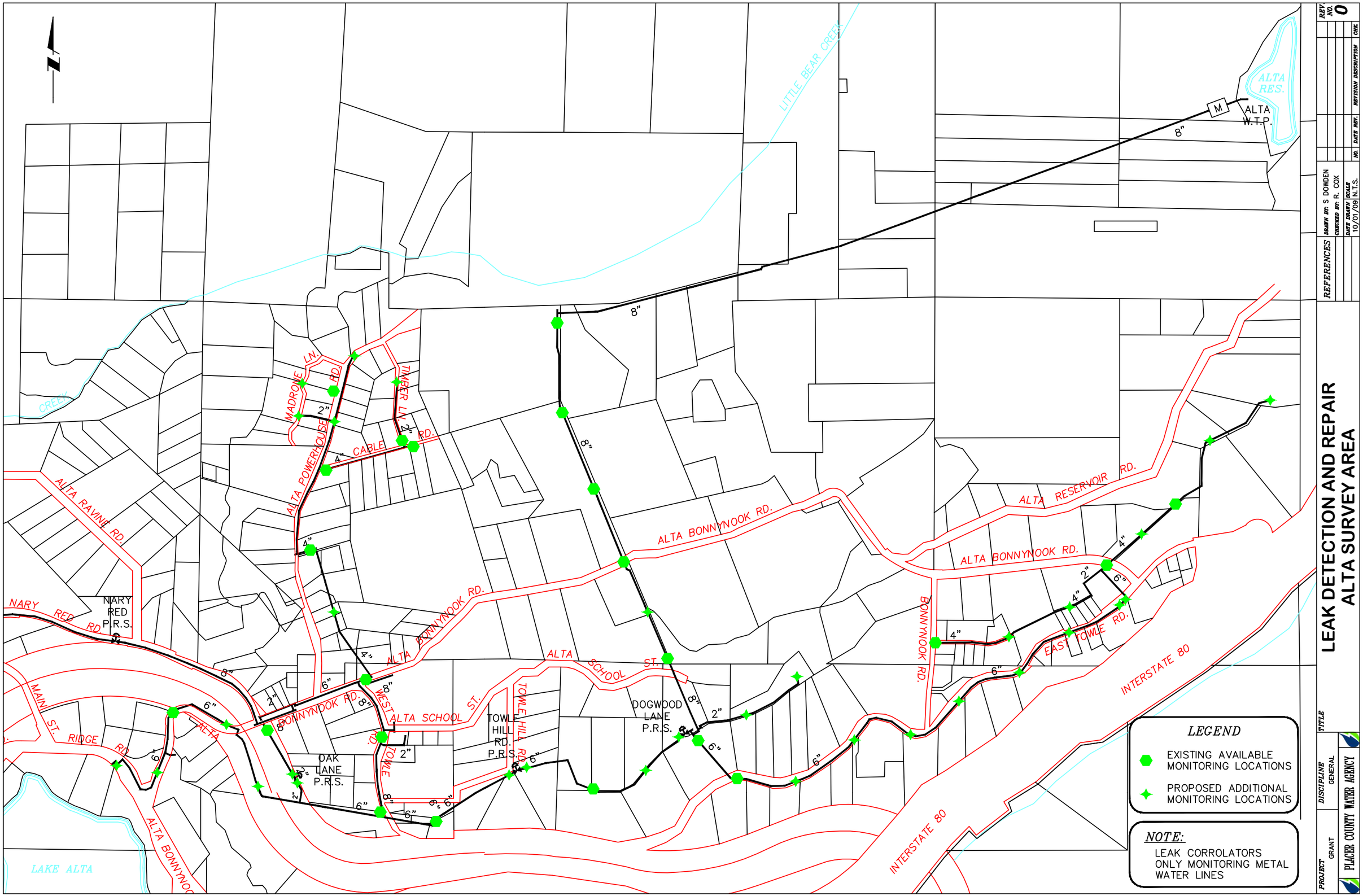
Exhibit 4



PROJECT	DISCIPLINE	TITLE	REFERENCES	DRAWN BY: S. DOWDEN				REV. NO.
GRANT	GENERAL	LEAK DETECTION AND REPAIR COLFAX SURVEY AREA		CHECKED BY: R. COX				0
PLACER COUNTY WATER AGENCY				DATE DRAWN 10/01/09	SCALE N.T.S.	NO. / DATE REV. / REVISION DESCRIPTION / CHK.		

Y:\Drawings\Facilities\ColfaxFacility\MonitoringSites\FLD_Colfax_Monitors.dwg, 10/6/2009 08:09:51

Exhibit 5



Y:\Drawings\Facilities\AltaFacility\MonitoringSites\FID_Alta_Monitors.dwg, 10/6/2009 08:08:12

CABY Water Trust

CABY WATER TRUST

OVERVIEW

The overall goal of this project is to set up an institutional structure in the CABY region that will be able to purchase water rights or water leases from willing sellers and rededicate them to instream flow needs.

In the past ten years, water trusts have emerged across the western United States as a viable, effective, and innovative way to preserve and restore freshwater ecosystems while at the same time providing water diverters such as farmers and ranchers with more flexibility in their operations. In 1991, the State of California amended the California Water Code by adding section 1707, which permitted the transfer and dedication of all or part of a water right specifically for environmental purposes. Trust or environmental water is defined as an amount of water that has voluntarily been reclassified to boost instream flows. Trust water can also be acquired through buying, trading or leasing water for instream flows. Obtaining water rights through acquisition is one of the most effective ways to get water when and where it is needed and is used extensively in Oregon and Washington.

Specific objectives in support of the overall project goal include:

- Assess and address opportunities and constraints to establishing a CABY Water Trust;
- Increase capacity to understand and use this non-regulatory approach to instream-flow protection;
- Develop and implement institutional arrangements for launching a CABY Water Trust; and
- Identify strategic reaches in need of flow augmentation.

Ultimately, the net effect of the CABY Water Trust will be increased protection of CABY rivers and streams coupled with the economic benefit to those water rights holders interested in and willing to provide water for instream uses. A market-based water transfer system would be an improvement over existing regulatory programs because the transfers would be voluntary and remunerated instead of imposed and uncompensated. Thus, it is likely to be preferred by vested water right[1] holders simply because it harnesses private property rights rather than seeking to limit or abridge them. This implies less resistance to implementation, which will lower administration and transaction costs.

Properly administered, the market approach also has the virtue of capturing water where it is needed for flow augmentation, instead of wherever in the hydrologic system the regulatory apparatus intervenes to salvage wasted water (for example, by invoking the public trust, by establishing minimum streamflows, or by appropriating available water for the stream). No constitutional issues of uncompensated taking can arise. No political issues regarding the appropriate balance among competing interests or constituencies will emerge.

Because acquisition strategies will tap the least expensive water first, this method of reallocation is economically efficient. It targets water sources that can inexpensively conserve water or that are using water in economically unproductive applications, i.e., irrigation of crops that are the least profitable per unit or water applied. Under market conditions, the water uses that will be displaced will be determined not by temporal priorities, as is the case under prior appropriation system. Instead, they will be determined by the comparative economic and social value of particular water uses.[2]

The project's primary contributions will be ensuring permanent protection through systematic water acquisitions or shorter term benefits through leasing of water fostering supportive policies, building capacity, facilitating stewardship, and advancing restoration. Measuring and capturing the success of environmental water acquisitions is essential to building momentum for achieving support and funding for future projects.

PROJECT NEED

The Sierra Nevada generates approximately 20 million-acre feet of runoff in the form of river flows each year. These rivers form a natural and engineered water supply network providing approximately 60 percent of the state's water supply. They further support complex instream ecology, which results in the Sierra Nevada ranking as the world's most ecologically rich region for endemic aquatic invertebrates.

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1 David L. Sunding, *Economic Impacts of Market Implementation of Bay/Delta Water Quality Standards*, 1 (May 23, 1994) on file with the Stanford Environmental Law Journal.

2 Thomas, G.A. 1996. *Conserving Aquatic Biodiversity: A Critical Comparison of Legal Tools for Augmenting Streamflows in California*. Stanford Environmental Law Journal. January 1996.

However, most of the Sierra's rivers have impaired water quality and almost two-thirds of the region's 67 aquatic habitat types are declining in quality and abundance. In addition, the Sierra, including the foothills, is subject to some of the largest drivers of change—including population growth, intense recreational use, rapid development, and climate change—of any rural region in the United States. These rivers, streams, and creeks are under immense pressure, and unless their ecological needs are integrated into these landscape level changes, the impact on water quality, species diversity and abundance, and general ecosystem health will be felt from the headwaters to the Bay.

Preserving or restoring elements of the unimpaired hydrographs associated with these rivers is an important component in addressing these ecosystem needs. It is estimated that there are at least 10,000 individual holders of water rights in the Sierra Nevada region. Many of these are comparatively small-- 1,000 acre-feet on an American River ranch, 2,000 acre-feet for a small Yuba River powerhouse. However, in total, these claims represent a substantial stress—perhaps the most substantial current stress--to the capacity of Sierra rivers and streams to sustain local aquatic ecosystems and provide beneficial uses to source water and downstream users. If a portion of these water rights could be reclaimed for strategic flow augmentation through community-level efforts to acquire and manage these rights, then river stress could be managed and the ecosystem services protected or restored.

Water rights acquisitions are particularly well suited for headwater rivers, streams and tributaries such as in the CABY Region, where adding even small amounts of additional flows in the right reach at the right time can be critical.

The opportunities to improve river function through trust water are growing, and there is already a demand to acquire water rights in the Sierra. For example, land trusts are often faced with water rights tied to their land transactions. Because they do not have the capacity to acquire and manage these water rights as trust water, they must abandon them and thus forfeit the opportunity of river restoration in conjunction with their land conservation efforts. In addition, citizens and community leaders are eager to improve the condition of their watersheds, but also lack an understanding of how to apply this river restoration tool.

In many cases, the use of restoration approaches such as implementation of Best Management Practices (BMPs), bank stabilization, restoration of riparian vegetation, and removing passage barriers will provide only part of the solution. Without additional flows, these projects may not result in the expected long-term benefits. This CABY Water Trust Project will identify those features of connectivity that must be addressed by additional flows and focus the purchase of water rights in that direction. This integrated approach will lead to sustainable restoration more likely than attempts that don't take into consideration flow augmentation needs. This is also an important consideration with conservation projects such as those included in this proposal. Small water purveyors such as Washington County Water District and the City of Nevada City hold

water rights within the region, and are a resource for contributing to beneficial instream flows that remains untapped. The inclusion of entities such as these in this project will ensure a comprehensive effort to protect and restore waterways in the region.

CURRENT STATUS

The CABY Water Trust is a strategic and critical part of a larger Sierra-wide initiative called the Sierra Water Trust Flow Augmentation Project, which is funded by the US EPA and the Sierra Nevada Conservancy. Partners in this larger effort include American Rivers, Sierra Nevada Alliance, Natural Heritage Institute, Alpine Watershed Group, South Yuba River Citizens League, Nevada Irrigation District, Feather River Land Trust, Friends of Deer Creek, and UC Davis.

The larger Sierra-wide initiative will provide legal and scientific support to the CABY Water Trust Project. In turn, the CABY Water Trust will be the institutional model for acquiring and managing water rights – a model that will be expanded over time throughout the Sierra. Identification and recruitment of the Water Trust Advisory Board, which will serve as the interim governing body for the CABY Water Trust, has already begun. The lessons learned through the implementation of the Sierra Water Trust Flow Augmentation Project will be applied to the CABY Water Trust Project which requires no environmental documentation and is ready to proceed.

PROJECT LOCATION

This project will be implemented across the CABY region.

WORK PLAN TASKS

Budget Category (A): Direct Project Administration Costs

Task 1: Administration and Management
The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all project administration activities performed by American Rivers and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

Deliverables:

- Preparation of invoices and other deliverables as required.
- Accurate and accessible records

Task 2: Labor Compliance Program
As this project does not include construction activities, a labor compliance program is not necessary.

Task 3: Reporting
In order to track the project's implementation and achievement of performance measures, reports will be prepared to provide DWR with details regarding the project's progress. The content and schedule for these reports will be identified and agreed upon with DWR through the grant agreement. The cost of this task is included in the total for Task 1 in the budget.

Deliverables:

- Quarterly and final reports

Budget Category (B): Land Purchase/Easement
No land purchase or easement activities required by this project.

Budget Category (C): Planning/Design/Engineering/Environmental Documentation

Task 4: Assessment and Evaluation (Planning)
The purpose of this task is to develop the water rights acquisition process and structure of the CABY Water Trust organization. This task involves six main activities: 1) establishing the CABY Water Trust Advisory Board, 2) training advisory board

members, 3) defining the water rights acquisition process, 4) developing water rights selection criteria and water trust principles, 5) identifying priority and strategic reaches, and 6) conducting outreach to build community support and identify willing sellers.

Task 4.1 Establish CABY Water Trust Advisory Board

The CABY Water Trust Advisory Board will be convened to provide guidance during project implementation. This board will be an interim body that will provide management oversight of the formation of a formal CABY Water Trust Board and will disband once the formal board is convened. The advisory board members will be asked to oversee the development of the water trust structure, function, principles, and membership. They will also provide guidance regarding the education and outreach activities necessary to ensure that the full depth and breadth of stakeholder interest is represented in developing the trust.

It will be extremely important to have a diverse range of interests represented on the board. For this reason, a wide range of organizations and entities will be involved. Board members will include large water and power districts (such as NID, PCWA, and PG&E); smaller, rural water purveyors (such as Washington County Water District, Grizzly Flats Community Services District, and the City of Nevada City); land trusts (such as the Nevada County Land Trust and the Sierra Nevada Land Trust Council); farming and economic interests (such as the Regional Council for Rural Counties and the Farm Bureau); environmental interests (such as American Rivers and the Sierra Nevada Alliance); tribal interests; scientific and legal expertise from UC Davis, UC Berkeley, and Stanford University; and representatives with experience from other water trusts such as the National Fish and Wildlife Foundation. Outreach to these entities has already begun, and in some cases, organizations are already participating in the current Sierra Water Flow Augmentation Project.

Deliverables:

- Establishment of CABY Water Trust Advisory Board

Task 4.2: Train Advisory Board Members

Once the advisory board is established, training sessions will be held to provide information on the fundamentals of water transactions. The trainings provided to Water Trust Advisory Board members will include information on topics such as

- Essential background material for water transactions (water budgets and water math for transactions, water law and water rights)
- Types of water management transactions (e.g., temporary and permanent acreage reductions, diversion reduction agreements, hydrological impacts),
- Preparing the ground and acquisition strategies (e.g., enabling conditions, water acquisition targets and prioritization, collaboration with the water resource community),

- Developing transactions (the water transaction project cycle, identification and due diligence, pricing and appraisal, and financing),
- Price discovery and auctions,
- Completing a transaction (legal aspects, contracting, administrative aspects, monitoring for impact).

These trainings will provide case studies and will be evaluated based on before and after questionnaires to determine increase in knowledge in the subject matter.

Deliverables:

- CABY-relevant training material
- Design of training sessions
- Case studies

Task 4.3: Define Water Rights Acquisition Process

This task will build on the Trust for Public Land's 2001 workshop, entitled: "Environmental Water Acquisition: Roadblocks and Opportunities." The work effort will involve conducting interviews with key stakeholders, identifying barriers to Sierra water acquisitions, identifying benefits and incentives, reviewing experiences from water trust organizations in other western states (e.g., Oregon, Washington, Colorado, and Texas), and the current Sierra-wide initiative (the Sierra Water Trust Flow Augmentation Project), and drafting a "Barriers and Benefits Report" for review and distribution. This report will clearly identify and quantify the benefits of acquiring water rights and dedicating those rights to instream uses in the CABY region and will describe the legal, institutional, economic, and social barriers to water rights acquisition. A PowerPoint presentation will also be developed so that the information can be easily distributed throughout the region (e.g., at IRWMP meetings and gatherings of the advisory board members' organizations).

Deliverables:

- Stakeholder questionnaire
- CABY Water Trust Benefits and Barriers Report
- Benefits and Barriers PowerPoint Presentation

Task 4.4: Develop Water Rights Selection Criteria and Water Trust Principles

The intent of this task is to ensure the accurate and effective identification of willing sellers whose water rights contributions will yield maximum benefit. In order to achieve this goal, selection criteria must be determined and prioritized and principles associated with water rights acquisitions in the region must be articulated.

The selection criteria and principles will be developed using the technical resources of the various advisory board members, as well as project staff. They will also be submitted to technical experts in California and adjoining states for review and comment.

Deliverables:

- Final Water Rights Acquisition Criteria
- Final Water Trust Principles

Task 4.5: Identify Priority and Strategic Reaches

Under this task, we will assess the flow augmentation needs for habitat and water quality in the CABY Watershed. We will use the criteria developed in Task 4.4 and will build on assessment methodologies developed by the Nature Conservancy. This task will involve reviewing a range of flow assessment methodologies to determine the most appropriate for application in the CABY region. Once an assessment methodology has been identified, it can be used to determine high priority and strategic reaches for flow augmentation in the CABY region.

Deliverables:

- CABY watershed maps identifying flow augmentation needs by reach

Task 4.6: Outreach to Build Community Support and Identify Willing Sellers

The goal of this task is to identify potential water rights sellers and build support for the project through a comprehensive outreach program. Outreach activities will be tailored to priority and strategic reaches identified in Task 4.5.

In order to build community support for the project, residents and stakeholders within the CABY region will need to understand or appreciate the issues associated with water transfers, benefits and barriers to water transfers, flow augmentation needs and impact, and the general process for water transfers. This task will involve the creation of materials—including direct mailing materials, brochures, and a PowerPoint presentation—to describe the water trust activities and process. A brochure specifically aimed at potential willing sellers will also be developed and will include a "frequently asked questions" section to address the most common concerns and interests of potential sellers. Advisory board members, as well as the project sponsor, will distribute these materials to targeted individuals or geographic areas. These materials will also serve as the basis for a series of strategic press releases aimed at raising awareness of the water trust throughout the CABY region.

Deliverables:

- Outreach materials for the general public, including direct mailers, brochures, and a PowerPoint presentation
- Brochure specifically aimed at potential willing sellers

Budget Category (d): Construction/Implementation

Task 5: Implementation

Project implementation will involve two main tasks: 1) establishing a formal CABY Water Trust and 2) preparing trust water cases.

Task 5.1: Establish CABY Water Trust

Under this task, the formal CABY Water Trust will be established. In order to accomplish this, an appropriate institutional structure will be chosen, governing principles and processes will be determined, an initial governing board will be recruited, and the CABY Water Trust will be staffed for the founding year. This process will build on the recent experience of the Sierra Water Trust Flow Augmentation Project that is currently being implemented by the project sponsor.

The advisory board will identify and recruit board members for the new formal CABY Water Trust, and will provide the new board with draft governing principles and suggested policies and procedures. The advisory board will officially hand over governance of the entity at the initial board meeting of the CABY Water Trust, during which the governing principles, policies, and procedures will be finalized and adopted.

Staff will also provide the new board with a draft strategic plan and diversified fundraising plan for their review, revision, and adoption. This Water Trust governance packet will expedite the new organization's process and will contain draft materials to help expedite the new organization's process.

A part-time water rights acquisition coordinator will also be funded through this grant for the first year, enabling the new board to develop a self-supporting funding mechanism for continued support of this position.

Deliverables:

- Legal documents filed to establish CABY Water Trust
- List of governing board members
- CABY Water Trust governance packet, including draft governing principles and procedures, strategic plan and diversified fundraising plan
- Job description and hiring of a Water Rights Acquisition Coordinator

Task 5.2 Prepare Trust Water Cases

The overall aim of this task is to identify and begin to facilitate strategic water rights acquisitions where they are most needed (i.e., in the areas identified in Task 4.5). This task will entail the identification of willing sellers and evaluation of water rights for transfer to trust water. Knowing the characteristics of potential water rights (seniority, historic beneficial use, transferable quantity, etc.) will ensure that acquired water rights are more than paper claims. This task will involve legal research of water rights using California's water rights registry database, application files, and statements of water diversion and use. Also, templates for acquisition agreements will be created and an appraisal methodology will be drafted to determine fair market value of the water

rights, as well as the length of time, location, and type of transaction being contemplated. This task will also outline the CEQA process for the water rights identified for transfer.

Deliverables:

- Willing Sellers identified
- Evaluation of Legal Aspects of Water Rights
- Template for Acquisition Agreement
- Finalized Appraisal Methodology
- Determination of Fair Market Value of Identified Water Rights
- Agreement of Price and Details of Transfer
- Outline of CEQA process

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

Environmental Compliance/Mitigation/Enhancement
Although the environmental compliance and enhancement associated with this project will be identified and described in Task 5.2, no on-the-ground activities will be required for project implementation.

Budget Category (f): Construction Administration

Direct Construction Administration
There are no construction activities associated with this project, so no construction administration is required.

Budget Category (g): Other

Task 6: Develop and Maintain CABY Project-specific Webpage
The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project which is implemented will be integrated into the CABY website through the creation of a project-specific web page. Project plans, specifications, progress photographs, reports, status updates and other similar materials will be posted or linked to this web page.

Task 7: Data Management
The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state data bases as well as CABY members and the interested public using Data Management and Monitoring Deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY

Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not.

Deliverables:

- Development, activation and maintenance of project-specific web page within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- Post project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)
- Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

WATER SUPPLY AND DEMAND UPDATE

MAY 2012

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1.0 INTRODUCTION

1.1 Report Scope

This report provides an updated evaluation of water supply and demand for the Grizzly Flats Community Services District (District) system. Current and projected future water demands are compared with the estimated annual safe yield and firm yield water volumes available from sources on North Canyon and Big Canyon Creeks. The need for supplemental storage to meet projected future growth is addressed. District metered water usage and treatment plant production data are considered in the evaluation of current and future water demand. The El Dorado County Water Agency provided water use information for a selected area of Pollock Pines with use patterns considered similar to Grizzly Flats. This Pollock Pines use information is compared with the Grizzly Flats use data collected from meters and plant production records.

Water supply and demand has been evaluated by different consultants and the results have been documented in a series of reports dating back to 1994. For continuity, Section 1.5 provides a brief summary of the content of the previous evaluation reports, including findings relative to safe yield and the ability to meet existing and future demands.

The water supply and demand evaluation presented in this report is solely intended to provide the District information that it can incorporate into its decision making process regarding operation of the system and possible expansion of the customer base in the future.

1.2 System Description

Figure 1 is a Vicinity Map of the Grizzly Flats area showing District facilities. Water for the treatment plant comes from two existing diversions located on North Canyon Creek and Big Canyon Creek. From North Canyon Creek, water is diverted into an 8-inch-diameter buried plastic pipe that follows the old alignment of the Upper Eagle Ditch southeast to the diversion location on Big Canyon Creek. There, water from Big Canyon Creek is also diverted into the pipeline, which increases in size from 8 inches to 10 inches in diameter. The 10-inch-diameter plastic pipe then runs along the old alignment of the Lower Eagle Ditch from Big Canyon Creek to the existing reservoir at the treatment plant. Both pipeline segments flow by gravity. The capacities of the pipelines were estimated in previous investigations by other consultants to be 330 gpm (0.74 cfs) for the 8-inch-diameter pipeline and 800 gpm (1.78 cfs) for the 10-inch-diameter pipeline.

Figure 1 also shows the possible locations for two off-stream storage reservoirs studied by Wood Rodgers, Inc. (WR) in 2008 (WR, 2008) should future system expansion be considered. The Spring Flat site is too small to accommodate anything but a small reservoir with insufficient capacity, but the Lincoln Hill site can accommodate a reservoir with an active storage up to and beyond 400 acre-feet. When considering an off-stream reservoir in this study, URS assumes it would be located at the Lincoln Hill site.

The existing Grizzly Flats water treatment plant utilizes two package filtering units with a combined capacity of approximately 400 gpm. Feed water from the treatment plant reservoir is chlorinated as it enters the plant prior to filtering. Filtered water then goes to a 200,000-gallon treated water holding tank at the treatment plant from which the water is supplied to the distribution system on demand. Treatment plant operation (on or off) is controlled by water levels in the treated water holding tank. According to the District, each filtering unit requires backwashing at a frequency that varied during the year. Backwash frequency is shorter during

the higher demand summer months and lower during the winter months. The amount of water used to backwash treatment plant filters is an important consideration in determining yield of the supply system. Previous studies assumed that approximately 7% of the water demand was required for backwashing. However, a recent change in the type of flocculent used at the treatment plant appears to have reduced the backwash water volume required significantly as discussed later in this report. Backwash water is not returned to the treatment plant reservoir and is lost to the system.

1.3 Service Area and Sphere of Influence Area

The District's service area covers approximately 1,115 acres and includes the Grizzly Park subdivisions and several larger perimeter parcels. The District estimates that approximately 1,252 parcels could require water within the service area once build-out of the community is reached in the future.

The El Dorado County Local Agency Formation Commission has also identified the District as the purveyor of choice for a Sphere of Influence around Grizzly Flats covering an area of approximately 9,200 acres. Previous water supply and demand investigations focused on supplying the service area up to the point of build-out, and did not included allowances for water to serve additional development that could occur within the larger Sphere of Influence outside the service area. URS has also limited its evaluation of water supply and demand to the 1,252 parcels that would be located in the service area.

1.4 DEFINITIONS

Definitions for key terms used in this report follow.

1.4.1 Safe Yield

Safe yield is defined as the yield that fully meets demand without deficiency even during the most hydrologically critical season for the historical period of record analyzed.

1.4.2 Firm Yield

Firm yield can be defined in different ways. In this report, firm yield is defined as the water supply that fully meets demand in 95 out of 100 years based on the historical record. In remaining years, demand would exceed supply. Section 3.5.1 described the statistical evaluation of the synthesized creek runoff record for North Canyon and Big Canyon Creeks that was used to support the determination of firm yield.

1.4.3 Demand

Demand is the amount of water, usually in acre-feet per month or acre-feet per year that must be supplied from the treated water holding tank to meet the community need. Demand can also be for the entire system, or for an individual residence (dwelling unit) depending upon the discussion.

1.4.4 Water Year

In this report, evaluations are typically based on the water year, which runs from October 1 through September 30 each year. References to year in this report are to the water year, not calendar year, unless noted otherwise.

1.5 Summary of Previous Reports

This section provides a summary of previous water supply and demand evaluations prepared for the District. Some of the information presented in these reports continues to be used in this current report, in particular, the synthesized runoff data developed in 1994 for North Canyon and Big Canyon Creeks and the assessment of the contribution of springs to creek runoff in the late summer and early fall. These topics are discussed in more detail later in this report.

1.5.1 Borcalli & Associates, Inc. (B&A) Report, 1994

B&A prepared the first comprehensive evaluation of water supply and demand for the system in 1994 (B&A, 1994). B&A subcontracted with Sierra Hydrotech (SH) to develop synthesized flow data for Big Canyon and Long Canyon Creeks because no recorded flow data from gages exists for the creeks. The synthesized flow data was extrapolated from gage data recorded for Sly Park Creek, which SH determined to have similar hydrological characteristics to Big Canyon and Long Canyon Creeks. The synthesized data covered water years 1925 through 1992 (note that SH ignored Sly Park Creek data from 1920 to 1924). SH also adjusted the synthesized hydrologic data to incorporate a correction suggested by the District to account for the suspected beneficial effects of springs on creek runoff in the late summer and early fall months. SH developed a model of the supply system that was used to evaluate safe yield for the system using the synthesized hydrologic data. Safe yield was estimated for various combinations of existing conditions at the time (reservoir leakage, evaporation, and the like), planned system improvements (reservoir lining, the addition of wells, and the like), and the addition of off-stream storage reservoirs to accommodate future system growth.

B&A assumed that the demand on the system would be 0.42 acre-feet per dwelling unit (DU) per year for full-time residences. This demand represented the average residence consumption calculated for the east side of the El Dorado Irrigation District (EID) service area using data from 1989 through 1991. It is possible that this demand included some commercial water use. B&A assumed the District served 150 full-time residences and 189 part-time residences at the time based on 1990 connection data. Treatment plant production records provided by the District, the split between part-time and full-time users, and the demand for full-time users (0.42 acre-feet per DU per year) were used to estimate the demand for the part-time residences, which was determined to be 0.113 acre-feet per DU per year.

B&A projected customer growth based on historical growth trends, projecting that build-out would occur in the year 2030 with 1,252 residences. Part-time occupancy was assumed to reduce each year and become zero after the year 2010.

The safe yield of the water supply system was determined to be 126.7 acre-feet. Table 1, taken from the 1994 B&A Report, summarizes the supply and demand findings.

As shown on the last two lines in Table 1, water demand was expected to exceed the supply (firm yield) sometime between 1990 and 1995. In order to meet the projected demand growth, B&A evaluated various system modifications that would be required, including, lining and

expanding the existing treatment plant reservoir, rehabilitating an existing well, adding new wells, and adding new off-stream storage reservoirs. Modification costs were provided along with a schedule for implementing modifications to keep supply ahead of demand.

Table 1 Supply and Demand Findings, B&A 1994

	Year						
	1990	1995	2000	2005	2010	2020	2030
Dwelling Units							
Full-Time	150	280	469	706	1,000	1,190	1,252
Part-Time	189	200	181	114	0	0	0
Total	339	480	650	820	1,000	1,190	1,252
Water Demand							
Full-Time Residence Demand (a-f/DU/year)	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Full-Time Demand (a-f)	63	118	197	297	420	500	526
Part-Time Residence Demand (a-f/DU/year)	0.113	0.113	0.113	0.113	0.113	0.113	0.113
Part-Time Demand (a-f)	21	23	20	13	0	0	0
Total Demand (a-f)	84	141	217	310	420	500	526
Safe Yield (a-f)	126.7	126.7	126.7	126.7	126.7	126.7	126.7

a-f = acre-feet
Taken from Table 2, B&A 1994
Safe yield estimated assuming unlined water treatment plant reservoir with seepage losses and evaporation

1.5.2 B&A Report, 1998

B&A updated its 1994 evaluation of water supply and demand and issued an updated report in 1998 (B&A, 1998). Important modifications B&A made to the previous report included:

- Modifying projected system growth using District growth trends observed since the previous report was completed, and assuming future growth would parallel County growth projections estimated in the January 1994 version of the El Dorado County General Plan. The planning horizon for build-out within the District's system was also extended from 2030 to 2050.
- Modifying the monthly pattern of water use based on an evaluation of monthly treatment plant production data collected since 1994.
- Assuming that a 15 gallon per minute (gpm) well drilled by the District in 1994 near the Forrest View tank could be used in critically dry years to meet system demand.
- Incorporating the new area-capacity curve for the treatment plant reservoir developed from a topographic survey performed in June 1996 by the El Dorado County Surveyor, GIS Division.

Using the additional treatment plant data collected since 1994, and assuming the demand for full-time residences remained at 0.42 acre-feet per DU per year, B&A revised the estimated water use for part-time residences from 0.113 acre-feet per DU per year to 0.087 acre-feet per DU per year. The change in the water use pattern, the revised area-capacity curve for the treatment plant reservoir, and the revised part-time residence demand lead to an increase in the safe yield of the supply system from 126.7 acre-feet to 143.5 acre-feet. If the 15 gpm well was added as a source of water in critical dry years, the safe yield would increase to 166.8 acre-feet.

Table 2, taken from the 1998 B&A Report, summarizes the updated water supply and demand findings. From the last two lines of the table, water demand was expected to exceed the supply beginning around the year 2000. In order to meet the projected demand, B&A again evaluated

various system modifications and off-stream storage options that could be implemented to meet increasing demand.

Table 2 Supply and Demand Findings, B&A 1998

	Year											
	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Dwelling Units												
Full-Time	252	364	493	652	745	850	950	1,050	1,130	1,190	1,230	1,252
Part-Time	180	139	79	0	0	0	0	0	0	0	0	0
Total	432	503	572	652	745	850	950	1,050	1,130	1,190	1,230	1,252
Water Demand												
Full-Time Residence Demand (a-f/DU/year)	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Full-Time Demand (a-f)	106	153	207	274	313	357	399	441	475	500	517	526
Part-Time Residence Demand (a-f/DU/year)	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
Part-Time Demand (a-f)	16	12	7	0	0	0	0	0	0	0	0	0
Total Demand (a-f)	122	165	214	274	313	357	399	441	475	500	517	526
Safe Yield (a-f)	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8	166.8

a-f = acre-feet
Taken from Table 3, B&A 1998
Safe yield determined assuming unlined treatment plant reservoir and 15 gpm well available in critical dry years

1.5.3 Wood Rodgers, Inc. (WR) Report, 2008

In 2008, WR, formally B&A, prepared an evaluation for two new alternative off-stream reservoir sites identified as Spring Flats and Lincoln Hill. Results of the evaluation are presented in a report titled "Reconnaissance Study Off-Stream Storage Reservoir Sites, Lincoln Hill and Spring Flat" (WR, 2008). The Spring Flat site is too small to accommodate anything but a small reservoir with insufficient capacity, but the Lincoln Hill site can accommodate a reservoir with an active storage volume of 400 acre-feet or more and could be considered by the District as an alternative to meet projected future growth within the District.

1.5.4 URS Corporation Americas (URS) Report, August 2009:

In March 2009, URS entered into an agreement with the District to provide engineering services to update the B&A 1998 water supply and demand evaluation. Results of the study were provided in a Draft Water Supply and Demand Update Report dated August 2009 (URS, 2009).

Previous B&A reports assumed that the water demand would be 0.42 acre-feet per DU per year for full-time residences (equivalent to approximately 375 gallons per residence per day). This demand was considered high for the Grizzly Flats community that lacked significant commercial water use. To address this issue URS evaluated water treatment plant production data and metered water use data from the District's billing system to refine the monthly and annual system demand estimates. The El Dorado County Water Agency also prepared an estimate of water use per DU for a selected residential area of Pollock Pines, California, without commercial use for comparison with the demands being estimated from the District's use data. The demand for Pollock Pines was estimated to be 0.25 acre-feet per DU per year. In the URS 2009 report, the District's water use data and Pollock Pines data was averaged and the demand was estimated to be approximately 0.23 acre-feet per DU per year for full time residences. This demand is down significantly from 0.42 acre-feet per DU per year used in previous reports.

Some influence from part-time residences on system demand was incorporated by favoring the Pollock Pines data in the evaluation.

Another significant change included in the August 2009 report was an increase in assumed diversion efficiency from the creeks. Previous reports assumed that 75 percent (%) of the flows in Big Canyon and North Canyon Creeks would be divertible. The remaining 25% would be unavailable to the system. It includes water remaining in the creek to meet in-stream flow maintenance requirements (15%) and water unavailable for diversion (10%) when creek flows exceed the diversion capacity. URS increased the diversion efficiency to 80% by reducing the unavailable water percentage from 10% to 5%. The reduction is reasonable because the District would be proactive in diverting all available water into the system during the more critical summer and fall months each year. To further support the reduction, the District should also continue to be proactive in addressing suspected root intrusions or air accumulation in the gravity pipeline (air binding) whenever such conditions are suspected.

With the higher diversion efficiency, the safe yield was found to be 145 acre-feet with an unlined treatment plant reservoir and 162 acre-feet with a lined treatment plant reservoir. At the time of the study, District record showed that 611 meters were being served. Table 3 summarizes the water supply and demand findings relative to the conditions existing at the time the draft report was prepared.

Table 3 Supply and Demand Findings, URS 2009

Case	Active Meters	Demand (a-f per DU per Year)	Total Demand (a-f per Year)	Safe Yield (a-f)
Existing System, Unlined Treatment Plant Reservoir	611	0.23	140.5	145
Existing System, Lined Treatment Pant Reservoir	611	0.23	140.5	162

a-f = acre-feet
Taken from data provided in Table 10, URS 2009
Safe yield determined excluding 15 gpm well

As in previous studies, the system demand with an unlined treatment plant reservoir remained close to the safe yield of the system.

The August 2009 Water Supply Demand Update Report remained in draft form. In August 2011, the District requested URS update the draft report. This report is the update to the August 2009 draft report and supersedes that report.

2.0 PROJECTED SERVICE AREA GROWTH

The projected growth in connections is presented on Figure 2. The projection is based on information provided on tables and figures in the B&A 1998 report. The growth in connections relies on data from several sources, including District statistics for the years up to 1997, assumed growth through 2015 for the community at a rate similar to that forecast for El Dorado County in the El Dorado County General Plan (1994), and a subsequent, gradually decreasing growth rate to final build-out, which is assumed to occur in 2050. The maximum number of planned connections (meters) at build-out is expected to be approximately 1,252 for the District's service area.

Currently, there are 607 metered connections in the system. This is down slightly from 611 connections reported in 2009. These two points are also shown on Figure 2 for comparison with predicted demand. Current connections are less than projected, likely the result of the recent economic downturn. The District anticipates growth will continue to be slower than projected. The District must be able to serve all 607 metered connections assuming they could become active on a full-time basis.

3.0 WATER SUPPLY SYSTEM SAFE AND FIRM YIELD EVALUATIONS

3.1 System Model

Since the B&A 1998 report was completed, B&A and SH have ceased providing engineering services. Many project files relative to the 1994 and 1998 studies have been lost or discarded. URS discussed the projects with previous consultants and reviewed what limited files remain. Unfortunately, the only definitive information remaining from the previous investigations is what is contained in the text and appendices of the B&A 1994 and B&A 1998 reports. A functional copy of the FORTRAN-based model used by SH to evaluate the performance of the District's system was not found, but some input and output data are memorialized in the reports. URS developed a new Excel-based system model to replace the FORTRAN model and used the published results in the previous reports to calibrate the new model and verify previous findings.

3.2 Model Components

The system model is an Excel spreadsheet driven by a Visual Basic program that can evaluate the operation of the District's system under various operating scenarios on a monthly average basis for water years 1925 through 1992. Components of the model are described in the following paragraphs.

3.2.1 Hydrologic Data

Creek Runoff: The District's water supply comes from two diversions located on North Canyon Creek and Big Canyon Creek. Both diversions are ungaged. To estimate creek flows for the B&A 1994 report, SH identified a gage on Sly Park Creek near Pollock Pines, California, that they considered comparable to North Canyon and Big Canyon Creeks based on topographic elevations, average annual rainfall, estimated runoff per square mile, and other factors. The Sly Park Creek gage has daily records spanning the period 1920 to 1992, which included several significant dry and wet periods (note that SH only used the data from 1925 to 1992 for their evaluations). Table 4 provides a comparison of basin characteristics.

Table 4 Hydrologic Characteristics of Drainage Basins

Stream	Area (Acres)	Average Annual Runoff (a-f)	a-f/mi^2	Average Precipitation (in)
Sly Park Creek	15.7	12,326	785	47
North Canyon Creek	1.75	1,365 (E)	780	47
Big Canyon Creek	2.66	2,070 (E)	780	47

Table data extracted from Appendix B, Table 1, B&A 1994
a-f = acre-feet
(E)= estimated value
in = inches
mi^2 = square mile(s)

SH transposed the Sly Park gaged runoff data to North Canyon Creek and Big Canyon Creek based on the ratio of drainage basin areas. This method is typically used to extrapolate hydrologic data from a gaged basin to ungaged basins with similar hydrologic characteristics.

Influence of Springs: Based on a limited set of data collected by the District in July and August 1998, North Canyon and Big Canyon Creeks appear to have proportionately greater summer flows than predicted from Sly Park Creek (B&A, 1998). The District and SH assumed that the

observed difference was associated with the various active springs located within the North Canyon and Big Canyon drainage basins, some of which are located on United States Geological Survey (USGS) maps covering those areas. To account for the apparent, more favorable time distribution of flow during the late summer and early fall due to the springs, SH adjusted the runoff records for each year based on limited District observations made in 1988. That adjustment redistributed some of the annual runoff between seasons to provide a higher spring-related base flow in late summer and fall without changing the annual total runoff.

No description can be found in previous reports that documents how creek flows were adjusted to account for the runoff from springs. However, the B&A 1994 report contains tables for North Canyon and Big Canyon Creeks that document the estimated monthly runoff in acre-feet with the adjustments for the influence of the springs. These tables are provided in Attachment A in this report. For consistency, URS used the monthly synthesized data from these two tables in its current evaluations of the District's system because it still represents the best available information. It is important that the District begin to collect real-time rainfall and stream flow data within the North Canyon and Big Canyon drainage basins to begin verifying current assessments of basin productivity and spring activity, and to better plan for future growth within the system.

Figure 3 provides a graph of annual total runoff from North Canyon and Big Canyon Creeks versus water year for the synthesized period of record from 1925 to 1993. Wet years and dry years occur in the record. Of particular interest are the years 1987, 1976, and 1961, which are circled on Figure 3. These years are the second years in a sequence of two consecutive dry years. Typically, these years control the safe yield and firm yield of the water supply system.

3.2.2 Reservoir Evaporation Data

Previous reports assumed an annual total evaporation of three feet distribution by month as shown in Table 5. No references were cited to document the source of the annual data and monthly distribution, but the assumed evaporation appears reasonable for the region based on limited data available on-line for evaporation at Jenkinson Lake near Pollock Pines. Three-foot total annual evaporation and the monthly distribution shown in Table 5 are used in the evaluation of drainage basin yield.

Table 5 Percent Distribution of Annual Evaporation by Month

October	6.6	January	1.7	April	8.6	July	17.4
November	2.6	February	2.9	May	11.5	August	15.6
December	1.7	March	5.5	June	14.4	September	11.5

Total annual evaporation assumed to be 3 feet
Table data taken from B&A, 1998.

3.2.3 Monthly Distribution of Annual Demand

Previous reports distributed annual water demand by month according to the percentages shown in Table 6. This distribution is based on monthly treatment plant production data evaluated by B&A.

Table 6 Percent Distribution of Annual Demand by Month

October	8.2	January	6.7	April	7.5	July	11.9
November	6.7	February	5.6	May	7.8	August	11.1
December	7.9	March	7.2	June	9.3	September	10.1

Table data taken from B&A, 1998.

The same monthly distribution percentages are used in the system model in this report for consistency with previous investigations. Model results (yields) are sensitive to changes in the monthly distribution, particularly for the months of August through October.

3.2.4 Treatment Plant Reservoir Storage Parameters

Figure 4 provides a storage curve for the treatment plant reservoir. This curve was developed from a topographic survey performed in June 1996 by the El Dorado County Surveyor, GIS Division. The treatment plant storage reservoir holds a total of 22.8 acre-feet of water below the present spillway invert. The District holds in reserve approximately 6.14 acre-feet, or 2 million gallons, for emergencies and firefighting. This leaves approximately 16.66 acre-feet of storage available to meet treatment plant demand. Currently, some of this water is potentially unusable at the plant because of the 6-foot projection of the supply pipe above the bottom of the reservoir and because the hydraulic head at lower reservoir levels is too low to supply the treatment plant effectively by gravity.

The District is currently making modifications to the reservoir and supply piping to the treatment plant that include lowering the top of the outlet pipe by approximately three feet and adding pumps at the treatment plant to boost pressure and access stored water that currently cannot flow to the plant by gravity. These changes will allow the District to fully access 16.66 acre-feet of storage in the reservoir and URS is using this active storage capacity for the current water supply and demand study. Refer to Figure 4 for the active and reserve storage allocations. The supply system is assumed to be at the point of failure (at safe yield) when the demand causes the remaining active storage in the treatment plant reservoir to drop to zero, or just begin to encroach into the reserve storage, in any month during the critical dry year.

3.2.5 Treatment Plant Reservoir Seepage

The existing reservoir at the treatment plant has exhibited significant leakage, particularly when a high water level is maintained. To help control seepage, the original spillway invert was lowered by approximately 1.5 feet. Despite lowering the invert, previous investigations (B&A, 1998) indicate that the seepage loss could still amount to 35 acre-feet if the reservoir were maintained at the spillway invert for the full year. The District will be installing an engineered membrane liner in the treatment plant reservoir during the summer of 2012. Reservoir lining will eliminate seepage, and the seepage loss is not included in the current model.

3.2.6 Diversion Efficiency

Previous reports assumed that 75 percent (%) of the flows in Big Canyon and North Canyon Creeks would be divertible. The remaining 25% would be unavailable to the system. It includes water remaining in the creek to meet in-stream flow maintenance requirements (15%) and water unavailable for diversion (10%) when creek flows exceed the diversion capacity. URS increased the diversion efficiency to 80% by reducing the unavailable water percentage from 10% to 5%. The reduction is reasonable because the District would be proactive in diverting all available water into the system during the critical summer and fall months each year, particularly in a dry year.

3.2.7 Backwash Water Volume

Backwash water volume is a significant factor in determining the safe or firm yield of the system. Backwash water is taken from the treatment plant reservoir to clean the plant filters during each

cleaning cycle and the backwash water is wasted without being returned to the reservoir. The backwash volume must be taken into account when estimating yield because it reduces the amount of water available for treatment and distribution.

In previous reports, the backwash water volume was set at 7% of the demand (need 107 acre-feet from the supply to produce 100 acre-feet of treated water). This came from an evaluation of monthly plant operation records in 1993/1994. Recently, the District has made changes in the flocculent being used in the plant and this appears to result in a significant reduction in the amount of backwash water required for each backwash cycle. Plant operation records in 2010 show that the average backwash volume was approximately 4.5% of water sent to the treated water holding tank. In 2011, the average backwash volume was 4.0%. For the evaluation in this report, URS reduced the backwash volume from 7% to 4.5% of demand. This change is predicated on the District continuing to use the improved flocculation method.

3.2.8 Off-Stream Storage Reservoir Parameters

Using an off-stream storage reservoir to improve the yield of the system to meet future growth is discussed later in this report. As indicated previously, the off-stream reservoir is assumed to be located at the Lincoln Hill site (refer to Figure 1 for location). Figure 5 presents the off-stream reservoir storage versus area curve used in the model. The curve was developed from survey data developed by WR based on a topographic survey performed in June 2007. To calculate system operation and the water balance in any month, the model uses the storage remaining in the reservoir from the previous month to estimate the evaporation for the current month being calculated.

Various sizes of off-stream reservoirs are considered in this study. Each reservoir is assumed to have an area-storage relationship following the curve shown on Figure 5, assuming a reservoir smaller than the maximum size would cover the same general area, but be shallower in depth.

Based on anticipated geological conditions at the reservoir site, and assuming that foundation treatments (like a grout curtain) would be employed to minimize seepage, seepage from the off-stream reservoir was assumed to be approximately 15 acre-feet per year for a 200 acre-foot reservoir maintained full for the entire year. This assumption is generally consistent with seepage amounts used in previous investigations. Table 7 provides a list of the maximum annual seepages used for larger or smaller reservoirs.

Table 7 Maximum Annual Seepage Assumed for Off-Stream Reservoir

Reservoir Maximum Volume (acre-feet)	Maximum Annual Seepage (acre-feet)
50	3.75
100	7.50
150	11.25
200	15.00
250	18.75
300	22.50
350	26.25
400	30.00

Using the information on Table 7, and other data from the previous reports, URS developed the following off-stream reservoir seepage equation for the system model for any size reservoir:

$$Monthly\ Seepage = \frac{Max\ Annual\ Seepage}{12} \times \left(\frac{Actual\ End\ of\ Month\ Storage}{Maximum\ Storage} \right)^{0.25}$$

To calculate system operation in any month, the model uses the actual off-stream storage remaining in the reservoir from the previous month to estimate the seepage for the current month being calculated.

Refilling the Off-Stream Reservoir: Figure 6 provides a map of the North Canyon and Big Canyon drainage basins, including their respective sub-basin areas. The total drainage basin areas for North Canyon and Big Canyon (as shown in Table 4) were verified by URS and agree with the values used in previous studies. URS assumed that only water from Long Canyon (1.45 square miles) and Upper Big Canyon above the confluence with Long Canyon (0.75 square miles) could contribute to refilling the off-stream storage reservoir. A diversion at the confluence of Long Canyon and Upper Big Canyon creeks would still have adequate head to move water by gravity to the off-stream reservoir. The combined area of these two sub-basins, plus a small additional area for the reservoir itself, represents approximately 52% of the total drainage area presently supplying the District's system. Therefore, to refill the off-stream reservoir during winter months, only 52% of the net runoff water available after all other demands for the month are met is diverted to storage.

3.3 Model Operation to Determine Safe Yield and Firm Yield

In general, the model operates on a monthly basis as follows:

a. In any month, the total (gross) amount of water available for use is calculated to be the sum of the monthly runoff from North Canyon and Big Canyon Creeks in acre-feet multiplied by the diversion efficiency factor (80%).

b. Water lost to the system is then estimated by calculating an evaporation loss for the treatment plant reservoir, and evaporation and seepage losses for the off-stream reservoir if one is included in the case being evaluated.

c. The net amount of water available is then calculated by subtracting the evaporation and seepage losses for the month from the gross amount of water available (item a. above).

d. Monthly demand is calculated by taking the assumed annual total demand and multiplying by the monthly demand percentage (Table 6).

e. The monthly demand is then adjusted up to account for water needed for treatment plant backwashing. Based on treatment plant backwash flows estimated by the District for the last three years, the additional backwash water volume needed is approximately 4% of the volume of treated water sent to the storage tank to meet system demand.

f. The surplus or deficit of water for the month is then calculated by subtracting the adjusted demand (demand plus backwash) from the supply available.

g. If supply exceeds demand, the system is considered adequate for the month. If, however, demand exceeds supply, the deficit (supply minus demand) is taken from storage.

h. Demand is increased until the first failure of the supply system is noted. Failure is indicated by the complete depletion of any off-stream storage and the depletion of the active storage in the treatment plant reservoir, leaving only the emergency reserve (approximately 6 acre-feet). The critical year and month are defined as those when the deficiency first appears over the period of record analyzed.

The same process described above is used to determine the firm yield of the system as well. Firm yield allows for some deficiency to exist between demand and supply in the critical dry years. Firm yield is discussed in more detail in Section 3.5

The minimum value for safe yield and firm yield occur for the existing system with no additional off-stream storage. As off-stream storage is added to the system, safe and firm yields increase.

3.4 Safe Yield of the System

3.4.1 Safe Yield for Existing System without Additional Storage

Using the system model described herein, URS evaluated the safe yield of the system for several cases. The results are presented in Table 8. This table also indicates the controlling critical water year and month that established the safe yield value.

Table 8 Annual Safe Yield without Off-Stream Storage

Case	Estimated Annual Safe Yield	Critical Water Year, Month
Existing system, unlined treatment plant reservoir, reservoir active storage 16.6 acre-feet	149 acre-feet	1989, October
Existing system, lined treatment plant reservoir, reservoir active storage 16.6 acre-feet	165 acre-feet	1989, October

Table 8 provides values for the unlined and lined treatment plant storage reservoir for comparison. Lining the reservoir adds approximately 16 acre-feet annually, or almost 11%, to the safe yield.

3.4.2 Safe Yield for Existing System with Additional Off-Stream Storage

URS also re-evaluated how adding storage to the system would affect the safe yield of the system. The results are presented in Table 9. Storage increments of 50 acre-feet up to a maximum of 400 acre-feet were evaluated.

Section 5 discusses safe yield relative to system growth and the number of customers that could be served.

Table 9 Annual Safe Yield with Additional Off-Stream Storage

Storage Volume (acre-fee)	Annual Safe Yield Lined Treatment Plant Reservoir (acre-feet)
0	165
50	256
100	318
150	348
200	379
250	410
300	439
350	468
400	495

3.5 Firm Yield of the System

3.5.1 Statistical Evaluation for Firm Yield

Firm yield is defined as the water supply that fully meets demand in 95 out of 100 years. To determine firm yield, the available runoff data from 1925 to 1992 were statistically evaluated to develop a creek flow recurrence interval curve using the Log Pearson (Type III) Distribution method. Figure 7 shows the curve.

From Figure 7, it can be determined that an annual flow volume of 920 acre-feet would be equaled or exceeded 95% of the time based on the available record. The demand that just causes the system to fail with this supply would be a reasonable estimate of the firm yield. In reviewing the runoff data used to develop Figure 7, water year 1961 had a runoff of 883 acre-feet for the year, and is the year with runoff closest to 920 acre-feet. The system model was run for increasing levels of demand and deficiencies were ignored until the first deficiency appeared in 1961. The demand that caused this first deficiency in 1961 was determined to be the estimated firm yield for the system.

3.5.2 Firm Yield for Existing System without Additional Storage

Using the approach described above, URS evaluated the firm yield of the system for several cases. The results are presented in Table 10. This table also indicates the controlling critical water year and month that established the firm yield.

Table 10 Annual Firm Yield without Off-Stream Storage

Case	Estimated Annual Firm Yield	Critical Water Year, Month
Existing system, unlined treatment plant reservoir, reservoir active storage 16.6 acre-feet	166 acre-feet	1961, October
Existing system, lined treatment plant reservoir, reservoir active storage 16.6 acre-feet	184 acre-feet	1961, October

Table 10 provides values for the unlined and lined treatment plant storage reservoir for comparison. Lining the reservoir adds approximately 18 acre-feet annually to the safe yield.

Table 11 identifies the dry years when annual runoff would be less than the firm yield determined for the system. The five annual occurrences (1962, 1967, 1988, 1989, and 1992) would be the years when demand could not be met fully without deficiency under the definition of firm yield. Water years 1988 and 1989 are back-to-back dry years. The largest cumulative deficiency would be approximately 6.8 acre feet occurring in the month of October in water year 1989.

Table 11 Firm Yield Deficient Years

Water Year	Month	Deficiency (acre-feet)
1961	October	0.3
1962	November	2.7
1967	October	0.3
1988	October	2.4
1988	November	2.7
1988	December	1.4
1989	**October**	**6.8**
1992	October	2.0
1992	December	0.8

3.5.3 Conservation under Firm Yield

For a system with a customer base determined using the firm yield criteria, conservation would be required during the critical years shown in Table 11 when the annual runoff is less than the firm yield. Table 12 provides an evaluation of the conservation that would be required for the most critical year (water year 1989) to avoid system failure based on system model output.

Table 12 Firm Yield Conservation Required

	Water Year 1988				Water Year 1989	
Supply/Demand Conditions	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**
No Conservation Action Taken						
1. Net Available Water (a-f) for Month	39.18	22.25	13.84	9.85	10.40	23.42
2. Demand (a-f) for Month	17.90	23.01	21.46	19.53	15.85	12.96
3. Deficiency (a-f) from Treatment Plant Storage	0	-0.76	-7.61	-9.68	-5.45	10.47
4. Treatment Plant Storage (a-f)	16.66	15.90	8.29	**-1.39**	**-6.84**	10.47
Conservation Action Taken						
5. Conservation Percent Per Month	0.0	11	11	11	11	0
6. Demand (a-f) for Month	17.9	20.54	19.16	17.44	14.16	12.96
7. Deficiency (a-f) from Treatment Plant Storage	0	0	-5.32	-7.59	-3.76	0
8. Remaining Treatment Plant Storage (a-f)	16.66	16.66	11.34	3.75	0.00	10.46

a-f = Acre-Feet

With no conservation, deficiencies would begin to deplete the treatment plant reservoir in July. In September, the system would fail and the reservoir would be overdrawn by 1.39 acre-feet. In October, the cumulative overdraft would rise to 6.84 acre-feet. In November, supply would again exceed demand and the treatment plant reservoir would begin to refill.

With conservation, reducing demand uniformly by 11% in the months of July through October would prevent failure of the reservoir in October as shown in Table 12. If conservation was addressed only in the failing months, a 7% reduction would have been required in September (1.39/19.53) and a 34% reduction would have been required in October (5.45/15.85). Since the treatment plant reservoir is relatively small in proportion to monthly summer demand, and since

it is not possible to accurately predict rainfall/runoff a month in advance, the operating rule for conservation in a forecast dry year or multi-dry year condition should be to start conservation in July and continue conserving until refilling the reservoir is well advanced in the fall or early winter as evidenced by at least two reservoir filling months (supply exceeds demand).

An evaluation of the deficiencies in water years 1962 and 1998 shown in Table 11 also indicates that a conservation factor of 4% per month uniformly made over the summer and fall months would avoid depleting the reservoir in the critical month.

3.5.4 Firm Yield for Existing System with Additional Off-Stream Storage

URS did not review the firm yield for off-stream reservoirs because it assumed that selection of the size for a new reservoir would be based on the safe yield criteria.

of system leaks that were repaired by the District (per background information provided by the District).

The data from the billing system cover water use through day 18 or 20 of each month when meters are typically read. Therefore, the data shown on Table 13 is not representative of a full month on a calendar basis. However, this does not affect estimating average metered usage for the year as long as the corresponding number of active meters for the same reading period is used for the calculation. Usage per DU is calculated in any month by dividing the number of acre-feet metered each month by the corresponding number of active meters.

As shown by the data on Table 13, the annual usage per DU exhibits a significant drop in 2010 and 2011 (even though partial data is available). Information from the District indicates that the drop in recent years could be associated with a noticeable increase in part-time residences due to current economic conditions. A recent District evaluation of 581 active meters showed that 365 were full-time residences and 216 were part-time residences (approximately one-third of the total).

If the estimated demands for the highest three years from 2006 to 2009 are averaged, the result is approximately 0.19 acre-feet per DU per year. This average demand represents the meter readings only and does not reflect the possibility of unaccounted losses in the distribution system between the treatment plant and the meters. Unaccounted losses could include minor leaks, fire flows, hydrant tests, flushing, use of hydrant water by contractors, and the like. To allow for unaccounted losses, the metered average should be increased by an appropriate factor. In this analysis, URS suggests using a 10% increase. URS also assumed an additional 10% increase associated with some part-time residential use during the period of analysis. With these increases, the average annual usage per DU per year would be approximately 0.23 acre-feet (0.19 acre-feet x 1.2).

4.2 Demand Estimated from Pollock Pines Metered Data

The El Dorado County Water Agency (ECWA) and EID conducted an investigation of metered water use for a selected sample area in Pollock Pines to serve as a comparison with Grizzly Flats. This sample was chosen based on having key characteristics similar to Grizzly Flats, including parcel size range and elevation. Data was analyzed for some of the same years that the Grizzly Flats metered data was analyzed (2006, 2007, and 2008). The Pollock Pines data analysis indicates that the average use per connection is approximately 0.23 acre-feet per connection per year without any allowance for unaccounted losses ahead of the meters. Using a 10% allowance for unaccounted losses, the use per connection would be approximately 0.25 acre-feet per connection.

4.3 Demand Estimated from Treatment Plant Production

URS reviewed Grizzly Flats water treatment plant production data for the years 2006 through 2011 provided by the District. Table 14 presents a summary of the monthly data and the evaluation conducted by URS. Flow meters measure the amount of water entering the two treatment units; however, there are no meters on the backwash systems. The District estimated backwash volumes using an estimated backwash frequency and an estimated backwash volume per cycle for each unit. The number of gallons sent to distribution was assumed equal to the plant inflow less backwash. Backwash water is wasted and not returned to the system. Therefore, the estimated amount of backwash water needed to support plant output must be added to the demand when checking to see if the net water supply in any month is adequate.

Table 14 Estimated Usage Using Plant Production Data

Year 2006

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	385	125	3,019,400	223,400	2,796,000	8.57	0.022
Feb	400	125	2,626,900	194,400	2,432,500	7.46	0.019
Mar	404	125	2,979,326	220,500	2,758,800	8.46	0.021
Apr	407	100	2,752,600	254,600	2,498,000	7.66	0.019
May	366	120	3,871,300	298,400	3,572,900	10.96	0.030
Jun	406	120	4,531,500	349,300	4,182,200	12.83	0.032
Jul	426	125	4,938,900	365,500	4,573,400	14.02	0.033
Aug	435	160	4,958,700	286,700	4,672,000	14.33	0.033
Sep	435	145	4,314,900	275,300	4,039,600	12.39	0.028
Oct	437	145	3,316,400	211,600	3,104,800	9.52	0.022
Nov	438	140	2,649,700	175,100	2,474,600	7.59	0.017
Dec	437	140	2,550,300	168,500	2,381,800	7.30	0.017
		Annual Totals	42,509,926	3,023,300	39,486,600	121.09	0.292

Year 2007

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	431	140	2,374,200	156,900	2,217,300	6.81	0.016
Feb	432	150	2,461,400	151,800	2,309,600	7.09	0.016
Mar	433	150	2,974,400	183,400	2,791,000	8.57	0.020
Apr	421	150	2,804,000	172,900	2,631,100	8.08	0.019
May	435	150	3,928,000	242,200	3,685,800	11.31	0.026
Jun	447	150	4,565,700	282,800	4,362,900	13.21	0.030
Jul	463	150	6,138,000	378,500	5,759,500	17.68	0.038
Aug	454	150	7,131,700	439,800	6,691,900	20.54	0.045
Sep	470	150	4,078,400	251,500	3,826,900	11.75	0.025
Oct	463	150	3,001,600	185,100	2,816,500	8.64	0.019
Nov	462	150	3,026,500	186,600	2,839,900	8.72	0.019
Dec	462	150	2,728,700	168,300	2,560,400	7.86	0.017
		Annual Totals	45,232,600	2,799,800	42,432,800	130.23	0.290

Year 2008

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	451	170	2,550,100	138,800	2,411,300	7.39	0.016
Feb	476	165	3,634,700	181,700	3,453,000	10.59	0.022
Mar	414	170	2,851,000	155,100	2,695,900	8.27	0.020
Apr	446	180	3,251,200	167,100	3,084,100	9.46	0.021
May	468	190	4,005,300	195,000	3,810,300	11.68	0.025
Jun	463	165	4,770,800	267,500	4,503,300	13.81	0.030
Jul	479	175	5,683,000	300,400	5,382,600	16.51	0.034
Aug	485	185	5,592,100	279,600	5,312,500	16.29	0.034
Sep	556	180	5,211,400	267,900	4,943,600	15.16	0.027
Oct	498	180	3,716,800	191,300	3,525,800	10.81	0.022
Nov	510	170	3,100,800	168,700	2,932,100	8.99	0.018
Dec	541	170	3,271,900	178,000	3,093,900	9.49	0.018
		Annual Totals	47,639,100	2,490,700	45,148,400	138.45	0.287

Year 2009

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	389	180	3,054,700	226,716	2,827,984	8.67	0.022
Feb	572	175	2,704,100	183,493	2,520,608	7.73	0.014
Mar	324	170	2,748,100	191,963	2,556,137	7.84	0.024
Apr	525	185	2,874,200	184,493	2,689,707	8.25	0.016
May	524	179	3,822,200	266,992	3,555,208	10.90	0.021
Jun	545	165	4,207,300	302,798	3,904,502	11.97	0.022
Jul	466	175	5,466,200	370,921	5,095,279	15.63	0.034
Aug	409	180	5,433,900	358,486	5,075,414	15.56	0.038
Sep	472	180	4,434,700	292,567	4,142,133	12.70	0.027
Oct	478	180	3,450,900	227,664	3,223,236	9.88	0.021
Nov	460	175	2,494,700	169,283	2,325,417	7.13	0.016
Dec	459	170	3,391,500	236,906	3,154,594	9.67	0.021
		Annual Totals	44,082,500	3,012,282	41,070,219	125.95	0.274

Year 2010

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	466	140	2,568,800	124,508	2,444,292	7.50	0.016
Feb	455	140	2,243,200	108,727	2,134,473	6.55	0.014
Mar	365	160	3,046,800	129,217	2,917,583	8.95	0.025
Apr	476	160	2,678,000	113,576	2,564,424	7.86	0.017
May	475	160	3,781,100	159,511	3,601,589	11.04	0.023
Jun	500	160	4,393,500	186,331	4,207,169	12.90	0.026
Jul	497	160	5,388,100	228,513	5,159,587	15.82	0.032
Aug	488	160	4,454,700	188,927	4,265,773	13.08	0.027
Sep	504	160	3,890,400	164,995	3,725,405	11.42	0.023
Oct	490	160	3,031,500	128,568	2,902,932	8.90	0.018
Nov	496	160	2,798,700	118,695	2,680,005	8.22	0.017
Dec	485	160	3,012,600	127,767	2,884,833	8.85	0.018
		Annual Totals	41,267,400	1,779,334	39,488,066	121.10	0.255

Year 2011

Month	Meters	GPM	Total Production	Backwash Gallons	Gallons to Distribution	A-F to Distribution	A-F Per Meter
Jan	486	140	2,591,400	98,491	2,492,909	7.64	0.016
Feb	539	140	2,269,600	86,260	2,183,340	6.70	0.012
Mar	449	160	2,591,400	98,491	2,492,909	7.64	0.017
Apr	408	160	2,723,200	103,500	2,619,700	8.03	0.020
May	498	160	2,990,700	113,667	2,877,033	8.82	0.018
Jun	519	160	4,547,300	172,928	4,374,472	13.41	0.026
Jul	528	160	4,674,000	177,644	4,496,356	13.79	0.026
Aug	532	160	4,674,000	177,644	4,496,356	13.79	0.026
Sep	537	160	4,465,750	169,729	4,296,021	13.17	0.025
Oct	536	160	4,465,750	169,729	4,296,021	13.17	0.025
Nov	536	160	2,833,000	107,673	2,725,327	8.36	0.016
Dec	536	160	2,642,600	100,437	2,542,163	7.80	0.015
		Annual Totals	41,468,700	1,576,091	39,892,609	122.34	0.240

The volume of water sent to the distribution system is determined by dividing the total net plant production by the number of active, non-zero-reading meters for the same month. The number of active meters is taken from the metered data for the same month (reference Table 13). As shown in Table 14, the monthly water usage per connection ranges from 0.240 to 0.292 acre-feet per connection per year. The demand calculated from treatment plant production data should already include unaccounted losses downstream of the treatment plant and no further adjustment is required.

As shown on Table 14, the annual average use per DU has been dropping each year. The more significant drops observed in 2010 and 2011 may be due to increased part-time residential use due to current economic conditions, which is difficult to quantify. URS believes the continued downward trend observed in the treatment plant data prevents a reasonable determination of an average demand value and make the data less reliable than the metered data or the Pollock Pines data discussed previously.

4.4 Current Demand Estimate

Results of the demand evaluations described in this section are summarized in Table 15.

Table 15 Comparison of Annual Water Usage Factors

Case	Water Usage (acre-feet per DU per year)	Adopted Usage (acre-feet per DU per year)
Grizzly Flats metered data[1]	0.23	**0.25**
Pollock Pines metered data[1]	0.25	
Treatment plant production data	Not Used	
Previous B&A usage estimate	0.42	

[1] Grizzly Flats metered data includes an additional 10% allowance for losses between treatment plant and meter and 10% for part-time residential use. Pollock Pines metered data includes an additional 10% allowance for losses between treatment plant and meter only.

As can be seen in Table 15, Water use per DU per year is nearly the same for the metered Grizzly Flats data and the Pollock Pines data. Because of the uncertainty in the split between part-time and full-time residential use, and to be conservative, URS recommends using 0.25 acre-feet per DU per year as the system demand. No current data, including the treatment plant production data, supports using the previous B&A value.

5.0 COMPARISONS OF SUPPLY AND DEMAND

5.1 Present Conditions for the Existing System

As determined in the previous section, the assumed usage is 0.25 acre-feet per DU per year for full-time residences. District information indicates there are currently 607 meters that must be served. Table 16 provides a comparison of the current number of meters versus the approximate number of meters that could be serviced based on the safe yield and firm yield criteria for the water supply system.

Table 16 Comparison of Meters Served

Case	Current Total Active Meters	Projected Total Meters Supported by Yield
Existing System - Unlined Reservoir		
Safe Yield Criteria (149 a-f per year)	607	596
Firm Yield Criteria (166 a-f per year)	607	664
Existing System - Lined Reservoir		
Safe Yield Criteria (165 a-f per year)	607	660
Firm Yield Criteria (184 a-f per year)	607	736

a-f = Acre-Feet
No contribution from well

Table 16 provides results for the unlined treatment plant reservoir and lined treatment plant reservoir conditions for comparison to show the benefits of the current reservoir lining program. For the unlined reservoir under the safe yield criteria, no additional meters could be serviced. Under the firm yield criteria for the unlined reservoir, some additional meters could be serviced with the understanding that conservation would be necessary in dry years. The current situation improves once the reservoir is lined. The projected number of meters that could be served falls comfortably higher than the current number of meters actually being served for the safe yield criteria.

The increase in the number of meters that can be served is due primarily to the reservoir lining. The flocculent change in the water treatment plant process, which reduces the amount of backwash water wasted, also has a beneficial effect. Completing the reservoir lining project in 2012 should remain a District priority.

5.2 System Improvement from Well Addition

The District has an existing well located near the Forest View tank that is rated at 15 gpm. If this well is incorporated into the District's system, the safe yield and firm yield would be improved. URS incorporated the well into the system model to evaluate the benefits. URS assumed that the well would operate August through October in dry years as needed and that the well would benefit the entire system (not serve only a branch of the system). The evaluation shows that incorporating the well into the system would increase both the safe yield and firm yield by approximately 19 acre-feet per year. Table 17 provides a comparison of meters that could be served with the treatment plant reservoir lined and the 15 gpm well incorporated into the system.

Table 17 Comparison of Meters Served with Addition of 15 gpm Well

Case	Current Total Active Meters	Projected Total Meters Supported by Yield
Existing System - Lined Reservoir		
Safe Yield Criteria No Well (165 a-f per year)	607	660 (From Table 16)
Safe Yield Criteria with Well (184 a-f per year)	607	736
Firm Yield Criteria No Well (184 a-f per year)	607	736 (From Table 16)
Firm Yield Criteria with Well (203 a-f per year)	607	812

a-f = Acre-Feet

As shown in Table 17, the addition of the well to the system increases the potential number of connections by approximately 76 for safe yield and firm yield. The District should consider finalizing the connection of the well to the system if this is viable considering water quality and cost. Adding other wells could help to meet future growth and the District should consider performing a groundwater evaluation.

5.3 Future Demand Growth and Required Off-Stream Reservoir Size

Figure 8 shows the projected growth in demand based on the assumed community growth shown on Figure 2. Demand is related to growth through the residential use factor (0.25 acre-feet per DU per year) assuming no part-time residential use. Figure 8 also shows the current demand based on 607 active meters and the safe yield and firm yield supply lines for reference.

Current demand is below projected growth. Assuming that growth would eventually return to the projected curve, the maximum system demand at build-out would be approximately 313 acre-feet per year. Table 9 indicates that an off-stream storage reservoir with an active storage of 100 acre-feet would just satisfy the demand at build-out during the critical water years without depleting the system using the safe yield criteria. For planning purposes, a reservoir with a minimum of 150 acre-feet of active storage should be selected to allow for sediment accumulation over the years and to provide a safety margin due to the synthesized nature of the hydrological data and the unconfirmed contribution of springs in the drainage basins.

6.0 FINDINGS AND RECOMMENDATIONS

6.1 Key Findings

The evaluations provided in this report indicate that current and future system demand should be based on a use factor of 0.25 acre-feet per DU per year for full-time residences for planning purposes.

As of March 2012, there are approximately 607 meters in service within the District. The current safe yield evaluation of the water supply indicates that approximately 165 acre-feet of water would be available for the critical dry year in the synthesized hydrological record. Using 0.25 acre-feet per DU per year, approximately 660 meters could be served.

The current firm yield evaluation of the water supply indicates that approximately 184 acre-feet of water would be available from the synthesized hydrological record. Using 0.25 acre-feet per DU per year, approximately 736 meters could be served. Under the firm yield definition used for the evaluation in this report, deficiencies could be experienced in 5 out of 100 years in the hydrological record. An evaluation of the deficiency in the most critical year indicates that reducing demand by approximately 11% (conservation) from July through October could avoid depleting the treatment plant reservoir. If firm yield is the criteria adopted by the District for water supply, conservation efforts should be applied to the late summer and early fall months uniformly during a predicted dry year because the critical month for reservoir storage cannot be predicted in advance. Conservation should continue until surplus water is available to refill the treatment plant reservoir.

The potential number of metered connections determined in this report is higher than determined in previous water supply and demand evaluation reports. This is primarily due to the lining of the water treatment plant reservoir, which eliminates a significant seepage loss, and the change in flocculent used in the treatment plant, which is reducing the amount of backwash water that is required and wasted.

Incorporation the exiting 15 gpm well into the system can also increase both safe yield and firm yield of the water supply by approximately 19 acre-feet per year. Additional wells, if proven feasible by a groundwater evaluation, could help to meet increased demand in the future, and reduce or eliminate the need for off-stream storage if well operation is determined to be economically viable.

Using 0.25 acre-feet per DU per year as the basis for demand, approximately 313 acre-feet of water would be required to service 1,252 dwellings at build-out in the future. To meet the safe yield criteria, an off-stream reservoir with a minimum active storage capacity of 150 acre-feet is recommended if additional wells are not developed.

6.2 Sensitivity

The evaluation provided in this report relies upon data developed for previous reports and data supplied by the District. There can be variability in the data that can affect the results. Some of the variable factors include the following:

- The on-going reliance upon synthesized hydrological data for North Canyon and Big Canyon Creeks.
- The beneficial effect of springs in the drainage basin on available runoff, particularly in the late summer months.

- Future environmental limitations on the amount of water that can be diverted to meet higher in-stream flow requirements in excess of those assumed in this and previous evaluation reports.
- The ability of the District to effectively divert all available water needed to meet demand at the diversion sites, and convey the water to the treatment plant
- The assumed distribution of annual demand by month. A change in the distribution in critical summer months by one or two percent can significantly affect safe yield.

6.2 Recommendations

URS proposes the District consider the following recommendations regarding supply and demand:

- Provide recording stream gages at the diversions on Big Canyon and North Canyon Creeks and flow recorders for the diversion pipes so that site-specific data can be obtained on creek runoff, diverted flows, and bypass flows.
- Install at least one recording rain gage in the drainage basin area at a suitable location.
- Consider installing an evaporation gage at a suitable location.
- Continue to upgrade the flow measuring and recording equipment at the water treatment plant, including backwash flows, to account for all water as closely as possible.
- Continue to implement plans to line the treatment plant storage reservoir.
- Consider modifying or changing the billing program to facilitate retrieving data regarding active customers and water used on a monthly calendar basis.
- Continue to monitor and repair leaks in the distribution system, and monitor for water being used that might not be included in the billing system (hydrant flushing, contractor use, Forest Service use, etc.).
- Annually, update the evaluation of system demand based on meter readings and treatment plant production data to refine the estimate of water usage per DU for planning purposes.
- Continue to evaluate the addition of wells or an off-stream reservoir to the system to be able to meet future growth in the system.
- Consider a program to systematically replace the aging North Canyon and Big Canyon pipelines all the way to the treatment plant reservoir. Incorporate air relief and blowoff appurtenances. Replacing the pipelines would significantly increase the reliability of the raw water supply system and reduce concerns for root intrusion and air binding.

7.0 LIMITATIONS

This work performed for this report conforms to the current state of the practice for similar work prepared by qualified engineers currently practicing in the field.

URS relies upon the accuracy and completeness of the analyses and data developed by other consultants in previous reports, which is incorporated into the evaluations covered by this report.

URS relies upon the accuracy and completeness of meter data and treatment plant data provided by the District.

8.0 REFERENCES CONSULTED

B&A, 1994. Borcalli & Associates, Inc.; Grizzly Flats Community Services District, "Water Supply Reconnaissance-Level Study," March 1994.

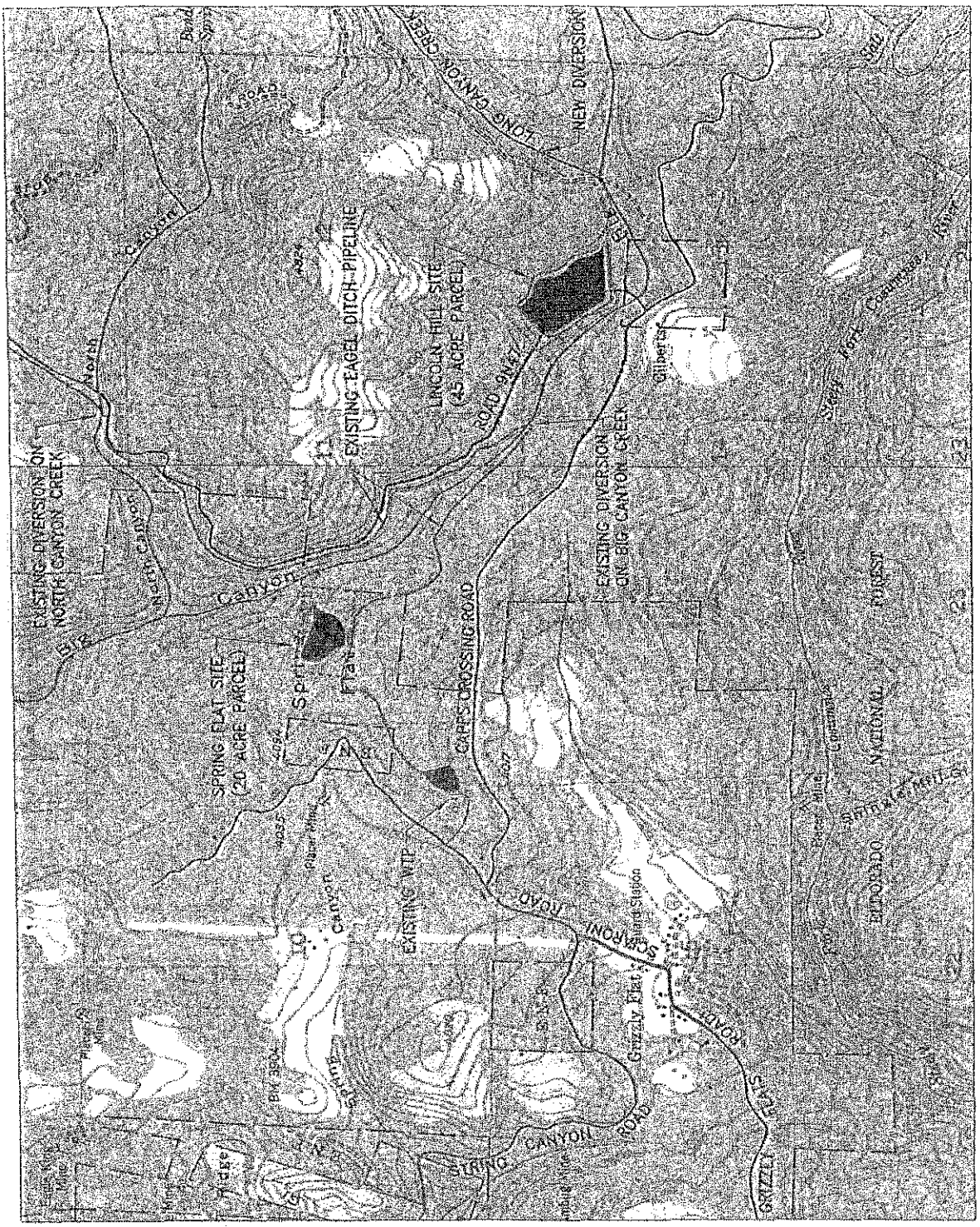
B&A, 1998. Borcalli & Associates, Inc.; Grizzly Flats Community Services District, El Dorado, California, "Reconnaissance Investigation of Off-Stream Storage," May 1998.

SH, 1998. Sierra Hydrotech; Grizzly Flats Community Services District, "Existing Water System and Off-Stream Storage Analysis," May 4, 1998

WR, 2008. Grizzly Flats Community Services District, "Reconnaissance Study Off-Stream Storage Reservoir Sites, Lincoln Hill and Spring Flat," December 2008.

URS, 2009. URS, Grizzly Flats Community Services District, "Draft Water Supply and Demand Update Report," August 2009

FIGURES



Reference: WR 2008 Reconnaissance Study
Off-Stream Storage Reservoir Study

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GRIZZLY FLATS COMMUNITY SERVICES DISTRICT
VICINITY MAP

Figure 1 Vicinity Map

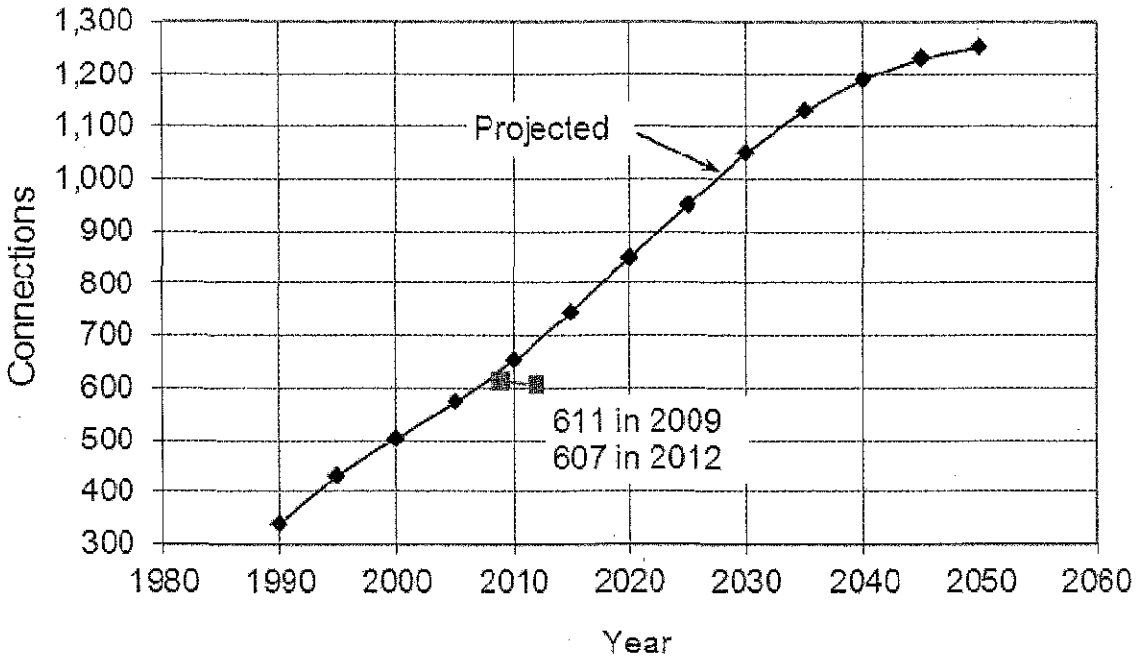


Figure 2 Projected Connection Growth

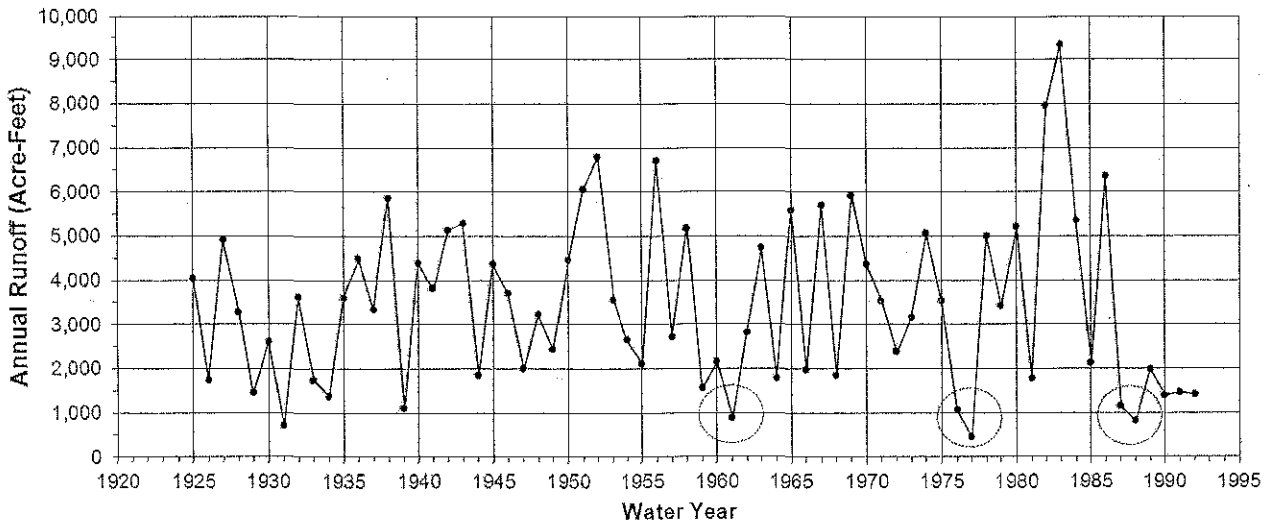


Figure 3 Graph of Annual Runoff

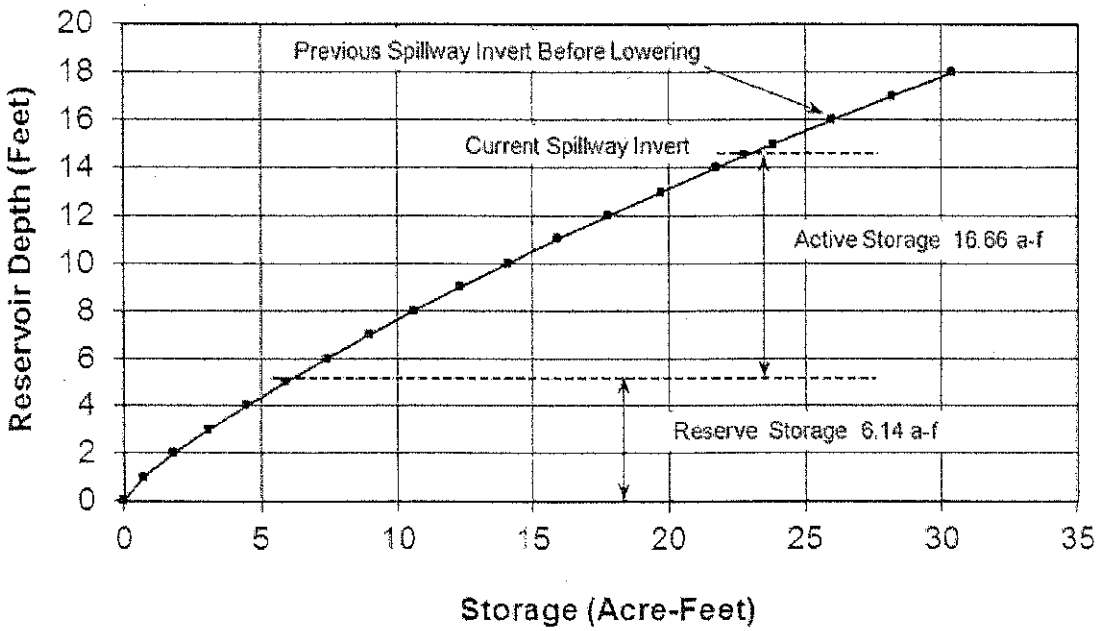


Figure 4 Plant Reservoir Storage Curve

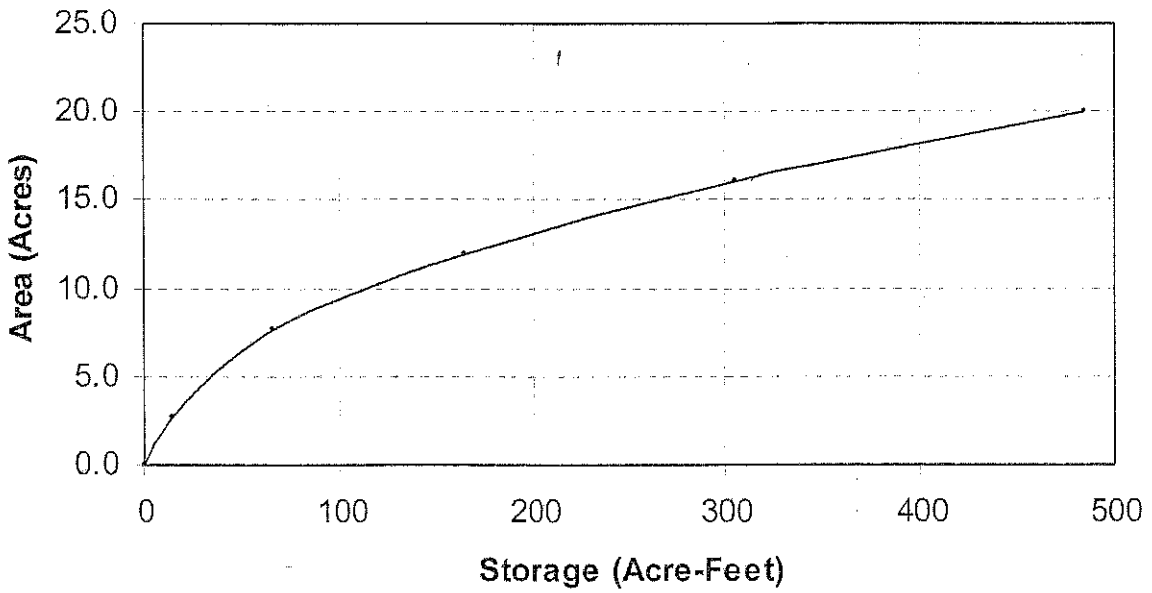
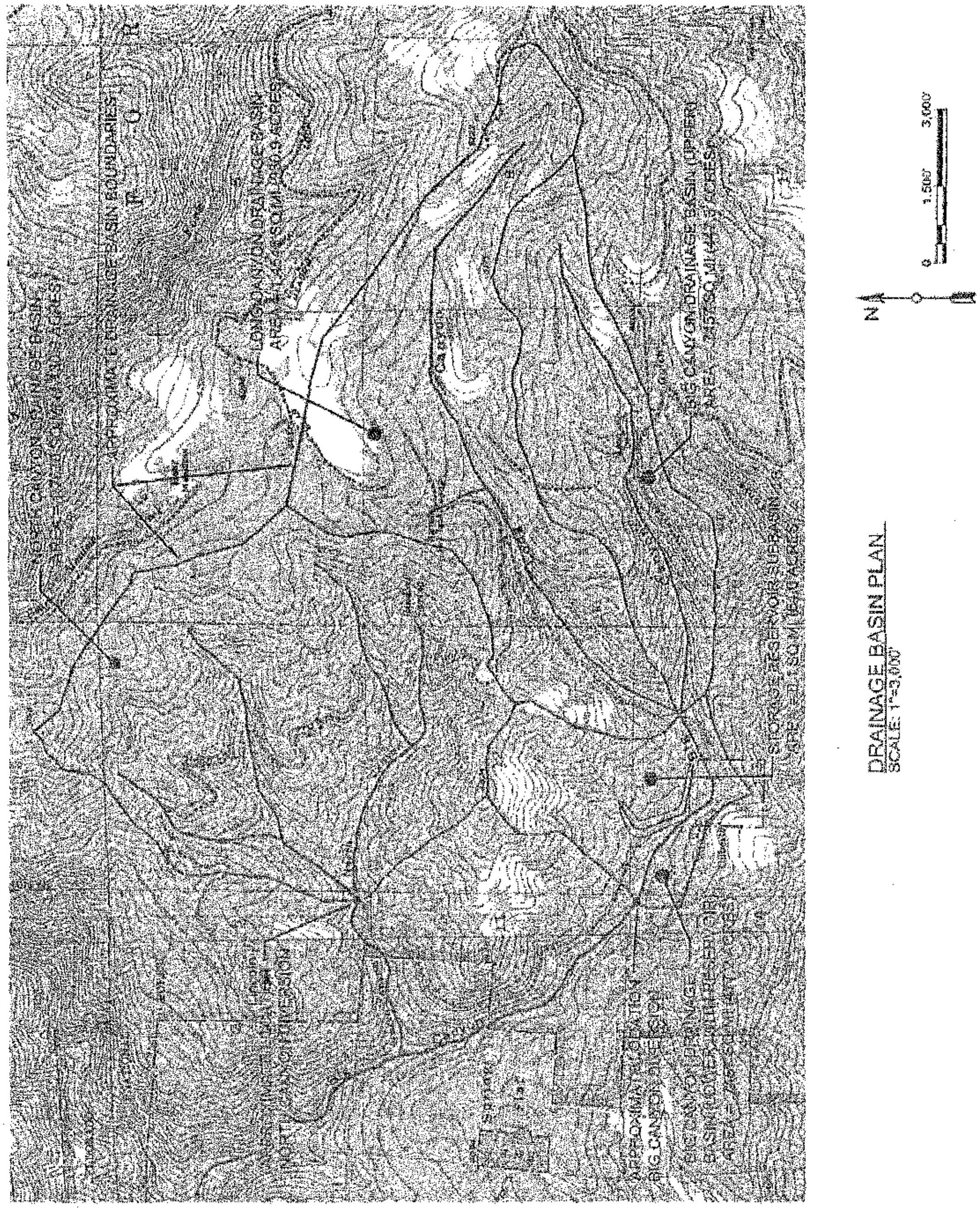


Figure 5 Off-Stream Reservoir Area-Storage Curve



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GRIZZLY FLATS COMMUNITY SERVICES DISTRICT
DRAINAGE BASINS FOR EXISTING DIVERSIONS

Figure 6   Drainage Basin Size And Shape

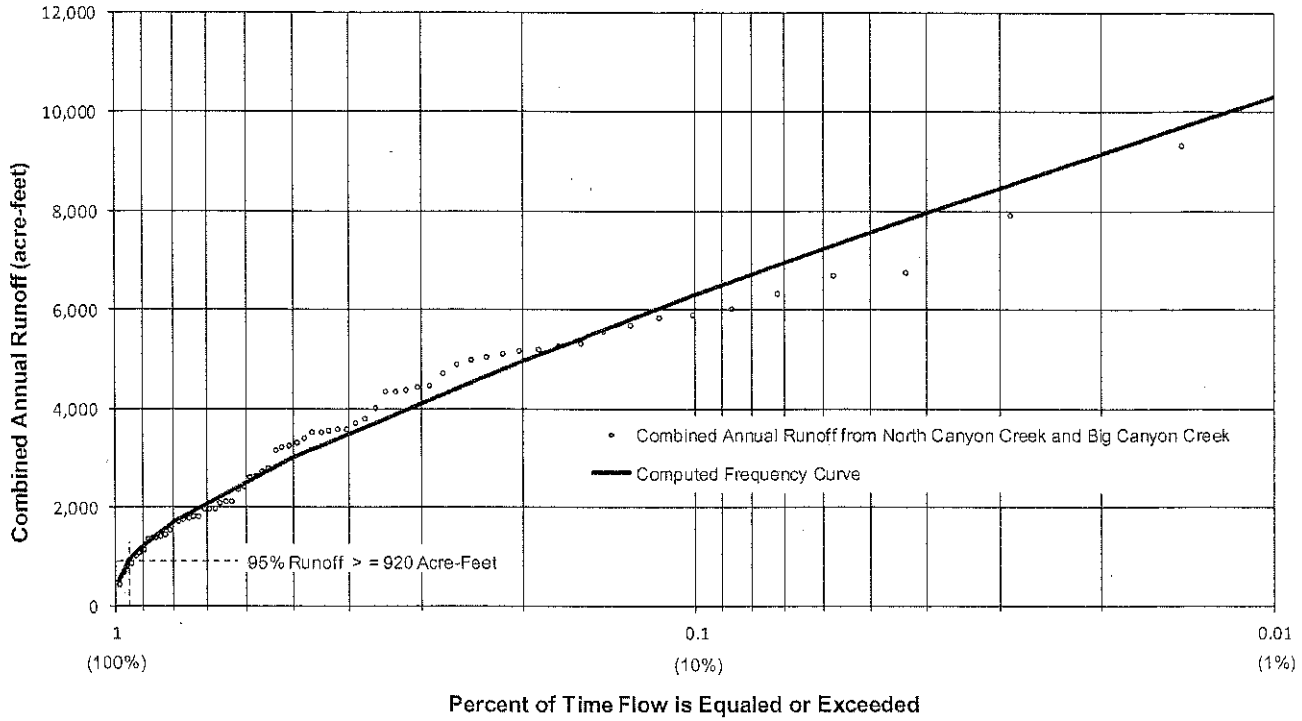


Figure 7 **Creek Flow Recurrence Interval**

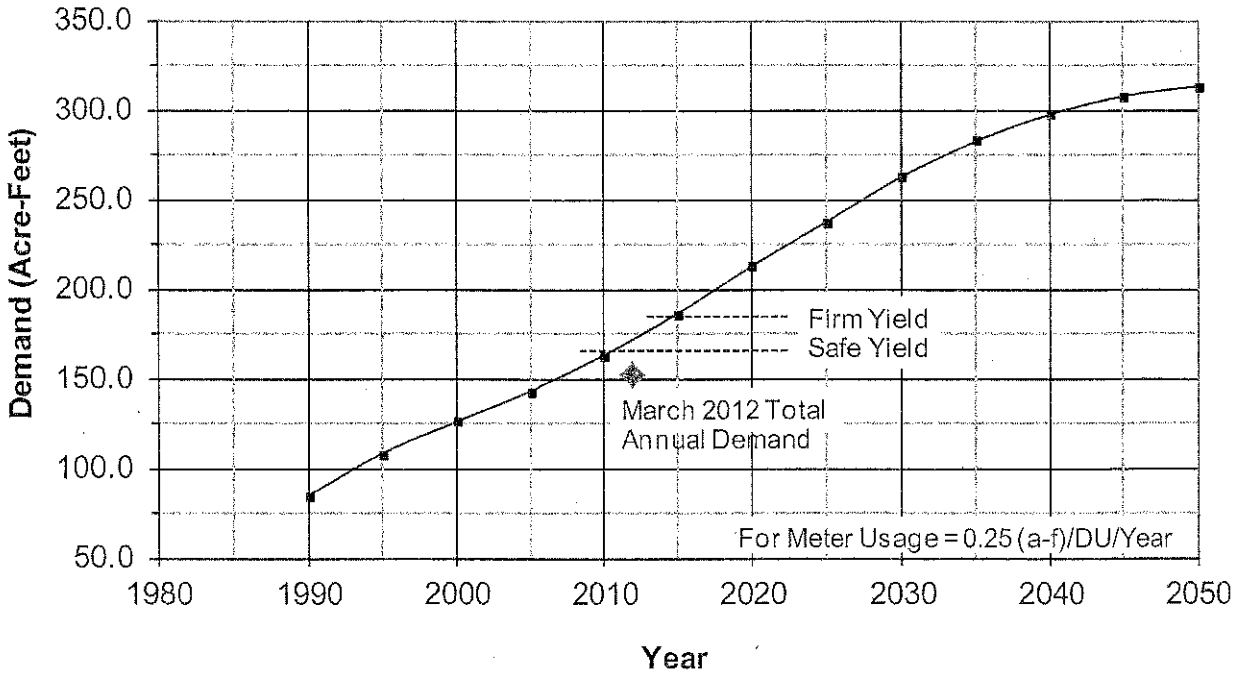


Figure 8 Projected Demand

ATTACHMENTS

ATTACHMENT A

NORTH CANYON AND BIG CANYON MONTHLY RUNOFF, INCLUDING SPRINGS, SYNTHESIZED BY SIERRA HYDROTECH

(Reference B&A, March 1994)

North Canyon Monthly Runoff (Acre-Feet)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1925	17.32	35.14	78.69	51.97	432.09	224.21	501.38	130.76	55.43	27.66	19.00	11.38	1,585.03
1926	15.34	19.30	20.29	36.13	198.47	99.48	218.27	43.65	26.72	21.72	17.02	11.38	727.77
1927	13.36	99.48	54.94	162.83	582.55	289.54	509.30	107.00	37.61	24.69	19.00	13.36	1,913.66
1928	18.31	63.84	38.11	76.71	115.32	585.52	276.67	45.63	27.71	23.70	17.02	11.38	1,299.92
1929	11.38	18.31	32.17	19.30	64.83	100.47	213.32	66.42	41.57	23.70	19.00	11.38	621.85
1930	11.38	11.38	49.00	104.43	148.98	376.65	173.72	99.08	32.66	24.69	17.02	11.38	1,060.37
1931	11.38	20.29	14.35	40.09	65.82	67.80	25.24	25.86	23.72	21.72	17.02	11.38	344.67
1932	11.38	13.36	138.09	83.64	359.82	324.19	199.46	203.02	44.54	23.70	17.02	11.38	1,429.60
1933	11.38	13.36	14.35	16.33	32.17	184.61	143.04	216.88	47.51	23.70	17.02	11.38	731.73
1934	19.30	17.32	71.76	103.44	153.93	91.56	27.22	28.80	26.72	21.72	17.02	11.38	590.17
1935	13.36	28.21	22.27	73.74	152.94	152.94	760.73	134.72	33.65	24.69	17.02	11.38	1,425.65
1936	13.36	14.35	15.34	249.95	642.94	328.15	295.48	65.43	72.25	27.66	19.00	13.36	1,757.27
1937	13.36	13.36	18.31	16.33	173.72	324.19	503.36	170.35	40.58	24.69	17.02	11.38	1,326.65
1938	16.33	28.21	150.96	71.76	152.94	724.11	673.62	335.67	53.45	28.65	18.01	12.37	2,266.08
1939	17.32	26.23	26.23	33.16	44.05	155.91	76.71	33.75	26.72	21.72	17.02	11.38	490.20
1940	12.37	12.37	22.27	339.04	491.48	449.91	268.75	52.56	21.77	21.72	17.02	11.38	1,720.64
1941	11.38	16.33	119.28	157.88	413.28	309.34	243.02	147.59	34.64	24.69	17.02	11.38	1,505.83
1942	13.36	20.29	95.52	478.61	408.33	223.22	443.97	183.22	70.27	29.64	19.00	11.38	1,996.81
1943	11.38	111.36	192.53	514.25	362.79	496.43	232.13	54.54	26.72	22.71	18.01	12.37	2,055.22
1944	12.37	17.32	19.30	32.17	58.89	137.10	227.18	167.38	41.57	24.69	18.01	12.37	768.35
1945	12.37	106.41	128.19	97.50	717.18	146.01	271.72	117.89	50.48	27.66	21.97	12.37	1,709.75
1946	32.17	85.62	309.34	259.84	130.17	222.23	264.79	82.25	26.72	24.69	18.01	12.37	1,468.20
1947	13.36	87.60	74.73	42.07	185.60	195.50	124.23	30.78	22.76	21.72	17.02	11.38	826.75
1948	35.14	36.13	14.35	137.10	61.86	81.66	477.62	271.32	97.00	35.58	22.96	14.35	1,285.07
1949	14.35	22.27	24.25	31.18	36.13	74.73	492.47	191.14	42.56	27.66	22.96	14.35	994.05
1950	14.35	17.32	14.35	159.86	420.21	332.11	519.20	162.44	46.52	26.67	19.99	12.37	1,745.39
1951	25.24	560.77	655.80	228.17	385.56	159.86	167.78	76.31	25.73	22.71	17.02	11.38	2,336.33
1952	22.27	37.12	179.66	148.98	415.26	224.21	891.40	461.39	136.60	47.46	30.88	20.29	2,615.52
1953	17.32	20.29	30.19	232.13	192.53	187.58	423.18	152.54	81.16	34.59	23.95	15.34	1,410.80
1954	14.35	17.32	19.30	53.95	177.68	286.57	352.90	69.38	24.74	23.70	19.00	13.36	1,072.25
1955	12.37	20.29	79.68	63.84	138.09	157.88	191.54	120.86	36.62	22.71	18.01	11.38	873.27
1956	13.36	13.36	963.66	706.29	252.92	184.61	211.34	144.62	36.62	23.70	19.00	13.36	2,582.84
1957	16.33	18.31	20.29	38.11	281.62	351.91	187.58	102.05	32.66	22.71	18.01	12.37	1,101.95
1958	12.37	33.16	59.88	94.53	636.01	269.74	415.26	344.58	76.21	31.62	24.94	17.32	2,015.62
1959	12.37	14.35	14.35	82.65	151.95	157.88	121.26	35.73	20.78	21.72	17.02	12.37	662.43
1960	12.37	12.37	14.35	23.26	232.13	304.39	167.78	43.65	21.77	21.72	17.02	11.38	882.19
1961	11.38	12.37	20.29	23.26	65.82	74.73	84.63	47.61	21.77	21.72	17.02	12.37	412.97
1962	11.38	9.40	15.34	19.30	331.12	108.39	441.00	107.99	34.64	23.70	19.00	11.38	1,132.64
1963	100.47	21.28	55.93	262.81	750.84	93.54	275.68	186.19	40.58	27.66	19.00	13.36	1,847.34
1964	17.32	118.29	58.89	58.89	96.51	80.67	159.86	74.33	28.70	22.71	18.01	12.37	746.55
1965	11.38	25.24	666.69	449.91	349.93	181.64	277.66	102.05	37.61	24.69	24.94	17.32	2,169.06
1966	16.33	60.87	40.09	46.03	58.89	213.32	271.72	37.71	21.77	21.72	17.02	11.38	816.85
1967	11.38	40.09	268.75	257.86	471.68	468.71	184.61	282.21	125.71	41.52	29.89	24.25	2,206.66
1968	19.30	17.32	21.28	47.02	277.66	150.96	130.17	33.75	21.77	21.72	18.01	11.38	770.34
1969	12.37	43.06	46.03	906.25	305.38	180.65	471.68	210.94	51.47	26.67	21.97	16.33	2,292.80
1970	15.34	20.29	119.28	965.64	251.93	142.05	74.73	47.61	23.75	21.72	17.02	11.38	1,710.74
1971	12.37	56.92	91.56	130.17	258.85	309.34	309.34	126.80	46.52	27.66	19.99	14.35	1,403.87
1972	15.34	26.23	51.97	63.84	128.19	336.07	208.37	65.43	24.74	21.72	18.01	14.35	974.26
1973	19.30	35.14	92.55	272.71	174.71	160.85	293.50	130.76	29.69	22.71	18.01	12.37	1,262.30
1974	18.31	236.09	218.27	497.42	162.83	366.75	270.73	100.07	29.69	28.65	22.96	17.32	1,969.09
1975	25.24	35.14	56.92	96.51	188.57	294.49	243.02	288.15	78.19	33.60	36.82	26.23	1,402.88
1976	48.01	51.97	36.13	30.19	49.00	74.73	69.78	31.77	21.77	21.72	23.95	15.34	474.36
1977	16.33	16.33	14.35	19.30	25.24	29.20	29.20	26.82	21.77	20.73	16.03	12.37	247.67
1978	14.35	19.30	149.97	421.20	308.35	443.97	346.96	129.77	44.54	27.66	22.96	20.29	1,949.32
1979	22.27	25.24	27.22	125.22	168.77	309.34	387.54	189.16	36.62	29.64	22.96	13.36	1,357.34
1980	23.26	32.17	43.06	772.61	595.42	198.47	179.66	81.26	34.64	27.66	22.96	17.32	2,028.49
1981	12.37	12.37	15.34	26.23	310.33	46.03	187.58	48.60	40.58	21.72	17.02	11.38	749.55
1982	19.30	172.73	339.04	318.25	637.00	520.19	715.20	153.53	90.07	28.65	25.93	27.22	3,047.11
1983	84.63	108.39	266.77	466.73	466.73	1,137.89	316.27	284.19	264.30	80.12	55.63	31.18	3,562.83
1984	30.19	290.53	507.32	407.34	172.73	271.72	153.93	90.17	77.20	40.53	19.99	15.34	2,076.99
1985	22.27	65.82	46.03	57.91	248.96	91.56	206.39	44.64	36.62	22.71	17.02	15.34	875.27
1986	18.31	28.21	64.83	245.00	839.93	755.78	264.79	88.19	88.09	23.70	18.01	15.34	2,450.18
1987	13.36	12.37	13.36	15.34	181.64	41.08	111.36	36.75	33.62	21.72	17.02	11.38	509.00
1988	10.39	11.38	16.33	23.26	130.17	35.14	48.01	33.80	28.65	21.30	16.45	10.39	385.27
1989	10.39	16.33	19.30	26.23	140.07	279.64	199.46	41.67	38.60	21.72	17.02	12.37	822.80
1990	19.30	19.30	21.28	33.16	138.09	108.39	113.34	48.60	49.49	22.71	17.02	11.38	602.06
1991	11.38	15.34	16.33	20.29	23.26	139.08	183.62	86.21	82.15	22.71	17.02	11.38	628.77
1992	10.39	12.37	14.35	21.28	165.80	187.58	98.49	27.81	21.77	22.71	16.03	10.39	608.97

Reference: Appendix Table A, B&A, March 1994. Includes Adjustment for Springs

Big Canyon Monthly Runoff (Acre-Feet)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1925	14.62	44.59	117.85	72.90	712.27	362.61	828.80	193.55	64.07	17.87	7.31	4.37	2,440.81
1926	11.29	17.95	19.61	46.26	319.32	152.82	352.61	47.03	15.79	7.88	3.98	4.37	998.91
1927	7.96	152.82	77.89	259.37	965.34	472.49	842.13	153.60	34.10	12.87	7.31	7.70	2,993.58
1928	16.28	92.87	49.58	114.52	179.46	980.33	450.85	50.36	17.45	11.21	3.98	4.37	1,971.26
1929	4.63	16.28	39.60	17.95	94.54	154.48	344.29	85.33	40.76	11.21	7.31	4.37	820.75
1930	4.63	4.63	67.90	161.14	236.06	619.02	277.69	140.27	25.78	12.87	3.98	4.37	1,558.34
1931	4.63	19.61	9.62	52.92	96.21	99.53	27.94	15.07	12.79	7.88	3.98	4.37	354.55
1932	4.63	7.96	217.75	126.18	590.71	530.77	320.98	315.10	45.76	11.21	3.98	4.37	2,179.40
1933	4.63	7.96	9.62	12.95	39.60	296.01	226.07	338.41	50.75	11.21	3.98	4.37	1,005.56
1934	17.95	14.62	106.19	159.47	244.39	139.49	31.27	22.06	15.79	7.88	3.98	4.37	767.46
1935	7.96	32.94	22.94	109.52	242.73	242.73	1,265.04	200.22	27.45	12.87	3.98	4.37	2,172.75
1936	7.96	9.62	11.29	405.90	1,066.90	537.43	482.49	83.67	92.38	17.87	7.31	7.70	2,730.52
1937	7.96	7.96	16.28	12.95	277.69	530.77	832.13	260.15	39.10	12.87	3.98	4.37	2,006.21
1938	12.95	32.94	239.39	106.19	242.73	1,203.43	1,118.52	538.21	60.74	19.53	5.64	6.03	3,586.30
1939	14.62	29.60	29.60	41.26	59.58	247.72	114.52	30.39	15.79	7.88	3.98	4.37	599.31
1940	6.30	6.30	22.94	555.74	812.15	742.22	437.53	62.02	7.46	7.88	3.98	4.37	2,668.89
1941	4.63	12.95	186.12	251.05	680.62	505.79	394.24	221.86	29.11	12.87	3.98	4.37	2,307.59
1942	7.96	19.61	146.15	790.51	672.30	360.94	732.23	281.80	89.05	21.20	7.31	4.37	3,133.43
1943	4.63	172.79	309.33	850.45	595.71	820.48	375.92	65.35	15.79	9.55	5.64	6.03	3,231.67
1944	6.30	14.62	17.95	39.60	84.55	216.08	367.60	255.16	40.76	12.87	5.64	6.03	1,067.16
1945	6.30	164.47	201.10	149.49	1,191.78	231.07	442.53	171.91	55.75	17.87	12.31	6.03	2,650.61
1946	39.60	129.50	505.79	422.54	204.43	359.28	430.87	111.97	15.79	12.87	5.64	6.03	2,244.31
1947	7.96	132.84	111.19	56.25	297.67	314.32	194.44	25.39	9.13	7.88	3.98	4.37	1,165.42
1948	44.59	46.26	9.62	216.08	89.54	122.85	788.85	429.98	134.01	31.19	13.97	9.36	1,936.30
1949	9.62	22.94	26.28	37.93	46.26	111.19	813.82	295.12	42.43	17.87	13.97	9.36	1,446.79
1950	9.62	14.62	9.62	254.38	692.28	544.09	858.78	246.84	49.09	16.20	8.98	6.03	2,710.53
1951	27.94	928.71	1,088.55	369.27	634.00	254.38	267.70	101.98	14.12	9.55	3.98	4.37	3,704.55
1952	22.94	47.92	287.68	236.06	683.95	362.61	1,484.81	749.66	200.61	51.17	27.29	19.36	4,174.05
1953	14.62	19.61	36.26	375.92	309.33	301.00	697.27	230.18	107.36	29.53	15.64	11.03	2,147.75
1954	9.62	14.62	17.95	76.22	284.35	467.50	579.05	90.32	12.46	11.21	7.31	7.70	1,578.31
1955	6.30	19.61	119.51	92.87	217.75	251.05	307.66	176.90	32.44	9.55	5.64	4.37	1,243.65
1956	7.96	7.96	1,606.36	1,173.46	410.89	296.01	340.96	216.86	32.44	11.21	7.31	7.70	4,119.12
1957	12.95	16.28	19.61	49.58	459.17	577.39	301.00	145.27	25.78	9.55	5.64	6.03	1,628.25
1958	6.30	41.26	86.20	144.49	1,055.24	439.20	683.95	553.20	99.04	24.53	17.30	14.36	3,165.07
1959	6.30	9.62	9.62	124.51	241.06	251.05	189.44	33.72	5.80	7.88	3.98	6.03	889.01
1960	6.30	6.30	9.62	24.61	375.92	497.47	267.70	47.03	7.46	7.88	3.98	4.37	1,258.64
1961	4.63	6.30	19.61	24.61	96.21	111.19	127.84	53.69	7.46	7.88	3.98	6.03	469.43
1962	4.63	1.30	11.29	17.95	542.42	167.80	727.24	155.26	29.11	11.21	7.31	4.37	1,679.89
1963	154.48	21.28	79.56	427.54	1,248.39	142.82	449.18	286.80	39.10	17.87	7.31	7.70	2,882.03
1964	14.62	184.45	84.55	84.55	147.82	121.18	254.38	98.65	19.12	9.55	5.64	6.03	1,030.54
1965	4.63	27.94	1,106.86	742.22	574.06	291.01	452.52	145.27	34.10	12.87	17.30	14.36	3,423.14
1966	12.95	87.88	52.92	62.91	84.55	344.29	442.53	37.04	7.46	7.88	3.98	4.37	1,148.76
1967	4.63	52.92	437.53	419.21	778.86	773.86	296.01	448.30	182.29	41.18	25.63	26.02	3,486.44
1968	17.95	14.62	21.28	64.57	452.52	239.39	204.43	30.39	7.46	7.88	5.64	4.37	1,070.50
1969	6.30	57.91	62.91	1,509.79	499.14	289.35	778.86	328.42	57.42	16.20	12.31	12.69	3,631.30
1970	11.29	19.61	186.12	1,609.69	409.23	224.41	111.19	53.69	10.80	7.88	3.98	4.37	2,652.26
1971	6.30	81.22	139.49	204.43	420.88	505.79	505.79	186.90	49.09	17.87	8.98	9.36	2,136.10
1972	11.29	29.60	72.90	92.87	201.10	550.75	335.96	83.67	12.46	7.88	5.64	9.36	1,413.48
1973	17.95	44.59	141.16	444.19	279.35	256.04	479.15	193.55	20.78	9.55	5.64	6.03	1,897.98
1974	16.28	382.58	352.61	822.14	259.37	602.36	440.86	141.94	20.78	19.53	13.97	14.36	3,086.78
1975	27.94	44.59	81.22	147.82	302.66	480.82	394.24	458.29	102.37	27.86	37.28	29.34	2,134.43
1976	66.24	72.90	46.26	36.26	67.90	111.19	102.87	27.06	7.46	7.88	15.64	11.03	572.69
1977	12.95	12.95	9.62	17.95	27.94	34.60	34.60	18.73	7.46	6.21	2.32	6.03	191.36
1978	9.62	17.95	237.73	693.94	504.13	732.23	569.07	191.89	45.76	17.87	13.97	19.36	3,053.51
1979	22.94	27.94	31.27	196.10	269.36	505.79	637.33	291.79	32.44	21.20	13.97	7.70	2,057.83
1980	24.61	39.60	57.90	1,285.02	986.98	319.32	287.68	110.30	29.11	17.87	13.97	14.36	3,186.72
1981	6.30	6.30	11.29	29.60	507.46	62.91	301.00	55.36	39.10	7.88	3.98	4.37	1,035.55
1982	17.95	276.02	555.74	520.78	1,056.91	860.44	1,188.45	231.85	122.35	19.53	18.97	31.01	4,900.00
1983	127.84	167.80	434.20	770.53	770.53	1,899.40	517.45	451.63	415.39	106.12	68.92	37.67	5,767.48
1984	36.26	474.16	838.80	670.63	276.02	442.53	244.39	125.29	100.70	39.51	8.98	11.03	3,268.30
1985	22.94	96.21	62.91	82.89	404.23	139.49	332.64	48.70	32.44	9.55	3.98	11.03	1,247.01
1986	16.28	32.94	94.54	397.57	1,398.24	1,256.71	430.87	121.96	119.02	11.21	5.64	11.03	3,896.01
1987	7.96	6.30	7.96	11.29	291.01	54.58	172.79	33.39	29.44	7.88	3.98	4.37	630.95
1988	2.96	4.63	12.95	24.61	204.43	44.59	66.24	26.06	21.45	7.87	2.06	2.70	420.55
1989	2.96	12.95	17.95	29.60	221.08	455.85	320.98	43.71	35.77	7.88	3.98	6.03	1,158.74
1990	17.95	17.95	21.28	41.26	217.75	167.80	176.12	55.36	54.08	9.55	3.98	4.37	787.45
1991	4.63	11.29	12.95	19.61	24.61	219.41	294.34	118.63	109.03	9.55	3.98	4.37	832.40
1992	2.96	6.30	9.62	21.28	264.37	301.00	151.15	20.40	7.46	9.55	2.32	2.70	799.11

Reference: Appendix Table B, B&A, March 1994. Includes Adjustment for Springs

ATTACHMENT B

POLLOCK PINES METERED USAGE DATA FOR SELECTED REPRESENTATIVE AREA COMPILED BY THE EL DORADO COUNTY WATER AGENCY

El Dorado County Water Agency

Ron Briggs, *Board of Supervisors*
John P. Fraser, *El Dorado Irrigation District*
James R. Jones, *South Tahoe P.U.D.*
Norma Santiago, *Board of Supervisors*
James R. "Jack" Sweeney, *Board of Supervisors*
William T. Hetland, P.E, *General Manager*

To: Joe Barnes
URS Corp.
2870 Gateway Oaks Drive
Sacramento, CA 95833
From: Tracey Eden-Bishop
Date: July 22, 2009
Subject: Technical Memorandum – GFCSD Unit Demand Verification

The purpose of this technical memorandum is to provide a surrogate full time residential unit water demand for the Grizzly Flat Community Services District (GFCSD). The approach to this analysis was to identify an area within the El Dorado Irrigation District (EID) potable water system that had similar physical and statistical characteristics, and where the occupancy was primarily full time, year round residential use.

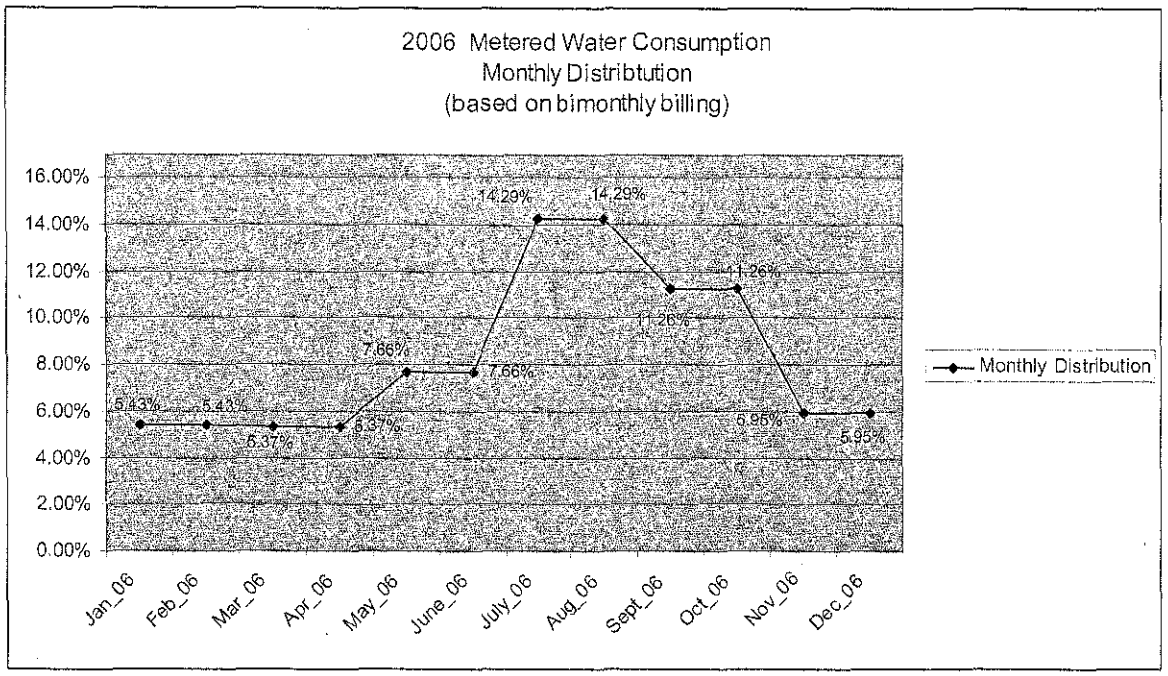
Working with EID GIS staff, a sample service area was isolated that is within the same 3400 to 4200 foot elevation range as the GFCSD service area and that has similar lot sizes. There are 1252 lots within the GFCSD service area. The sample consists of a similar number of lots. The sample service area lies south of Highway 50 in the Pollock Pines/Sly Park area, more particularly within the subdivisions of Gold Ridge Forrest, Sly Park Hills and Lakewood Sierra. Water demand from large open space parcels and other parcels owned by the various community services districts were removed from the sample.

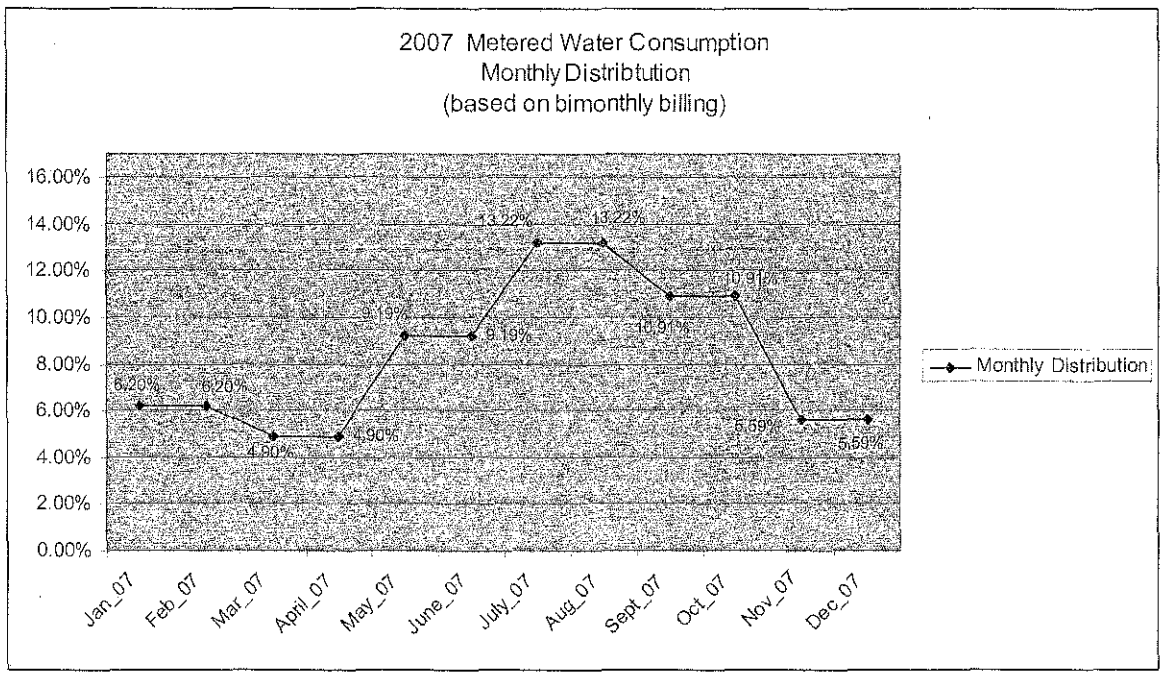
The sample period is 2006 through 2008 and includes active metered residential water accounts. Parcels with no water use were eliminated from the sample. The following provides a summary of the sample characteristics and the resultant unit water demand.

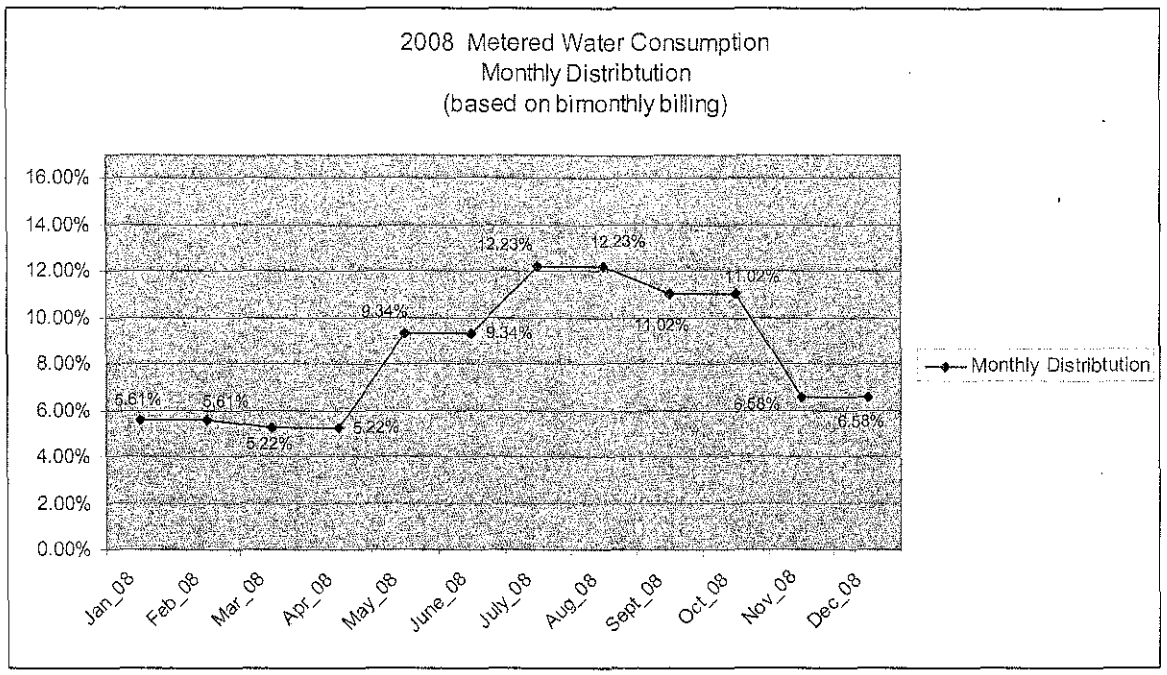
Sample size	1210 single family residential accounts
Parcel size range	0.01 - 5.56 acres
Average parcel size	0.37 acres
Elevation range	3500 to 4200 feet
Average elevation	3900 feet
Sample period	2006, 2007, 2008
3 year average	0.23 acre-feet/active account with usage

The GFCSD water system has no carry over storage, making the timing of the demand critical to determining the safe and firm yield of the supply. As such, the bimonthly consumption data associated with the sample has also been analyzed and is presented in the following tables for your use.

3932 Ponderosa Road, Suite 200 ▫Shingle Springs, CA 95682 ▫Office: (530) 621-5392 ▫Fax: (530) 672-6721
edcwa@co.el-dorado.ca.us ▫http://www.co.el-dorado.ca.us/water


2006 Metered Water Consumption
Monthly Distribtution
(based on bimonthly billing)
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
5.43%
5.43%
5.37%
5.37%
7.66%
7.66%
14.29%
14.29%
11.26%
11.26%
5.95%
5.95%
Jan_06
Feb_06
Mar_06
Apr_06
May_06
June_06
July_06
Aug_06
Sept_06
Oct_06
Nov_06
Dec_06
Monthly Distribution


2007 Metered Water Consumption
Monthly Distribtution
(based on bimonthly billing)
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
6.20%
6.20%
4.90%
4.90%
9.19%
9.19%
13.22%
13.22%
10.91%
10.91%
5.59%
5.59%
Jan_07
Feb_07
Mar_07
April_07
May_07
June_07
July_07
Aug_07
Sept_07
Oct_07
Nov_07
Dec_07
Monthly Distribution


2008 Metered Water Consumption
Monthly Distribtution
(based on bimonthly billing)
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
5.61%
5.61%
5.22%
5.22%
9.34%
9.34%
12.23%
12.23%
11.02%
11.02%
6.58%
6.58%
Jan_08
Feb_08
Mar_08
Apr_08
May_08
June_08
July_08
Aug_08
Sept_08
Oct_08
Nov_08
Dec_08
Monthly Distribtution

CABY Integrated Regional Water Management Group
2014 IRWM Drought Grant Solicitation

Attachment 3: Project Physical Benefits Table 5-- References

Attached are the references that relate to Table 5 Project Physical Benefits Tables for project:

- Rock Creek Water Contingency Intertie

PCWA UPDATE

PLACER COUNTY WATER AGENCY

VOL 25 NO 3 JUNE-JULY 2011

water • energy • stewardship

IN THIS ISSUE:

PCWA, Customers Rally to Stretch Water in Emergency ...Pages 1- 3

Creative Solution Keeps Water Flowing ...Page 3

When the Tap is Dry

PCWA, Customers Respond to PG&E Canal Emergency

ABOVE, PG&E's Bear River Canal following the Apr. 19 collapse.
Photo courtesy of PG&E

LEFT, PCWA water users gathered May 10 at the Gold Country Fairgrounds in Auburn for a public meeting on the water emergency.

When a landslide destroyed a section of PG&E's Bear River Canal on Apr. 19, it began what may be the most significant emergency and water use reduction program to face PCWA water users since the memorable drought of 1975-77.

In a drought, a water shortage can be well publicized and understood by everyone. In an emergency such as this year's, rapid proactive measures and immediate customer outreach must be employed.

As this newsletter went to press, six weeks into the water emergency, PG&E had made significant progress in repairing the canal and planned to restore normal water deliveries by mid-June.

Emergency Management

From the moment the incident occurred, PCWA emergency management actions were employed to keep as much water as possible flowing to customers.

The canal break had severed the major water supply for tens of thousands of people. This primary supply originates from the Yuba and Bear rivers and flows through a system of interconnected canals owned and operated by PG&E. The Bear River Canal is one of those; it dates to the Gold Rush era and has been owned by PG&E for more than a century.

When the land beneath it gave way, a section of the canal slid down a steep wall in the rugged Bear River canyon about a mile west of Colfax. PG&E officials said that saturated ground from heavy winter rains may have contributed to the landslide.

As the emergency unfolded, PCWA activated its American River Pump Station to supplement water supplies to lower elevation service areas. Through collaboration with surrounding water supply agencies, alternate sources of water were made available. Emergency notification procedures commenced at the PCWA Business Center, where Customer Services personnel used the automated telephone alert system, and launched email and direct mail notification programs.

The agency placed priority on preserving water flows to key canals and to water treatment plants to ensure widespread availability of water for fire protection, schools, medical facilities and for other health and safety purposes.

Rolling canal outages with one day on, one day off service were begun to stretch limited supplies of canal water. Rotations were extended in some areas to ensure that adequate water supplies would reach the ends of canals. In other areas canal box orifices were reduced in size. All treated water users were asked to cut use by 25 percent or more and to limit outside irrigation to three days a week and reduce overall water use through a number of other actions.

(Please See Emergency Response, P. 3)

General Manager's Report

By David A. Breninger

Getting Through a Water Crisis

The Apr. 19 collapse of PG&E's Bear River Canal critically disrupted water supplies flowing to PCWA and you, our customers. It impacted service throughout western Placer County, affecting about 150,000 people in one way or another.

Repairs are now under way (as we go to press) and PG&E officials have told us they plan to have restoration of normal water deliveries by mid-June.

Emergency management measures have been in place at PCWA throughout the water shortage emergency. My goal at all times was to stretch very limited alternate water supplies (that we assembled in a "patch quilt" pattern) along with bold system wide reduction actions that would allow us to best serve customers throughout our expansive western water system.

This has taken an immense amount of work, but I believe we achieved this goal while facing severe constraints and against great odds.

Our entire staff "stepped up and stepped forward" to immediately, aggressively and professionally respond to the emergency. Our engineers and field crews were hard at work on ways to move water around the system, a little here, a little there, to keep at least some water available to as many customers as possible. Our Customer Services and office personnel have been on the phones, emailing, writing letters and keeping the agency website current in order to keep our customers informed as we and PG&E worked to remedy the situation.

I thank all of the dedicated men and women of PCWA for their response and dedication during this emergency.

I also thank our neighboring water entities, whose assistance has been invaluable during this crisis. These include Nevada Irrigation District, San Juan Water District, Cal-American Water Company, cities of Roseville and Lincoln and the Midway Heights County Water District.

Our American River Pump Station has proven more valuable than ever before. We activated the pumps to lift water from the river canyon through the three-mile Auburn Tunnel to its outlet near Ophir. And from there the water was routed to areas that needed water during the emergency.

Unfortunately, the incident had its most significant impacts on PCWA's irrigation water users. Some suffered crop and financial losses and others disruptions to their lives, livestock, and businesses. This is the most unfortunate outcome of this water shortage emergency. To these customers, I extend my personal apology that we couldn't adequately meet your needs.

Overall, I am grateful to all of our customers for their support, understanding, and actions to pitch in together during the water shortage. Thank you!

This incident demonstrates the resilience in people who respond in an emergency. And, it affirms PCWA's proactive planning to diversify, add interties, rebuild, modify and back up conveyance systems wherever possible in order to assure reliable water delivery to you, our customers.

For current information, please see *www.pcwa.net*

28-Year PCWA Career

Power System Manager Retires

PCWA Power System Manager Steve Jones is retiring July 1, following a 28-year career with the water agency, 27 of those years as manager of the Power System.

Jones earned a degree in electronic engineering from Cal-Poly, San Luis Obispo and later spent eight years in electrical engineering with the U.S. Bureau of Reclamation, where he worked out of the Sacramento regional office.

He joined PCWA in June 1983 as power system manager in training and took over management a year later following the retirement of former manager Elmer Pretzer.

Based in Foresthill, the PCWA Power System operates the Middle Fork American River Hydroelectric Project with its network of reservoirs, dams, waterways and powerhouses. The system employs 18 and has a 2011 operating budget of $13.8 million.

"Steve has admirably managed our Middle Fork American River Hydroelectric Project for nearly three decades," said PCWA General Manager David Breninger. "He has provided excellent leadership, a spirit of dedication to service and complete attention to detail. The agency will be forever grateful for his service."

"It's been an interesting and challenging job and a wonderful place to work," said Jones, 65, who lives in Foresthill with his wife, Debbie. In retirement, he and Debbie plan to enjoy some travel and spend plenty of time with their nine grandchildren.

PCWA Assists Local Agencies

Four local community water suppliers will receive planning grants under PCWA's 2011 Financial Assistance Program.

The PCWA board approved these grants on May 5:

- $10,000 to the Christian Valley Community Services District for a site study for a new water storage tank.
- $10,000 to the Heather Glen Community Services District for a water storage tank site study.
- $5,000 to the Foresthill Public Utility District for a water rights investigation and analysis.
- $10,000 to the Squaw Valley Public Service District to provide emergency backup power during electrical outages at the district's East Pump Station.

The four projects share a total $35,000 made available through this year's assistance program. Since 1993, PCWA has granted more than $1.5 million to local water purveyors in Placer County.

Emergency Response

Continued from P. 1

Collaboration with neighboring water agencies proved to be a key factor in limiting the impacts of the outage. In the Auburn area, the Nevada Irrigation District supplemented treated water service and also pumped more canal water into Rock Creek Reservoir where it would be available to PCWA's Auburn area canals. PCWA reciprocated downstream by pumping more water into Auburn Ravine for service to NID canal water customers in the Lincoln area.

San Juan Water District, Cal-American Water Co., the cities of Roseville and Lincoln and the Midway Heights County Water District also offered valuable assistance.

PCWA staff and PG&E representatives briefed the PCWA board at several regular and special meetings. The board hosted a special public hearing that attracted about 170 people to Placer Hall at the Gold Country Fairgrounds in Auburn. The meeting, which was part of PCWA's emergency declaration process, outlined numerous water saving actions to be taken by PCWA and its customers.

"I'm very proud of everyone on our team," said General Manager David Breninger. "Our field personnel and engineering staff responded with energy and creativity and helped ease the shortage for many of our customers. Our customer services staff did a remarkable job in keeping our water users informed of the situation."

The water shortage emergency occurred as one of the wettest winters on record was coming to an end and a bountiful snowpack covered Sierra watershed. Importantly, wetter than normal conditions continued well into spring and helped ease the emergency by reducing demand for early season irrigation water.

www.pcwa.net

Pump Station Modified for Emergency Needs

PCWA built the Ophir Pump Station three years ago as a key link in supplying water from the American River to wide areas of western Placer County. It was designed to support a future water treatment plant.

When this year's water emergency occurred, PCWA engineers and water managers came up with a creative solution to temporarily modify the pump station and allow more water to flow into the nearby PG&E South Canal. This canal normally supplies water to PCWA water treatment plants and irrigation customers but was empty because of the Bear River Canal failure.

Large pipe systems in the building were reconfigured.

Large industrial pipe systems designed for the future treatment plant were reconfigured to carry water to an onsite holding basin. The water then flows through a drainage pipe to an adjacent area where it is being safely discharged into the South Canal.

The emergency configuration was conceived on Mother's Day, May 8, submitted for regulatory approval by Wednesday and constructed Friday and Saturday. It went into operation on Sunday, May 15.

Water is pumped from large temporary pipelines into an adjacent holding basin, left, and then into a drainage area, right, where it is safely discharged into the South Canal for downstream water use.

Similar Canal Failure in 1996

IT WAS 15 YEARS AGO, on Apr. 10, 1996, that a similar failure of the PG&E Bear River Canal occurred, flooding the Bear River Campground near Colfax and cutting water supplies to PCWA and its customers.

PG&E had a temporary supply of water flowing within two days, but a final repair took nearly a month when the company faced delays in the federal government's review and regulatory approval process.

In 1996, PCWA instituted emergency procedures, opened a 24-hour emergency telephone hotline, delayed the opening of that year's irrigation season and lobbied the federal government for rapid repairs, warning the regulators that livelihoods and property were at stake.

In 1996, PCWA did not have its American River Pump Station to provide backup water supplies. PG&E's temporary supply provided about 40 percent of normal flows and nearby water suppliers helped out as they did this year.

In 1996, about 75,000 people relied on water supplies delivered through the Bear River Canal. Today, the number is nearly double that.

Your Elected Board of Directors

PCWA is an independent public agency governed by an elected Board of Directors. Directors represent each of five districts in Placer County and are elected by voters to four-year terms.

Your PCWA Board of Directors:

DISTRICT 1: Gray Allen
DISTRICT 2: Alex Ferreira
DISTRICT 3: Lowell Jarvis
(2011 Board Chairman)
DISTRICT 4: Mike Lee
(2011 Board Vice Chairman)
DISTRICT 5: Ben Mavy

Public Meetings

The Placer County Water Agency Board of Directors meets regularly the first and third Thursdays of each month at 2 p.m. at the Placer County Water Agency Business Center, 144 Ferguson Road, in Auburn. The public is welcome.

www.pcwa.net

This newsletter is published as a public service of the

PLACER COUNTY WATER AGENCY

MAILING: P.O. Box 6570
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Auburn, California 95603

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(800) 464-0030

General Manager: David A. Breninger
Newsletter Editor: Dave Carter

WATER EFFICIENCY CORNER

Water Wise House Calls

PCWA is grateful to all customers who have reduced their water use and helped with this year's water shortage emergency.

For more water use efficiency ideas, consider having a trained water efficiency specialist visit your home (by appointment) to review your water usage and make recommendations for saving water.

To learn more about PCWA's free Water Wise House Calls, contact the PCWA Customer Services Center at (530) 823-4850 or customerservices@pcwa.net or see www.pcwa.net.

Personnel Notes...

Matt Young Promoted

PCWA General Manager David A. Breninger has announced the promotion of Matt Young to the position of Director of Customer Services. Young joined PCWA a year ago as Deputy Director of Customer Services after serving as assistant customer services manager for the City of Provo, Utah. He holds BS and MPA degrees from Brigham Young University (BYU).

Valerie Lord, *1959-2010*

Placer County native and longtime PCWA employee Valerie Lord died Mar. 14 following a valiant two-year fight against breast cancer. She was 51. Ms Lord was a key member of the PCWA management team, serving as the agency's Director of Administrative Services and Assistant General Manager. She leaves her husband, Drew; daughters Brooke and Caitlin; and other family members. Her many friends and colleagues at the water agency greatly miss her.

Big Snowpack This Year

Water supply forecasts are normally based on the April 1 snow surveys, but this year the snow continued and by May 1 the snowpack still held 163 percent of the April 1 average.

PCWA Power System Manager Steve Jones said Hell Hole Reservoir was expected to be full and spilling by May 31. Nearby French Meadows Reservoirs is being kept down this year for the continuing project to rebuild the spillway on the dam there.

The good snowpack is expected to provide for a good year in water supply, hydroelectric power production and public recreation at PCWA reservoirs.

IN BRIEF....

WCC Payment Plan The PCWA board on May 5 extended for one year a pilot program that allows housing developers to use a payment plan to pay the Water Connection Charge (WCC) for new water services.

Sharing Study Costs PCWA will complete an update of its Watershed Sanitary Survey of the Yuba and Bear river watersheds through a cooperative, cost-sharing agreement with the Nevada Irrigation District. Each agency will pay about $50,000 for the state-mandated study.

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NEVADA IRRIGATION DISTRICT

BOARD OF DIRECTORS

MINUTES

May 11, 2011

The Board of Directors of the Nevada Irrigation District convened in special session at the District's main office located at 1036 W. Main Street, Grass Valley, on the 11th day of May, 2011 at 10:07 a.m.

Present were John H. Drew, W. Scott Miller and Jim Bachman, Directors.

Nancy Weber, President, and Nick Wilcox, Vice-President, were absent.

Staff members present included Ron Nelson, General Manager; Tim Crough, Assistant General Manager; Marie G. Owens, Finance Manager/Treasurer; Gary King, Chief Engineer; Yvonne DuBose, Human Resources Manager; and Lisa Francis Tassone, Board Secretary.

In the absence of the President and Vice-President, Mr. Nelson called the meeting to order.

SELECTION OF PRESIDENT PRO TEM

Director Drew made a motion to select Director Miller as President Pro Tem. Director Bachman seconded the motion.

Motion passed on the following roll call vote:

Division I	**Absent**
Division II	**Aye**
Division III	**Aye**
Division IV	**Aye**
Division V	**Absent**

BEAR RIVER CANAL OUTAGE – Declaration of a Water Shortage Emergency (Res. 2011-12)

Ron Nelson, General Manager, stated that several guests are in attendance to provide the Board with an update on the Bear River Canal outage. Mr. Nelson explained that no water users in Nevada County are affected by the outage. No treated water users in Western Placer County are affected, but the District is asking these water users to be efficient with their water.

Kevin Goishi, Pacific Gas & Electric Company (PG&E), explained that on April 19, 2011, PG&E operators responded to canal alarms on the Bear River Canal. Based on the failure, the operators shut down the Canal. The Bear River Canal runs from Rollins Reservoir down into Halsey Forebay. A canal patrolman discovered a breach of about 40 feet (a mile below Rollins Reservoir). This Canal is PG&E's main conveyance into the Auburn and lower Placer County area and normally runs about 420 cubic feet per second (cfs). About 120 cfs is District water, and 245 cfs is Placer County Water Agency water. As a result of the break, engineers, geologists, drillers and a construction company arrived on site. The primary issue is the over steepened banks. They are not stable and PG&E initially tried to determine how to pin the hillside back so that crews could safely work to the bottom. The expectation was that foundations would be built at the bottom of the slide area. In the meantime, PG&E evaluated bypass alternatives for temporary water supply as well as a permanent fix. After evaluating alternatives, PG&E selected a permanent repair. The breach is now about 50 feet wide after chipping off unstable portions of the Canal. Crews will fill in the break section with a concrete mixture to rebuild the bench that the Canal sits on, and then PG&E is planning to install a 42-inch pipe against the bank. This pipe will carry approximately 30 to 50 cfs. At the same time, work will begin on an L wall concrete flume on top of the bench. Gunite will be placed along the bank, and once this is completed, the 42-inch pipe will be taken out of service. PG&E should then be able to start running water. Current projections are that the permanent repair should be made by mid June 2011, and the bypass repair should be made by the end of May or early June.

He stated that the capacity would be shared roughly equally between the District and Placer County Water Agency (PCWA). He added that construction plans need to be approved by the Federal Energy Regulatory Commission (FERC), and the review should take place by the end of this week.

Mr. Goishi stated that at this time, water is being trucked from Rollins Reservoir (District Facility) to Lake Arthur (PCWA Facility) so relief can be provided to some of PCWA's hardest hit customers. Approximately 14 trucks a day, running 12 hours a day, have been moving water with about a one hour round trip time. A tank has been installed at the Gold Country Fairgrounds and water is being hauled to this tank. PG&E will be working with the Agriculture Commission to evaluate those commercial agriculture customers that have been hardest hit. Additionally, PG&E will be assisting the District and PCWA financially to offset the energy bills for pumping water from the American River into the South Canal at Ophir and into Auburn Ravine.

Mr. Goishi reported that Jack Sanchez, Save Auburn Ravine Salmon and Steelhead (SARSAS), has suggested an alternative pumping site. The alternative appears promising and PG&E is investigating whether or not to install a 10 cfs pump at this location. A contractor is standing by until the necessary permits from the regulatory agencies are received.

Mr. Nelson thanked Mr. Goishi for all of the attention he has provided to this effort and keeping the District updated on a regular basis.

Mike Nichol, PCWA, thanked the Board and Staff for the spirit of cooperation PCWA has experienced regarding the Canal outage. Water is being moved around to the benefit of the District's customers and the Agency's customers. Otherwise, NID and PCWA would have customers without water. He referenced several maps. Zone 3 is in the upper area of the map, and Zone 1 is in the lower area of the map. Upper Zone 1 would be the Auburn area, and lower Zone 1 would be the area of the Loomis Basin over to Lincoln, Roseville and Rocklin. Zone 5 is west of the City of Lincoln. In Zone 3, the Drum system is fully operational. The Bear River Canal had the capacity of 450 to 470 cfs, and PCWA's Zone 3 system has the capacity of approximately 29 cfs. PCWA has asked customers in Zone 3 for a 25 percent reduction of water (both treated water and raw water customers) in order to make water available for the lower Zones. Additionally raw water connections are being reorificed to 50 percent of summer flows. Commercial agriculture customers will have their irrigation boxes reorificed to 75 percent of summer flows.

Mr. Nichol stated that the District is putting 9 cfs into PG&E's Rock Creek Reservoir and is serving the area of DeWitt from the North Auburn Water Treatment Plant which relieves demand on PCWA's Bowman Water Treatment Plant that would otherwise be serving this area. Likewise, PCWA is single lifting approximately 90 cfs into the Auburn Tunnel Pump Station (between the American River and the Ophir area). Currently, of the 90 cfs that is being single lifted, 20 cfs is being discharged into the Auburn Ravine Canal for the District's customers. Approximately 70 cfs is being double lifted up to the area around Ophir Road into PG&E's South Canal down to PCWA's Dutch Ravine system and to PCWA's lower Boardman system. Normal demand is 164 cfs; currently, 70 cfs is being pumped into these systems to serve customers. Currently, there are every other day outages. Modifications are being made to PCWA's Ophir Pump Station. PCWA is working closely with PG&E and FERC to modify the pump discharge to be able to discharge more water into the South Canal.

Mr. Nichol stated that PCWA is trying to decrease the demand on the Foothill Water Treatment Plant. Cooperation from other agencies includes 1.5 cfs from San Juan Water District, 1.5 cfs from a Roseville intertie, 1.5 from PCWA's Sunset Industrial Wells, and 4.5 cfs from another Roseville intertie. Also, the City of Lincoln is turning on their wells for about 3.75 cfs.

Mr. Nichol reported that PCWA held a special meeting on May 10, 2011, and the Board adopted a Resolution asking for treated water and raw water conservation measures. The meeting was well attended (about 150 people).

Mr. Nelson asked Mr. Nichol how many PCWA customers are affected by the Bear River Canal outage.

Mr. Nichol explained that approximately 4,000 raw water customers are affected and 157,000 treated water customers are affected. He stated that in Zone 5, below Lincoln, all agriculture customers have lost the entire season for a total of a $10 million loss.

Mr. Nelson informed the Board that approximately 1,000 District raw water customers are affected, and treated water customers are being asked to conserve. He stated that rotation schedules have been established and reorificing has occurred.

Sue Sindt, District Operations Supervisor, reported that three of the District's systems are affected. The Fiddler Green system is exclusively fed from the Bear River Canal, and is now being fed from the water that the District is feeding into Rock Creek Reservoir. PCWA is pumping out of Rock Creek into the Fiddler Green Canal. The second system affected is the Combie-Ophir System. Typically, the District supplements this system with Bear River Canal water, so this system is partially affected. The third system is the Auburn Ravine system which is exclusively fed by the Bear River Canal. Without the pumped water from PCWA, the District would not have any water available for this system. Currently, the available supply for all systems is 57 cfs. The demand for this time of year has historically been around 95 cfs and increases to about 120 cfs by the end of June. So, the District is approximately 50 percent short of supply versus demand. Fortunately, at this time, due to the weather, the demand is only approximately 60 cfs. After much discussion with the Water Distribution Operators, and evaluating flow data, a rotation schedule has been developed. The rotation schedule involves water being on for three days, rotating out with a partial day, and rotating in with a partial day. This amounts to a 50 percent reduction.

Ms. Sindt stated that a portion of the Combie-Ophir IV Canal is always in water because the laterals are being rotated against each other. These customers have had their irrigation boxes reorificed to 50 percent because they are always in water. The same is true for the Auburn Ravine I Canal. Laterals are being rotated against each other, so the customers on the Auburn Ravine I Canal which feeds the laterals have had their irrigation boxes reorificed to 50 percent.

Ms. Sindt reported that conservation letters were sent to a group of agricultural customers not currently affected, but who could become affected in case the Canal is not repaired by the projected June date. As the temperature increases, demand will increase, and these customers will need to conserve if the repair has not been made by the middle of June. Staff is also in the process of mailing conservation letters to all of the North Auburn treated water customers. The North Auburn Treatment Plant is

typically fed by the Rock Creek Reservoir, and at this time is being fed by the Combie-Ophir system.

Ms. Sindt stated that the weather has been cooperating, so rotation schedules have not been implemented at this time, but Staff is ready to move forward if necessary, and is evaluating the situation on a day-by-day basis.

Mr. Nelson stated that communications with District customers has occurred through direct mail, and personal contacts. Dave Carter, the District's Public Information Officer, has been helpful in preparing news releases for the public, and the District's website is updated regularly. Mr. Nelson thanked the District's Operations Department, and the District's partners (PCWA and PG&E), for their assistance and collaboration.

Director Miller made a motion to adopt Resolution No. 2011-12 (Declaring a Water Shortage Emergency, Authorizing Extraordinary Water Conservation Rules and Regulations, and Authorizing Emergency Activities and Projects). Director Drew seconded the motion.

Motion passed on the following roll call vote:

Division I	**Absent**
Division II	**Aye**
Division III	**Aye**
Division IV	**Aye**
Division V	**Absent**

MEETING ADJOURNED at 10:45 a.m. to reconvene in regular session on May 25, 2011, at 9:00 a.m. at the District's main office located at 1036 W. Main Street, Grass Valley, California.

_____
Board Secretary

Attest a true record of actions had and taken at the above and foregoing meeting our presence thereat and our consent thereto.

Director
Division I

_____

May 11, 2011

Division II

_____

Division III

_____

Division IV

_____

Division V

_____

Nevada Irrigation District

Memo

To: Gary King, Chief Engineer
Nate Wasley, Operations
Chip Close, Distribution
Brian Martin, PCWA

From: Adrian Schneider, PE

Date: July 17, 2012

Re: Alternative Pipe Route Analysis
Rock Creek Pipe – WO# 6898

Engineering Dept.

This memo is to provide an alternative analysis for review of the Rock Creek Bypass.

The Rock Creek pipe is to supply water to the Rock Creek Reservoir from the Combie Ophir II canal. This will supply water to the reservoir during scheduled PG&E shutdowns, and to provide a backup water supply for emergencies (PG&E's Bear River Canal). The pipe is to carry a maximum 35 cfs peak, and 12 cfs off-season flow per Placer County Water Agency's stated needs. The assumed pipe size is 36-inches in diameter.

The nearest practical location for the source water for the Rock Creek Pipe is near the inlet of the Rock Creek Siphon, located just west of the nursing home on Shale Ridge Road (figure 1). The District's maximum capacity at this location is 40 cfs (Dry Creek Siphon, Phase II Raw Water Master Plan, 2011). Flow records indicate maximum flows up to 48 cfs during peak summer operation and approximately 15-20 cfs during wintertime flows.

The elevation drop between Rock Creek siphon and the Rock Creek Reservoir is approximately 16 feet. Three different pipeline routes were reviewed (figure 1). The following table presents the different alternatives, their lengths, approximate costs, and a summary of the advantages and disadvantages.

The existing Rock Creek Siphon (Siphon), a 30" steel pipe, was looked at to potentially feed a portion of the new siphon. The Siphon also feeds the North Auburn Treatment Plant through a connecting 18" pipe. The siphon was built in the late 1940's and was cement mortar lined in 1991. The siphon is leaking near the inlet. The pipe could only be reasonably accessed during the wintertime when flows are lowest. However, the age and condition of the pipe, and constructing during the wintertime makes this alternative unattractive.

The preferred alternative pipe route is route B shown in the attached table. Field survey has been completed for this alternative and can be used for future design/construction plans.

Sue Sindt says 8 cfs is allocated for sales, therefore the max is 40 cfs

Route	Length	Cost Est	Advantages	Disadvantages
A	4,190	$1.5 - $2.3 million	• Existing NID easement related to 10” wtr line • Low impact to existing land use • Crosses Locksley Lane	• Longest route • Parallels Shale Ridge Rd with other utilities • Multiple crossings of large diameter storm drains through Mountain Peoples Warehouse property • Minimum 15-foot deep excavation through Locksley Lane area to facilitate hydraulics
B	3,750	$1.3 - $2.1 million	• Shortest route • Reduces trenching within Shale Ridge • Uses undeveloped property • Uses existing NID easement from WTP to Reservoir • Crosses Locksley Lane	• Requires crossing large 48-60” storm drain • Biggest potential impact to existing-future land use (Ace Storage property)
C	4,090	$1.4 - $2.4 million	• Minimizes trenching within Shale Ridge Rd • Uses portion of property undeveloped • Uses existing NID easement from WTP to Reservoir	• Crosses annual stream/wetland area • Routes near multiple sewer laterals or gas line • Parallels Locksley Lane with other utilities

Cc: file

Attachments: Figure 1 – Pipe Route Alternatives
Figure B4 – Phase II Raw Water Master Plan, December 2011, Kleinschmidt
Hydraulic Analysis – 36” pipe diameter
Flow Records – Rock Creek Siphon (Combie Ophir II Canal)

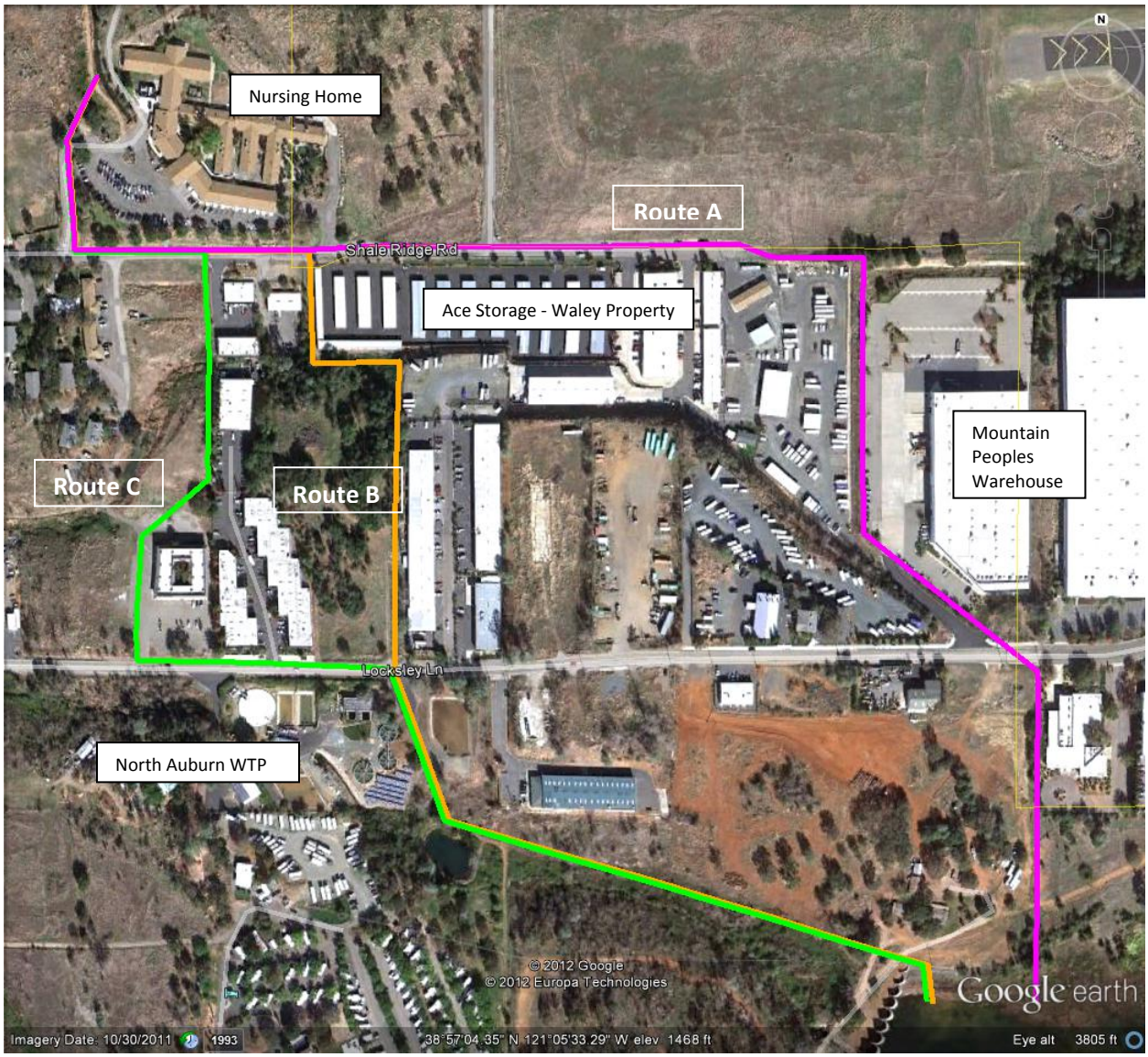
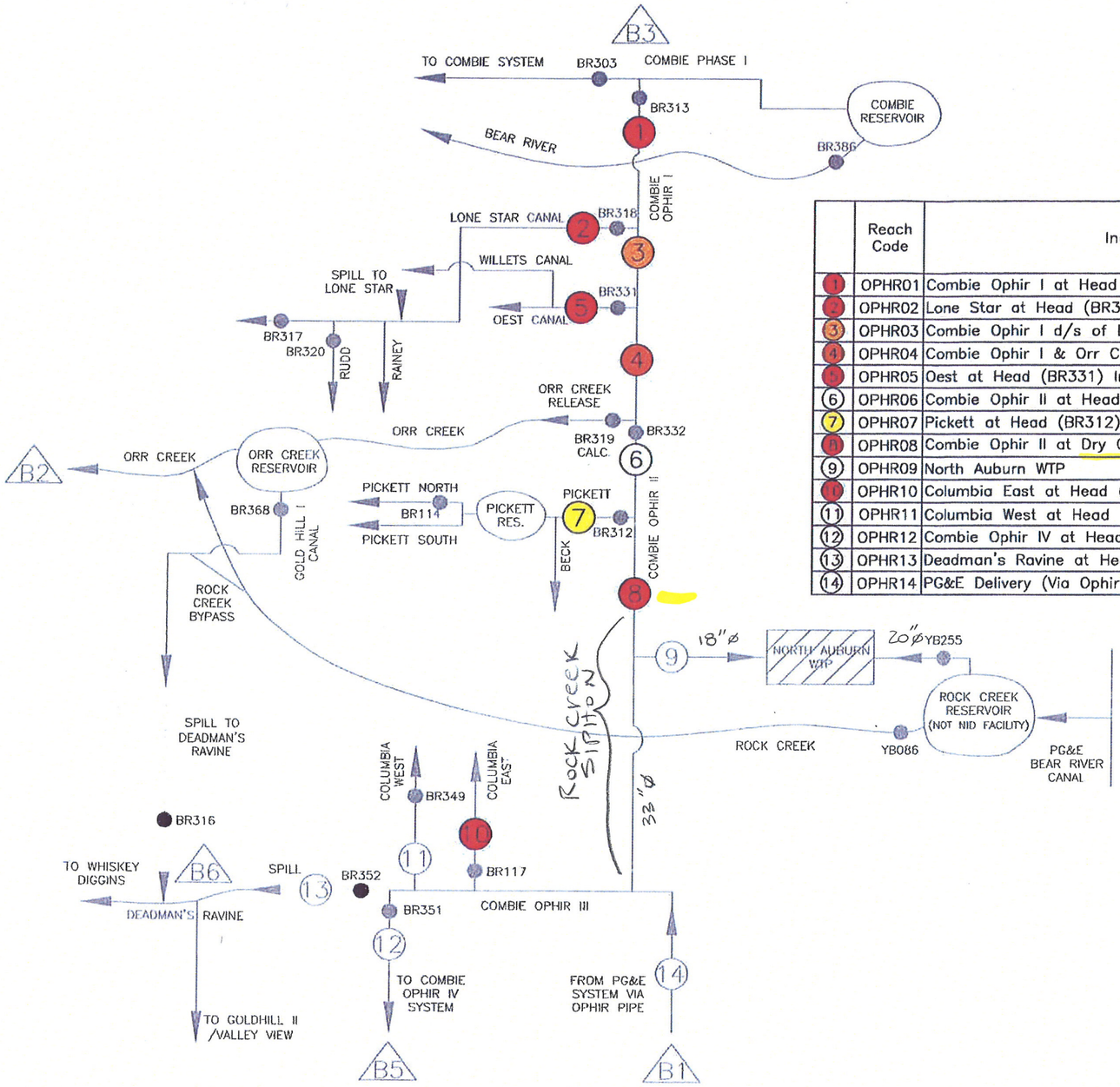


Figure 1 – Pipe Route Alternatives

Route A	4,190 feet	Shale Ridge Road, Mountain Peoples Warehouse, Cross Country
Route B	3,750 feet	Shale Ridge Road, Whaley Property, NID Property, Cross Country
Route C	4,090 feet	Shale Ridge Road, Harmon Property, NID Property, Cross Country



	Reach Code	Index	Estimated[1] Current Capacity (cfs)	Estimated Peak Flow[2] (cfs)								Est. Capital Const. Cost (2010)
				2007	2008	2012	2016	2020	2024	2028	2032	
1	OPHR01	Combie Ophir I at Head (BR313)	105.0	81.9	106.9	112.4	118.0	123.6	129.1	134.9	140.6	$2,295,000
2	OPHR02	Lone Star at Head (BR318) Including Rainey	6.7	6.5	7.0	7.3	7.5	7.5	7.5	7.5	7.5	$3,679,000
3	OPHR03	Combie Ophir I d/s of Lone Star Canal	105.0	74.9	99.4	104.6	109.9	115.5	121.0	126.8	132.5	$372,000
4	OPHR04	Combie Ophir I & Orr Creek Release (Combined)	105.0	69.1	99.7	105.1	110.6	116.5	122.6	129.1	135.6	$330,000
5	OPHR05	Oest at Head (BR331) Including Willits Canal	5.4	5.5	5.3	5.6	5.9	6.2	6.2	6.2	6.2	$2,921,000
6	OPHR06	Combie Ophir II at Head (BR332)	44.0	46.5	46.0	47.9	49.6	51.5	53.4	55.3	57.0	–
7	OPHR07	Pickett at Head (BR312) Including Beck Canal	2.5	2.5	2.2	2.4	2.5	2.6	2.8	2.9	3.1	$2,621,000
8	OPHR08	Combie Ophir II at Dry Creek Siphon Inlet	40.0	42.6	41.5	43.1	44.6	46.2	47.9	49.5	50.8	$16,028,000
9	OPHR09	North Auburn WTP	12.4	7.4	7.6	8.8	9.9	10.8	11.5	12.1	12.4	–
10	OPHR10	Columbia East at Head (BR117)	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	$1,652,000
11	OPHR11	Columbia West at Head	0.7	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	–
12	OPHR12	Combie Ophir IV at Head (BR351)	35.0	31.9	31.4	32.0	32.5	33.0	33.5	33.9	34.5	–
13	OPHR13	Deadman's Ravine at Head (BR352)	–	24.3	23.0	24.2	25.5	26.9	28.3	29.7	30.7	–
14	OPHR14	PG&E Delivery (Via Ophir Pipe) Addition	–	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–

LEGEND

PROJECTED YEAR OF FACILITY EXPANSION NEED

- Immediate
- 2012
- 2016
- 2020
- 2024
- 2028
- 2032

[1] PER DISTRICT INPUT
[2] CALCULATED AND PROVIDED BY KLEINSCHMIDT ASSOCIATES

NOTE 1: FUTURE FLOW VALUES THAT DO NOT INCREASE INDICATE THAT CANAL SEGMENT HAS REACHED ASSUMED SATURATION LIMIT
NOTE 2: SCHEMATIC MAPPING AND ESTIMATED PEAK FLOWS PROVIDED BY KLEINSCHMIDT ASSOCIATES.

Appendix E

Nevada Irrigation District
PROPOSED CIP
COMBIE OPHIR I, II & III
IMPROVEMENTS

WEST YOST ASSOCIATES Consulting Engineers

Scale: NTS	RAW WATER MASTER PLAN UPDATE WATER DEMAND ANALYSIS
Project No: 894.007	COMBIE OPHIR I, II, & III FLOW SCHEMATIC
Drawn by: JAQ	Kleinschmidt — Energy & Water Resource Consultants — 341 South Auburn Street, Suite C, Grass Valley, California 95945, Telephone (530) 477-5808, Fax (530) 477-5805, www.KleinschmidtUSA.com
Date Revised: 08-20-09	B4

R:\Clients\264 Roseville\261 Kleinschmidt\00-03-01 NID Raw Water MP\CAD\Figures\261-00-0301-BR Figs1-8.dwg

11x17

ROCK CREEK PIPE - AUBURN

Pipe Diameter:	36 inches	Water Surface Elevation - Inlet	1,453.7	ft MSL
Max Flow:	35 cfs	Water Surface Elevation - Outlet	1,439.5	ft MSL
Min Flow:	12 cfs	Feet of Head Available	14.2	feet
		Maximum Head Loss	8.7	feet

Assumptions: *PVC or HDPE Pipe
Pipe Flowing Partially Full Above Low point in Siphon

Hazen - Williams Head Loss Calculations

Headloss in Feet= $L \left[\frac{Q}{0.28176(C)(D^{2.63})} \right]^{1.85}$

Where:

L = Length in feet	35.0	Q in cfs
Q = gpm	15,708	Q in gpm
C = Hazen-Williams Coeficient		
D = inside diameter in inches	12.0	Q in cfs
V = Volocity in feet per second	5,386	Q in gpm

						Head Loss in ft - Max Flow			
Route	Length	Diameter	Fittings	Q	H-W*	Pipe	Fittings	**Total**	V
A	4,190	36.00	9	15,708	130	8.3	0.4	8.7	4.95
B	**3,750**	**36.00**	**8**	**15,708**	**130**	**7.4**	**0.4**	**7.8**	**4.95**
C	4,090	36.00	7	15,708	130	8.1	0.3	8.4	4.95

						Head Loss in ft - Min Flow			
Route	Length	Diameter	Fittings	Q	H-W*	Pipe	Fittings	**Total**	V
A	4,190	36.00	9	5,386	130	1.1	0.05	1.2	1.70
B	3,750	36.00	8	5,386	130	1.0	0.04	1.1	1.70
C	4,090	36.00	7	5,386	130	1.1	0.00	1.1	1.70

Fittings	30°	45°	90°	Total Estimated Feet in Equivalent Pipe lengths
A	3	3	3	204
B	3	1	4	192
C	3	2	2	156

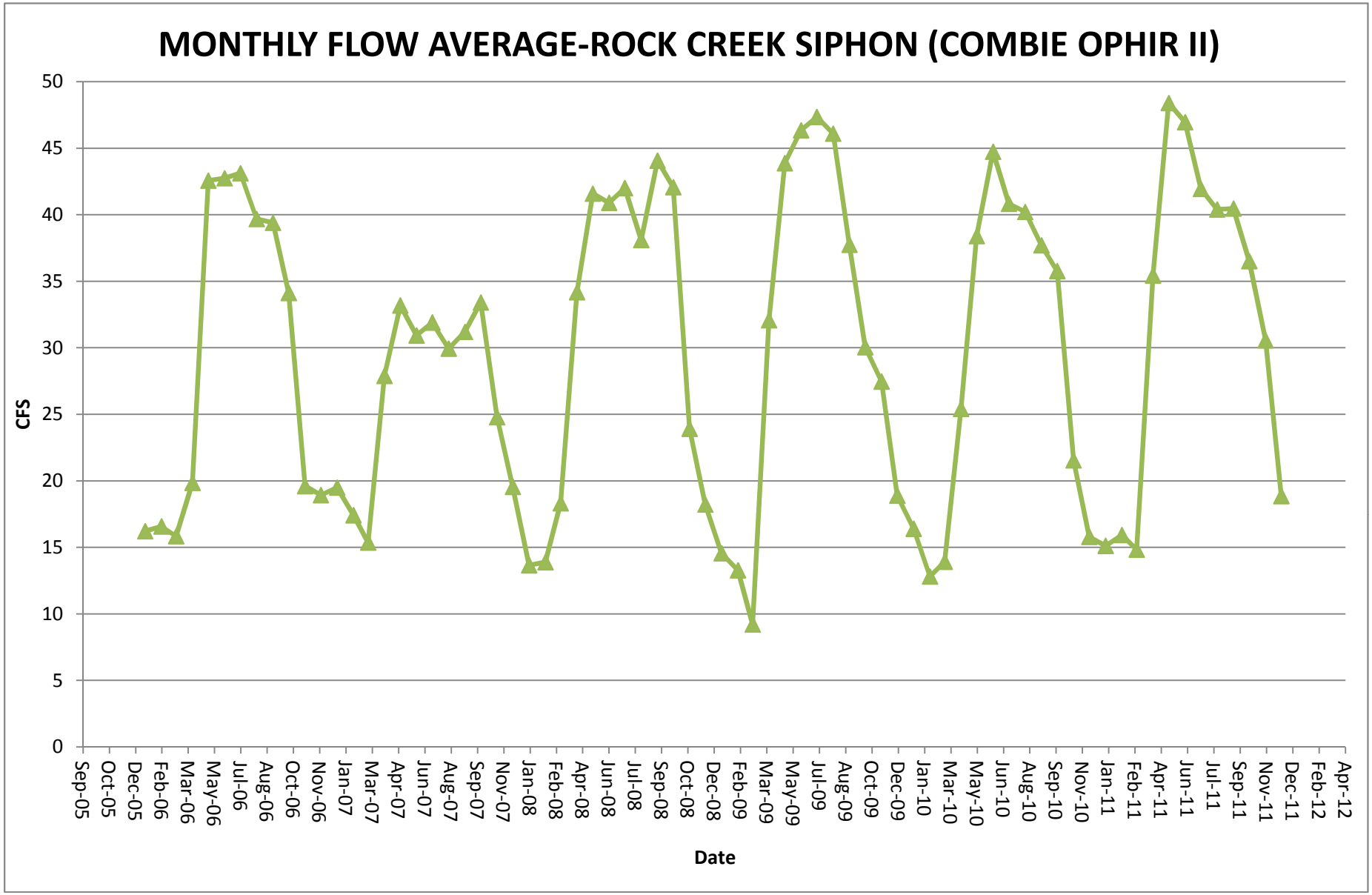
*Assume 20 ft equivalent pipe lengths for 30 & 45 bends
*Assume 28 ft equivalent pipe lengths for 90 bends

** From Equivalent Pipe Lengths of Straight Pipe, Cast Iron Fittings, 24" diameter*
Appendix L, Page 3-53, Civil Engineering Reference Manual, 6th ed.
Note, pipe is 36" in diameter. Using 24" value provides a conservative estimate

Monthly Averaged Flow Records

Date	BR332 Combie Ophir II @ Head cfs	BR312 Pickett @ Head cfs	Flow Downstream (Rock Creek Siphon) cfs	
Jan-06	16.50	0.28	16.22	
Feb-06	16.93	0.35	16.58	
Mar-06	16.25	0.40	15.85	
Apr-06	20.88	1.03	19.85	
May-06	44.32	1.75	42.57	
Jun-06	44.82	2.08	42.75	2006
Jul-06	45.54	2.42	43.12	
Aug-06	41.95	2.27	39.68	
Sep-06	41.50	2.11	39.40	
Oct-06	35.92	1.80	34.12	
Nov-06	20.17	0.56	19.61	
Dec-06	19.39	0.46	18.93	
Jan-07	19.82	0.33	19.50	
Feb-07	17.75	0.33	17.42	
Mar-07	15.81	0.44	15.37	
Apr-07	29.42	1.53	27.90	
May-07	35.07	1.89	33.19	
Jun-07	33.08	2.15	30.93	2007
Jul-07	34.04	2.13	31.90	
Aug-07	32.06	2.12	29.94	
Sep-07	33.13	1.93	31.20	
Oct-07	34.49	1.08	33.41	
Nov-07	25.43	0.64	24.79	
Dec-07	20.19	0.63	19.55	
Jan-08	14.24	0.58	13.66	
Feb-08	14.45	0.56	13.89	
Mar-08	19.09	0.77	18.32	
Apr-08	35.95	1.76	34.19	
May-08	43.76	2.17	41.58	
Jun-08	43.05	2.15	40.90	2008
Jul-08	44.19	2.18	42.01	
Aug-08	40.22	2.13	38.10	
Sep-08	46.13	2.06	44.07	
Oct-08	43.71	1.64	42.07	
Nov-08	24.77	0.85	23.92	
Dec-08	18.93	0.71	18.23	
Jan-09	15.20	0.64	14.56	
Feb-09	14.01	0.73	13.28	
Mar-09	9.68	0.47	9.21	
Apr-09	33.36	1.29	32.07	
May-09	45.55	1.67	43.88	
Jun-09	48.32	1.97	46.35	2009
Jul-09	49.48	2.13	47.35	
Aug-09	48.13	2.04	46.10	
Sep-09	39.79	2.04	37.75	
Oct-09	31.47	1.42	30.05	
Nov-09	28.17	0.71	27.47	
Dec-09	19.50	0.61	18.89	
Jan-10	17.01	0.60	16.41	
Feb-10	13.36	0.55	12.82	
Mar-10	14.77	0.85	13.92	
Apr-10	26.57	1.15	25.41	
May-10	39.75	1.36	38.40	
Jun-10	46.47	1.73	44.74	2010
Jul-10	42.81	1.99	40.82	
Aug-10	42.21	2.00	40.21	
Sep-10	39.59	1.89	37.70	
Oct-10	37.10	1.33	35.77	
Nov-10	22.24	0.70	21.54	
Dec-10	16.43	0.64	15.80	
Jan-11	15.71	0.60	15.12	
Feb-11	16.56	0.63	15.93	
Mar-11	15.31	0.49	14.83	
Apr-11	36.70	1.26	35.44	
May-11	50.02	1.62	48.40	
Jun-11	48.80	1.84	46.96	2011
Jul-11	44.03	2.07	41.96	
Aug-11	42.57	2.17	40.40	
Sep-11	42.56	2.09	40.47	
Oct-11	37.99	1.48	36.52	
Nov-11	31.38	0.81	30.57	
Dec-11	19.49	0.63	18.86	

March 5-8, 2007: 0 cfs flows
March 3-6, 2009: 0 cfs flows
February 15-17, 2010: 0 cfs flows
March 1-3, 2011: 0 cfs flows


MONTHLY FLOW AVERAGE-ROCK CREEK SIPHON (COMBIE OPHIR II)
CFS
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Apr-12
Date

Nevada Irrigation District

Staff Report

for the Board of Directors Meeting of May 14, 2014

TO: Board of Directors

FROM: Gary King, Engineering Manager
Adrian Schneider, Senior Associate Engineer

DATE: May 7, 2014

SUBJECT: Rock Creek Siphon Project – Preliminary Review and Initial Study

ENGINEERING

RECOMMENDATION:
Conduct Public Hearing; after hearing testimony, consider adopting Resolution No. 2014-17 (adopting a mitigated negative declaration and approve the project and mitigation monitoring and reporting program for the project).

BACKGROUND:
The proposed Nevada Irrigation District's (NID) Rock Creek Siphon Project (Project) would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as future connection (turnout) to the NID North Auburn Water Treatment Plant (WTP). The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. Specifically, the proposed siphon connection will provide water for deliveries for Pacific Gas & Electric (PG&E) which owns and operates Rock Creek Reservoir and Placer County Water Agency, which delivers water to much of western Placer County, in case of an outage upstream in these two agencies raw water source, the Bear River Canal.

The siphon will be approximately 3,350 feet in length and 36-inches in diameter. It will cross both Shale Ridge Road and Locksley Lane, and will use a portion of an existing NID easement. Additionally, the District will intend to co-locate and install a 12- to 24-inch diameter drinking water line between Shale Ridge and Locksley Lane during the construction of the siphon. The drinking water line will take advantage of the construction and will be installed to improve hydraulics and filling of a District water storage tank within its system.

The Initial Study/Mitigated Negative Declaration document details the environmental impacts that will be less then significant given the implementation of mitigation measures. The 30-day public comment period for the document ended May 1, 2014.

The engineering staff recommends that the Board adopt Resolution No 2014-17.

BUDGETARY IMPACT:
The project is not budgeted for construction. The project construction will likely be budgeted and funded from the District, PCWA and PG&E. Discussions with the involved agencies in the future will shape the District's timeline for this construction project.

Attachment: Initial Study & Mitigated Negative Declaration – Rock Creek Siphon Project

(ADOPTING A MITIGATED NEGATIVE DECLARATION, AND APPROVING THE PROJECT – ROCK CREEK SIPHON PROJECT)

WHEREAS, Nevada Irrigation District ("District") has undertaken the review of a project to install approximately 3,350 feet of 36-inch diameter raw water conveyance pipe to connect Combie Ophir II Canal to the Rock Creek Reservoir (the "Project"); and

WHEREAS, the California Environmental Quality Act of 1970 ("CEQA") requires state, local, and other agencies to evaluate or reduce, when feasible, the significant environmental impacts of their respective projects; and

WHEREAS, the District's engineering staff has prepared a Preliminary Review and Initial Study ("Initial Study") for the proposed Project (including biological studies conducted by Stantec), in accordance with the requirements of CEQA; and

WHEREAS, on April 8, 2014, a Notice of Intent to Adopt a Mitigated Negative Declaration for the Project was published in The Auburn Journal newspaper, advising of the time and place of a public hearing on the Project; and

WHEREAS, on May 14, 2014, following a public hearing on the Negative Declaration for the Project, the Board of Directors of the Nevada Irrigation District approved the adoption of the proposed Mitigated Negative Declaration for the Project as presented; and

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the Nevada Irrigation District that it does find as follows:

1. The above recitals are true and correct.

2. Based on its review of the whole record before it, including the Initial Study, presentations of Staff and the public comments, both written and oral, received in response to its Notice of Intent, the Board finds that there is no substantial evidence of record that the Project will have a significant effect on the environment and that the Mitigated Negative Declaration represents the independent judgment and analysis of the District.

3. Mitigation measures are made a condition for approval of the Project and the Board hereby adopts the mitigation measures which it has either required in the Project or made a condition of approval to mitigate or avoid significant environmental impacts.

4. The documents which constitute the record of proceedings upon which the decision of the Board is based are located at the offices of Nevada Irrigation District, 1036 West Main Street, Grass Valley, California, and the Secretary to the Board is the custodian thereof.

5. The Board of Directors hereby approves the Project.

6. The Board Secretary is hereby authorized to file a Notice of Determination, a copy of which is attached as Exhibit 'A', with the Office of the County Clerk, Nevada County and State Clearinghouse.

ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting of said Board, held on the 14th day of May 2014, by the following vote of said Board

AYES: Directors:

NOES: Directors:

ABSENT: Directors:

ABSTAINING: Directors:

_____
President

_____
Board Secretary

NOTICE OF DETERMINATION

To: County Clerk
County of Placer

From: Nevada Irrigation District
PO Box 1019
Grass Valley, CA 95945

1. SUBJECT: Filing of Notice of Determination in Compliance with Section 21108 or 21152 of the Public Resources Code.

Rock Creek Siphon Project
PROJECT TITLE

2014042008
State Clearinghouse Number

Adrian Schneider, Senior Engineer (530) 271-6839
CONTACT PERSON Area Code Phone

2. PROJECT LOCATION:

The proposed project is located in the northern portion of the City of Auburn, California, in Placer County. Access is from Locksley Lane or Shale Ridge Road and approximately ¼ - mile east of Highway 49.

3. PROJECT DESCRIPTION:

The Rock Creek Siphon Project (Project) would allow the Nevada Irrigation District (NID) to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as future connection (turnout) to the NID North Auburn Water Treatment Plant (WTP). The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. Specifically, the proposed siphon connection will provide water for deliveries for Pacific Gas & Electric (PG&E) which owns and operates Rock Creek Reservoir and Placer County Water Agency, which delivers water to much of western Placer County, in case of an outage upstream in these two agencies raw water source, the Bear River Canal.

The siphon will be approximately 3,350 feet in length and 36-inches in diameter. It will cross both Shale Ridge Road and Locksley Lane, and will use a portion of an existing NID easement. Additionally, the NID will co-locate and install a 12- to 24-inch diameter drinking water line between Shale Ridge and Locksley Lane during the construction of the siphon. The drinking water line will be installed to improve hydraulics and filling of a District water storage tank within its system.

DETERMINATIONS:

This is to advise that the NEVADA IRRIGATION DISTRICT approved the above-described project on May 14, 2009, after complying with CEQA, and has made the following determinations regarding the above-described project:

1. The project ☐ will ☒ will not have a significant effect on the environment.

2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.

   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

The EIR or Negative Declaration and record of project approval may be examined at the District's office at 1036 West Main Street, Grass Valley, California.

3. Mitigation measures ☒ were, ☐ were not, made a condition of the approval of the project.

4. A Statement of Overriding Considerations ☐ was, ☒ was not, adopted for this project.

5. Findings ☐ were ☒ were not made pursuant to the provisions of CEQA.

6. A mitigation reporting or monitoring plan ☐ was, ☒ was not adopted for this project.

_____ _____

Date

Remleh Scherzinger, General Manager
Nevada Irrigation District

Nevada Irrigation District

Rock Creek Siphon Project

Initial Study/Mitigated Negative Declaration

March 2014

Prepared for

Nevada Irrigation District

Prepared by

Stantec Consulting Services Inc.

101 Providence Mine Road, Suite 202
Nevada City, CA 95959

Design with community in mind

Stantec

Nevada Irrigation District Rock Creek Siphon Project

Initial Study/Mitigated Negative Declaration

Prepared for:
Nevada Irrigation District

Prepared by:
Stantec Consulting Services Inc.
101 Providence Mine Road,
Suite 202
Nevada City CA 95959

184030377

March 2014

Sign-off Sheet

This document entitled Nevada Irrigation District Rock Creek Siphon Project was prepared by Stantec Consulting Services Inc. for the account of Nevada Irrigation District. The material in it reflects Stantec's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Stantec Consulting Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Preparation Lead by _____
(signature)

Megan O'Deegan, Environmental Specialist

Reviewed by _____
(signature)

Bernadette Bezy, Project Manager

Stantec

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Executive Summary

The proposed Nevada Irrigation District's (NID) Rock Creek Siphon Project (Project) would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn Water Treatment Plant (WTP). The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. Additionally, a 24 inch water pipeline would be installed parallel to the 36" pipe, between Locksley Lane and Shale Ridge Road to fill an existing District water storage tank from the NID North Auburn WTP. The goal and purpose of the Project is to increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed siphon connection will assist with water for deliveries for Pacific Gas & Electric (PG&E) which owns and operates Rock Creek Reservoir, Placer County Water Agency which delivers water to much of Western Placer County, and Nevada Irrigation District.

Figure ES-1: Proposed Project Footprint (East of HWY 49, north Auburn)

The proposed Project is located in North Auburn, Placer County as depicted in Figure ES-1. The proposed Project entails the installation of a diversion structure located at the Combie Ophir II Canal, just prior to entering an existing NID siphon. The diversion structure would include a concrete headwall, bar rack with two-inch spacing to prevent debris and persons from entering the pipeline. The bar rack will be manually cleaned by NID operations staff. A slide gate will be used to divert a portion of water flow into the pipeline. There will also be the installation of approximately ¾ mile (~ 4,000 feet) of anticipated 36-inch pipe from the existing Combie Ophir II Canal to the Rock Creek Reservoir and approximately 1,150 feet of 24-inch pipe from Locksley Lane to Shale Ridge Road. The pipe will be constructed using either ductile iron, PVC, or HDPE. The pipeline trench during construction will be approximately four feet wide with an anticipated maximum depth of five to six feet, the trench between Locksley Lane and Shale Ridge Road will be approximately eight to ten feet wide to allow for the installation of the additional 24-inch water pipeline. The two pipes would be installed parallel and adjacent to each other but within separate trenches. . Upon completion, approximately 30 inches of fill will cover the pipe and the pipeline corridor will be restored, to the extent feasible to pre-existing conditions (pavement and grassland). Valves and other appurtenances will be buried or located in vaults adjacent to the pipeline.

The Project also involves the installation of an outlet structure including a headwall, energy dissipation structure to reduce velocity, erosion, and prevent wildlife or persons from entering the pipeline. The outlet structure will be constructed at Rock Creek Reservoir just east of the dam. It will be located above the ordinary high water mark (OHWM) of the reservoir; however, an approximately 15ft by 10ft erosion control riprap area will line the reservoir bank below the outlet. There will also be a connection to an existing 24-inch raw water supply line to feed the NID North Auburn WTP. It is estimated that the Project will be completed within 150 days and will require three potential staging areas (Figure ES-1).

CEQA ANALYSIS AND FINDINGS

An NID Board of Director's approval of the proposed Project would be considered discretionary action and therefore subject to review under the California Environmental Quality Act (CEQA). As the Lead Agency, NID prepared a Draft Initial Study/Mitigated Negative Declaration (IS/MND). In accordance with CEQA guidelines, the IS/MND will be circulated for thirty days for public review. In the IS/MND the potential environmental impacts are assessed with respect to eighteen specific resource sections.

This executive summary provides an overview of the analysis contained in the CEQA environmental analysis. This summary also includes discussions of: (a) effects found to be less than significant; (b) potential significant impacts; and (d) mitigation measures to avoid or reduce identified significant impacts to less than significant levels. The potential impacts, findings, and associated mitigation measures are summarized in Table ES-1. Note: Table ES-1 is a summary of impacts and mitigation measures. The complete impact assessment and mitigation measure details can be found in the Chapter 3 of the IS/MND and in the Mitigation Monitoring and Reporting Program (MMRP).

Effects Found to be Not Significant

A number of Project impacts were found to be less than significant in the Draft IS/MND, including effects on aesthetics, agriculture resources, greenhouse gases emissions, land use, mineral resources, noise, population & housing, public services, recreation, and utilities/service systems.

Significant Impacts and Mitigation Measures

Under CEQA guidelines, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (Guidelines Section 15382). Based on surveys conducted on July 18, and August 15, 2013, the proposed Project would result in potentially significant impacts on some of these resources, but all of these significant impacts would be reduced to a less than significant level with mitigation identified in the IS/MND. Table ES-1, Summary of Impacts and Mitigation Measures, identifies all impacts and their level of significance with the application of mitigation. The mitigation measures presented in this IS/MND will form the basis of the MMRP.

Significant Unavoidable Impacts

There are no significant and unavoidable Project-specific or cumulatively considerable impacts associated with implementation of the proposed Project.

Table ES-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Finding	Mitigation Measure
Air Quality		
AIR-1: Potential to conflict with or obstruct implementation of the applicable air quality plan, violate air quality standards or contribute to an existing or projected air quality violation, result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard, and expose sensitive receptors to substantial pollutant concentrations	Less than significant with mitigation incorporated	**MM AIR-1 Implement a Project Dust and Emissions Control Plan:** that is approved by the Placer County Air Pollution Control District (PCAPCD) prior to construction. (Refer to IS/MND Mitigation Measure text for additional details, Chapter 3).
Biological Resources		
BIO-1: Potential Disturbance of Protected Botanical Species	Less than significant with mitigation incorporated	**MM BIO-1 Construction Worker Environmental Awareness Training:** Environmental awareness training will be given to construction personnel by a qualified biologist to brief them on how to recognize special status species that could occur in the area such as rare plants, Western pond turtle, California red-legged frog, foothill yellow-legged frog, and active breeding bird nests. **Bio -2 Protocol-level Botanical Surveys:** Prior to Construction Botanical surveys will be conducted during the early bloom season. Note: Late bloom season surveys were conducted in 2013.
BIO-2: Potential Disturbance of Protected Amphibian and Aquatic Reptile Species and Their Habitat	Less than significant with mitigation incorporated	**MM BIO-1:** See description above. **MM BIO-3 Exclusion Fencing Installation for Environmentally Sensitive Areas:** Exclusion fencing will be installed adjacent to actively flowing water or slow moving water with emergent vegetation within 100 feet of construction areas and around trees with nesting birds should they be encountered.

Environmental Impact	Finding	Mitigation Measure
BIO-3: Potential Disturbance Nesting Raptors and Other Migratory or Special Status Birds and During Construction Activities	Less than significant with mitigation incorporated	**MM BIO-1:** See description above. **MM BIO-3:** See description above. **MM BIO-4 Avoid disturbance nesting raptors and other migratory birds and during construction activities:** If construction activities are scheduled to occur during the breeding season for these species (generally between March 1 and August 30), a qualified biologist will be retained to conduct focused nesting survey within the appropriate habitat. If construction activities begin before the breeding season (i.e. begin between August 30 and February 28) (pre-existing construction), then construction can proceed until it is determined that an active migratory bird nest would be subject to abandonment as a result of construction activities. Pre-existing construction activities are assumed to be “full force,” as are site grading and infrastructure development. Activities that technically initiate construction but are minor would not be considered full force. Optimally, all necessary vegetation removal should be conducted before the breeding season (approximately March 1 through August 30) so that nesting birds would not be present in the construction area during construction activities.

Environmental Impact	Finding	Mitigation Measure
BIO-4: Potential Disturbance to Riparian or Other Designated Sensitive Natural Community	Less than significant with mitigation incorporated	**BIO-5 Avoid, minimize, and compensate for tree removal (including riparian trees):** NID will avoid and minimize riparian tree removal and trimming to the extent feasible. The proposed Project alignment may entail some tree trimming and minor removal. If trees are removed in the riparian habitat, NID will seek a CDFW Streambed Alteration Agreement and replace the trees at an appropriate ratio as deemed by the permit. In compliance with CEQA and Senate Bill 1334, NID will compensate for the loss of oak trees, with a DBH (diameter at breast height) equal to or greater than 5 inches, at a 2:1 ratio by replanting or payment into an existing local oak mitigation bank. Replanting parameters include the following considerations: 1) Oak replanting can be done with saplings, seedlings or bare-root seedlings grown by a local nursery supplier. Oaks replanted within the riparian regions will retain the same genetic integrity as those removed; 2) If grown in a container, seedlings and/or saplings will be no more than one year and less than two years of age at the time of planting; 3) Replanting will occur during late fall through mid-winter (December-February); 4) Soils conditions at replanting sites will be unfrozen (at the time of planting) and well-drained (year round); 5) Irrigation at replanting sites is not required, however is dependent on drought and adequate water supply during the first year of oak establishment; 6) Fertilizer is not required at replanting sites unless replanting yields less than a 1:1 regeneration rate during the first year of establishment; 7) Herbivore protection is not required in or around seedlings unless replanting yields less than a 1:1 regeneration rate during the first year of establishment; 8) Invasive plant (e.g. non-native annual grasses) removal and/or control during the first year of oak establishment is not required, however regeneration ratios will increase with the removal of local competitors. **MM GEO-1 Sedimentation and erosion control measures:** The contractor shall prepare and implement an erosion control plan and Stormwater Pollution Prevention Plan (SWPPP) to ensure erosion and sedimentation from the Project is kept to a minimum.
BIO-5: Potential Loss of Wetlands from the Proposed Project	Less than significant with mitigation incorporated	**BIO-6 Avoidance or Compensation for Direct Impacts to Waters of the U.S.:** If avoidance of the wetlands/waters of the U.S./waters of the State or riparian areas is not practicable for various engineering or other site constraints, NID shall apply for and obtain a Clean Water Act (CWA) Section 404 Nationwide Permit and comply with the current Corps compensation schedule for any loss of waters of the U.S.

Environmental Impact	Finding	Mitigation Measure
BIO-6: Potential Impact to Wildlife Movements or Migration	Less than significant	**None required**
BIO-7: Potential Project Conflicts with Existing or Planned Habitat Conservation Plans or Local Ordinances	Less than significant	**None required**
Cultural Resources		
CULTURAL-1: Potential inadvertent discovery of cultural resources	Less than significant with mitigation incorporated	**MM CULTURAL-1 Proper Handling of Inadvertent Discovery of Cultural and Paleontological Resources:** If cultural resources are encountered during the proposed Project construction, construction shall be halted immediately in the subject area and a qualified professional archaeologist shall be consulted. If Prehistoric resources are encountered, the United Auburn Indian Community of the Auburn Rancheria (UAIC) and the T' si-Akim Maidu have requested to be consulted. If any paleontological resources (i.e., fossils) are found during proposed Project construction, construction shall be halted immediately in the subject area and the City shall be immediately notified. A qualified paleontologist shall be retained to evaluate the find and recommend appropriate treatment of the inadvertently discovered paleontological resources. If NID or its contractor finds archeological, paleontological, or human remains, NID and its contractor will stop work and isolate the area using orange or yellow fencing until the appropriate regulatory agency is contacted and clears the area for future work. NID at its discretion can move construction activities and restart activities at a distance not expected to affect or disturb the find. Work can proceed away from the area of the find but cannot proceed toward the area of the find. If NID resumes work in a location where archaeological, paleontological, or human remains have been discovered and cleared, NID will have an archeologist onsite to confirm that no additional archaeological resources are in the area.

Environmental Impact	Finding	Mitigation Measure
CULTURAL-2: Potential inadvertent discovery of human remains	Less than significant with mitigation incorporated	**MM CULTURAL-2 Proper handling of inadvertent discovery of human remains:** If human graves are encountered, work should halt in the vicinity and the County Coroner shall be notified immediately pursuant to PRC Section 7050.5. At the same time, an archaeologist shall be contacted to evaluate the situation. If human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.
Geology		
GEO-1: Potential substantial soil erosion or the loss of topsoil.	Less than significant with mitigation incorporated	**MM GEO-1 Sedimentation and erosion control measures:** The contractor shall prepare and implement an erosion control plan and Stormwater Pollution Prevention Plan (SWPPP) to ensure erosion and sedimentation from the Project is kept to a minimum.
Hazards & Hazardous Materials		
HAZ-1: Potential to release hazardous materials into the environment	Less than significant with mitigation incorporated	**MM HYD-1 Develop or use current Spill Prevention Control and Countermeasure Plan:** NID or its contractor will develop and implement a Spill Prevention Control and Countermeasure Plan (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors.
Hydrology/Water Quality		
HYD-1: Potential discharge of sediment or hazardous material into surface waters during construction	Less than significant with mitigation incorporated	**MM GEO-1 Sedimentation and erosion control measures:** See description above.
HYD-2: Potential for substantial additional sources of polluted runoff during construction	Less than significant with mitigation incorporated	**MM HYD-1 Develop or use current Spill Prevention Control and Countermeasure Plan:** See description above.
Transpotation & Traffic		
TRANS-1: Potential to damage private or public roads during construction.	Less than significant with mitigation incorporated	**MM TRANS-1 Restore Roads to Preexisting Condition:** Private or Public roads that are damaged by construction will be restored to pre-construction conditions where feasible by NID or its contractor.
TRANS-2: Potential to result in inadequate emergency access	Less than significant with mitigation incorporated	**Mitigation Measure TRANS-2 Prepare Plan for Traffic Control, Including Emergency Access:** Prior to the commencement of construction, NID or its contractor will prepare a plan to minimize interference with normal traffic flows.

1.0 Project Description

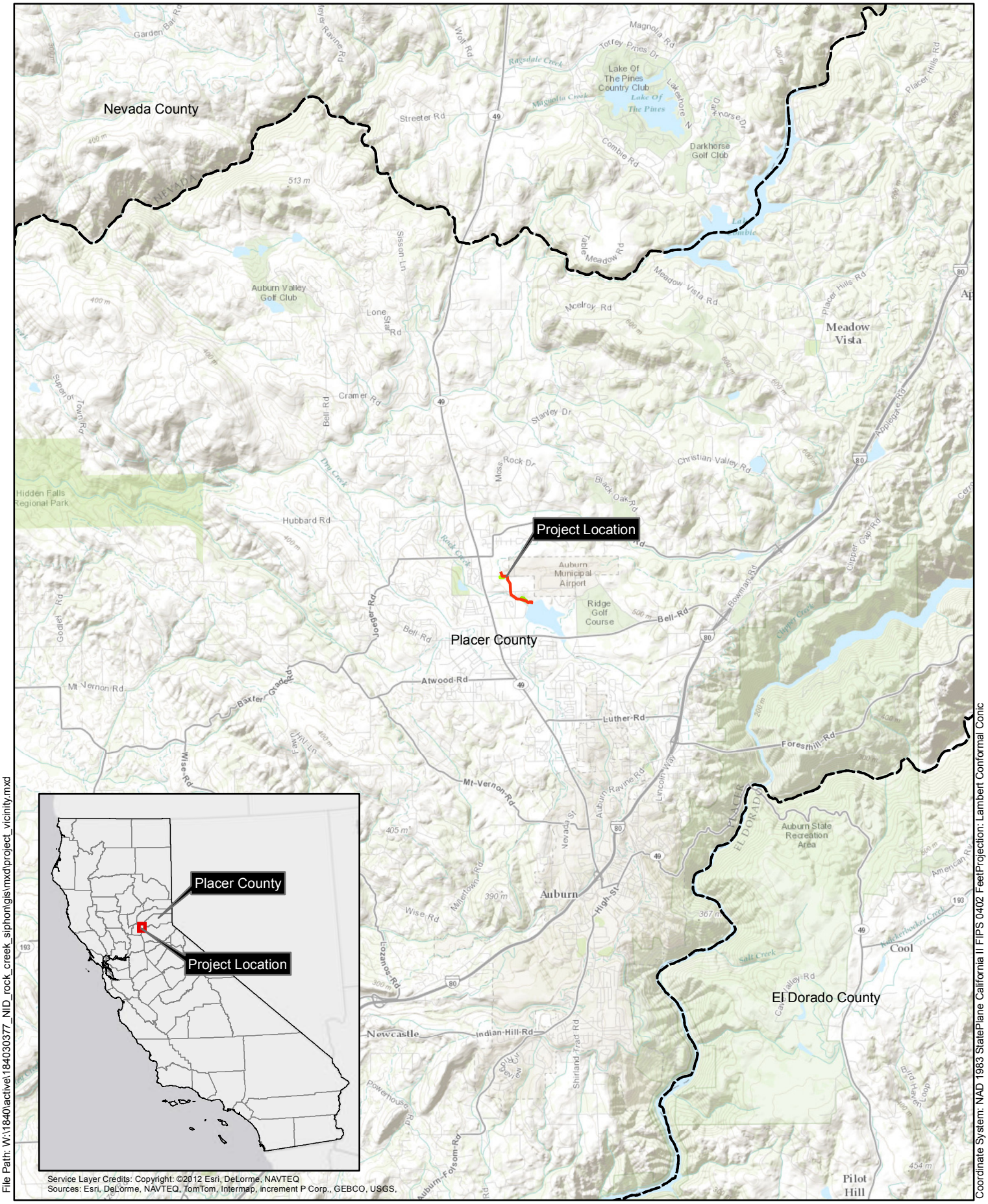
Nevada Irrigation District (NID) provides irrigation water for agriculture and other non-potable uses and treated water for domestic, municipal, and industrial use, including areas in North Auburn and Western Placer County. Within its district, NID serves a section of North Auburn's residential population and commercial properties, including Auburn Faith Hospital (treated water). Currently, the irrigation source of water for the North Auburn Area served by NID is Combie Reservoir and flows through the Combie (and Combie Ophir) Canal systems.

The existing raw water system operates effectively under normal conditions and serves NID customers in the area; however, the existing facilities lack redundancy. In the event of a canal outage, treated raw water supply to the NID North Auburn Water Treatment Plant (WTP) could be reduced; potentially jeopardizing the potable water supply and irrigation customers could be impacted with reduced deliveries. Both of these conditions put NID and its customers at risk.

The proposed Rock Creek Siphon Project (Project) would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Specifically, the proposed siphon connection will provide redundancy and delivery for treated and raw water customers in North Auburn. The project will also provide a redundant raw water source for deliveries for PG&E and Placer County Water Agency (PWCA). Additionally, the Project would include the installation of a 24 inch pipeline between Locksley Lane and Shale Ridge Road, connecting the WTP to an existing water storage tank.

PROJECT LOCATION

The proposed Project is located in North Auburn, Placer County as depicted in Figure 1-1 (Project Vicinity Map). The specific proposed alignment that connects the Combie Ophir II Canal and Rock Creek Reservoir was selected based on elevation and grade constraints necessary to operate using gravity and avoiding the need for pump stations. The proposed alignment was also selected to minimize, to the extent feasible, potential construction and operation-related environmental impacts. The location of the proposed Project, including anticipated staging areas during construction, is depicted in Figure 1-2 (Project Location Map).



File Path: W:\1840\active\184030377_NID_rock_creek_siphon\gis\mxd\project_vicinity.mxd

Coordinate System: NAD 1983 StatePlane California II FIPS 0402 FeetProjection: Lambert Conformal Conic

Stantec

0 3 Miles

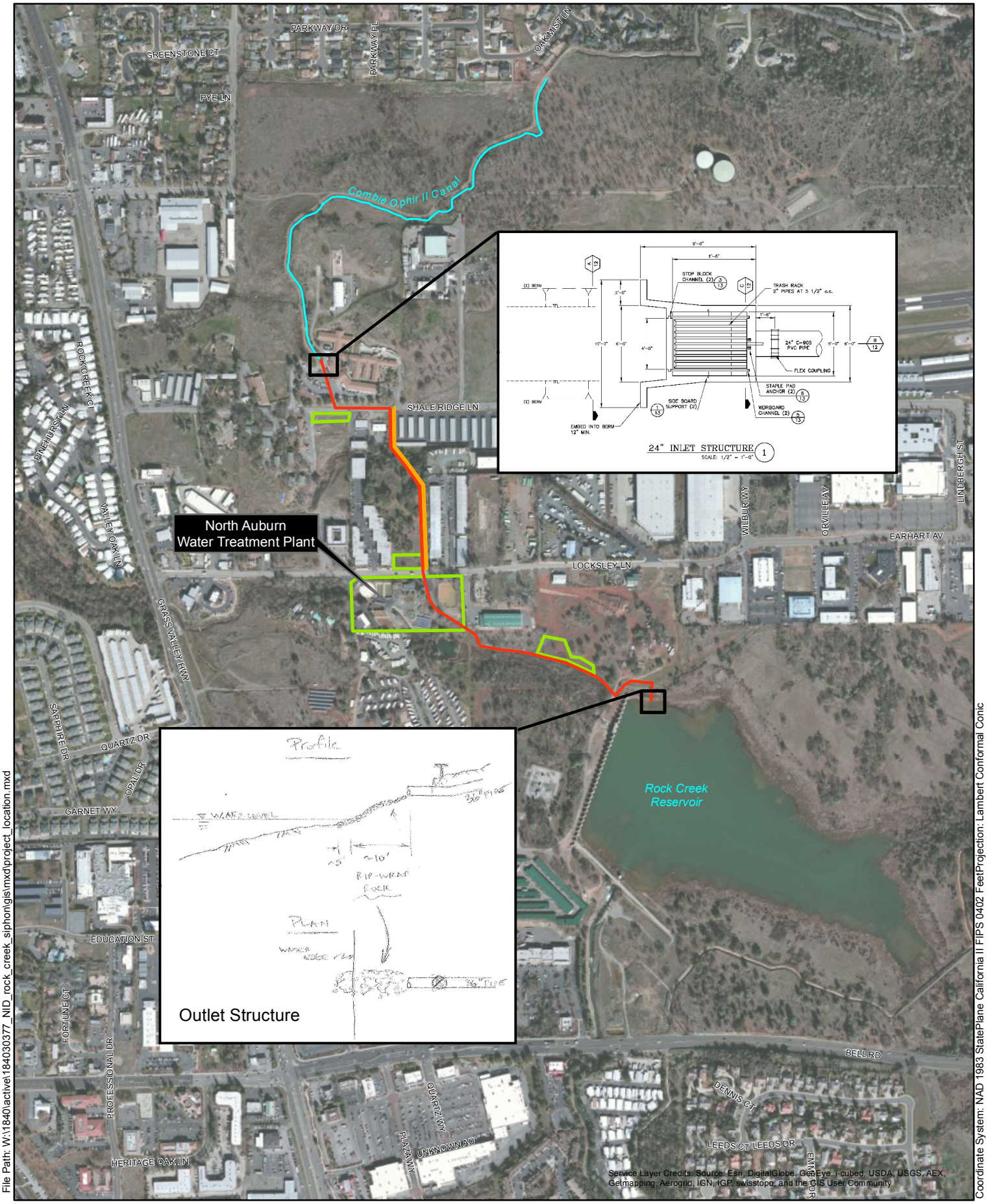
1 inch = 8,000 feet

Project: 184030377; Sources: Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013, ESRI 2013; Create By: K. Gross; Updated: 7/24/2013

Figure 1-1

Project Vicinity

Nevada Irrigation District • Rock Creek Siphon Project



File Path: W:\1840\active\184030377_NID_rock_creek_siphon\gis\mxd\project_location.mxd

Coordinate System: NAD 1983 StatePlane California II FIPS 0402 FeetProjection: Lambert Conformal Conic

Stantec

0 1,000 Feet

1 inch = 750 feet

Project: 184030377; Sources: Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013, ESRI 2013; Create By: K. Gross; Updated: 3/4/2014

Project Features

- Preferred Alignment 36-inch raw water pipeline
- Preferred Alignment 24-inch water pipeline
- Potential Staging Areas

Figure 1-2
Project Location

Nevada Irrigation District
Rock Creek Siphon Project

The proposed pipeline alignment connects from Combie Ophir II Canal at the Westview Healthcare Center and heads South to Shale Ridge Road. The alignment then turns east along Shale Ridge Road for approximately 340 feet, where the alignment turns south along a property line between two developed industrial sites, then across undeveloped land for approximately 1,020 feet. The pipeline then crosses Locksley Lane and continues South through the NID North Auburn WTP. From the NID North Auburn WTP the proposed alignment heads Southeast/East across undeveloped land to the Rock Creek Reservoir, just north of the dam. The proposed Project is located between 1,400 to 1,460 feet in elevation (above mean sea level). An additional water pipeline will be installed parallel to the proposed pipeline alignment, between Locksley Lane and Shale Ridge Road and will be approximately 1,150 feet in length. This pipeline will provide water from the NID North Auburn WTP to an existing water storage tank.

1.1 PROJECT PARAMETERS

The proposed Project entails:

- The installation of a small diversion structure (approximately 4' tall by 7' wide by 6'depth) located at the Combie Ophir II canal, just prior to entering an existing NID siphon. The diversion structure would include a concrete headwall, bar rack with two-inch spacing to prevent debris and persons from entering the pipeline. The bar rack will be manually cleaned by NID operations staff. A slide gate will be used to divert a portion of water flow into the pipeline. This structure would be similar in type and build and immediately adjacent to the existing NID structure. The bottom of the structure will be roughly two to three feet below the existing canal floor elevation. (See call-out in Figure 1-2).
- The installation of approximately ¾ mile (~ 4,000 feet) of anticipated 36-inch pipe from the existing Combie Ophir II Canal to the Rock Creek Reservoir. The pipe will be constructed using either ductile iron, PVC, or HDPE. The pipeline trench during construction will be approximately four feet wide with an anticipated maximum depth of five to six feet. Upon completion, approximately 30 inches of fill will cover the pipe and the pipeline corridor will be restored to pre-existing conditions (pavement and grassland). Valves and other appurtenances will be buried or located in vaults adjacent to the pipeline.
- The installation of approximately 1,150 feet of 24-inch pipe from the North Auburn WTP to an existing water storage tank. The pipe will be constructed using either ductile iron, steel, HDPE or PVC. The pipe will span from Locksley Lane to Shale Ridge Road and will be installed parallel to the 36-inch pipe (adjacent trenches). The trenches from Locksley Lane to Shale Ridge Road will be approximately eight to ten feet wide.

- Installation of an outlet structure including a headwall, energy dissipation structure to reduce velocity and erosion, erosion measures consisting of a concrete apron and a rack to prevent wildlife or persons from entering the pipeline. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The outlet structure is an exposed pipe with a gate valve on the end. The pipe will come out of the ground about 10 feet above the ordinary high water mark (OHWM) of the reservoir. This will minimize the amount of exposed material. Large rip-wrap rock to be placed between the outlet and the OHWM of the reservoir, in order to minimize erosion of bare ground. Rock Creek Reservoir water levels will not be manipulated during outlet construction. Rip-wrap rock will be placed beyond the pipe and will be deposited in the first one to two feet of the reservoir water level. The area covered by rip rap will be approximately 10 feet wide, along the shoreline, and 15 feet down the shore from the outlet towards the water.
- A connection to an existing 24" raw water supply line to feed the NID North Auburn WTP.

The proposed pipeline connection between the Combie Ophir II Canal and Rock Creek Reservoir will require an approximate 30 feet easement. Some portions of the Project will require a Right-of-Way to be acquired from private property owners to complete the proposed Project. NID will work with property owners to acquire a permanent easement for the facilities.

1.1.1 Construction Activities and Estimated Schedule

The construction activities for the proposed Project are listed below in Table 1.1-1. The proposed activities entail site preparation, grading, trenching (excavation and fill), pipe installation, paving, and site restoration. Typical construction equipment, such as an excavator backhoe, and dump truck will be utilized for these activities. Access to the proposed Project site and staging areas will occur along Shale Ridge Road, Locksley Lane, and if feasible, Rock Creek Road (a private drive). Four potential staging areas have been identified, the first is along Shale Ridge Road in a vacant lot, the second in a vacant lot on Locksley Lane across from the North Auburn WTP, the third is the NID North Auburn WTP, and the fourth is on private property adjacent to Rock Creek Reservoir (see figure 1.2). NID's chosen contractor will procure the use of these properties if needed. All staging areas are on previously disturbed lots. In addition, some staging may occur off-site at the District or contractor's facilities. The majority of construction will likely occur in summer/fall within the next five years and construction will last approximately 150 days.

Table 1.1-1
Project Overview and Proposed Schedule

Project Component	Specific Activities	Construction Phase	Location	Area of impact	Estimated Construction Schedule
Site preparation	❒ Site preparation within county right-of-way, public utility or NID easements ❒ Staging of equipment in designated staging areas (previously disturbed areas)	Site Preparation: – Approximately 10 trees for trimming/removal – Vehicular traffic – Staging – Grading	The Project is located between the Combie Ophir II Canal and Rock Creek Reservoir.	The Project area is approximately 4000 linear feet. Staging areas are approximately one acre total in size depending on the staging area(s) chosen by contractor. Construction corridor within county right-of-way, public utility or NID easements.	The proposed Project activities will be completed within the next five years in the Summer/Fall and will take approximately 150 days to complete.
Installation of 36-inch pipeline, 24-inch pipeline, and connection to existing 24" line at North Auburn WTP	❒ Install anticipated 36-inch pipeline ❒ Install 24-inch pipeline between Locksley Lane and Shale Ridge Road ❒ Install diversion structure at Combie Ophir II canal ❒ Install Outlet structure at Rock Creek Reservoir	Trenching: – Excavation – Fill Paving (in previously paved areas) Rip-rap placement		The outlet will be located approximately 10 feet above the OHWM of Rock Creek Reservoir and erosion control rip-rap will be installed on the reservoir bank below the outlet to a water depth of approximately 2 feet.	
Site Restoration	❒ Re-paving specifications for roadways/ driveways ❒ Re-vegetation will be consistent with pre-construction landscaping status (replaced as former). If pre-construction landscaping was non-existent, post restoration will include soil erosion control.	Post-installation, site restoration and cleanup			

1.1.2 Operation

The proposed facility will be utilized for operational needs and emergency purposes. When in use, flow will be diverted manually by operations staff using the slide gate. Flow into the pipeline will be monitored by assessing upstream and downstream weir devices on the canal. Flow will be recorded periodically during the use. The bar rack will be cleaned as necessary and will vary depending on the season and water quality. Cleaning consists of removing debris from the rack. Additionally, the proposed alignment interconnecting the NID North Auburn WTP to the existing water storage tank would allow for faster filling of the tank, thus a more reliable storage facility. Visual inspections will occur periodically during operations.

1.2 CEQA PROCESS

The California Environmental Quality Act (CEQA) is the state environmental law that requires project proponents to disclose the significant impacts to the environment from proposed development projects. The intent of CEQA is to foster good planning and to consider environmental issues during the planning process. NID is the Lead Agency under CEQA for the preparation of this Initial Study/Mitigated Negative Declaration. CEQA Guideline (Section 21067) defines the Lead Agency as "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment". The approval of the proposed Project is considered a public agency discretionary action, and therefore the proposed Project is subject to the compliance with CEQA. The public, Placer County Community Development Agency, and other local state resource agencies will be given the opportunity to review and comment on this document, during the 30-day Public review period. Comments received during the 30-day review period will be considered by the NID Board prior to the certification of the CEQA disclosure document, and Project approval.

1.3 PERMITTING

The proposed Project will likely trigger Federal and State permitting requirements, due to the potential for placement of "dredge or fill material" into potentially jurisdictional "waters of the US" (i.e. Combie Ophir II Canal and/or Rock Creek Reservoir) and pipeline installation within the riparian zone, lakebed, or bank of a potential water of the State (Rock Creek Reservoir and the riparian zone along Rock Creek). In addition, the possible removal of emergent vegetation and work within Rock Creek Reservoir will likely trigger the need for a demonstration of compliance with the State and Federal Endangered Species Acts. As such, compliance with the following regulations will likely be necessary:

- Clean Water Act (CWA) Section 404
- CWA Section 401
- Federal Endangered Species Act Section 7
- National Historic Preservation Act Section 106 (pre-requisite for CWA 404 compliance)
- California Department of Fish and Wildlife Code Section 1600 et seq.

As part of the permit compliance process a Wetland Delineation, National Historic Preservation Act (NHPA) Section 106 compliant report, possible Protocol Level California Red-Legged Frog surveys, and US Fish and Wildlife Service consultations may be required.

1.4 SCOPE OF THIS STUDY

As the Lead Agency under CEQA, NID is responsible for compliance with the environmental review process prescribed by the CEQA guidelines. This study focuses on the environmental issues identified as possibly significant in the CEQA checklist and by CEQA guidelines. A complete project description is included in the first part of this section of this document. All areas of concern relevant to the proposed Project are analyzed in Section 3 and references are included in Section 4. Reconnaissance-level biological and cultural surveys were conducted on July 18 and August 15, 2013 by Stantec biologists and a cultural resource specialist.

1.5 ENVIRONMENTAL COMMITMENTS/BEST MANAGEMENT PRACTICES

The following environmental commitments and Best Management Practices have been incorporated by NID into the Project design and will be executed prior to, and during the proposed Project.

Environmental Commitment BIO-01 - Biological Resource-Related Commitments:

> **Trees:** Where possible, minimize, or avoid removal of mature trees during construction. Any activities that may occur in the dripline of trees will be minimized to the extent possible. The dripline of the trees will be identified by exclusionary fencing when practicable.
>
> **Staging Areas**: To the extent feasible, proposed staging areas will be located in previously disturbed or graded areas.

Environmental Commitment HAZ-1: Fire Suppression and Control:

NID will require the selected construction contractor to coordinate with the local fire chief and Placer County to ensure fire control to reduce the risk of fires during the proposed Project. The fire prevention and control measures will include requirements for onsite extinguishers; roles and responsibilities of NID and the contractor; fire suppression equipment and/ critical fire prevention and suppression items.

Environmental Commitment NOISE-1: Compliance with Placer County Noise Ordinance and Auburn Municipal Code:

According to the Placer County Noise Ordinance and City of Auburn Municipal Code 93.09, Construction activities are exempt from the noise ordinance as long as construction takes place between the hours of seven a.m. and six p.m. Monday through Friday, and between the hours of nine a.m. and five p.m. Saturdays and 10 a.m. to six p.m. Sundays. Any noise from the above activities, including from any equipment used therewith, on Saturdays, shall not produce noise levels in excess of the 80 dba when measured at a distance of 25 feet and on Sunday and observed holidays 70 dba when measured at a distance of 25 feet. Additionally, all construction equipment will be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

2.0 Environmental Checklist Form and Analysis

1. **Project Title:** Nevada Irrigation District Rock Creek Siphon Project

2. **Lead agency name and address:**

   Nevada Irrigation District, 1036 W. Main Street, Grass Valley, CA 95945

3. **Contact person and phone number:**

   Contact: Adrian Schneider
   Phone: (530) 273-6185

4. **Project location:**

   Nevada Irrigation District (NID) Rock Creek Siphon Project is located in North Auburn in Placer County. The proposed pipeline alignment connects from Combie Ophir II Canal at the Westview Healthcare Center and heads south to Shale Ridge Road. The alignment then turns east along Shale Ridge Road for approximately 340 feet, where the alignment turns south along a property line between two developed industrial sites, then across undeveloped land for approximately 1,020 feet. The pipeline then crosses Locksley Lane and continues South through the NID North Auburn WTP. From the NID North Auburn WTP the proposed alignment heads Southeast/East across undeveloped land to the Rock Creek Reservoir, just north of the dam.

5. **Project sponsor's name and address:**

   Nevada Irrigation District, 1036 W. Main Street, Grass Valley, CA 95945
   Phone: (530) 271-6866

6. **General plan designation and zoning:**

   Placer County Land Use Designations: Industrial Park, Canal, within intermittent stream 50' setback (Rock Creek), and Lake (Rock Creek Reservoir)

   City of Auburn Land Use Designation: Industrial/Public

7. **Description of Project:** Refer to Section 2 above.

8. **Surrounding Land Uses and Setting:** Refer to Section 2 above.

   Surrounding land uses and setting to the Project site are generally designated as Industrial Park and/or Commercial within an urban setting.

9. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement:** Refer to Section 2 above.

NEVADA IRRIGATION DISTRICT ROCK CREEK SIPHON PROJECT

Environmental Checklist Form and Analysis
March 2014

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that requires mitigation to reduce the impact from "Potentially Significant" to "Less than Significant" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Utilities/Service Systems	☐ Mandatory Findings of Significance

DETERMINATION: (TO BE COMPLETED BY THE LEAD AGENCY.)

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed Project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature

3/24/14
Date

Remleh Scherzinger
Printed Name

Nevada Irrigation District
For

3.0 Environmental Impacts

The following sections summarize (1) the environmental setting, (2) impacts, and (3) proposed mitigation measures associated with the Project. Additional topics such as the methodology and/or regulatory setting were also included where applicable. In all cases the proposed Project activities described in the Project description were analyzed for potential impacts. In each section all proposed Project activities are referred to either explicitly by name, or implicitly as "the Project".

3.1 AESTHETICS

3.1.1 Environmental Setting

Located in an industrial park/heavy commercial area of North Auburn in Placer County, the proposed Rock Creek Siphon Project (Project) pipeline alignment connects from the existing NID Combie Ophir II Canal (Photo 3-1) at the Westview Healthcare Center and heads south to Shale Ridge Road. The alignment then turns east along Shale Ridge Road for approximately 340 feet, where the alignment turns South along a property line between two developed industrial sites, then across undeveloped land for approximately 1,020 feet. The pipeline then crosses Locksley Lane and continues south through the NID North Auburn WTP (Photo 3-2). From the NID North Auburn WTP the proposed alignment heads Southeast/East across undeveloped land to the Rock Creek Reservoir, just north of the dam (Photo 3-3).

Photo 3-1
Existing NID Combie Ophir II Canal facing North

Photo 3-2
Existing NID North Auburn Water Treatment Plant facing West

Photo 3-3
Rock Creek Reservoir facing South

3.1.2 Impact Analysis

Table 3-1
CEQA Checklist for Assessing Project-Specific Potential Impacts to Aesthetic Resources

I.	AESTHETICS: Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a. Would the Project have a substantial adverse effect on a scenic vista?

Finding: No Impact

The Project site is approximately one-quarter mile from Highway 49 and will not be visible from the highway. Based on a review of the California Department of Transportation State Scenic Highway List and the Placer County General Plan, Highway 49 is an eligible State Scenic Highway but not officially designated (California Department of Transportation 2011; Placer County General Plan 1994). Because the Project site is not visible from Highway 49 and because Highway 49 is not a designated scenic vista and/or highway, the proposed Project will not have a substantial adverse effect on any scenic vistas. Additionally, the proposed Project will not significantly change the current view shed. Therefore, no impact will occur.

b. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway?

Finding: No Impact

Based on review of the California Department of Transportation State Scenic Highway List and the Placer County General Plan, there is no state scenic highway or scenic vista on or adjacent to the proposed Project site from which the site would be visible (California Department of Transportation 2011; Placer County General Plan 1994). Highways 49 is located within one-quarter mile of the proposed Project site, and is an Eligible State Scenic Highway but not officially designated. Additionally, the proposed Project area is not visible from Highway 49 and will not permanently change the current viewshed. Therefore, the proposed Project entails no impact to scenic resources within a state scenic highway

c. Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

Finding: Less than Significant

The proposed Project is located in an industrial area of North Auburn and the majority of the Project permanent infrastructure is below ground (anticipated 36" water pipeline) and will not substantially degrade the existing visual character or quality of the Project area and its surroundings. Any roads, sidewalks, or undeveloped areas will be restored to existing conditions once construction is complete. Tree removal will be kept to a minimum with approximately ten trees (less than or equal to [≤] 30 inches diameter at breast height [DBH]) either removed or trimmed along the proposed Project area. There is also potential for temporary visual impacts during construction. These impacts will be temporary (≤150 days) and will only be partially visible from the surrounding industrial and commercial buildings within view of the Project site. Views of construction traffic and staging areas along the Project area will be visible from nearby surrounding industrial and commercial buildings. Therefore, potential impacts to the aesthetic character of the area are considered less than significant.

d. Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Finding: Less than Significant

No permanent lighting is involved with the proposed Project. Temporary lighting may be used during construction but will most likely not occur because construction will take place from seven a.m. and six p.m. Monday through Friday, and between the hours of nine a.m. and five p.m. Saturdays and 10 a.m. to six p.m. Sundays (according to the Placer County Noise Ordinance and Auburn Municipal Code 93.09). If an emergency occurs at night, flashlights or car lights will be used as needed if existing street lights do not provide enough light. Therefore, there will be no permanent new source of substantial light or glare and impacts are considered less than significant.

3.2 AGRICULTURAL RESOURCES

3.2.1 Regulatory Setting

Farmland Protection Policy Act (FPPA)

The Farmland Protection Policy Act (FPPA) of 1981 [Sections 1539-1549 P.L. 97-98, Dec 22, 1981], requires the Secretary of Agriculture to establish and carry out a program to "minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland." [7 USC 4201-4209 & 7 USC 658].

Williamson Act

The California Land Conservation Act (Williamson Act) of 1965 is the state's principal policy for the "preservation of a maximum amount of the limited supply of agricultural land in the state" (Cal. Government Code Section 51220(a)). The purpose of the Williamson Act is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Williamson Act enables private landowners to contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. In return for this guarantee by landowners the government jurisdiction assesses taxes based on the agricultural value of the land rather than the market value, which typically results in a substantial reduction in property taxes.

Placer County General Plan

The following general plan goal was considered when analyzing potential Project-related impacts to agricultural resources:

Goal 7.D: To maximize the productivity of Placer County's agriculture uses by ensuring adequate supplies of water.

City of Auburn General Plan

The City of Auburn does not have any agricultural and/or forestry general plan goals or policies that pertain to the proposed Project.

3.2.2 Impact Analysis

Table 3-2
Checklist for Assessing Project Specific Potential Impacts to Agricultural Resources

II.	AGRICULTURE RESOURCES: Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

a) Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Finding: Less than Significant

The proposed Project activities would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The Project site is classified primarily as Urban and Built-Up Land with a small area near Rock Creek Reservoir classified as Grazing Land according to the Important Farmland Mapping and Monitoring Program. Urban and Built-Up Land is described as occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10 acre parcel. Grazing Land is described as land on which the existing vegetation is suited to the grazing of livestock (CDC, 2010). The proposed Project construction will be temporary in nature and will not permanently impact the small area of grazing land or convert the land to non-grazing uses. Additionally, the area of the proposed Project near Rock Creek Reservoir is not currently used as grazing land. Therefore, impacts are considered less than significant.

b) Would the Project conflict with existing zoning for agricultural use or a Williamson Act contract?

Finding: Less than Significant

The proposed Project area is currently designated as Industrial Park, Canal, within intermittent stream 50 feet setback (Rock Creek), and Lake (Rock Creek Reservoir) by Placer County. The small portion of the Project within the City of Auburn is designated as Industrial/Public land (Placer County General Plan, 2013; City of Auburn General Plan, 1992). The Project site is classified primarily as Urban and Built-Up Land with a small area near Rock Creek Reservoir classified as Grazing Land according to the Important Farmland Mapping and Monitoring Program (CDC, 2010). The entire proposed Project area is not registered under the Williamson Act based on a review of the most recent Williamson Act lands map published by the Department of Conservation in 2012/2013. Therefore, the proposed Project will not conflict with existing zoning for agricultural use or a Williamson Act contract and impacts are considered less than significant.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Finding: No Impact

The Project area is currently designated as Industrial Park, Canal, within intermittent stream 50 feet setback (Rock Creek), and Lake (Rock Creek Reservoir) by Placer County. The small portion of the Project within the City of Auburn is designated as Industrial/Public land (Placer County General Plan, 2013; City of Auburn General Plan, 1992). The proposed Project is not located on land zoned as forest or timber land and will not conflict with existing zoning for forestry or timberland resources. Therefore, no impacts will occur.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

Finding: No Impact

The Project area is currently designated as Industrial Park, Canal, within intermittent stream 50 feet setback (Rock Creek), and Lake (Rock Creek Reservoir) by Placer County. The small portion of the Project within the City of Auburn is designated as Industrial/Public land (Placer County General Plan, 2013; City of Auburn General Plan, 1992). The proposed Project is not located on forest land. The Project may entail the trimming/removal of approximately 10 trees (canyon live oaks 6-30" DBH) that are within the proposed Project area. This area of tree trimming/removal is not designated as forestland and 10 trees or less will be impacted and therefore will not result in an overall significant conversion of forestland to non-forestland uses. Therefore, no impacts will occur.

e) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Finding: Less than Significant

The Project area is currently designated as Industrial Park, Canal, within intermittent stream 50 feet setback (Rock Creek), and Lake (Rock Creek Reservoir) by Placer County. The small portion of the Project within the City of Auburn is designated as Industrial/Public land (Placer County General Plan, 2013; City of Auburn General Plan, 1992). The Project site is classified primarily as Urban and Built-Up Land with a small area near Rock Creek Reservoir classified as Grazing Land according to the Important Farmland Mapping and Monitoring Program (CDC, 2010). The entire proposed Project area is not registered under the Williamson Act based on a review of the most recent Williamson Act lands map published by the Department of Conservation in 2012/2013. The Project will not involve any other changes in the existing environment that would result in conversion of farmland or forestland to non-agricultural or non-forest use. Therefore, impacts are considered less than significant.

3.3 AIR QUALITY

3.3.1 Environmental Setting

The proposed Project is located in Placer County within the Sacramento Valley Air Basin. According to California Air Resources Board (CARB), air quality problems in the County are primarily related to motor vehicle emissions. PM_{10} (particulate matter measuring less than 10 microns) levels have been increasing in the air basin due to increased traffic on paved and unpaved roads. Reactive organic gasses (ROG), nitrogen oxide (NOx), and carbon monoxide (CO) levels have decreased in the last several years due to technological advances in vehicle engine efficiency (CARB 2011).

The Placer County Air Pollution Control District (PCAPCD) is responsible for the management and improvement of air quality in Placer County. Placer County is currently in non-attainment for State and Federal Ozone (with the exception of the Lake Tahoe area), State PM_{10}, and Federal $PM_{2.5}$ (particulate matter measuring less than 2.5 microns). Table 3.3.1 describes Placer County area designations for California and National Ambient Air Quality (CARB 2011 & United States Environmental Protection Agency (EPA) Green Book 2012). Project specific air quality impacts within the Project area were analyzed using California Emission Estimator Model (CalEEMod) software version 2013. The results of the air quality analysis can be found in Table 3.3.2 below.

3.3.2 Regulatory Setting

The proposed Project site is within the Sacramento Valley Air Basin and is under the jurisdiction of the Placer County Air Pollution Control District (PCAPCD), California Air Resources Board (CARB), and the United States Environmental Protection Agency (EPA). The following federal and state regulations were considered when analyzing potential Project-related impacts to air quality:

Federal Clean Air Act (FCAA)

The Federal CAA establishes the framework for modern air pollution control. The Clean Air Act directs the EPA to establish ambient air quality standards for six pollutants: ozone (O_3), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM_{10}, $PM_{2.5}$) and sulfur dioxide (SO_2). These standards are divided into primary and secondary standards, the former are set to protect human health, the latter are set to protect environmental health, such as plant and animal life (EPA Green Book 2012).

California Clean Air Act (CAA)

The California CAA focuses on attainment of the California Ambient Air Quality Standards (CAAQS). These standards are more stringent than federal regulations with respect to certain Criteria Pollutants and averaging periods. Responsibility for monitoring the CAAQS is placed on the CARB and local APCD. The California CAA requires the local air districts to draft, implement, and uphold an air quality management plan to meet CAAQS. The information in the air quality management plans are also utilized in the California SIP.

Table 3.3.1
Placer County Area Designations for California and National Ambient Air Quality

Criteria Pollutants	California Designation	National Designation
Ozone	Non-attainment	Severe Non-attainment
PM_{10}	Non-Attainment	Attainment
$PM_{2.5}$	Attainment	Non-attainment
Carbon Monoxide	Attainment	Unclassified/ Attainment
Nitrogen Dioxide	Attainment	Unclassified/ Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	-
Lead	Attainment	Unclassified/ Attainment
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

(Source: CARB, 2012, EPA Green Book, 2013)

Placer County Air Pollution Control District

PCAPCD CEQA Air Quality Handbook: The PCAPCD introduced a CEQA Air Quality Handbook on October 11, 2012. The PCAPCD CEQA Air Quality Handbook reviews how to assess and mitigate air quality impacts for CEQA projects. Thresholds included in this handbook have been used for air emissions analysis.

Rule 202 - Visible Emissions: A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection (A) above.

Rule 205 Nuisance: A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause to have a natural tendency to cause injury or damage to business or property.

Rule 207 – Particulate Matter: For the Sacramento Valley Air Basin and the Mountain Counties Air Basin portions of the Placer County APCD a person shall not release or discharge into the atmosphere from any source or single processing unit, exclusive of sources emitting combustion contaminants only, particulate matter emissions in excess of: 0.1 grains per cubic foot of gas at District standard conditions.

Rule 217 – Cutback and Emulsified Asphalt Paving Materials: A person shall not discharge to the atmosphere volatile organic compounds (VOC's) caused by the use or manufacture of Cutback or Emulsified asphalts for paving, road construction or road maintenance, unless such manufacture or use complies with the provisions of this Rule.

Rule 228 - Fugitive Dust: Rule 228 establishes standards to be met by activities generating fugitive dust. Rule 228 applies to the entire County of Placer and addresses fugitive dust generated by construction and grading activities, and by other land use practices including recreational uses. Fugitive dust is particulate matter discharged into the atmosphere due to a man-made activity or condition. Examples of dust sources that are subject to the rule are excavating and trenching, drilling, boring, earthmoving and grading operations, pavement or masonry cutting operations, brush clearing, travel on unpaved roads within construction sites, and wind-blown dust from uncovered graded areas and storage piles. Rule 228 establishes standards to be met by activities generating fugitive dust. Among these standards to be met is a prohibition on visible dust crossing the property boundary, generation of high levels of visible dust (dust sufficient to obscure vision by 40%), and controls on the track-out of dirt and mud on to public roads. The regulation also establishes minimum dust mitigation and control requirements. Rule 228's minimum dust control practices must be used for all construction and grading activities. When an area to be disturbed is greater than one acre, and if required by a Condition of Approval of a discretionary permit, a Dust Control Plan (DCP) must be submitted to and approved by the District. The District has developed an application for this purpose. The DCP instructions contain a DCP Application form. The District urges the use of the DCP Application form as opposed to submitting an original Plan which may be subject to higher fees if it requires increased time to review. Completion of this application and subsequent approval by the District will satisfy requirements to have a DCP. Failure to implement the plan is subject to enforcement through the Conditions of Approval, and by District through Rule 228.

Rule 301 Nonagricultural Burning Smoke Management: To establish criteria for the disposal of vegetation from fire hazard reduction burning, mechanized burners, fires set or permitted by public officers, and right-of-way (ROW) clearing, levee, ditch, and reservoir maintenance, to better manage smoke in order to reduce its effects.

Rule 501 General Permit Requirements - Section 301 Authority to Construct: Any person building, erecting, placing on site, altering or replacing any article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain authorization for such construction from the Air Pollution Control Officer (APCO) as specified in Section 403 of this rule. The emissions unit(s) shall not commence operation until the APCO takes final action to approve the Authority to Construct. After the emissions unit(s) commences operation, the Authority to Construct may remain in effect as a Temporary Permit to Operate until a Permit to Operate the equipment is granted or denied or the application is canceled.

Rule 502 – New Source Review: This rule shall apply to all new stationary sources and emissions units and all modifications to existing stationary sources and emissions units that, after construction, emit or may emit any NSR regulated pollutant within the District.

If any source or modification becomes a major source or major modification solely by virtue of the relaxation of any limitation that was established after August 7, 1980, on the capacity of the source or modification to emit a federal nonattainment pollutant or its precursor such as a restriction on hours of operation, then the requirements of this rule shall apply to such a source or modification as though construction had not yet commenced on the source or modification. This rule shall not apply to prescribed burning of forest, agriculture or range land; open burning in accordance with District Regulation 3, Open Burning; road construction, or any non-point source common to timber harvesting or agricultural practices. The regulations in effect at the time any application for an Authority to Construct for a new or modified source is deemed complete shall apply to that source except when a new federal requirement not yet incorporated into this Rule applies to the new or modified source.

Placer County General Plan

The Placer County General Plan includes the following goals and policies that are directly or indirectly pertinent to the proposed Project:

Goal 6.F: To protect and improve air quality in Placer County.

Policy 6.F.2: The County shall develop mitigation measures to minimize stationary source and area source emissions.

Policy 6.F.3: The County shall support the Placer County Air Pollution Control District (PCAPCD) in its development of improved ambient air quality monitoring capabilities and the establishment of standards, thresholds, and rules to more adequately address the air quality impacts of new development.

Policy 6.F.4: The County shall solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality.

Policy 6.F.5: The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and area wide source programs and transportation control measures (TCM) programs. Project review shall also address energy efficient building and site designs and proper storage, use, and disposal of hazardous materials.

Policy 6.F.6: The County shall require project-level environmental review to include identification of potential air quality impacts and designation of design and other appropriate mitigation measures or offset fees to reduce impacts. The County shall dedicate staff to work with project proponents and other agencies in identifying, ensuring the implementation of, and monitoring the success of mitigation measures.

Policy 6.F.7: The County shall encourage development to be located and designed to minimize direct and indirect air pollutants.

Policy 6.F.8: The County shall submit development proposals to the Placer County APCD for review and comment in compliance with California Environmental Quality Act (CEQA) prior to consideration by the appropriate decision-making body.

Policy 6.F.9: In reviewing project applications, the County shall consider alternatives or amendments that reduce emissions of air pollutants.

Policy 6.F.10: The County may require new development projects to submit an air quality analysis for review and approval. Based on this analysis, the County shall require appropriate mitigation measures consistent with the Placer County APCD's 1991 Air Quality Attainment Plan (or updated edition).

Goal 6.G: To integrate air quality planning with the land use and transportation planning process.

City of Auburn General Plan

The City of Auburn General Plan has no specific goals or policies relating to air quality in the City of Auburn General Plan.

3.3.3 Impact Analysis

The potential Project-related impacts and the mitigation measures implemented to reduce impacts to less than significant are discussed below. In order to assess potential Project related impacts to air quality, a CalEEMod model was run using engineer's estimations of Project construction activities (Appendix A). The model was run using the following assumptions/Project details:

- The proposed Project construction activities will take approximately 150 days to complete and will be completed summer/fall within the next five years. In order to analyze air emissions for the Project, the year 2014 was evaluated. While this may not be the exact year of construction, the emissions analysis should not significantly change if construction occurs in a different year.

- The Project, once constructed, should have little to no emissions from operations (similar to the existing infrastructure at the site). The proposed facility will be utilized for emergency purposes. Therefore, operations emissions estimates were not included in this analysis for the Project.

The results of the CalEEMod simulation are enumerated in Table 3.3.2 and in Appendix A below and form the basis for the impact assessment in this section. Ozone levels are typically caused by emissions of reactive organic gases (ROG) and nitrogen oxides (NOx) listed in the table below. All predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds.

Table 3.3.2
NID Rock Creek Siphon Project
CalEEMod Predicted Maximum Daily Unmitigated Project Emissions Estimates

	ROG	NOx	CO	PM10	PM2.5
Construction (lbs./day)	3.16	33.13	20.90	7.91	4.97
PCAPCD Thresholds (lbs./day)	**82**	**82**	**550**	**82**	**82**

Table 1.3
CEQA Checklist for Assessing Project-Specific Potential Impacts to Air Quality

III.	AIR QUALITY – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b)	Violate any air quality standard or contribute to an existing or Projected air quality violation?	☐	☒	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Finding: Less than Significant with Mitigation

The Placer County General Plan and the PCAPCD have adopted goals and rules intended to improve air quality in Placer County and the air basin as a whole. The proposed Project applicable goals and rules of Placer County and the PCAPCD are listed above in the regulatory setting of this section. The proposed Project is not in conflict with or obstructing the implementation of these goals and rules because mitigation measures will be implemented by NID and NID's selected contractors to ensure that any air quality impacts will be less than significant. The proposed Project construction will take approximately 150 days to complete. Construction will occur within the next five years in the summer/fall. All predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds (Table 3.3.2, CalEEMod, 2013). The Project, once constructed, should have little to no emissions from operations (similar to the existing infrastructure at the site) and the proposed facility will be utilized for emergency purposes. Therefore, the proposed Project does not represent a significant addition of long term impacts to air quality.

Placer County is currently in non-attainment for State and Federal ozone, State PM_{10}, and Federal $PM_{2.5}$. As a result, an incremental increase in background ozone or PM levels would be considered a significant impact. The proposed Project is in compliance with PCAPCD thresholds of significance for all criteria pollutants and therefore would not conflict or obstruct implementation of the air quality plan. The Project is disturbing more than one acre, thus the PCAPCD requires the preparation of a Dust Control Plan pursuant to District Rule 228. As a result, Mitigation Measure AIR-1 will be implemented to reduce dust and air emissions impacts to less than significant levels. The proposed Project will be consistent with the goals of the PCAPCD through the implementation of Mitigation Measure AIR-1 and impacts are considered less than significant with mitigation incorporated.

b) Would the Project violate any air quality standard or contribute to an existing or Projected air quality violation?

Finding: Less than Significant with Mitigation

The proposed Project would not violate any air quality standard by itself but could contribute to existing regional air quality exceedances. Placer County is in non-attainment for State and Federal ozone, State PM_{10}, and Federal $PM_{2.5}$. All predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds (Table 3.32, CalEEMod, 2013). Placer County is in attainment or unclassified for all other criteria pollutants (CARB, 2012; EPA Greenbook, 2013). Based on CalEEMod air quality modeling, short-term construction activities are expected to generate minor emissions below PCAPCD thresholds. However, despite the minimal contribution to air quality degradation, the Project is disturbing more than one acre, thus the PCAPCD requires the preparation of a Dust Control Plan pursuant to PCAPCD Rule 228. Additionally, air quality impacts are considered potentially significant due to pre-existing regional non-attainment for ozone, PM_{10}, and $PM_{2.5}$. The implementation of air quality Mitigation Measure AIR-1 should effectively reduce the levels of dust and air emissions from construction to less than significant levels. The Project, once constructed, should have little to no emissions from operations (similar to the existing infrastructure at the site) and the proposed facility will be utilized for emergency purposes, therefore, no long-term impacts to air quality would occur.

Naturally occurring Asbestos (NOA) is known to occur in some parts of Placer County. According to the Placer County NOA Hazard Maps, the Project location is in an area of Placer County that is likely to contain NOA. The proposed Project disturbance area is greater than one acre and therefore required to submit an Asbestos Dust Mitigation Plan (Placer County, 2012). Mitigation Measure AIR-1 will be implemented to reduce dust and air emissions impacts to less than significant levels and to prepare an Asbestos Dust Mitigation Plan. Through the implementation of Mitigation Measure AIR-1 the Project will not violate any air quality standards or contribute to existing projected air quality violations and impacts are considered less than significant with mitigation incorporated.

c) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Finding: Less than Significant With Mitigation

All predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds (Table 3.3.2, CalEEMod, 2013). The construction of the proposed Project would temporarily produce additional dust and air emissions. Any increase in non-attainment pollutants is considered a cumulative net increase, and therefore constitutes a potentially significant impact. NID will implement Mitigation Measure AIR-1, which would include a Dust and Air Emissions Control Program, to effectively reduce the levels of dust and emissions from construction to a less-than-significant level. Therefore, potential Project-related impacts to criteria pollutants are considered less than significant with mitigation AIR-1 incorporated.

d) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Finding: Less than Significant with Mitigation

The proposed Project construction involves operating heavy equipment and construction activities that would temporarily produce additional dust and air emissions. The nearest sensitive receptor in the vicinity of the proposed Project area that could be affected by construction generated air emissions are commercial properties, residences, and an assisted living facility located along the Project alignment. All predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds (Table 3.3.2, CalEEMod, 2013). While all predicted maximum daily unmitigated Project emissions estimates are below the PCAPCD thresholds, exposure to substantial pollutant concentrations shall be further reduced with Mitigation Measure AIR-1. The Project, once constructed, should have little to no emissions from operations (similar to the existing infrastructure at the site) and the proposed facility will be utilized for emergency purposes Therefore, with the implementation of Mitigation Measure AIR-1, impacts are considered less than significant.

e) Would the Project create objectionable odors affecting a substantial number of people?

Finding: Less than Significant

While offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the PCAPCD. The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source, the wind speed and direction, and the sensitivity of the receptor. The nearest sensitive receptor in the vicinity of the proposed Project site that would be affected by odors are commercial properties, residential properties, and an assisted living facility located near the Project site (~50 feet). The proposed Project construction and current and future operations do not and will not omit or add to odors in the area. Given this is a water Project and does not entail the application of foul smelling materials, and the distance from sensitive receptors and lack of current odor complaints from the public, the impacts from odor are expected to be less than significant.

3.3.4 Mitigation

Mitigation Measure AIR-1: Dust and Emissions Control Plan

NID shall require that the selected contractor prepare and implement a Project Dust and Emissions Control Plan that is approved by the PCAPCD prior to construction. The following shall be conducted throughout the construction period to limit and control dust and air emissions:

- All material excavated, stockpiled, or graded shall be sufficiently watered, treated, or covered to prevent fugitive dust from leaving the property boundaries and/or causing a public nuisance. Watering during summer months should occur at least twice daily, with complete coverage of disturbed areas.
- All unpaved areas with vehicle traffic shall be watered or have dust palliative applied as necessary to minimize dust emissions.
- All on-site vehicle traffic shall be limited to a speed of 15 mph on unpaved roads.
- All land clearing, grading, earth moving, or excavation activities on a project shall be suspended as necessary to prevent excessive windblown dust when winds are expected to exceed 20 mph.
- All inactive portions of the development site shall be covered, seeded, or watered or otherwise stabilized until a suitable cover is established.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent it from being entrained in the air and there must be a minimum of six (6) inches of freeboard in the bed of the transport vehicle.
- Paved streets adjacent to the Project shall be reasonably clean through methods such as sweeping or washing at the end of each day, or more frequently if necessary, to remove excessive accumulations or visibly raised areas of soil which may have resulted from activities at the Project site.
- Prior to the end of construction, the applicant shall re-establish ground cover on the site through seeding and watering.
- The Project contractor shall ensure that all construction equipment is properly maintained.
- Employ best management construction practices to avoid unnecessary emissions (e.g., trucks and vehicles in loading and unloading queues would turn their engines off when not in use). Vehicle and equipment idling shall not be allowed to exceed five minutes.
- Encourage construction worker commuters to carpool or employ other means to reduce trip generation.
- If naturally-occurring asbestos is located onsite, the following measures shall be implemented prior to the approval of a Grading/Improvement Plans:

- The applicant shall prepare an Asbestos Dust Mitigation Plan pursuant to CCR Title 17 Section 9305 ("Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations") and obtain approval by the PCAPCD. The Plan shall include all measures required by the State of California and the PCAPCD.
- If asbestos is found in concentrations greater than 5 percent, the material shall not be used as surfacing material as stated in California regulation CCR Title 17 Section 93106 ("Asbestos Airborne Toxic Control Measure-Asbestos Containing Serpentine"). The material with naturally-occurring asbestos can be reused at the site for subgrade material covered by other non-asbestos-containing material.

Mitigation Measure AIR-1 Implementation

Responsible Party: NID would require that the contractor prepare and implement a Construction Emissions and Dust Control Plan and an Asbestos Dust Mitigation Plan. NID shall be responsible for ensuring that all adequate dust control measures are implemented in a timely manner during all phases of Project development and construction by the contractor.

Timing: An Emissions and Dust Control Plan must be prepared and approved by the PCAPCD and NID prior to construction and implemented during all phases of grading and activities that generate dust.

Monitoring and Reporting Program: During construction, regular inspections will be performed by a NID representative and reports will be kept on file by NID for inspection by the PCAPCD or other interested parties.

Standards for Success: Visible emissions and dust are kept to the lowest practicable level during construction periods. The goal is to minimize dust and emissions during construction and to the extent feasible, complaints from the public

3.4 BIOLOGICAL RESOURCES

3.4.1 Environmental Setting

The proposed Project is located in the Sierra Nevada foothills between 1,400 feet and 1,460 feet in elevation (above mean sea level) (Figures 1-1 and 1-2). In the Sierra Nevada foothills, this elevation is typically dominated by oak woodland and oak savanna; however, in North Auburn in Placer County within the proposed Project area, the habitat is largely developed or on previously disturbed land.

The proposed Project connects from Combie Ophir II Canal at the Westview Healthcare Center and heads South to Shale Ridge Road, crossing through a parking lot. The alignment then turns East along Shale Ridge Road for approximately 340 feet, where the alignment turns South along a property line between two developed industrial sites, then across undeveloped land comprised of valley foothill woodland and annual grassland habitat (Mayer and Laudenslayer 1988) for approximately 1,020 feet. The pipeline then crosses Locksley Lane and continues South through the NID North Auburn WTP. From the NID North Auburn WTP the proposed Project heads Southeast/East across areas of valley foothill woodland and annual grass/shrubland habitat (Mayer and Laudenslayer 1988) to Rock Creek Reservoir. This final stretch of the proposed Project runs parallel to a riparian zone along Rock Creek and the siphon will run along an existing access road. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet east of all structural aspects of the dam.

The specific proposed alignment that connects the Combie Ophir II Canal and Rock Creek Reservoir was selected based on elevation and grade constraints necessary to operate using gravity and avoiding the need for pump stations. The proposed alignment was also selected to minimize, to the extent feasible, potential construction and operation-related environmental (including biological) impacts. The location of the proposed Project, including anticipated staging areas during construction, is located in the U.S. Geological Survey (USGS) 7 ½ minute Quadrangle Map (Quad), Auburn, and is depicted in the Project Location Map (Figure 1-2).

3.4.2 Regulatory Setting

Federal Regulations

Clean Water Act: Section 401

Compliance of Section 401 of the Clean Water Act (CWA) is required for any project requiring a federal action (i.e. U.S. Army Corps of Engineers (Corps) permit or federal funding) with construction that could have an impact to surface water quality (EPA 2013). The proposed Project is parallel to Rock Creek, adjacent to an unnamed pond, within Rock Creek Reservoir and within the Combie Ophir II Canal and will require a CWA 401 Water Quality Certification even if well out of the ordinary high water mark (OHWM) and riparian zone. The Regional Water Quality Control Board (RWQCB) is a responsible agency under the California Environmental Quality Act (CEQA) and will review the CEQA document.

Clean Water Act: Section 404

The Corps and the Environmental Protection Agency (EPA) regulate the discharge of dredge or fill material into "Waters of the United States" under Section 404 of the CWA. "Waters of the United States" include wetlands and lakes, rivers, streams, and their tributaries. Wetlands are defined for regulatory purposes as areas "...inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated solid conditions" (333 CFR 328.3, 40 CFR 230.3) (USACE 1987 and EPA 2013). Project proponents must obtain a Nation-wide permit from the Corps for all discharges of fill material into waters of the United States (U.S.), including wetlands, before proceeding with a proposed action. Potential waters of the U.S. in the Project area include the Combie Ophir II Canal, Rock Creek, Rock Creek Reservoir, and a small unnamed pond adjacent to the proposed Project. Wetlands associated with these waters would also be considered waters of the U.S.

Endangered Species Act of 1973

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under Section 9 of the Federal Endangered Species Act (ESA). The act protects listed species from harm or "take" which is broadly defined as "...the action of harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct" (USFWS 1973). For any project involving a federal agency in which a listed species could be affected, the federal agency must consult with the USFWS in accordance with Section 7 of the ESA. The USFWS issues a biological opinion and, if the project does not jeopardize the continued existence of the listed species, issues an incidental-take permit (USFWS 1973).

Consultation with the USFWS would be necessary if a proposed action may affect suitable habitat for a federally listed species (e.g., valley elderberry longhorn beetle [Desmocerus californicus] or California red-legged frog [Rana draytonii]). This consultation would proceed under Section 7 of the ESA if a federal action is part of the proposed action (such as the Corps granting a Section 404 permit for the Project) or through Section 10 of the action if no such nexus were available (USFSW 1973).

The proposed Project will entail authorizations under CWA Section 404 and thus the Corps will likely consult with the USFWS under Section 7 of the ESA. There are 12 plant and wildlife species protected under the ESA and designated as either threatened or endangered known to occur within the USGS Auburn Quad, and the surrounding Quads of Wolf, Lake Combie, Colfax, Gold Hill, Greenwood, Rocklin, Pilot Hill, and Coloma; however, USFWS consultations will likely center around the potential (or lack thereof) of the Project to affect California red-legged frog (CRLF) and valley elderberry longhorn beetle (VELB), both federally listed species have a potential for habitat in the Project area.

Migratory Bird Treaty Act of 1918 and Bald and Gold Eagle Protection Act

The Migratory Bird Treaty Act (MBTA) (16 United States Code Section 703-711) and the Bald and Golden Eagle Protection Act (BAGEPA) (16 USC Section 668) protect certain species of birds from direct "take" (i.e. harm or harassment as described above). The MBTA protects migrant bird species from take through setting hunting limits and seasons and protecting occupied nests and eggs (USFWS 1918). BAGEPA prohibits the take or commerce of any part of the bald or golden eagles (USFWS 1940). The USFWS administers both Acts and reviews federal agency actions that may affect species protected under each Act. Regarding the proposed Project, the Corps must verify compliance with these two federal regulations prior to issuing a permit.

State Regulations

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) has jurisdiction over species listed as threatened or endangered under section 2080 of the California Fish and Game Code (CFG Code). The California Endangered Species Act (CESA) prohibits take of state-listed threatened and endangered species (USFWS 2013a). The state Act differs from the federal Act in that it does not include habitat destruction in its definition of *take*. The California Fish and Game Code defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Legislative Council of California 2013). The CDFW may authorize *take* under the CESA through Sections 2081 agreements. If the results of a biological survey indicate that a state-listed species would be affected by the project, the CDFW would issue an Agreement under Section 2081 of the CDFG Code and would establish a Memorandum of Understanding for the protection of state-listed species (USFWS 2013a).

CDFW maintains lists for threatened, endangered, and candidate species. California candidate species are afforded the same level of protection as listed species. California also designates Species of Special Concern (SSC), which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational or educational values. These species do not have the same legal protection as listed species, but may be added to official lists in the future (CDFW 2013b).

CESA protects nesting birds and their parts in Codes 3503, 3503.5, and 3800. Sections 3503, 3503.5, and 3800 of the CDFW Code prohibit the take, possession, or destruction of birds, their nests, or eggs (CDFW 2013a). Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (approximately March 1 through August 30). Disturbance that causes nest abandonment, the loss of reproductive effort (i.e. killing or abandonment of eggs or young), or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment (CDFW 2013a). Such taking would also violate federal law protecting migratory birds under the MBTA (USFWS 1918).

CDFW also maintains a list of species designated as Fully Protected to provide additional protection to species that faced possible extinction. Species listed as Fully Protected "may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research" (CDFW 2013b). This classification began in the 1960's and remains today, although most are protected under the current endangered species laws. Species that are designated as Fully Protected by CDFW and have been observed or have the potential to occur within the Project area include the golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), and California black rail (*Laterallus jamaicensis coturniculus*).

According to the California Natural Diversity Database (CNDDB) , there are eight plant and wildlife species designated by CDFW as California Special Status Species known to occur within five miles of the proposed Project site; Jepson's onion (*Allium jepsonii*), vernal pool andrenid bee (*Andrena subapasta*), Galilie's cave harvestman (*Banksula galiilei*), Brandegee's clarkia (*Clarkia biloba ssp. Brandegeeae*), Western pond turtle (*Emys marmorata*), Butte County fritillary (*Fritillaria eastwoodiae*), dubious pea (*Lathyrus sulphureus*), and the oval-leaved viburnum (*Viburnum ellipticum*) (CDFW 2013c) (Figure 3-1).

California Environmental Quality Act Guidelines Section 15380

Section 15380(b) of the California Environmental Quality Act (CEQA) states that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example "candidate species" that has not yet been listed by the USFWS or CDFW (CERES 2005). CEQA, therefore, enables an agency to protect a species from significant project impacts until the respective government agencies have an opportunity to list the species as protected, if warranted.

In general, plants designated by the California Native Plant Society (CNPS) as Rank 1A (plants presumed extirpated in California and either rare or extinct elsewhere), Rank 1B (plants rare, threatened, or endangered in California and elsewhere), Rank 2A (plants presumed extirpated in California, but more common elsewhere), and Rank 2B (plants rare, threatened, or endangered in California, but more common elsewhere) are considered to meet CEQA's Section 15380 criteria. Impacts to these species would therefore be considered "significant" requiring mitigation (CNPS 2013a).

California Fish and Game Code Sections 1600–1616: Streambed Alteration Agreement

CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes under Sections 1600–1616 of the CFG Code. The Lake and Streambed Alteration Program, Section 1602, states that CDFW has the authority to regulate all work under the jurisdiction of the State of California that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed (Legislative Council of California 2013).

In practice, CDFW marks its jurisdictional limit at the top of the stream or lake bank or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by CWA Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1600 may encompass a greater area than those regulated under CWA Section 404 (EPA 2013).

CDFW enters into a Lake or Streambed Alteration Agreement (SAA) with an applicant and can impose conditions on the agreement to ensure that no net loss of wetland values or acreage will be incurred. The SAA is not a permit, but a mutual agreement between CDFW and the applicant.

The proposed Project entails work within CDFW SAA jurisdiction (riparian areas of Rock Creek and Rock Creek Reservoir).

California Fish and Game Code Sections 3503, 3503.5, and 3800

Sections 3503, 3503.5, and 3800 of the CFG Code prohibit the take, possession, or destruction of birds, their nests or eggs (Legislative Council of California 2013). Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (approximately March 1 through August 30). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds under acts such as the MBTA (Legislative Council of California 2013).

State Oak Woodland Regulations

State laws that regulate protection of oak woodlands include Professional Forester's Law of 1972 and CEQA according to Public Resources Code Section 21083.4. The California Oak Foundation (COF) defines an "Oak Woodland" as "an area which has canopy cover of 10 percent, which distinguishes them from oak savannas" (COF 2007). An "oak" is defined in Public Resources Code Section 21083.4 as a native tree species in the genus *Quercus*, that is 5 inches diameter at breast height (DBH) or greater (Legislative Council of California 2004). The Oak Woodlands Conservation Act (Senate Bill 1334) requires, in the absence of local tree ordinances, compensatory mitigation for loss oak trees with a DBH less than 5 inches and provides funding for the conservation and protection of oak woodlands in California. Oak woodland habitats are protected under both State and Placer County regulations.

Local Regulations

Placer County Tree Preservation Ordinance and Placer County Oak Woodland Management Plan

Placer County's Tree Preservation Ordinance protects trees in the County's unincorporated areas. Before a tree can be removed, a formal protected tree report is required. The ordinance states "no person, firm, corporation or county agency shall conduct any development activities within the protected zone of any protected tree on public or private land, or harm, destroy, kill or remove any protected tree unless authorized by a tree permit." A protected tree is defined as the following (Placer County 2001):

- A tall woody plant native to California (excluding foothill pines and plants that are typically shrubs), with a single main stem or trunk at least 6 inches DBH, or a multiple trunk with an aggregate of at least 10 inches DBH.
- All native trees regardless of size within riparian zones. A riparian zone is defined as any area within 50 feet from the centerline of a seasonal creek or stream; any area 100 feet from the centerline of a year round creek, stream, or river; and any area within 100 feet of the shoreline of a pond, lake, or reservoir.
- All landmark trees. A landmark tree is defined as a tree or grove of trees designated by resolution of the County board of supervisors to be of historical or cultural value, an outstanding specimen, an unusual species and/or of significant community benefit. Landmark trees may include non-native species.

The objective of the Placer County Oak Woodland Management Plan is to "provide guidance on the conservation of and to mitigate the impact of the loss of oak woodland communities" (Placer County 2013a).

NID is exempted from the Placer Tree Ordinance and all building and zoning ordinances (California Government Code section 53091, subdivsions (d) and (e)) for facilities used directly and immediately for the production storage treatment or transmission of water district facilities and therefore do not need to apply for a Tree Permit under this local regulation. As a water district NID is exempt from Senate Bill 1334, however, NID must still analyze and mitigate impacts to oak woodlands as a requirement under CEQA.

Placer County Conservation Plan

The draft Placer County Conservation Plan (PCCP) was released in 2011. While still in draft form, it proposes a streamlined strategy and permitting process for development in Western Placer County for the next 50 years, in order to provide greater environmental benefits. The First Agency Review Draft PCCP establishes conservation areas to protect and conserve special status species and natural communities. It covers 221,000 acres, including important biological communities, in Western Placer County.

Placer County General Plan

The following goals and policies regarding biological resources are set forth in the Placer County General Plan (Placer County 2013b):

Section 6 Natural Resources

Water Resources

Goal 6.A: To protect and enhance the natural qualities of Placer County's streams, creeks and groundwater.

Policy 6.A.14. The County shall help ensure that open space located in reservoir is preserved and protected to assure adequate performance of those reservoirs. The watershed is defined as those lands draining into a reservoir and having an immediate effect upon the quality of water within that reservoir. Those lands located within the watershed and within 5,000 feet of the reservoir shall be considered as having an immediate effect. Following are key watersheds labeled "immediate," because of their current domestic usage and proximity to urban areas and "future," because of current non-domestic usage and/or distance from urban areas.

Immediate	Future
Folsom Lake Watershed	Sugarpine Reservoir
Combie Lake Watershed	Lake Spaulding
Rock Creek Reservoir	French Meadows Reservoir
Rollins Lake	Hell Hole Reservoir
Camp Far West Reservoir	

Wetland and Riparian Areas

Goal 6.B: To protect wetland communities and related riparian areas throughout Placer County as valuable resources.

Policy 6.B.4. The County shall strive to identify and conserve remaining upland habitat areas adjacent to wetlands and riparian areas that are critical to the survival and nesting of wetland and riparian species.

Fish and Wildlife Habitat

Goal 6.C: To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.

Policy 6.C.1. The County shall identify and protect significant ecological resource areas and other unique wildlife habitats critical to protecting and sustaining wildlife populations.

Policy 6.C.2. The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the reasonable value of the habitat for wildlife is maintained.

Policy 6.C.6. The County shall support preservation of the habitats of rare, threatened, endangered, and/or other special status species. Federal and state agencies, as well as other resource conservation organizations, shall be encouraged to acquire and manage endangered species' habitats.

Policy 6.C.7. The County shall support the maintenance of suitable habitats for all indigenous species of wildlife, without preference to game or non-game species, through maintenance of habitat diversity.

Policy 6.C.9. The County shall require new private or public developments to preserve and enhance existing native riparian habitat unless public safety concerns require removal of habitat for flood control or other public purposes. In cases where new private or public development results in modification or destruction of riparian habitat for purposes of flood control, the developers shall be responsible for acquiring, restoring, and enhancing at least an equivalent amount of like habitat within or near the project area.

Policy 6.C.11. Prior to approval of discretionary development permits involving parcels within a significant ecological resource area, the County shall require, as part of the environmental review process, a biotic resources evaluation of the sites by a wildlife biologist, the evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of rare, threatened, or endangered species of plants or animals. Such evaluation will consider the potential for significant impact on these resources, and will identify feasible measures to mitigate such impacts or indicate why mitigation is not feasible. In approving any such discretionary development permit, the decision making body shall determine the feasibility of the identified mitigation measures. Significant ecological resource areas shall, at a minimum, include the following:

a. Wetland areas including vernal pools.

b. Stream environment zones.

c. Any habitat for rare, threatened or endangered animals or plants.

d. Critical deer winter ranges (winter and summer), migratory routes and fawning habitat.

e. Large areas of non-fragmented natural habitat, including Blue Oak Woodlands, Valley Foothill Riparian, vernal pool habitat.

f. Identifiable wildlife movement zones, including but not limited to, non-fragmented stream environment zones, avian and mammalian migratory routes, and known concentration areas of waterfowl within the Pacific Flyway.

g. Important spawning areas for anadromous fish.

Goal 6.D: To preserve and protect the valuable vegetation resources of Placer County.

Policy 6.D.1**.** The County shall encourage landowners and developers to preserve the integrity of existing terrain and natural vegetation in visually-sensitive areas such as hillsides, ridges, and along important transportation corridors.

Policy 6.D.2. The County shall require developers to use native and compatible non-native species, especially drought-resistant species, to the extent possible in fulfilling landscaping requirements imposed as conditions of discretionary permits or for project mitigation.

Policy 6.D.3. The County shall support the preservation of outstanding areas of natural vegetation, including, but not limited to, oak woodlands, riparian areas, and vernal pools.

Policy 6.D.4. The County shall ensure that landmark trees and major groves of native trees are preserved and protected. In order to maintain these areas in perpetuity, protected areas shall also include younger vegetation with suitable space for growth and reproduction.

Policy 6.D.5. The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects.

Policy 6.D.8. The County shall require that new development preserve natural woodlands to the maximum extent possible.

Policy 6.D.9. The County shall require that development on hillsides be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion.

Policy 6.D.10. The County shall encourage the planting of native trees, shrubs, and grasslands in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.

Goal 6.E: To preserve and enhance open space lands to maintain the natural resources of the County.

Policy 6.E.1. The County shall support the preservation and enhancement of natural land forms, natural vegetation, and natural resources as open space to the maximum extent feasible. The County shall permanently protect, as open space, areas of natural resource value, including wetland preserves, riparian corridors, woodlands, and floodplains.

Policy 6.E.2. The County shall require that new development be designed and constructed to preserve the following types of areas and features as open space to the maximum extent feasible:

a. High erosion hazard areas;
b. Scenic and trail corridors;
c. Streams, streamside vegetation;
d. Wetlands;
e. Other significant stands of vegetation;

f. Wildlife corridors; and

g. Any areas of special ecological significance.

Policy 6.E.3. The County shall support the maintenance of open space and natural areas that are interconnected and of sufficient size to protect biodiversity, accommodate wildlife movement, and sustain ecosystems.

It should be noted that according to Placer County Community Development Administration (CDRA), **General Plan Policy 6.A.1** and **Policy 6.A.3,** requiring stream buffers, do not apply because the propose Project is an underground facility. (pers com. E.J. Ivaldi, Supervising Planner, Placer County Planning Department with Bernadette Bezy, 8/14/2013)

3.4.3 Impact Analysis

Methodology

Stantec completed a desktop analysis of the special status plant and wildlife species known to occur within a five mile radius of the proposed Project site. Figure 3-1 shows the California special status species known to occur within five miles of the proposed Project area (CDFW 2013c).

In addition to the California Natural Diversity Database (CNDDB) Rarefind report, the following sources were used to identify potential sensitive biological resources in the proposed Project area:

- Biological field surveys;
- The Placer County General Plan (Placer County 2013b);
- A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988);
- CNPS online Inventory of Rare and Endangered Plants of California within the Auburn and surrounding eight USGS Quads (CNPS 2013b); and
- USFWS list of endangered, threatened, and proposed species within the Auburn and surrounding eight USGS Quads (USFWS 2011);
- Federal Energy Regulatory Commission (FERC) Draft Environmental Impact Statement for the Drum-Spaulding Project (P-2310-173) and Yuba-Bear Hydroelectric Project (P-2266-096) Issued: May 17, 2013 Sections pertaining to Rock Creek and Rock Creek Reservoir.
- City of Lincoln/Placer County Midwestern Placer Regional Sewer Project Draft and Final Environmental Impact Report (May 2013). Sections pertaining to Rock Creek.

Stantec biologists conducted biological surveys at the Rock Creek Siphon proposed Project site on July 18 and August 15, 2013. The plant and wildlife species observed during these site visits are shown in Table 3.4-1.

Table 3.4-1
Plant and Wildlife Species Observed During the Rock Creek Siphon Project Site Visits

Scientific Name	Common Name
Plants	
Avena sp.	Wild oat
Brassica nigra	Black mustard
Bromus hordeaceus	Soft chess
Centaurea solstitialis	Yellow starthistle
Erodium cicutarium	Redstem filaree
Pinus sabiniana	Foothill pine
Plantago lanceolata	English plantain
Polypogon monspeliensis	Rabbitsfoot grass
Quercus kelloggii	Black oak
Quercus lobata	Valley oak
Quercus wislizeni	Interior live oak
Rubus armeniacus	Himalayan blackberry
Rumex crispus	Curly dock
Salix spp.	Willow sp.
Toxicondendron diversilobum	Poison oak
Triflorium hirtum	Rose clover
Verbena litoralis	Shore vervain
Wildlife	
Aphelocoma californica	Western scrub-jay
Elanus leucurus	White-tailed kite
Callipepla californica	California quail
Charadrius vociferus	Killdeer
Columa livia	Rock dove
Lepus californicus	Black-tailed jackrabbit
Melanerpes formicivorus	Acorn woodpecker
Sitta carolinensis	White-breasted nuthatch
Sturnus vulgaris	European starling
Zenaida macroura	Mourning dove

Biological Communities

Foothill-Valley Woodland Habitat

The foothill-valley woodland habitat typically occurs below 2,000 feet in elevation in the Sierra Nevada foothills and is primarily composed of a diverse mix of hardwoods, shrubs, annual grasses (Mayer and Laudenslayer 1988). In the proposed Project area, this habitat is includes black oak *(Quercus kelloggii*), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizeni*), and few foothill pine (*Pinus sabianana*). Common shrub species found include Himalayan blackberry *(Rubus armeniacus)* and poison oak (*Toxicodendron diversilobum*). The herbaceous layer includes annual grasses and other common species such as wild oat (*Avena sp.),* soft chess *(Bromus hordeaceus),* rabbitsfoot grass (*Polypogon monspeliensis),* and rose clover (*Trifolium hirtum*).

Lacustrine, Wetland, and Riverine Habitat with Associated Riparian Zones

Rock Creek Reservoir - Lacustrine, Wetland, and Riparian Habitat

The proposed Project includes an outlet valve on the North West corner of Rock Creek Reservoir. Lacustrine or open water lake habitat is present in this area. Rock Creek Reservoir has a maximum surface area of 58 acres, is 0.6 mile long, and has a maximum storage capacity of 485 acre-feet (usable storage is 482 acre-feet). Maximum drawdown occurs in November or December; the storage frequency analysis indicates that about half the time Rock Creek Reservoir is drawn down significantly. The reservoir shoreline is 1.8 miles long. The majority of which is lined by emergent wetland species. The drainage area into Rock Creek Reservoir is 2.18 square miles. (PG&E 2013)

No historical data on fish populations were available for Dry Creek and Rock Creek. In 2008 and 2009, fish surveys documented rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), golden shiner (*Notemigonus crysoleucas*), mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), pumpkinseed sunfish (Lepomis gibbosus), and bluegill (*Lepomis macrochirus*). Overall, rainbow trout or brown trout dominated fish collections in each of the two to Rock Creek Reservoir. (PG&E 2013)

With the exception of the area immediately adjacent to the North side of the dam (i.e. the location of the proposed Project outlet valve), the reservoir is lined by emergent wetland vegetation such as cattails and rushes. Trees lining the reservoir include cottonwood, alder, and willow species.

Rock Creek - Riverine and Riparian Habitat

The proposed Project also runs North, upland, and adjacent to riparian habitat along Rock Creek. Rock Creek is a small tributary to Dry Creek, upper Coon Creek, the Camp Far West Canal, and Coon Creek. The riparian zone adjacent to Rock Creek is dominated by willow (Salix spp.) and Himalayan blackberry.

Special Status Species

For the purpose of this IS/MND, special status species are defined as:

- Species listed or proposed for listing as threatened or endangered under the federal ESA (50 Code of Federal Regulations [CFR] 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the Federal Register [FR] for proposed species)
- Species that are candidates for possible future listing as threatened or endangered under ESA (67 FR 40657, June 13, 2002) (USFWS 1973);
- Species that are listed or proposed for listing by California as threatened or endangered under CESA (14 CCR 670.5) (CDFW 2013a):
- Plant species listed as rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code 1900 et seq.) (CDFW 2013e);
- Plant species that are Rank 1B species and considered to be "rare, threatened, or endangered in California and elsewhere" (CNPS 2013a);
- Species that meet the definitions of "rare" or "endangered" under State CEQA Guidelines Section 15380 (CDFW 2013d) including CNPS list species ranked between 1 and 4 (see Table 3.4-2 for details);
- Wildlife species of Special Concern to CDFW (CDFG 2011); and
- Wildlife species fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]) (CDFG 2011).

A list of special status plant and wildlife species that have the potential to occur within the proposed Project region is shown in Table 3.4-2. The species on this list were compiled based on the following resources:

- CNDDB Rarefind report for the proposed Project site and surrounding 5 miles (CDFW 2013c) (Figure 3-1);
- CNPS online inventory of sensitive plant species that may be affected by the proposed Project in the Auburn and surrounding eight USGS quads (i.e. Colfax, Coloma, Gold Hill, Greenwood, Lake Combie, Pilot Hill, Rocklin, and Wolf) (CNPS 2013b); and
- USFWS list of federal endangered and threatened species that may be affected by the proposed Project in the Auburn and surrounding eight USGS quads (i.e. Colfax, Coloma, Gold Hill, Greenwood, Lake Combie, Pilot Hill, Rocklin, and Wolf) (USFWS 2011).

Conclusions regarding habitat suitability and species occurrence in the proposed Project area are based on biological surveys conducted by Stantec biologists and background/desktop research using various resources including those listed above (existing literature and databases).

Based on this research and the biological surveys, the plant and wildlife species in Table 3.4-2 were each given a "level of potential occurrence within the Project site." The level of potential for occurrence within the Project site was evaluated as follows:

- **Very Low to Nil:** The Project site and/or immediate area do not support suitable habitat for a particular species. Project is outside the species known range.
- **Low:** Project site and/or immediate area only provide limited habitat for a particular species. In addition, the known range for a particular species may be outside the immediate Project area.
- **Moderate:** The Project site and/or immediate area provide suitable habitat for a particular species, and habitat for the species may be impacted. **High:** The Project site and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in the immediate area and within the potential area of impact.

Descriptions of the five special status plants that have been known to occur within 5 miles of the proposed Project area are provided below in Table 3.4-2. Wildlife species identified during biological surveys and the background research that are known to occur or having at least a low or moderate potential to occur within the Project region are provided below in Table 3.4-2.

Table 3.42
Special-Status Plant and Wildlife Species and Their Potential to Occur in the Project Area (CDFW 2013c, CNPS 2013b, USFWS 2011)

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Plants							
Jepson's onion *Allium jepsonii*	–	–	1B.2	300-1320 meters	Chaparral, cismontane woodland, lower montane coniferous forest.	April-August	**Low**. Limited suitable habitat exists in Project area, and not observed in Project area.
Big-scale balsamroot Balsamorhiza macrolepis	–	–	1B.2	90-1555 meters	Serpentinite, chaparral, cisomontane woodland, valley and foothill grassland.	March-June	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils and not observed in Project area.
Brandegee's clarkia *Clarkia biloba ssp. Brandegeae*	–	–	4.2	Northern Sierra Nevada Foothills, 75-915 meters	Chaparral, cisomontane woodland. Often found in roadcuts.	May-July	**Low**. Limited suitable habitat exists in Project area, and not observed in Project area.
Butte County fritillary *Fritillaira eastwoodiae*	–	–	3.2	50-1500 meters	Chaparral, cismontane woodland, lower montane coniferous forest (openings). Usually on dry slopes.	March-June	**Low**. Limited suitable habitat exists in Project area, and not observed in Project area.
Stebbins' morning-glory *Calystegia stebbinsii*	E	E	1B.1	185-1090 meters	Gabbroic or serpentinite substrate. Chaparral openings and cismontane woodland.	April-July	**Low**. Limited suitable habitat exists in Project area, not observed in Project area, and no records in Placer County.
Pine Hill ceanothus *Ceanothus roderickii*	E	R	1B.2	245-630 meters	Serpentinite or gabbroic substrate. Chaparral and cismontane woodland.	April-June	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils and not observed in Project area, and no records in Placer County.

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Red Hills soaproot *Chlorogalum grandiflorum*	_	_	1B.2	245-1240 meters	Serpentinite, gabbroic or other soils. Chaparral, cismontane woodland, and lower montane coniferous forest.	May-June	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils,, and not observed in Project area.
El Dorado bedstraw *Galium californicum ssp. sierrae*	E	R	1B.2	100-585 meters	Gabbroic substrates. Chaparral, cismontane woodland, and lower montane coniferous forest.	May-June	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils, not observed in Project area, and no records in Placer County.
Dubious pea *Lathyrus sulphureus var. argillaceus*	_	_	3	150-930 meters	Cismontane woodland, both lower and upper coniferous forest (CNPS 2013).	April-May	**Low**. Limited suitable habitat exists in Project area, and not observed in Project area.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	_	C	1B.2	10-2375 meters	Clay soils. Marshes and swamps, vernal pools.	April-August	**Very Low to Nill**. The Project site is not in hydric habitats, and not observed in Project area.
Parry's horkelia *Horkelia parryi*	_	_	1B.2	80-1035 meters	Lone formation and other soils. Chaparral and cismontane woodland.	April-September	**Low**. Limited suitable habitat exists in Project area, not observed in Project area, and no records in Placer County.
Layne's ragwort *Packera layneae*	T	R	1B.2	200-1000 meters	Serpentinite or gabbroic, rocky substrates. Chaparral and cismontane woodland.	April-August	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils, and not observed in Project area.
Sierra blue grass *Poa sierrae*	_	_	1B.3	365-1000 meters	Openings in lower montane coniferous forest.	April-June	**Very Low to Nil.** No suitable habitat present in Project area.
El Dorado County mule ears *Wyethia reticulata*	_	_	1B.2	185-630 meters	Clay or gabbroic substrates. Chaparral, cismontane woodland, and lower montane coniferous forest.	April-August	**Very Low to Nill**. The Project site is not in serpentine or gabboroic soils, not observed in Project area, and no records in Placer County.

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Oval-leaved viburnum *Viburnum ellipticum*	–	–	2B.3	215-1400 meters	Chaparral, cismontane woodland, lower montane coniferous forest. Prefers shady, North facing slopes in mixed conifer forest (CDFW 2013).	May-June	**Low**. Limited suitable habitat exists in Project area, and not observed in Project area.
Invertebrates							
Tight coin *Ammonitella yatesii*	–	–	n/a	Eldorado County	Terrestrial. Found in humus around limestone outcropping, favors North-facing slopes.		**Very Low to Nil.** No suitable habitat present in Project area, and no records for Placer County.
Vernal pool andrenid bee *Andrena subapasta*	–	–	n/a	El Dorado and Placer Counties	Nests in uplands near vernal pools.		**Very Low to Nil.** No suitable habitat present in Project area.
Galile's cave harvestman *Banksula galilei*	–	–	n/a	Eldorado County	Lime rock caves, species is troglobitic.		**Very Low to Nil.** No suitable habitat present in Project area.
Vernal pool fairy shrimp *Branchinecta lynchi*	T	–	n/a	Throughout California West of the Sierra Nevada.	Vernal pools.		**Very Low to Nil.** No suitable habitat present in Project area.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–	n/a	California central valley and foothills below 1000 meters elevation.	Elderberry shrubs.		**Low.** Potentially occurring in the Project area, but no elderberry shrubs or beetles detected on Project site.
Vernal pool tadpole shrimp *Lepidurus packardi*	E	–	n/a	California Central Valley	Vernal pools containing clear to highly turbid water.		**Very Low to Nil.** No suitable habitat present in Project area.

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Fish							
Delta smelt *Hypomesus transpacificus*	T	–	n/a	San Francisco Bay-Delta. Lower Sacramento, San Joaquin Delta, San Pablo, and Suisun Bay Watersheds (UC 2013).	Spawn in shallow, fresh or slightly brackish water upstream of salt-freshwater mixing zone.		**Very Low to Nil.** No suitable habitat present in Project area, and out of species range.
Central Valley steelhead *Oncorhynchus mykiss*	T	–	n/a	Sacramento river tributaries (NOAA 2008).	Streams with deep, low-velocity pools tolerant of a wide variety of temperatures. Stream preference generally determined by size (UC 2013).		**Very Low to Nil.** Limited suitable habitat present in Project area, and out of species range (NOAA 2013).
Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha*	T	T	n/a	Sacramento and San Joaquin watersheds; Butte, Mill, Deer, Antelope, and Beegum Creeks. Mainstream Sacramento and Feather Rivers (CDFW 2013f).	Higher cool headwater streams of large river systems with spring fed runoff or snow melt runoff. Migrate to estuaries.		**Very Low to Nil.** No suitable habitat present in Project area, and out of species range (NOAA 2013).
Winter-run chinook salmon *Oncorhynchus tshawytscha*	E	E	n/a	Upper Sacramento River, below Keswick Dam (CDFW 2013f).	Spawn in cool, spring fed streams.		**Very Low to Nil.** No suitable habitat present in Project area, and out of species range (NOAA 2013).

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Reptiles and Amphibians							
Western pond turtle *Emys marmorata*	–	SSC	n/a	Western California, including Central Valley and Western foothills of the Sierra Nevada (Storer et al. 2004).	Variety of water bodies with abundant vegetation, both rocky/muddy bottoms. Found in areas of woodland, forest, or grassland. Prefers shallow water with basking areas (California Herps 2013).	Year-round depending on life stage	**Moderate**. Potential suitable habitat is present in Project area in Rock Creek Reservoir and in the small unnamed pond.
Giant garter snake *Thamnophis gigas*	T	T	n/a	Sacramento Valley and isolated portions of the San Joaquin Valley (USFWS 1999).	Marshes, sloughs, drainage canals, irrigation ditches, and rice fields (California Herps 2013).	Year-round	**Very Low to Nil.** Limited suitable habitat present in Project area, and out of species range.
California red-legged frog *Rana draytonii*	T	SSC	n/a	Riverside to Mendocino County along Coast Range, from Calaveras to Butte County in Sierra Nevada. Locally abundant Marin County and central coast (USFWS 2010).	Ponds in forests, woodlands, grasslands, stream sides with plant cover, woods near streams. Breeds in permanent and ephemeral lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps (California Herps 2013).	Year-round depending on life stage	**Low to Moderate**. Limited suitable habitat in Project area.

Common name *Scientific name*	Legal status			Elevation/geographic distribution	Preferred habitat	Identification period	Level of potential for occurrence within Project site
	Federal	State	CNPS				
Birds							
California black rail *Laterallus jamaicensis Coturniculus*	–	T FP	n/a	Primarily in Northern San Francisco Bay. Few small populations occur in San Francisco Bay, Marin County, and in the foothills of the Sierra Nevada (Spautz et al. 2005).	Salt and freshwater marshes with dense vegetation.	February-September	**Low.** Very limited suitable habitat within the Project area.
Nesting raptors and other migratory birds	MB	PR	n/a	Migrants	Tree, shrub, and ground cover.	March-August	**Moderate to High**: Project area includes trees (nesting habitat) and is located along a creek, and near a reservoir and pond (potential foraging areas).

Federal

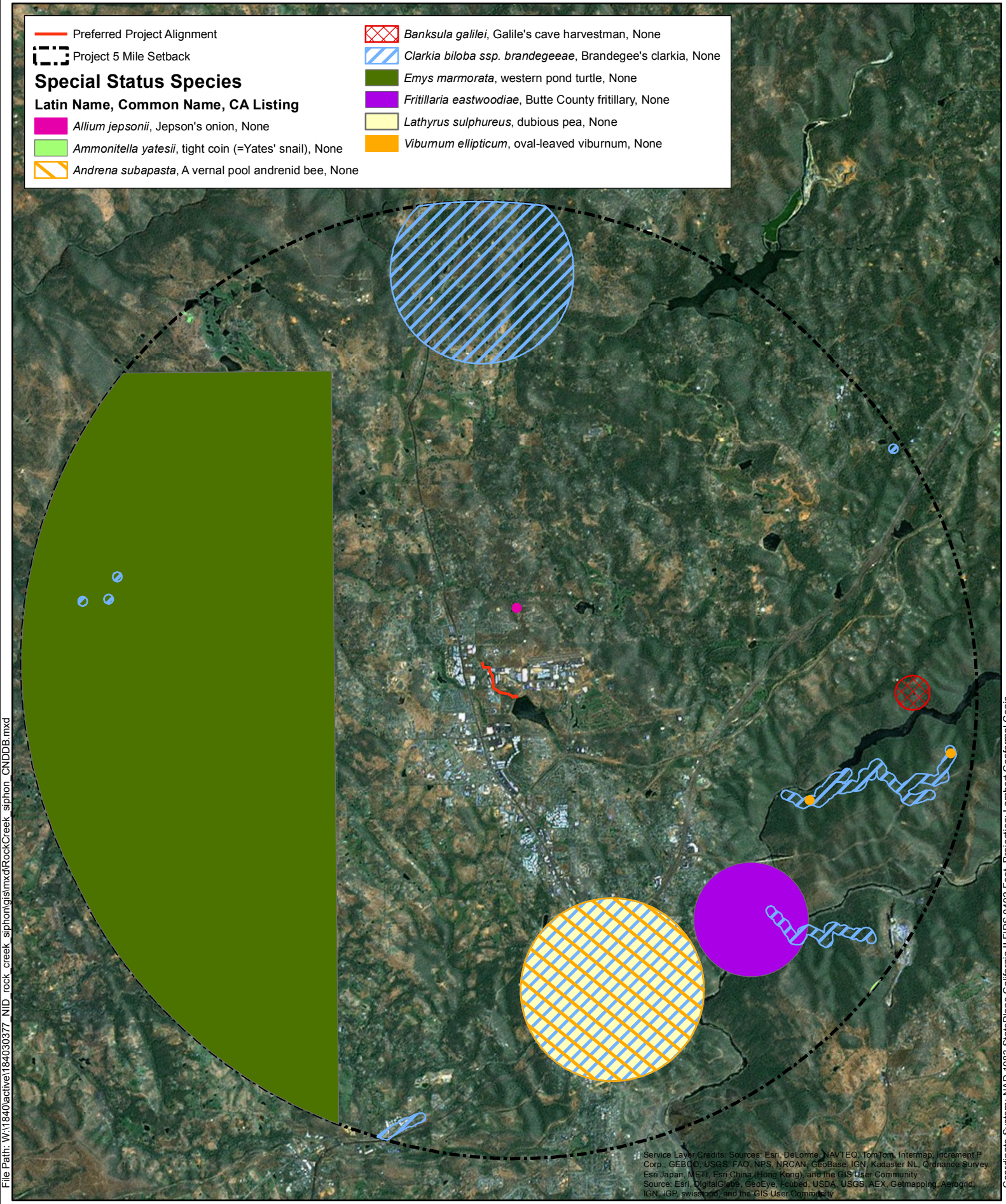
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
D = delisted under the federal Endangered Species Act
PD = proposed for delisting
C = candidate to become a proposed species
MB = Migratory Bird Treaty Act
– = no listing.

California Native Plant Society (CNPS)

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2B = List 2 species: rare, threatened, or endangered in California
3 = List 3 species: plants about which more information is needed to determine their status.
4 = List 4 species: plants of limited distribution.

State

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
CE = candidate species for listing as endangered under the California Endangered Species Act
FP = fully protected species
SSC = species of special concern in California
PR = Protected Raptor Species
– = no listing.



File Path: W:\1840\active\184030377_NID_rock_creek_siphon\gis\mxd\RockCreek_siphon_CNDDB.mxd

Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet, Projection: Lambert Conformal Conic

Stantec

0 3 Miles

1 inch = 7,000 feet

Project: 184030377 ; Sources: ESRI 2013, Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013; Created By: K.Gross; Updated: 3/24/2014

Figure 3-1

Known Occurrences of Special Status Species

Nevada Irrigation District Rock Creek Siphon Project

Special Status Plant Species

Based on the elevation, habitats, and soils present onsite, seven special status plant species were identified as potentially occurring within the Project area (Figure 3-1). These include Jepson's onion (*Allium jepsonii*), Stebbins' morning glory (*Calystegia stebbinsii*), Brandegee's clarkia (*Clarkia biloba ssp. Brandegeeae*), Butte County fritillary (*Fritillaria eastwoodiae*), Parry's horkia (*Horkelia parryi)*, dubious pea (*Lathyrus sulphureus*), and oval-leaved viburnum (*Viburnum ellipticum*) (CDFW 2013c). No special status plants were detected during biological surveys conducted by Stantec biologists. However, due to timing constraints surveys were conducted during the appropriate blooming season of four of the seven species. These four species are all late blooming plants. Protective mitigation with clear performance standards is incorporated in the impact analysis below for these late blooming plant species.

Jepson's onion (*Allium jepsonii*)

Jepson's onion is a bulbiferous herb in the onion family, Alliaciae. The Jepson's onion grows to a height between about 25 and 40 centimeters from one or two oval-shaped bulbs. There is a single cylindrical leaf which is about the same length as the stem. The inflorescence holds 20 to 60 small flowers, each under a centimeter long with pink-veined white tepals with curling tips. Jepson's onion grows in chaparral, cismontane woodland, lower montane coniferous forest in serpentine or volcanic soils from approximately 300 meters to 1,320 meters (984 feet to 4,331 feet) (CNPS 2013b, BLM 2010). Limited suitable habitat exists in the proposed Project area, and Jepson's onion was not observed during the biological surveys performed during the appropriate bloom time by Stantec biologists.

Stebbins' morning-glory (*Calystegia stebbinsii)*

Stebbins' morning-glory is a perennial herb in the morning glory family, Convolvulaceae. Stebbins' morning-glory is a federally and state endangered species found only in soil derived from the rock-type gabbro in Western Eldorado County and Western Nevada County. Stems can grow up to 3 feet long and they grow on the ground or on other vegetation. Leaves are palmately lobed; each leaf has up to seven or nine half-inch offshoots. The flowers are white and beneath each flower are two bracts. In Eldorado County, Stebbins' morning-glory distribution is found between Salmon Falls and Cameron Park. In Nevada County, the distribution is found Southwest of Grass Valley. (BLM 2012). Limited suitable habitat exists in the proposed Project area, and this species was not observed during the biological surveys performed during the appropriate bloom time by Stantec biologists.

Brandegee's clarkia (Clarkia biloba ssp. brandegeeae)

Brandegee's clarkia is an annual herb in the evening primrose family, Onagraceae. Its stems grow erect, measuring less than a meter tall. The wedge-shaped flowers have lavender petals and the leaves are lanceolate shaped. Brandegee's clarkia is often found in roadcuts in chaparral, cismontane woodland, and lower montane coniferous forest habitats at approximately 75 meters to 915 meters (246 feet to 3,002 feet) (CNPS 2013b, BLM 2010). Limited suitable habitat exists in the proposed Project area, and Brandegee's clarkia was not observed during the biological surveys performed during the appropriate bloom time by Stantec biologists.

Butte County fritillary (*Fritillaria eastwoodiae*)

Butte County fritillary is a perennial bulbiferous herb in the lily family, Liliaceae. Stems grow 20 to 80 centimeters tall, with linear, narrow lanceolate-shaped leaves. Flowers can be a combination of red, orange, green, and yellow with a mottling pattern. Butte County fritillary prefers dry habitats of chaparral, cismontane woodland, and openings of lower montane coniferous forest at approximately 50 meters to 1,500 meters (164 feet to 4,921 feet) (CNPS 2013b, Jepson Flora Project 2013). Limited suitable habitat exists in the proposed Project area. Protective mitigation with clear performance standards is incorporated in the impact analysis below.

Parry's Horkia (Horkelia parryi)

Parry's horkia (Horkelia parryi) is a perennial herb in the rose family, Rosaceae. The Parry's horkia is endemic to California's Sierra Nevada foothills and grows in open chaparral and foothill woodland from approximately 80 meters to 900 meters (260 feet to 3,000 feet). It grows to a height between 10 and 30 centimeters. Parry's horkia leaves grown between 5 to 10 centimeters with three to six leaflets, each 5 to 15 millimeters in length, on each side (BLM 2012). Limited suitable habitat exists in the proposed Project area, and this species was not observed during the biological surveys performed during the appropriate bloom time by Stantec biologists.

Dubious pea (Lathyrus sulphureus var. argillaceus)

Dubious pea is a perennial herb in the pea family, Fabaceae. Leaves consist of oval-shaped alternate leaflets about two to four centimeters long. Flowers can be yellow-white to brown-orange. Dubious pea prefers cismontane woodland and both lower and upper coniferous forest habitats at approximately 150 meters to 930 meters (492 feet to 3,051 feet) (CNPS 2013b, Jepson Flora Project 2013). Limited suitable habitat exists in the proposed Project area. Protective mitigation with clear performance standards is incorporated in the impact analysis below.

Oval-leaved viburnum (Viburnum ellipticum)

Oval-leaved viburnum is a shrub with numerous erect branches from 1 to 3 meters high. The herbage of the petioles is covered with spreading coarse hairs and often with short raised glands. The leaves are palmate and veined from the base with 3 to 5 veins. The margins are coarsely and bluntly toothed but not lobed. This deciduous shrub occurs in chaparral, cismontane woodland, and lower montane coniferous forest mainly on North-facing slopes from approximately 215 meters to 1,400 meters (705 feet to 4,593 feet) (CNPS 2013b, Jepson Flora Project 2013. Oval-leaved viburnum was not observed during the botanical surveys) performed by Stantec biologists. Protective mitigation with clear performance standards is incorporated in the impact analysis below.

Special Status Wildlife Species

Species accounts for special status wildlife with a low to moderate potential (or higher) to occur in the Project area are provided below. In addition, valley elderberry long horn beetle, California red-legged frog both federally threatened and the latter a California Species of Special Concern, are analyzed in detail below due to its high profile in the Sierra foothills and the NID's goal to be protective of this species. The Western pond turtle has been known to occur within five miles of the proposed Project site, and there is a moderate potential for the Western pond turtle to occur in aquatic habitats adjacent to the Project area and therefore to occasionally wander into the Project area (Figure 1-2) (CDFW 2013c). There is no potential for the Central Valley steelhead (Oncorhynchus mykiss) or any other anadromous fish on Rock Creek due to the barriers downstream on Coon Creek at the Camp Far West diversion. California black rail has a low potential to occur in Rock Creek or along the banks of Rock Creek or the Rock Creek Reservoir; however, limited suitable habitat was encountered in the Project area. There is moderate to high potential for bird species such as the white-tailed kite and other common and protected migratory raptors and passerines to nest in trees and shrubs in and near the Project area.

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

The valley elderberry longhorn beetle (VELB) is completely dependent on its host plant, elderberry (*Sambucus* spp.), and is associated with various species of elderberry below 3,000 feet in elevation. VELB generally occur along waterways and in floodplains that support remnant stands of riparian vegetation. Both larvae and adult VELB feed on elderberries. Larvae feed internally on the pith of the trunk and larger branches, while adult beetles appear to feed externally on elderberry flowers and foliage. Prior to metamorphosing into the adult life stage, VELB larvae chew an exit hole in the elderberry trunk, through which the adult beetle later exits the plant (EPA 2010).

The VELB range extends throughout California's Central Valley and associated foothills. There are three critical habitat areas—all of which are located outside the Proposed Project area—along the American River in Sacramento County. There are no known occurrences of VELB within the Proposed Project area. The nearest documented VELB occurrence is in El Dorado County. No elderberry bushes were encountered in the Project area during biological surveys and therefore, there is not appropriate habitat (elderberry shrubs). Valley elderberry longhorn beetle is not likely to occur in the proposed Project area.

California red-legged frog (Rana draytonii)

The California red-legged frog is listed as threatened under the Federal ESA. Critical habitat was designated on March 2010. Historically, the California red-legged frog (CRLF) was found in aquatic, riparian, and upland habitats throughout much of California (Northern Sacramento Valley into foothills of the Sierra Nevada) and Northern Baja California at elevations up to approximately 1,500 meters (4,921 feet). Currently, records are known in California in the Coast Range and from Calaveras County to Butte County in the Sierra Nevada (USFWS 2010). The CRLF typically occurs in aquatic areas with dense, shrubby, or emergent riparian vegetation and a permanent source of deep still or slow moving water. They prefer relatively deep (greater than two feet deep) still or slow-moving water (Jennings and Hayes 1994, USFWS 2010). At seasonal spawning habitat, water must remain long enough in most years to allow for metamorphosis of most of the tadpoles (generally between July and September). Juveniles prefer more shallow and open aquatic habitats with dense submergent vegetation (Jennings and Hayes 1994). Most populations of CRLF are found in habitats that are free of introduced predators, on one or more life stage, which are believed to include bullfrogs (*Lithobates catesbeianus*), non-native crayfish, and various fishes including bass, catfish, and mosquito fish (Jennings and Hayes 1994). Upland dispersal habitat includes areas within one mile of aquatic breeding habitat with no impassable dispersal barriers. Upland habitats are used primarily by CRLF during the non-breeding season for dispersal and/or aestivation.

The proposed Project site has limited suitable habitat required for the California red-legged frog. Rock Creek reservoir, located at the Southern end of the proposed Project, is deep with a minimal amount of dense vegetation along its bank; however it is likely home to a variety of common predators of CRLF, such as bullfrog. The proposed Project runs adjacent to Rock Creek, which presents unlikely suitable habitat due to its shallow characteristic and lack of dense preferred vegetation such as cattails and willows that constitutes suitable CRLF breeding habitat. A small unnamed pond in the Auburn Gold Country RV Park (small unnamed Pond), located Southwest of the North Auburn WTP and adjacent to the proposed Project, also has limited suitable habitat. There are no recorded observations in the area of the proposed project, nor was the California red-legged frog observed during biological surveys performed by Stantec biologists on July 18 and August 15, 2013. The proposed Project area is not within designated critical habitat. The nearest Critical Habitat Unit (PLA-1) as well as the nearest CRLF record is 20 miles East of the proposed Project area, near the town of Foresthill, California (USFWS 2010). A formal USFWS CRLF site assessment for the proposed Project was completed; however, due to time and access limitations (to all ponds within a mile of the Project), year-long protocol-level occurrence surveys were not completed during the FERC relicensing process (PG&E, 2013) or for the proposed Project and therefore, it is not possible to rule out the presence of CRLF in the system.

Western pond turtle (Emys marmorata)

The Western pond turtle can be found in a wide variety of permanent and ephemeral aquatic habitats, including ponds, lakes, streams, and irrigation ditches, with emergent vegetation, and they prefer both rocky or muddy bottoms (California Herps 2013). Additional habitat requirements include rock outcrops and floating debris for basking as well as sandy banks or grassy open fields up to 0.5 kilometers from water are required for egg-laying (CDFW 2013c). Their range includes Western California, the central valley, and Western foothills of the Sierra Nevada (Storer et al. 2004). The Western pond turtle nests on land between May and August usually within 300 feet of water usually in dry hard soil in flat open areas with low vegetation with a Southern aspect. In Northern California, although eggs hatch by September, hatchlings overwinter in the nest site and migrate to aquatic sites in the spring (Lovich 1998).

According to CDFW's CNDDB Rarefind report, the Western pond turtle has been known to occur within five miles of the proposed Project area (Figure 1-2). The Rock Creek Reservoir, Rock Creek, and the unnamed pond do contain potential suitable habitat for the Western pond turtle. The proposed Project area does not contain suitable upland egg-laying/overwintering habitat for breeding turtles. Suitable aquatic habitat for Northwestern pond turtle is not present in the Combie Ophir II Canal at the Northern end of the Project because it is fast moving and lacks access and basking habitat. No Western pond turtles were observed during the biological surveys performed by Stantec biologists on July 18 and August 15, 2013.

California black rail (Laterallus jamaicensis Coturniculus)

California black rail occurs in salt marshes bordering larger bays and freshwater and brackish marshes at least one acre in size and supporting at least one inch of water. Vegetation composition is dependent on habitat type and includes Scirpus spp., Juncus spp., Cyperaceae, Typha spp. Grindelia spp., and Poaceae (Spautz et al. 2005). The California black rail occurs in transition areas between wet and dry habitats, excluding deep/open water. Nesting habitat includes areas concealed in dense vegetation. The nest is a deep, loose cup formed at ground level or elevated several inches. The California black rail is extremely private and a rarely seen bird that tends to avoid areas of human activity (CDFW 2013b).

The majority of California black rails are found in the tidal salt marshes of the Northern San Francisco Bay region, primarily in San Pablo and Suisun Bays. Smaller populations occur in San Francisco Bay, Marin County, as well as freshwater marshes in the foothills of the Sierra.

Nevada in Yuba, Butte, Nevada, and Placer Counties. The Placer County population, found in April 2003 is thought to be non-migratory (CDFW 2013b). According to studies performed by the Point Reyes Bird Observatory (PRBO) from 1998 to 2001, California black rail distribution is largely dependent on size of the marsh, distance to the marsh, vegetation species composition and height, and amount of urban land surrounding their habitat (CDFW 2013b). The majority of the proposed Project area can be considered urban or immediately adjacent to urban lands, and therefore it is unlikely habitat suitable to support the California black rail. There are no known occurrences of California black rail in the proposed Project area and no observations were recorded during biological surveys performed by Stantec biologists.

White-tailed kite (*Elanus leucurus*)

The white-tailed kite is a medium-sized raptor designated as fully protected species by the CDFW as well as protected by the federal MBTA (CDFW 2013b). It can be found year-round in the California central valley in its preferred habitat is grassland savanna, open woodlands, cultivated fields and marshes where it hunts primarily small mammals. The white-tailed kite usually builds its nest in the upper third of a wide variety of tree species approximately 10 feet to 160 feet tall (Dunk 1995).

An adult white-tailed kite was observed in the proposed Project area on August 15, 2013 by a Stantec biologist. No signs of a nest or breeding behavior were observed at this time.

Nesting raptors and other migratory birds

In addition to the special status bird species listed above, the proposed Project area may support potential habitat for other nesting raptors or other bird species protected under the MBTA including ground-nesting waterfowl such as Canada goose (*Branta canadensis*) and tree-nesting songbirds like the yellow warbler (*Setophaga petechia*). No breeding birds were observed during the biological surveys performed by Stantec biologists; however it is possible that nesting migratory birds could be present in the proposed Project area during breeding season (approximately March 1 through August 30).

Table 3.4-3
CEQA Checklist for Assessing Project-Specific Potential Biological Resources Impacts

IV. BIOLOGICAL RESOURCES **Would the Project:**	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or regulated by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f). Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or regulated by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Impacts BIO-01: Potential Disturbance of Protected Botanical Species

Finding: Less than Significant

There is a low potential for Jepson's onion, Stebbins' morning-glory, Brandegee's clarkia, Butte County fritillary, Parry's horkelia, dubious pea, and oval-leaved viburnum to occur at the Project site. Of these seven species, protocol-level surveys during the correct bloom period were conducted for four species: Jepson's onion, Brandegee's clarkia, Stebbins' morning-glory, and Parry's horkelia. These are late blooming species. During the appropriate bloom period, July and August, no specimens were encountered. Therefore, the proposed Project will have no effect on these four special status species.

The remaining species with a potential to occur in the Project area bloom during the spring. They include Butte County fritillary, dubious pea, and oval-leaved viburnum. The habitat in the Project area is very limited and likely too disturbed from maintenance activities, development, and human activity to support these special status plants. Impacts to these species would be unlikely, because much of the Project would be limited to existing disturbed areas (i.e., dirt and gravel roads and clear areas) and the aforementioned plants don't typically occupy those areas. Mechanisms for potential impacts to these species should they occur in the project areas include excavation (i.e. species removal) and access (i.e. species compaction) in the overland oak woodland area between Shale Ridge Road and Locksley Lane and adjacent to the riparian area along Rock Creek. Therefore, although impacts are unlikely given the limited suitable habitat, the application of mitigation measures BIO-1 and BIO-2 are necessary to reduce the potential removal of compaction of special status species to less than significant levels. These measures include pre-construction awareness training (BIO-1) and early bloom species protocol-level botanical surveys prior to construction and specific performance standards should special-status plants be encountered (BIO-2). The measures are described in detail at the end of this section.

Therefore, with the application of mitigation measures BIO-1 and BIO-2, the proposed Project is considered to have less than significant impacts on special status botanical species.

Impact BIO-02: Potential Disturbance of Protected Amphibian and Aquatic Reptile Species and Their Habitat

Finding: Less than Significant with Mitigation Incorporated

California red-legged frog (federally threatened) and Western pond turtle (CDFW species of special concern) frequent similar habitats, slow moving or ponded areas. CRLF requires emergent vegetation for cover and breeding (egg attachment), while WPT needs adequate basking areas (i.e. exposed banks or logs). There is a moderate potential for the Western pond turtle (WPT) and low to moderate potential for the California red-legged frog to occur in aquatic habitats adjacent to the Project area.

Based on field surveys using the USFWS habitat assessment and Scott and Rathburn (2009) criteria for CRLF, marginal but suitable breeding habitat exists adjacent to the project area in the Auburn Gold Country RV Park unnamed pond and along the banks of Rock Creek Reservoir. Suitable movement corridors also exists upland of potential breeding habitat and within Rock Creek. WPT habitat is present in both the Auburn Gold Country RV Park unnamed pond and Rock Creek Reservoir. The PG&E FERC EIS corroborates these findings, indicating that "Essential components CRLF breeding habitat were present in Rock Creek reservoir, but the habitat has marginal quality because of the presence of predatory fish and American bullfrog." In the absence of protocol-level presence absence surveys for this area it is impossible to rule out their presence (USFWS, 2007).

Foothill yellow-legged frog (FYLF), a CDFW species of special concern, inhabits fast moving streams and breeds in areas where cobble is present (for egg mass placement). The Project area does not contain breeding habitat for FYLF; however, Rock Creek (adjacent to the project area) and the Combie-Ophir Canal II, where an outlet will be installed are possible migratory corridors for this species.

Possible mechanisms for potential impacts to semi-aquatic species such as CRLF, WPT, and FYLF include:

- direct mortality from excavation in upland migration areas or excavation in the Ohpir II Canal,
- temporary water quality degradation of breeding or migratory habitat from site run-off should BMPs not be installed correctly,
- temporary water quality degradation to potential breeding habitat during the placement of rip-rap below the outlet valve on the bank of Rock Creek Reservoir,
- temporary water quality degradation of potential migratory habitat during construction of the inlet valve on Ophir Canal.

The installation of the outlet valve has the potential for direct mortality or water quality impacts to migrating FYLF. In order to reduce this potential impact to less than significant levels, prior to construction of the outlet valve Mitigation Measures BIO-1 and BIO-3 will be implemented. These measures are detailed at the end of this section, but in general entail worker awareness training and a pre-construction clearance survey to ensure no FYLF are located in the construction zone. Once the survey is complete, exclusion fencing will be installed and/or an environmentally trained foreman will check the site prior to construction each day to ensure no FYLF are in the project area. If FYLF are encountered in the project area work will halt and CDFW and a qualified biologist contacted.

The installation and burial of the pipe between the NID WTP and Rock Creek Reservoir along Rock Creek and the Auburn Gold Country RV Park unnamed pond has the potential for indirect water quality impacts to potential CRLF and WPT breeding habitat (Auburn Gold Country RV Park unnamed pond) and CRFL, WPT, and FYLF migratory habitat, Rock Creek. In addition, should construction occur during the non-breeding season (July-March), there is a possibility CRLF could be located in the upland areas adjacent to potential aquatic breeding sites. Thus, direct mortality is possible if exclusion fencing is not installed.

In order to reduce these potential impacts to protected semi-aquatic species during pipe burial along Rock Creek and near the Auburn Gold Country RV Park unnamed pond, NID shall implement Mitigation Measures BIO-1, Contractor Awareness Training, and BIO-3 Pre-construction Clearance Surveys and Exclusion Fencing Installation. In order to reduce the potential for indirect water quality impacts from construction run-off, NID will implement Mitigation Measure GEO-1, Sedimentation and Erosion Control Measures (see Section 3.6 of this document).

The installation of the outlet valve immediately East of the Rock Creek Reservoir Dam is located in a waterway with potential breeding habitat for CRLF and known occurrences of WPT. The outlet will be located approximately 10 feet above the OHWM, immediately adjacent to an existing concrete abutment (Figure 1-2). It will be installed in an area where there is currently limited emergent vegetation so it is considered better WPT basking habitat than CRLF breeding habitat. The placement of rip rap below the outlet valve on the reservoir bank could result in temporary water quality degradation through increased turbidity, habitat loss from rip rap placement, and/or direct mortality from rip-rap placement. In order to reduce these potential impacts to less than significant levels, NID will implement Mitigation Measures BIO-1 and BIO-3 as described above and detailed at the end of this section.

Therefore, given the low probability of occurrence (presence of predators and no known occurrences of CRLF within 20 miles) and with the implementation of Mitigation Measure BIO-1 and BIO-3, the potential impact to these semi-aquatic species from the inlet installation, pipeline burial along Rock Creek, and the outlet installation is considered less than significant.

Impact BIO-03: Potential Disturbance Nesting Raptors and Other Migratory or Special Status Birds and During Construction Activities

Finding: Less than Significant with Mitigation Incorporated

The trees, shrubs, and grassland plant species within the Project area provide potential nesting habitat for raptors and other migratory birds. The proposed Project area is also within close proximately to water features such as Rock Creek Reservoir, Rock Creek, and a small unnamed pond, providing potential nesting habitat for migratory waterfowl or waterbirds as well as foraging habitat for many bird species. Nesting season typically occurs March 1 through August 30, and due to the proposed Project timing of construction (summer/fall within the next five years), there is moderate to high potential to disturb raptor nests and other nesting migratory birds. This disturbance could cause nest abandonment and subsequent loss of eggs or developing young at active nests in or near the Project area. Disturbance resulting in nest abandonment or loss of eggs would be considered a potential substantial adverse impact. With the implementation of Mitigation Measure BIO-1, BIO-3, and BIO-4 described at the end of this section, the impact would be reduced to a less than significant level. These measures include environmental awareness training, exclusion fencing around sensitive areas, and pre-construction nesting bird surveys with proper performance standards should nesting raptors be encountered. Refer to the mitigation measure detail at the end of this section. Note: The Project does not entail the removal of emergent vegetation or cover along Rock Creek considered potential habitat for the fully protected California black rail. Therefore, with the implementation of Mitigation Measures BIO-1, BIO-3, and BIO-4, potential impacts to California black rail are also expected to be less than significant.

b) Would the Project have a substantial adverse effect on any riparian habitat, sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish or U.S. Fish and Wildlife Service?

Finding: Less than Significant with Mitigation Incorporated

Impact BIO-4: Potential Disturbance to Riparian or Other Designated Sensitive Natural Community

The proposed Project is primarily located in disturbed areas such as parking lots and roadways. However, there are three areas where the Project crosses open country habitats. Between Shale Ridge Road and Locksley Lane, the pipe will be installed in a small oak woodland area; between the NID WTP and Rock Creek Reservoir the pipeline is located adjacent but upland of the Rock Creek riparian zone and; at Rock Creek Reservoir the proposed Project entails the installation of an outlet valve on the reservoir bank and the placement of riprap along the bank and below the OHWM.

Oak woodlands with greater than 10 percent canopy cover are defined as a sensitive natural community by Placer County. In addition, riparian habitats, such as those along Rock Creek and Rock Creek Reservoir are considered sensitive by CDFW and Placer County. The Project was designed to avoid direct impacts to riparian habitat. The alignment will be located upland and North of the riparian zone along Rock Creek. In addition, location of the inlet valve on the Combie Ophir II Canal was selected for the absence of riparian trees. Potential direct impacts to wetlands and other waters of the US are assessed in the section below. The proposed Project will entail the removal of approximately 10 trees with no greater than approximately 30 inch DBH in the oak woodland area between Shale Ridge Road and Locksley Lane. Although exempt from Placer County tree ordinances, NID must still analyze and mitigate impacts to oak woodlands as a requirement under CEQA. In order to mitigate for the loss of oak trees greater than 5 inches DBH Mitigation Measure BIO-5 has been implemented. This measure entails on-site replacement plantings at a 2:1 inch per inch ratio or payment into an existing local oak mitigation bank.

Indirect impacts to riparian habitat from erosion, runoff, or sedimentation are possible, but unlikely due to the timing of construction during the summer/fall months. If construction does occur during the wet season, sediment control BMPs such as hay coils and natural buffers (as described in Mitigation Measure GEO-1 in Section 3.6) will be in place in any area where construction activities approach riparian zones and waters of the U.S. An assessment of water quality impacts is addressed in the Water Quality and Hydrology (Section 3.9) of this IS/MND.

The implementation of Mitigation Measure BIO-5 and Mitigation Measure GEO-1 (listed in Section 3.6 below) will minimize the potential impacts of the proposed Project to less than significant levels.

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Finding: Less than Significant with Mitigation Incorporated

Impact BIO-05: Potential Loss of Wetlands from the Proposed Project

The proposed Project is located adjacent to Rock Creek and a small pond in the adjacent Auburn Gold Country RV Park property on Rock Creek; however, no construction (placement of dredge or fill material) will occur in these waterways.

The proposed Project includes the installation of an inlet valve below the OHWM of the Combie Ophir II Canal. This canal is located in uplands. It comes from Combie Lake on the Bear River and drains to Rock Creek, among other locations. Rock Creek is tributary to Dry Creek, Coon Creek, and eventually the Sacramento River. Therefore because this canal in uplands comes from and goes to a "waters of the U.S.", it will likely be considered a "waters of the US" (USACE RGL Letter No. 07-02, 2007). The total area of the inlet valve below the OHWM is 10 feet by 5 feet up to a water depth of approximately 2 feet below the OHWM (Figure 1-2). Therefore, the placement of the inlet valve will likely be considered fill by the Corps, requiring a Clean Water Act 404 permit; however, the area of impact is so small relative to the canal itself that compensatory mitigation is not likely necessary.

In addition, the proposed Project includes the placement of an outlet valve above the OHWM of Rock Creek. This will therefore be outside of Corps jurisdiction; however, below the valve erosion control rip-rap will be installed within the banks of the open water environment in Rock Creek Reservoir, a "waters of the U.S". The area of rip-rap placement below the OHWM will likely be approximately 5 feet by 10 feet wide (Figure 1-2).

Work in any potential waters of the U.S. requires a wetland/waters delineation, a Corps verification of that delineation, and proof of compliance with the Clean Water Act (CWA) Section 404. If the work at the Combie Ophir II Canal and at Rock Creek Reservoir are considered in jurisdictional waters of the U.S. and the proposed Project entails the placement of dredge or fill below their OWHM, NID will seek a Clean Water Act Section 404 permit from the Corps and implement Mitigation Measure BIO-6. These measures entail design alterations to ensure avoidance of waters of the U.S. or coordination with the Corps to compensate the loss of wetland/waters of the U.S.

Therefore, with the implementation of the Mitigation Measure BIO-6, the potential impact to seasonal wetlands and drainages is considered less than significant.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Finding: Less than Significant

Impact BIO-06: Potential Impact to Wildlife Movements or Migration

The proposed Project area is currently designated as industrial park and is largely developed. Although not likely a migration corridor, the area may facilitate the movement of wildlife such as mule deer along the riparian area of Rock Creek. This particular area adjacent to the proposed Project alignment as well as Rock Creek Reservoir may provide water and foraging opportunities and therefore attract wildlife species during the dry summer months. The proposed Project construction would not inhibit movement to or access to the areas that may supply foraging opportunities. The remaining areas of the proposed Project, including existing paved roads and buildings will likely deter animals from entering the Project site. It's unlikely the proposed Project site would prevent wildlife from their usual seasonal or migratory movements. As a result, the proposed Project is expected to have a less than significant impact on mule deer and other common wildlife migrations and no mitigation is required.

e/f) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? Would the Project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

Finding: Less than Significant

Impact BIO-7: Potential Project Conflicts with Existing or Planned Habitat Conservation Plans or Local Ordinances

The Project will not conflict with local ordinances relative to biological resources as specified in the Placer County Tree Preservation Ordinance, Placer County Oak Woodland Management Plan, the Placer County General Plan, or other existing or the draft Placer County Conservation Plan (draft PCCP) or local ordinances. The Project was designed to avoid and minimize impacts to trees and waterways.

In accordance with Placer County General Plan Goal 6.A, Goal 6.B, and Goal 6.C, the proposed Project is protective of Placer County's steams, creeks, groundwater, wetland communities, riparian areas, fish and wildlife species, and their habitats, by avoiding, minimizing or mitigating for work in these areas. In accordance with Goal 6.D and 6.E, the proposed Project preserves/minimizes impacts to riparian habitat and open spaces, by constructing upland of the Rock Creek riparian zone.

The Project area is not currently subject to an approved habitat conservation plan, or other approved local, regional, or state habitat conservation plans. Therefore, for the above-mentioned reasons, the proposed Project will not conflict with any approved or planed local policies or ordinances protecting biological resources. This potential impact is thus considered less than significant and no mitigation is required.

3.4.4 Mitigation

Mitigation Measure BIO-01: Environmental Awareness Training

Environmental awareness training will be given to construction personnel by a qualified biologist to brief them on how to recognize special status species that could occur in the area such as rare plants, Western pond turtle, California red-legged frog, foothill yellow-legged frog, and active breeding bird nests. Environmental training pamphlets will also be available onsite for use by environmentally trained foreman in training new personnel to the Project in the absence of the qualified biologist. If special status species are encountered in the work area, construction will cease and the qualified biologist will be notified for guidance before any construction activities are resumed. Depending the species-listing and persistence in the area, the biological monitor will notify the USFWS and/or CDFW for guidance.

Mitigation Measure BIO-1: Implementation

Responsible Party: NID will ensure that a qualified biologist conducts pre-construction environmental awareness training.

Timing: One environmental awareness training will be conducted prior to the initiation of construction.

Monitoring and Reporting Program: The training will be conducted by a qualified biologist and the training brochures will be kept on the construction site.

Standards for Success: Construction personnel will be trained in the key characteristics for identifying and avoiding impacts to special status species. Special status species will not be disturbed during the Project construction activities.

Mitigation Measure BIO-2: Protocol-level Botanical Surveys Prior to Construction

Botanical surveys will be conducted during the early bloom season. Note: Late bloom season surveys were conducted on July 18, and August 15, 2013 2013. Should a special status species be encountered during protocol level botanical surveys NID will**:**

1. Route construction activity away from sensitive plants to the degree feasible in keeping with Project objectives.
2. Relocate plants to suitable habitat outside of the Project area, whether within applicant-owned land or off-site.
3. Monitor affected populations or relocated populations to document potential Project-related impacts.
4. Restore or enhance occupied habitat on-site or at another location; and/or
5. Protect occupied habitat for the species on-site or at another regional location.

Mitigation Measure BIO-2: Implementation

Responsible Party: NID will ensure that a qualified biologist conducts pre-construction early bloom special-status plant surveys.

Timing: March-June, prior to construction.

Monitoring and Reporting Program: The survey results will be presented in a survey report, and if special status species were encountered the report will include recommended/required actions for avoidance.

Standards for Success: Avoidance or compensation for special status plant species impacts.

Mitigation Measure BIO-3: Exclusion Fencing Installation for Environmentally Sensitive Areas

Exclusion fencing will be installed adjacent to actively flowing water or slow moving water with emergent vegetation within 100 feet of construction areas and around trees with nesting birds should they be encountered.

A. Silt fencing will be installed in all areas where construction occurs within 100 feet of actively flowing water or slow moving water with emergent vegetation (i.e. Rock Creek, Rock Creek Reservoir, and small unnamed pond).

B. No less than two weeks prior to the beginning of ground-disturbing activities, a qualified biologist (U.S. Fish and Wildlife Service - approved Biological Monitor – SBM) shall survey disturbance areas for special status amphibians and aquatic reptiles. Daily visual clearance surveys shall also be conducted by the environmentally trained foreman during initial ground-disturbing activities (the first two weeks of construction). If any protected pond turtles or amphibian adults, tadpoles, or eggs are identified where habitat disturbance is proposed, work shall be halted and the SBM shall be contacted to determine appropriate actions, unless already stipulated by USFWS. If the USFWS and/or CDFW approve moving the frogs or pond turtles, the qualified biologist shall be allowed sufficient time to move the frogs from the work site before work activities resume. Only qualified and permitted biologists shall participate in the capturing, handling, and relocating of protected amphibians and aquatic reptiles.

C. During work activities, trash that may attract predators will be properly contained, removed from the worksite, and disposed of regularly. Following construction, trash and construction debris will be removed from work areas.

D. Spoil sites (concrete wash areas) will be located so they do not drain directly into the Rock Creek or other waters of the U.S. If a spoil site drains into a water body, catch basins will be constructed to intercept sediment before it reaches the channels. Spoil sites will be graded to reduce the potential for erosion.

E. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents will be located away from any waters of the U.S. Any equipment or vehicles driven and/or operated within or adjacent to Rock Creek will be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life.

F. With the exception of the rip-rap area along Rock Creek Reservoir, project sites will be revegetated with an appropriate assemblage of native upland vegetation and, if necessary, riparian and wetland vegetation suitable for the area.

G. If the Corps determines USFWS ESA Section 7 consultations are necessary, NID will abide by the stipulations in the Corps concurrence letter.

H. Regarding active nests, orange exclusion fencing shall be installed around active nests and Mitigation Measure BIO-4 shall be applied.

Mitigation Measure BIO-3: Implementation

Responsible Party: NID will ensure that a qualified biologist conducts pre-construction clearance surveys and that an environmentally trained foreman inspects the site daily for the presence of protect semi-aquatic species.

Timing: One survey will be conducted by a qualified biologist within two weeks of initiating the Project and exclusion fencing and excavated trenches will be inspected daily by the project foremen.

Monitoring and Reporting Program: The survey will be conducted by a qualified biologist (SBM) and a brief survey report will be documented and kept on file with NID.

Standards for Success: Special status species will not be disturbed during the Project construction activities.

Mitigation Measure BIO-4: Avoid disturbance nesting raptors and other migratory birds and during construction activities

NID will implement one of the following measures, depending on the specific construction timeframe, to avoid disturbing ground nesting special and non-special status nesting raptors and migratory birds.

If construction activities are scheduled to occur during the breeding season for these species (generally between March 1 and August 30), a qualified biologist will be retained to conduct the following focused nesting survey within the appropriate habitat:

- Nesting surveys will be conducted within the proposed Project area and all potential nesting habitat within 250 feet of this area.
- The surveys should be conducted within one week before initiation of construction activities at any time between March 1 and August 30. If no active nests are detected, then no additional mitigation is required.

- If surveys indicate that migratory bird nests are found in any areas that would be directly affected by construction activities, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or after a biologist determines that the young have fledged (usually late June to mid-July). The extent of these buffers will be determined by a biologist and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors should be analyzed to make an appropriate decision on buffer distances.

If construction activities begin before the breeding season (i.e. begin between August 30 and February 28) (pre-existing construction), then construction can proceed until it is determined that an active migratory bird nest would be subject to abandonment as a result of construction activities. Pre-existing construction activities are assumed to be "full force," as are site grading and infrastructure development. Activities that technically initiate construction but are minor would not be considered full force. Optimally, all necessary vegetation removal should be conducted before the breeding season (approximately March 1 through August 30) so that nesting birds would not be present in the construction area during construction activities. If any birds nest in the Project area under pre-existing construction conditions, then it is assumed that they are habituated (or will habituate) to the construction activities. Under this scenario, the pre-construction survey described previously should still be conducted on or after March 1 to identify any active nests in the vicinity. Active sites should be monitored by a biologist periodically until after the breeding season or after the young have fledged (usually late June through mid-July). If active nests are identified on or immediately adjacent to the Project site, then all nonessential construction activities (e.g., equipment storage and meetings) should be avoided in the immediate vicinity of the nest site, but the remainder of construction activities may proceed.

Mitigation Measure BIO-4: Implementation

Responsible Party: NID will ensure that a qualified biologist conducts pre-construction surveys.

Timing: One nesting survey will be conducted within one week of initiating the Project, should the Project occur between March 1 and August 30.

Monitoring and Reporting Program: The survey will be conducted by a qualified biologist and a brief survey report will be documented and kept on file with NID.

Standards for Success: Special status species and migratory bird nests will not be disturbed during the Project construction activities.

Mitigation Measure BIO-5: Avoid, minimize, and compensate for tree removal (including riparian trees)

NID will avoid and minimize riparian tree removal and trimming to the extent feasible. The proposed Project alignment may entail some tree trimming and minor removal. If trees are removed in the riparian habitat, NID will seek a CDFW Streambed Alteration Agreement and replace the trees at an appropriate ratio as deemed by the permit. In compliance with CEQA and Senate Bill 1334, NID will compensate for the loss of oak trees, with a DBH (diameter at breast height) equal to or greater than 5 inches, at a 2:1 ratio by replanting or payment into an existing local oak mitigation bank. Replanting parameters include the following considerations: 1) Oak replanting can be done with saplings, seedlings or bare-root seedlings grown by a local nursery supplier. Oaks replanted within the riparian regions will retain the same genetic integrity as those removed; 2) If grown in a container, seedlings and/or saplings will be no more than one year and less than two years of age at the time of planting; 3) Replanting will occur during late fall through mid-winter (December-February); 4) Soils conditions at replanting sites will be unfrozen (at the time of planting) and well-drained (year round); 5) Irrigation at replanting sites is not required, however is dependent on drought and adequate water supply during the first year of oak establishment; 6) Fertilizer is not required at replanting sites unless replanting yields less than a 1:1 regeneration rate during the first year of establishment; 7) Herbivore protection is not required in or around seedlings unless replanting yields less than a 1:1 regeneration rate during the first year of establishment; 8) Invasive plant (e.g. non-native annual grasses) removal and/or control during the first year of oak establishment is not required, however regeneration ratios will increase with the removal of local competitors.

Mitigation Measure BIO-5: Implementation

Responsible Party: NID will review the design plans to ensure minimal tree removal.

Timing: Prior to finalizing the design plans.

Monitoring and Reporting Program: NID will document all trees to be removed as a basis for calculating the replanting numbers.

Standards for Success: Removal of riparian trees and protected upland oaks are avoided/minimized and/or compensated.

Mitigation Measure BIO-6: Avoidance or Compensation for Direct Impacts to Waters of the U.S.

NID plans to avoid the wetlands and drainage areas during through the final design phase of the Project.

If avoidance of the wetlands/waters of the U.S./waters of the State or riparian areas is not practicable for various engineering or other site constraints, NID shall apply for and obtain a CWA Section 404 Nationwide Permit and comply with the current Corps compensation schedule for any loss of waters of the U.S. NID will work with the Corps to ensure that the local and federal “no net loss” of wetlands is properly upheld. In addition, for work with a stream or lake bed, riparian zone, or flood plain (i.e. the installation of the outlet valve), NID will apply for, obtain and comply with a CDFW Streambed Alteration Agreement (SAA), including tree loss compensation. For all activities that trigger the Corps CWA 404 permit, NID will also apply for, obtain and comply with a Clean Water Act Section 401 Water Quality Certification from the Regional Water Quality Control Board.

Mitigation Measure BIO-6 Implementation

Responsible Party: NID is responsible for applying for all permits and approvals needed to fill the wetlands, work in waters of the U.S./Waters of the State, and riparian zones.

Timing: If required, the CWA Section 404, Streambed Alteration Agreement, and CWA 401 Permits will be obtained prior to construction.

Monitoring and Reporting Program: NID will ensure that environmental permits will be obtained prior to construction and the appropriate fees paid to comply with the regulatory agency compensatory mitigation schedule for temporary and permanent impacts to waters of the U.S. and riparian areas. The NID Project manager will prepare brief letter report on compliance with this mitigation measure for NID files.

Standards of Success: Appropriate state and federal permit compliance and compensation, including no net loss of waters of the U.S. from the proposed NID Project.

3.5 CULTURAL RESOURCES

This section was developed by Stantec Consulting pursuant to Section 15064.5 of CEQA. The purposes were to (1) identify and record cultural resources in the Project area; (2) make preliminary evaluations of such resources' significance according to the criteria of the California Register of Historical Resources (CRHR); and (3) recommend procedures for avoidance or mitigation of adverse effects to National Register of Historic Places (NRHP)/CRHR-eligible resources.

3.5.1 Environmental Setting

This environmental setting provides a brief overview of the prehistoric and historic periods in Western Placer County. This information is provided as context within which to interpret the cultural resources identified in the proposed Project area. Most of the following is excerpted and adapted from McCarthy 1994 and Waechter et al. 2007 (with historical overview by S. Wee and C. Toffelmier of JRP Historical Consulting).

Prehistoric Setting

Native people in the area traditionally lived in large towns along the Sacramento and American rivers, and on ridges, knolls, and benches above the streams (Beals 1933; Kroeber 1925). These people spoke one of three languages in the Maiduan language family (Shipley 1978:83). The Nisenan, the most Southerly of the Maiduan speakers, once held a territory that stretched from the South Fork Feather River South to the Middle Fork Cosumnes River, and from the Sacramento River East to the Sierra crest (Beals 1933:338-339; Kroeber 1925:391-392; Merriam and Talbot 1974:16-17). They apparently did not reside in the mountains above about 3,000 feet, but used this territory for summer hunting and gathering expeditions (Beals 1933:363).

These villages ranged in size from 25-30 residents to 500 or 1,000 persons (Cook 1976:9; Kroeber 1925:831; Wilson and Towne 1978:389). The largest villages were in the Sacramento Valley, along the river and its tributaries. Structures (which might be represented in the archaeological record) included pole-frame dome-shaped houses 10 to 15 feet in diameter and covered with tules or tule mats plastered with earth (Kroeber 1925:407; Wilson and Towne 1978:388); dance houses or *k'um*, large semi-subterranean structures with the door to the West; and at least one sweathouse or *k'um-im-hü*, separate from the dance house and similar in construction, although smaller (Kroeber 1929:259; Wilson and Towne 1978:389).

Both the Valley and Foothill *Nisenan* had access to diverse resources throughout their territories, and they scheduled their subsistence activities according to the seasonal availability of critical harvests. Families or groups of families moved to the gathering sites—now seen on the landscape as small, sparse scatters of flaked and/or ground stone—as the location of the resources and season dictated, returning to the permanent village to store the harvests and to live during the winter months. Valley people collected acorns from the local valley oaks (*Quercus lobata*), while the Foothill people collected blue oak (*Q. douglasii*) and black oak (*Q. kelloggii*) acorns. Black oak acorns were the most highly preferred variety, and the Valley people traded with the Foothills people to obtain them (Beals 1933:351). The people stored as many acorns as possible, since this was a food staple and was also important for ceremonies.

Fish, particularly salmon and lamprey eels, were essential protein sources for the *Nisenan*. Salmon were taken by the Valley people by the use of weirs, which were built communally. The Foothill people used spears and harpoons but made extensive use of willow nets hung from two long poles. The rivers also yielded numerous other fish, as well as freshwater clams and mussels (Wilson and Towne 1978:389). Large game mammals were an important component of the diet and included deer, antelope, elk, and bear (Beals 1933:347-348; Kroeber 1925:409-410; Voegelin 1942:58-59). Small game such as rabbits and squirrels were taken, as were many varieties of birds, particularly waterfowl. Bones from a variety of fish, birds, and mammals have been recovered from archaeological sites in the area.

Limited, formal trade was practiced between the Foothill *Nisenan* and their Valley neighbors. Acorns, salt, and beads comprised the major trade items (Beals 1933:365). The Valley People received black oak acorns; sugar pine nuts; manzanita berries; yew wood for bows; yellowhammer and red-headed woodpecker scalps and feathers; dried deer and bear meat; wild cat, mountain lion, and bear hides; rabbit-skin blankets; redbud for baskets; milkweed for fiber; and salt, all of which were available in the foothills (there were valuable salt deposits near both Rocklin and Cool; Beals 1933:365; Littlejohn n.d.:35). In return the Foothill people received basket roots, oyster shells, salmon, antelope meat, and the valuable shell beads which moved from the coast into the interior through active trade networks (Beals 1933:365; Littlejohn n.d.:35). Clamshell disk beads were equivalent to money, as they had a standard value and acted as currency for most other resources and goods. Many other kinds of highly valued shell beads also moved through this exchange system. The East/West trade routes generally followed the major streams, and major trails in *Nisenan* territory approximated the routes of US 50 and old Highway 40 (now partially re-routed Interstate 80; Davis 1974:73, Map 1).

The indigenous patterns of *Nisenan* society were irrevocably changed with the arrival of Euro-Americans in California. By the 1830s, white trappers operated throughout the Central Valley. They brought many diseases, and in 1833, the Indian population was decimated by a pandemic thought to have been malaria (Cook 1955). This would have had a devastating effect on the *Nisenan* communities. Also by this time, Mexico had won its independence from Spain and was instituting new administrative policies in California. Many new land grants were given to private citizens for enormous ranchos and, like the missionaries, the ranchers sought their labor supply in the native villages. Although the missions were secularized in 1834, the Baptismal Register for Mission San Jose shows that Indians from the Cosumnes/Sacramento area, a few *Nisenan* among them, were baptized in 1836, as was another, similar group in 1840 (Milliken, personal communication 1994).

The Mexican government also allowed a small number of other nationals to settle, apply for Mexican citizenship, and so become eligible to receive land grants. One such was the Swiss immigrant John Sutter, who, in 1840, established a fort, which he named New Helvetia, on the South bank of the American River in Valley *Nisenan* territory. Sutter engaged in cattle ranching, fur trapping, wheat farming and other agricultural pursuits and also developed a grist mill, sawmill (in the foothills at Coloma), and tannery. Much of his labor was supplied by local Indians, whom he locked in the fort at night so as to have them on the job in the morning (Lienhard 1841:68). Undoubtedly, *Nisenan* were significantly affected by John Sutter's nearby activities.

Circumstances became even worse for the *Nisenan* when gold was discovered at Sutter's sawmill in Coloma, in their territory on the South Fork of the American River, in 1848. A year later, 100,000 miners poured into the Sierra Foothills, many of them through the Sacramento-Folsom area, disrupting *Nisenan* (and other Indian) life and often destroying villages and homes. The riverbeds held the placer gold deposits and were thus a major focus of mining activities for many years. Consequently, *Nisenan* residents of the study area would have borne a major brunt of the Gold Rush. Many did survive, however, and today their descendants still live and work throughout the Sacramento Valley/Foothill region.

Historical Setting

The first settlement near the lower foothill area of Placer County was a tract of land on the South bank of the Bear River granted to Theodor Sicard, a French sailor, who planted extensive wheat fields on his property. In 1846, fellow countrymen Claude Chana arrived at the ranch and together they planted the first commercial peach and almond orchards in the Sacramento Valley.

Paralleling the establishment of these land grants, the first emigrant wagon trains began crossing the Sierra Nevada and opened transcontinental immigration routes across Nevada and Southern Idaho into the Oregon territory and Mexican-governed California from the East. The first group to cross in 1844 was followed by approximately 50 wagons in 1845. The early immigrants, farmers and ranchers looking for inexpensive land, were the forerunners of more than 30,000 settlers who followed in 1849 after the discovery of gold on the South Fork of the American River at Coloma, in 1848. By 1850, small towns and mining camps were spread throughout the canyons and small valleys of the Western slope of the Sierra Nevada Mountains and foothills from the Northern mines above Redding South to Mariposa.

The Placer County foothills were one of the richest sections of dry diggings in California. Claude Chana first discovered gold in the area in May 16, 1848 on Auburn Ravine Creek. After this discovery, miners flocked to the area that became known as the North Fork Dry Diggings. Dozens of mining camps sprang up along the North Fork of the American River below its confluence with the Middle Fork, and in the many tributary ravines. The origins of many of the settlements within the vicinity of the Project date to the early mining period of California. By 1852, Ophir was the largest town in Placer County, but a fire in 1853 destroyed most of the community. Although quartz mining in later years revived the settlement, Ophir never recovered its early prominence as a mining or commercial center.

Like mining booms elsewhere, California's mining economy was unstable and went through a series of booms and busts during the last half of the nineteenth century. Discovery of gold and silver in the Nevada Comstock drew off miners from California in 1859, and the mining depression in California lasted into the mid-1860s. By 1868, many miners, and more importantly mining capital, had returned to California and spurred a resurgence of the gold-mining industry built on the technologies employed in hydraulic mining and deep-rock mining.

During the 1870s mining was still the principal occupation of settlers in the Auburn, Newcastle, Penryn, and Rocklin areas, as reflected in the 1870 census returns where 74% of the heads of household reported their occupation as miners. Farmers and shopkeepers were the next occupational group of any importance statistically, but they comprised only about 12% and 11% of the heads of households, respectively. Interestingly, American-born heads of household (44%) in the Secret Ravine area of the township of Placer County only slightly outnumbered European-born heads of household (40%), reflecting the cosmopolitan legacy of the California gold rush. The vast majority of these immigrants were miners who came from Ireland and England, but the Germans, French, and Scottish were also represented in fair numbers. Canadians made up only about 3% of the population. Chinese, who mostly labored as miners, made up fully 25% of the heads of household, but these groups were not distributed widely through the region—they tended to live in a few segregated clusters and in large and exclusively male households.

As the mining industry grew and professionalized in the 1860s and 1870s, the debris created by the hydraulic mining method silted the rivers and raised riverbeds, damaging waterways and creating wide-spread flood and damage to downstream farms. In 1884, a federal court ruling known as the Sawyer Decision ended large-scale hydraulic mining in the Sierra Nevada. The ruling prohibited mining companies from dumping debris into rivers. After 1884 and for the next several decades, quartz mining and stamp mills produced the majority of California's gold output. Quartz mining required miners to blast the quartz from the surrounding rock, then water-driven stamp mills pulverize it into fine grains, and finally the gold was separated from the rest of the rock. During World War I and the 1920s, the country's general prosperity caused a reduction in gold output and the closure of mines.

Small-scale placer mining operations were revived during the Great Depression of the 1930s. Thousands of the unemployed migrated to the early gold districts, including areas in Placer County, where individuals and small groups of miners returned to many of the earlier techniques of gold mining, including the use of pans, rockers, and sluices. Quartz mining and small-scale hydraulic mining also returned in Placer County. During the 1930s and early 1940s, production in the Sicily mine in the Penryn Mining District near Penryn reached over $100,000, causing a considerable resurgence of mining activity in Western Placer County. During World War II, gold output dropped due to the War Production Board Limitation Order L-208 issued in 1942 that caused the gold mines to be shut down. Although the order was lifted in 1945, gold output remained low.

As the gold became more difficult to extract, miners developed more sophisticated tools to process higher volumes of gold-bearing gravels. The new tools and techniques required more capital, and groups of miners organized to finance the equipment and water conveyances necessary to exploit these resources. The business of bringing water to dry diggings spawned a new industry in the gold districts, as numerous ditch companies quickly formed throughout the foothills and constructed a vast network of ditches to supply their own mines, as well as others, with water.

Between 1850 and 1853, before hydraulic mining dominated the region, most ditches and canals were quickly dug and possessed flimsy diversion structures and wooden flumes that were hastily constructed and not designed to withstand more than a season or two of use. Ditch companies formed in all mining districts, and by 1861 twenty-three ditch companies operated within Placer County alone. Because dry diggings were crossed with seasonal streams, they frequently had an unreliable water source. None of the early ditch companies had storage facilities. Lack of a water supply often suspended work during the long, dry summer months. Generally, the prosperity of a ditch company was dependent on the reliability of its water source during the dry season and the capacity of its main canal to meet the demand for water when needed.

In 1851, a group of miners organized the Bear River and Auburn Water and Mining Company (BR&AW&M) with the intent to design a canal system that would bring water down from the Bear River into the rich dry diggings of the Auburn, Newcastle and Penryn mining districts. The original Bear River Canal, which was hand dug by miners, diverted water from the Bear River near the town of Colfax and it extended West through the foothills beyond the town of Auburn. The water company began making deliveries of water to miners in 1851, and completed their system to the Auburn vicinity by 1852. The company purchased smaller water ditch companies, enlarged the capacity of its main canal, and consolidated these facilities into a more centralized system. By 1861, BR&AW&M had absorbed all its competitors and was the sole water company in the Auburn/Newcastle area.

During the early 1860s the Comstock Lode in the area around Carson City, tens of thousands of miners left California and moved Eastward to Nevada. The slumping gold mining industry in California brought hard times to the ditch companies that had once supplied the bustling mining economy. With the environmental restrictions placed on the hydraulic mining industry by federal and state court decisions in the late 1870s and early 1880s, agriculture became more important as a market for water companies. The South Yuba Water Company, originally organized in 1854 to meet the increased water needs of early hydraulic mining in Nevada County, now became one of the five major canal companies of the nineteenth century in California. The company owned a substantial amount of potential irrigable land in the foothills, and was able to transition from supplying water to the mines to supplying irrigation water. The company also became the municipal water supplier of Nevada City, Grass Valley, Auburn, Newcastle, and Lincoln.

In 1893, the South Yuba Water Company shifted into hydroelectric power production, forming a subsidiary company named the Central California Electric Company. In 1896, the new company finished construction on their first power plant, the Newcastle Power House, which supplied power to the communities of Newcastle, Rocklin, and Loomis, and the Griffith Mine at Penryn. By 1898, the company completed the Auburn Power House and by 1902 the Alta Power House was in operation. In 1905, the South Yuba Water Company and its subsidiary company, the Central California Electric Company became part of the Central Gas and Electric Company, which in 1906, consolidated its Northern California electric utilities under the new name, Pacific Gas & Electric Company (PG&E). PG&E continued to supply irrigation water to Western Placer County farmers through their subsidiary, the South Yuba Water Company.

In 1917, Munson B. "Bert" Church and his wife, Kate, drove their cattle from parched dry pasture in Western Nevada County Eastward and up to the green mountain meadows of the Sierra Nevada. On this cattle drive, Bert and Kate first envisioned a water system where the tumbling and abundant waters of the high mountains could be carried to the fertile but dry farms and ranches of the Sierra foothills. Soon, the Churches joined with other Nevada County residents to pursue this dream. The Nevada County Farm Bureau and visionary leaders such as Aubrey L. Wisker, Herman Graser and Guy N. Robinson Jr. set out to convince Nevada County residents and voters they should form their own irrigation district (Nevada Irrigation District History Website, 2013).

Through the early 1900s, many of the old reservoir and canal systems built during the California Gold Rush had become under-utilized and were falling into disrepair. Community leaders were determined to acquire these invaluable assets, make improvements, and recreate them as the backbone of a new public water system. From 1917-1921, engineering studies were completed, new water rights were negotiated and a local campaign was mounted to build support for this dream of a new irrigation district. On March 15, 1921 local organizers presented petitions carrying 800 signatures of irrigation district supporters to the Nevada County Board of Supervisors. On August 5, 1921 a public election was held with voters favoring the new district by a margin of 536-163. Nevada County Supervisors authorized the new district and 10 days following the election, on August 15, 1921, NID was officially formed. NID's first board meeting was held that day in Grass Valley's Bret Harte Hotel. At its formation, NID included 202,000 acres in Nevada County. Five years later, in 1926, residents of Placer County chose to join NID and another 66,500 acres were added. Today, NID includes more than 287,000 acres (Nevada Irrigation District History Website, 2013).

Following its formation, NID achieved rapid progress in laying the groundwork for the new public irrigation system. During the 1920s, many important water rights were obtained, key water rights NID retains to this day. The acquisition of land to store and deliver water was a very important step in NID's development. NID began to deliver irrigation water to local farms in 1927. At that time, irrigation water was priced at about 10 cents per day (Nevada Irrigation District History Website, 2013).

By the late 1950s and early 1960s it had become apparent that the future would bring more demand for water in NID service areas. Demand for NID water was beginning to transition from canal water to piped and treated drinking water. At the same time, California was embracing development of hydroelectric power to meet the state's growing energy needs. NID leaders once again took their campaign to the electorate and in a 1962 election, 97 percent of NID voters supported a $65 million bond issue to construct the Yuba-Bear River Power Project. The major project completed from 1963-66, remains a very important milestone in NID history. It brought not only power generation capability, but new reservoirs and canal systems and, most importantly, created an additional 145,000 acre-feet of water storage for NID residents. No longer would foothill reservoirs run dry in the long hot summers. Today, as NID has grown and matured into a multi-faceted water and power agency, NID continues to take great pride in its Gold Rush roots and important place in California water history (Nevada Irrigation District History Website, 2013).

3.5.2 Regulatory Setting

This regulatory setting lists cultural resource regulations relevant to the proposed Project.

Federal

National Historic Preservation Act

Most regulations at the federal level stem from the National Environmental Policy Act (NEPA) and historic preservation legislation such as the National Historic Preservation Act (NHPA) of 1966, as amended. NHPA established guidelines to "preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice." The NHPA includes regulations (Section 106) which pertain to all projects (including the proposed Project) that are funded, permitted, or approved by any federal agency and which have the potential to affect cultural resources. Provisions of NHPA establish the NRHP maintained by the National Park Service, the Advisory Councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs.

American Indian Religious Freedom Act and Native American Graves and Repatriation Act

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

State

CEQA, PRC Section 21083.2, and CEQA Guidelines 15064.5

Includes provisions for significance criteria related to archaeological and historical resources. A significant archaeological or historical resource is defined as one that (a) meets the criteria of the California Register of Historical Resources (CRHR), (b) is included in a local register of historical resources, (c) or is determined by the Lead Agency to be historically significant. A significant impact is characterized as a “substantial adverse change in the significance of a historical resource.” Public Resources Code (PRC) Section 5024.1 authorizes the establishment of the CRHR. Any identified cultural resources must therefore be evaluated against the CRHR criteria.

PRC Section 5024.1 California Register of Historical Resources

In order to be determined eligible for listing in the California Register of Historical Resources (CRHR), a property must be significant at the local, state, or national level under one or more of the following four criteria as defined in PRC 5024.1 and CEQA Guideline 15064.5(a).

- It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States. (2) It is associated with the lives of persons important to the nation or to California's past. (3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values. (4) It has yielded, or may be likely to yield, information important to the prehistory or history of the state and the nation.

- In addition to meeting one or more of the above criteria, a significant property must also retain integrity. Properties eligible for listing in the CRHR must retain enough of their historic character to convey the reason(s) for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association.

PRC Section 21083.2 Treatment of Unique Archaeological Resources

PRC Section 21083.2 governs the treatment of unique archaeological resources, defined as "an archaeological artifact, object, or site about which it can be clearly demonstrated" as meeting any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.
- If it can be demonstrated that a project will cause damage to a unique archaeological resource, appropriate mitigation measures shall be required to preserve the resource in place and in an undisturbed state. Mitigation measures may include, but are not limited to, 1) planning construction to avoid the site, 2) deeding conservation easements, or 3) capping the site prior to construction. If a resource is determined to be a "non-unique archaeological resource", no further consideration of the resource by the Lead Agency is necessary.

PRC Section 7050.5 Encountering Human Remains

The possibility of encountering human remains cannot be entirely discounted. Pursuant to PRC Section 7050.5 if human graves are encountered, work should halt in the vicinity and the Nevada County Coroner should be notified immediately. At the same time, an archaeologist should be contacted to evaluate the situation. If human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

Local

Placer County General Plan

The Placer County General Plan describes Cultural Resources goals and policies that are directly or indirectly pertinent to the proposed Project including:

Policy 1.I.1: The County shall require that significant natural, open space, and cultural resources be identified in advance of development and incorporated into site-specific development project design. (Placer County General Plan, Open Space, Habitat, and Wildlife)

Goal 5.D: To identify, protect, and enhance Placer County's important historical, archaeological, paleontological, and cultural sites and their contributing environment. (Placer County General Plan, Cultural Resources)

Policy 5.D.3: The County shall solicit the views of the (Native American Heritage Commission) NAHC and/or the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance. (Placer County General Plan, Cultural Resources)

Policy 5.D.6: The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a countywide cultural resource data base, to be maintained by the Department of Museums. (Placer County General Plan, Cultural Resources)

Policy 5.D.7: The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question. (Placer County General Plan, Cultural Resources)

Policy 5.D.8: The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts. (Placer County General Plan, Cultural Resources)

Policy 5.D.11: The County shall support the registration of cultural resources in appropriate landmark designations (i.e., NRHP, California Historical Landmarks, Points of Historical Interest, or Local Landmark). The County shall assist private citizens seeking these designations for their property. (Placer County General Plan, Cultural Resources)

City of Auburn General Plan

The City of Auburn General Plan contains several goals and policies that directly or indirectly pertain to proposed Project cultural resources, including the following:

Goal 1: Preserve all historical sites and enhance the character of the historic districts.

Policy 1.2: Preserve existing Indian and Chinese cemeteries and other historic sites. (City of Auburn General Plan, 1993, Historic Element)

3.5.3 Impact Analysis

Methodology

The proposed Project area is approximately 4,000 linear feet or 2.0 acres of anticipated 36-inch pipe from the existing Combie Ophir II Canal to the Rock Creek Reservoir, 24-inch pipe from the NID North Auburn WTP to an existing water storage tank (~ 1,150 feet), installed parallel to the 36-inch pipe, as well as turnout to the NID North Auburn WTP. A map of the proposed Project records search area is included in Figure 3.2 below.

Records Search

As part of the study, a records search was conducted at the North Central Information Center (NCIC) of the California Historical Resources Information System by Stantec staff, on August 13, 2013 (NCIC File No. PLA-13-80) for the Project area and a quarter mile around the Project area. The NCIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historic records and reports for a 6-county area that includes Placer County, and it is housed at Sacramento State University.

The records search for this study was performed in order to (1) determine whether known cultural resources had been recorded within or adjacent to the study area; (2) assess the likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature; and (3) to review the distribution of nearby archaeological sites in relation to their environmental setting.

The record search included a review of all cultural resources, reports, and recorded cultural resources within the immediate Project area. The records were accessed by utilizing the Auburn U.S. Geological Survey 7.5-minute quadrangle map. Other sources reviewed included the OHP Historic Property Data File (2012), Determination of Eligibility (2012), NRHP/CRHR listings (2008 & updates), California Inventory of Historical Resources (California Office of Historic Preservation, 1976), California State Historical Landmarks (1996), Points of historic Interest (1992), Caltrans Bridge Inventory, and Historic Maps.

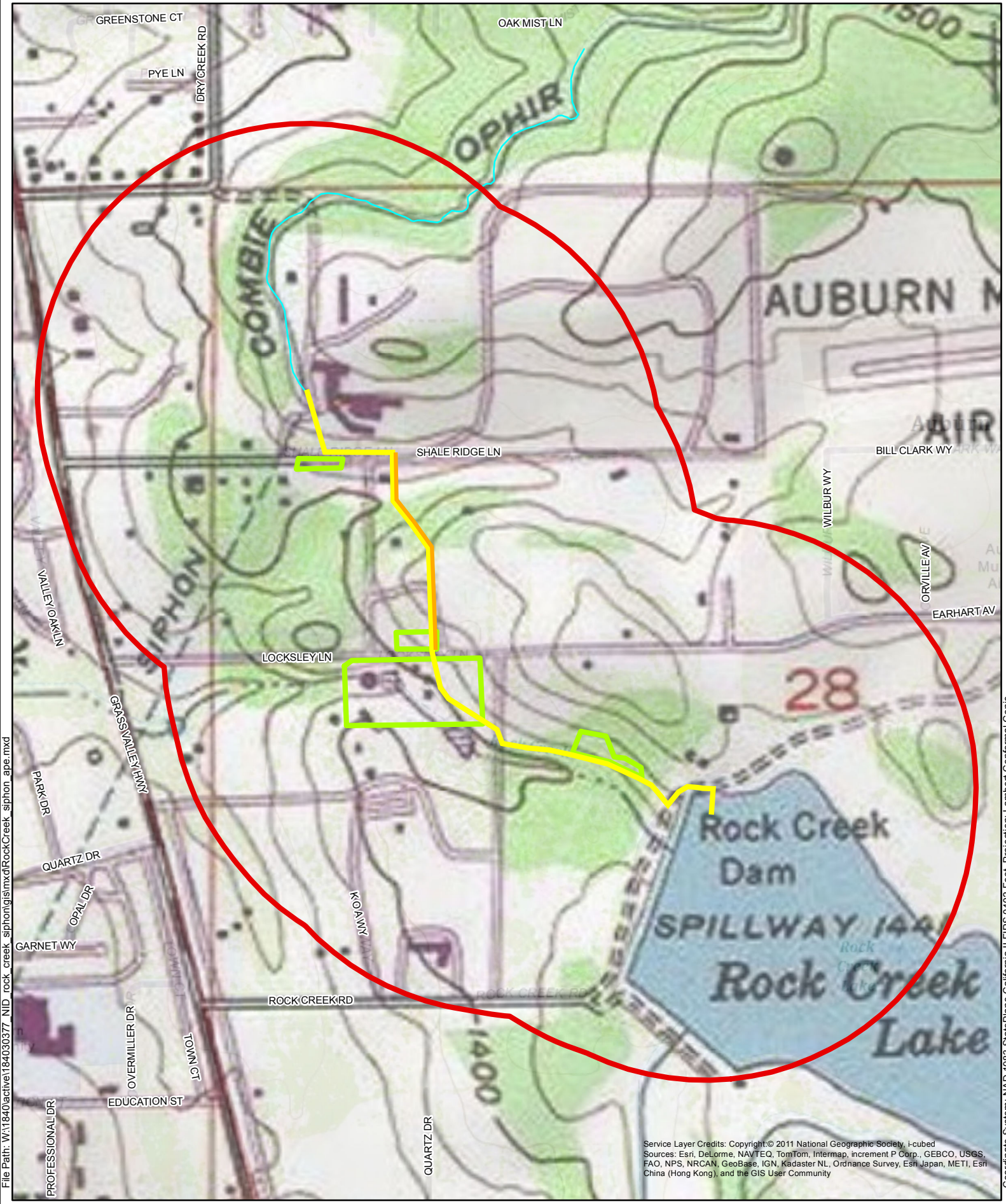
The records search revealed that two previously recorded historic resources are within the Project area (Drum Spaulding Hydroelectric District and an historic artifact concentration) and one previously recorded historic resource is immediately adjacent to the Project area (Rock Creek Dam an element of the Drum Spaulding Hydroelectric District). Three reports have been produced within the Project area. (Baker, 1998; Lmabert & Pitsenberger, 2006; Maniery, HDR, & DTA, 2011).

Historic Resource P-31-001816 is Rock Creek Dam and this dam is an element of the Drum Spaulding Hydroelectric District (P-31-005407). Rock Creek Dam was built in 1916 and is an example of a multiple arch dam. Rock Creek Dam (as a contributing element to the District) and the Drum Spaulding Hydroelectric District were determined eligible to both the California Register or Historical Resources (CRHR) and National Register of Historic Places (NRHP) in 1998. These resources were determined eligible under National Register Evaluation Criterion A: associated with events that have made a significant contribution to the broad patterns of our history (NRHP, 2011). While these resources are within or immediately adjacent to the Project area, the Project construction will not impact or change these resources as the Rock Creek Siphon will be buried and installation of an outlet structure to reduce velocity, erosion, and to prevent wildlife or persons from entering the pipeline will be constructed at Rock Creek Reservoir just East of the dam. As such the integrity and structures associated with the Rock Creek Dam and Drum Spaulding Hydroelectric District will not be compromised as a result of the proposed Project.

Historic Resource P-31-005005 is an historic artifact concentration. This artifact concentration was evaluated and found ineligible to the California and National Registers. This evaluation was part of the 2011 Cultural Resources Inventory/Evaluation Report with a Finding of Effect for Pacific Gas & Electric Company's Drum-Spaulding Project (FERC Project No. 2310) FERC Boundary Changes, Nevada and Placer Counties, California. As this resource has been deemed ineligible and SHPO has concurred with these recommendations as part of the previous PG&E Project cultural resource evaluations, this resource will require no further consideration for the proposed Project.

One Prehistoric Bedrock Milling Feature was recorded within a quarter mile of the Project area but not within or adjacent to the Project area. Seven historic resources/sites have been recorded within a quarter mile of the Project area but not within or adjacent to the Project area. These sites include historic mines, tailings, and quarry sites, historic Lower Wise Canal an element of the Drum Spaulding Hydroelectric District, an historic collapsed structure, historic privies/dumps/trash scatters, and historic water conveyance systems.

Site indicators for the presence of prehistoric sites in this area may include, but are not limited to, ground depressions; darkened soil areas indicative of middens; fire scorched and/or cracked rock; modified obsidian, chert, or other vitreous materials; and grinding stones including manos and metates. Historic era artifacts may include, but are not limited to, metal objects including nails; containers or miscellaneous hardware; glass fragments; ceramic or stoneware objects or fragments; milled or split lumber; trenches; feature or structure remains such as buildings or building foundations; and trash dumps.



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Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet, Projection: Lambert Conformal Conic

Stantec

0 1,200 Feet

1 inch = 600 feet

Project: 184030377 ; Sources: ESRI 2013, Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013; Created By: K.Gross; Updated: 3/4/2014

Preferred Alignment 36-inch raw water pipeline

Preferred Alignment 24-inch water pipeline

Potential Staging Areas

Record Search Area

Figure 3-2
Cultural Resources Records Search Area

Nevada Irrigation District
Rock Creek Siphon Project

Native American Consultation

On August 7, 2013, the Native American Heritage Commission (NAHC) was asked to review the Sacred Lands File for information on Native American cultural resources on the Project site. On August 19, 2013, the NAHC responded that a records search of the Sacred Land File had failed to indicate the presence of Native American cultural resources within the Project area. However, they did provide a list of local Native American individuals/organizations to consult with further. Consultation letters to these individuals/organizations were sent on September 3, 2013 and follow-up phone calls were made on September 19, 2013. The United Auburn Indian Community of the Auburn Rancheria (UAIC) completed a records search of their database and no resources or sites have been recorded in the Project area. The UAIC asked to be included as a contact if any prehistoric resources are inadvertently discovered during Project construction. Additionally, the UAIC requested copies of all future cultural resource reports, including a copy of this CEQA IS/MND. The Shingle Springs Band of Miwok Indians also requested copies of all future cultural resource reports, including a copy of this CEQA IS/MND. The T' si-Akim Maidu asked to be included as a contact if any prehistoric resources are inadvertently discovered during Project construction. Additionally, the T' si-Akim Maidu requested copies of all future cultural resource reports, including a copy of this CEQA IS/MND. The T' si-Akim Maidu contact emphasized that there were Maidu sites within two miles of the Project area and that isolates may be encountered during Project construction as some areas of the Project were utilized by Maidu as destination but not habitation sites. Lastly, April Wallace Moore of the Nisenan, Maidu, Konkow, and Washoe requested copies of all future cultural resource reports, including a copy of this CEQA IS/MND and reiterated the T' si-Akim Maidu comments regarding nearby sites. All other Native American individuals and groups contacted regarding the Project either had no comments or did not respond. The correspondence has been attached in Appendix B of this document.

Field Survey

A Stantec cultural resource specialist conducted a reconnaissance level survey of the entire Project area on July 18, and August 15, 2013. The Project area was evaluated for the presence of prehistoric or historic site indications. The survey used transects spaced no more than fifteen meters apart and examined the entire Project area. Ground visibility was fair to poor and was covered with pavement, dirt, gravel, or vegetation. The survey found that the Project area has been subject to historic and modern disturbances. The previously recorded Drum Spaulding Hydroelectric District including Rock Creek Dam (immediately adjacent to the Project area) were observed during the survey. A previously recorded and heavily disturbed historic artifact concentration was also observed during the study.

Results and Findings

A full accounting of all potential cultural resources located within the Project area was achieved through a records search, Native American consultation, and archaeological pedestrian survey. The survey confirmed that the ground surface within the Project area has been previously disturbed and developed. Historic Resource P-31-001816 is Rock Creek Dam and this dam is an element of the Drum Spaulding Hydroelectric District (P-31-005407). Rock Creek Dam (as a contributing element to the District) and the Drum Spaulding Hydroelectric District were determined eligible to both the California Register or Historical Resources (CRHR) and National Register of Historic Places (NRHP) in 1998. These resources were determined eligible under National Register Evaluation Criterion A: associated with events that have made a significant contribution to the broad patterns of our history (NRHP, 2011). While these resources are within or immediately adjacent to the Project area, the Project construction will not impact or change these resources as the Rock Creek Siphon will be buried and installation of an outlet structure to reduce velocity, erosion, and to prevent wildlife or persons from entering the pipeline will be constructed at Rock Creek Reservoir just East of the dam. As such the integrity and structures associated with the Rock Creek Dam and Drum Spaulding Hydroelectric District will not be compromised as a result of the proposed Project. Historic Resource P-31-005005 is an historic artifact concentration which includes nails, a broken pot metal toy gun, white improved earthenware, and broken clear & olive glass. This artifact concentration was evaluated and found ineligible to the California and National Registers. This evaluation was part of the 2011 Cultural Resources Inventory/Evaluation Report with a Finding of Effect for Pacific Gas & Electric Company's Drum-Spaulding Project (FERC Project No. 2310) FERC Boundary Changes, Nevada and Placer Counties, California. As this resource has been deemed ineligible and SHPO has concurred with these recommendations as part of the previous PG&E Project cultural resource evaluations, this resource will require no further consideration for the proposed Project. We are confident that our identification efforts have adequately explored the Project site and its potential for cultural resources. As such, a finding of No Historic Properties Affected is recommended. No further cultural resources study is warranted unless the design of the Project changes. There is the possibility, that subsurface archaeological deposits may exist in the Project area, as archaeological sites may be buried with no surface manifestation.

Table 3-5 below discusses the potential Project-related impacts relative to cultural resources for the Project.

Table 3-5
CEQA Checklist for Assessing Project-Specific Potential Impacts to Cultural Resources

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
V.	**CULTURAL RESOURCES.** Would the Project:				
a)	Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) Would the Project cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?

Finding: Less than Significant with Mitigation

Historic Resource P-31-001816 is Rock Creek Dam and this dam is an element of the Drum Spaulding Hydroelectric District (P-31-005407). Rock Creek Dam was built in 1916 and is an example of a multiple arch dam. Rock Creek Dam (as a contributing element to the District) and the Drum Spaulding Hydroelectric District were determined eligible to both the California Register or Historical Resources (CRHR) and National Register of Historic Places (NRHP) in 1998. These resources were determined eligible under National Register Evaluation Criterion A: associated with events that have made a significant contribution to the broad patterns of our history (NRHP, 2011). While these resources are within or immediately adjacent to the Project area, the Project construction will not impact or change these resources as the Rock Creek Siphon will be buried and installation of an outlet structure to reduce velocity, erosion, and to prevent wildlife or persons from entering the pipeline will be constructed at Rock Creek Reservoir just East of the dam. As such the integrity and structures associated with the Rock Creek Dam and Drum Spaulding Hydroelectric District will not be compromised as a result of the proposed Project.

Historic Resource P-31-005005 is an historic artifact concentration. This artifact concentration was evaluated and found ineligible to the California and National Registers. This evaluation was part of the 2011 Cultural Resources Inventory/Evaluation Report with a Finding of Effect for Pacific Gas & Electric Company's Drum-Spaulding Project (FERC Project No. 2310) FERC Boundary Changes, Nevada and Placer Counties, California. As this resource has been deemed ineligible and SHPO has concurred with these recommendations as part of the previous PG&E Project cultural resource evaluations, this resource will require no further consideration for the proposed Project.

There are no other known historic resources within the Project area. However, the possibility for encountering buried historical resources during Project construction can never be fully discounted. Therefore, Mitigation Measure CULTURAL-1 is required to reduce impact to a less than significant level.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource as identified in Section 15064.5?

Finding: Less than Significant with Mitigation

There are no known prehistoric archeological resources within the Project area. While no prehistoric archaeological resources have been recorded in the Project area, the possibility for encountering buried archaeological resources can never be fully discounted. Therefore, Mitigation Measure CULTURAL-1 is required to reduce impacts to a less than significant level.

c) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Finding: Less than Significant with Mitigation

There are no known significant paleontological sites or deposits within the Project area and the site is previously disturbed. However remote, the possibility for encountering paleontological resources during construction of the proposed Project does exist, therefore, Mitigation Measure CULTURAL-1 is required to reduce impact to a less than significant level.

d) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Finding: Less than Significant with Mitigation

There are no known human burials or remains within the Project area and no evidence of human remains was observed during surveys. In the event that human remains are encountered during construction of the proposed Project mitigation measure CULTURAL-2 will be employed. Therefore, Mitigation Measure CULTURAL-2 is required to reduce impacts to a less than significant level.

3.5.4 Mitigation

Mitigation Measure CULTURAL-1: Proper Handling of Inadvertent Discovery of Cultural and Paleontological Resources

If cultural resources are encountered during proposed Project construction, construction shall be halted immediately in the subject area and a qualified professional archaeologist shall be consulted. If Prehistoric resources are encountered, the United Auburn Indian Community of the Auburn Rancheria (UAIC) and the T' si-Akim Maidu have requested to be consulted. Prehistoric resources may include chert or obsidian flakes, projectile points, mortars and pestles, dark friable soil containing shell and bone dietary debris, and heat-affected rock. Historic resources may include stone or wood foundations or walls, structures or remains with square nails, and refuse deposits.

If any paleontological resources (i.e., fossils) are found during proposed Project construction, construction shall be halted immediately in the subject area and NID shall be immediately notified. A qualified paleontologist shall be retained to evaluate the find and recommend appropriate treatment of the inadvertently discovered paleontological resources. The appropriate treatment of inadvertently discovered paleontological resources shall be implemented to ensure that the impacts to these resources are avoided.

If NID or its contractor finds archeological, paleontological, or human remains, NID and its contractor will stop work and isolate the area using orange or yellow fencing until the appropriate regulatory agency is contacted and clears the area for future work. NID at its discretion can move construction activities and restart activities at a distance not expected to affect or disturb the find. Work can proceed away from the area of the find but cannot proceed toward the area of the find. If NID resumes work in a location where archaeological, paleontological, or human remains have been discovered and cleared, NID will have an archeologist onsite to confirm that no additional archaeological resources are in the area.

Mitigation Measure CULTURAL-1 Implementation

Responsible Party: NID would ensure the appropriate treatment for any discovery of pre-historic, historic, or paleontological resources during construction.

Timing: During all ground disturbing activities.

Monitoring and Reporting Program: If any find is determined to be significant, representatives of NID and a qualified archaeologist (in consultation with the UAIC and T' si-Akim Maidu) or paleontologist (if a paleontological resource is discovered) would meet to determine the appropriate avoidance measures or other appropriate mitigation. All significant cultural materials and paleontological resources recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist or paleontologist (if a paleontological resource is discovered) according to current professional standards. A report shall be kept on file at the NID offices.

Standards of Success: The proper recording, evaluation, and treatment of any newly identified prehistoric, historic, or paleontological resources.

Mitigation Measure CULTURAL-2: Proper Handling of Inadvertent Discovery of Human Remains

If human remains are encountered, work shall halt in the vicinity and the County Coroner shall be notified immediately pursuant to PRC Section 7050.5. At the same time, an archaeologist shall be contacted to evaluate the situation. If human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC shall identify the person or persons it believes to be the most likely descendent (MLD) from the deceased Native American. The MLD shall have an opportunity to make a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. (See General Plan Policy 6.10 as described in Section 3.15.1.3 above)

Mitigation Measure CULTURAL-2 Implementation

Responsible Party: NID and the Placer County Coroner would insure the appropriate treatment for any discovery of any human remains during construction.

Timing: During all ground disturbing activities.

Monitoring and Reporting Program: The recording and evaluation of any newly identified human remains shall be conducted by qualified professional archaeologists and a report shall be kept on file at the NID offices.

Standards of Success: The proper recording, evaluation, and treatment of any newly identified human remains.

3.6 GEOLOGY AND SOILS

3.6.1 Environmental Setting

The Western portion of Placer County is underlain by a complex mosaic of geology associated with the transition between the Sierra Nevada and the Great Valley physiographic provinces and includes geologic formations from the Jurassic period (pre Sierra Nevada up lift) through the Holocene's recent alluvial deposits. The Sierra Foothills portion of the region is comprised largely of metavolcanic rocks associated with the accretion of oceanic crust on the North American plate, Copper Hill Volcanics described as metamorphosed mafic pyroclastic rocks and Mesozoic dioritic rocks (Wagner et. al, 1987). The Mehrten Formation, composed of andesitic conglomerate, tuffaceous sandstone and siltstone and andesitic mudflow breccia, occurs in both the Sierra Foothills and the Great Valley. The Great Valley in the region is primarily composed of the Riverbank Formation, which is alluvium deposited approximately 80 to 250 thousand years ago. Minor areas in the Great Valley portion of the region include older (three million years ago) consolidated alluvium from the Laguna Formation and the (34 million years ago) Ione Formation of interbedded sandstone and kaolinitic clay as well as recent alluvial basin and stream deposits (Wagner et. al, 1987). The soils located in Western Placer County are highly variable reflecting the different geologic parent materials as well as the variable time frames these parent materials have been exposed for soil development processes.

3.6.2 Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA, 33 USC 1344) focuses primarily on Waters of the United States, and is more thoroughly described in Section 2.4 (Biological Resources). However, the CWA focuses on sediment control in two aspects. First, the United States Army Corps of Engineers (USACE) administers section 404 which regulates the discharge of fill into waters of the United States. Secondly, the CWA applies to stormwater discharges, where erosion control is an integral part of achieving permit compliance.

State

Alquist Priolo Zoning Act

The Alquist Priolo Zoning Act requires the mapping of zones around active faults in California, in an effort to prohibit the construction of structures for human occupancy on active faults and minimize damage due to rupture of a fault. Active faults are those that have ruptured within the past 11,000 years. Where the act identifies an Earthquake Fault Zone, a geologic investigation and report is necessary to prevent siting of buildings on active fault traces. The closest Alquist Priolo recognized Earthquake Fault Zone, is approximately 35 miles from the proposed Project area.

Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act is intended to delineate zones where earthquakes could cause hazardous ground shaking and ground failure, including liquefaction and landslides. Currently, zones near the San Andreas Fault in the urban centers of the Greater San Francisco Bay Area and Los Angeles have been delineated. Local cities and counties within these zones regulate construction in order to minimize loss associated with these seismic hazards. No seismic hazard zones have been delineated in the proposed Project area under this act.

California Standard Building Code

Title 24 of the California Code of Regulations, the California Standard Building Code, contains specific requirements for construction with respect to earthquakes and seismic hazards intended to be protective of public health. Construction for this proposed Project will adhere to the California Standard Building Code.

General Construction Stormwater Discharge Permit

A Statewide General Construction Stormwater Discharge (GCSD) Permit (Order No. 2009-0009-DWQ) was adopted by the State Water Resources Control Board (SWRCB) on September 2, 2009, for construction projects that disturb greater than one acre or have the potential to impair water quality. The permit is required regardless of the time of year construction occurs. This permit requires a Notice of Intent to be submitted, a Stormwater Pollution Prevention Plan (SWPPP) to be developed and implemented and monitoring to be conducted. The SWPPP must contain best management practices (BMPs), other measures to prevent pollution and a construction timeline. The SWPPP shall demonstrate compliance with erosion and sediment control standards and identify responsible parties. Furthermore, a BMP maintenance program is required by the SWPPP, which should include proper installation and thorough and frequent inspection to ensure the effectiveness of specific BMPs. The proposed Project will require coverage under this permit.

Local

Placer County General Plan

The Placer County General Plan contains several policies that directly or indirectly pertain to soil and geologic hazards, including the following:

Policy 4.E.4: The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's *Stormwater Management Manual* and the County *Land Development Manual*.

Policy 4.E.5: The County shall continue to implement and enforce its Grading Ordinance and Flood Damage Prevention Ordinance.

Policy 6.A.4.e: Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as:

1) Turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and

2) Temporary vegetation sufficient to stabilize disturbed areas.

Policy 6.A.5: The County shall continue to require the use of feasible and practical BMPs to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.

Policy 6.A.7: The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.

Policy 6.B.3: The County shall discourage direct runoff of pollutants and siltation into wetland areas from outfalls serving nearby urban development. Development shall be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.

3.6.3 Impact Analysis

Table 3-6 and the section below discuss the potential Project impacts relative to geology and soil-related issues.

Table 3-6
CEQA Checklist for Assessing Project-Specific Potential Impacts to Soils and the Potential for Geologic Impacts to the Project

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
VI. GEOLOGY AND SOILS -- Would the Project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on strata or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

a) Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Finding: Less than Significant

The proposed Project area is not located in a fault zone delineated on the California Geological Survey, Alquist-Priolo Earthquake Fault Zoning map (CGS, 2010). The nearest active fault is approximately 35 miles from the Project site. The Project does not include construction of structures for human occupancy and would not subject people or structures to adverse effects due to rupture of a known fault because there are no known active faults in the Project area, based on information provided by the California Geological Survey maps (CGS, 2010). Therefore, impacts are considered less than significant.

ii. Strong seismic ground shaking

Finding: Less than Significant

The Project area is not located on any known fault traces and ground shaking is forecast to be low in this area. Additionally, soils are relatively shallow to hard metamorphic bedrock, and therefore there is limited potential for ground failure, including liquefaction, and landslides. Placer County and the City of Auburn have adopted the 2010 California Building Code (CBC California Code of Regulations Title 24) to provide minimum requirements and standards for the protection of the public safety, health, property and welfare within their respective jurisdictions. The California Building Code specifies design requirements and standards to account for geologic hazards including seismicity. The pipeline will be designed in accordance with the Uniform Building Code (UBC) specifications and standards. Therefore, this is a less than significant impact.

iii. Seismic related ground failure, including liquefaction.

Finding: No Impact

Soils underlying the Project area are generally classified by the NRCS as silt loam, well drained generally shallow (20-44 inches to bedrock) and Rock outcrop (0 to 4 inches to bedrock) and not likely susceptible to liquefaction. In addition, the site is not susceptible to strong ground shaking necessary for liquefaction to occur (NRCS, 2012). Therefore, no impacts will occur.

iv. Landslides

Finding: No Impact

Soils underlying the Project area are generally classified by the NRCS as silt loam, well drained generally shallow (20-44 inches to bedrock) and Rock outcrop (0 to 4 inches to bedrock) and not likely susceptible to landslides (NRCS, 2012). According to the California Geologic Survey, the Project area is not located in an area that is prone to landslides (CGS 2007). Therefore, no impacts will occur.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Finding: Less than Significant with Mitigation

Soils underlying the Project area are generally classified by the NRCS as silt loam, well drained generally shallow (20-44 inches to bedrock) and Rock outcrop (0 to 4 inches to bedrock) and not likely susceptible to landslides (NRCS, 2012). The Project will impact approximately 2 acres, impacting a small area which will not result in substantial soil erosion or the loss of topsoil. As a measure to control erosion, the Project will be conducted in accordance with the requirements stipulated in the Statewide GCSD permit and incorporate Mitigation Measure GEO-1.

Installation the outlet structure including a headwall, energy dissipation structure to reduce velocity and erosion, erosion measures consisting of a concrete apron and a rack to prevent wildlife or persons from entering the pipeline. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The outlet structure will be an exposed pipe with a gate valve on the end. The pipe will come out of the ground about 10 feet above the OHWM of the reservoir. This will minimize the amount of exposed material. Large rip-wrap rock to be placed between the outlet and the OHWM of the reservoir, in order to minimize erosion of bare ground. Rock Creek Reservoir water levels will not be manipulated during outlet construction. Rip-wrap rock will be placed beyond the pipe and will be deposited in the first one to two feet of the reservoir water level.

Under Mitigation Measure GEO-1, NID will require that the selected contractor prepare an erosion control plan and a storm water pollution prevention plan (SWPPP) prior to construction. The plans should provide, whenever practicable, Best Management Practices including measures to trap sediment and prevent soil erosion or transport to nearby surface water courses or storm drains. These plans shall be implemented and inspected accordingly throughout the construction process. Additionally, these plans will include measures for restoring and stabilizing the Project area after final construction to minimize and control erosion from the completed Project. The implementation of the erosion control plan along with the construction period SWPPP should minimize any substantial soil erosion or loss of topsoil, reducing impact to less than significant levels with Mitigation Measure GEO-1 incorporated.

c) Would the Project be located on strata or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Finding: No Impact

The proposed Project is located on relatively shallow, well drained, and underlain by bedrock. These soils, and the bedrock, are inherently stable, generally not susceptible to landslide or lateral spreading, and are not likely susceptible to subsidence or liquefaction (NRCS, 2012). Therefore, no impacts will occur.

d) Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?

Finding: No Impact

The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Given that expansive soil materials are encountered throughout California, they are generally addressed through standardized foundation engineering practices. The proposed Project will be constructed in compliance with applicable Uniform Building Code (UBC) regulation and other County and State requirements. Therefore, no impacts will occur.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Finding: No Impact

The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. No wastewater will be produced as a part of the proposed Project. Moreover, onsite wastewater treatment and disposal is not a component of the proposed Project. Therefore, no impacts would occur.

3.6.4 Mitigation

Mitigation Measure GEO-1: Sedimentation and Erosion Control Measures

The contractor shall prepare and implement an erosion control plan and Stormwater Pollution Prevention Plan (SWPPP) to ensure erosion and sedimentation from the Project is kept to a minimum. As well, for all activities disturbing greater than one acre, the contractor will be required to obtain a Statewide General Construction Stormwater Discharge Permit (RWQCB, 2009). The contractor shall prepare and implement the SWPPP, and standard erosion and sediment control best management practices will be used during and after construction to control accelerated soil erosion and sedimentation and ensure there will be no adverse effect on the Combie Ophir II Canal, Rock Creek, and unnamed pond, Rock Creek Reservoir, or other associated drainages.

Straw bales, silt fence, coir rolls, and other erosion protection devices will be used in areas of bare soil, and in drainages near all areas of disturbance to reduce surface runoff velocities and to prevent sediment from entering drainages. Maintenance of erosion and sediment control measures during the construction phase will be conducted on a weekly basis.

The re-vegetation of all graded and disturbed areas of bare soil, will be completed within three months of Project completion, or prior to the rainy season. Seed mixes approved by NCRS will be used to replicate the naturally occurring vegetation.

Mitigation Measure GEO-1 Implementation

Responsible Party: NID will require the contractor to develop and implement the Stormwater Pollution and Prevention Plan (SWPPP) and revegetate the site.

Timing: During and immediately after construction activities.

Monitoring and Reporting Program: The recording and evaluation of the SWPPP and erosion control practices will be conducted by NID and the contractor and kept on file at the NID offices.

Standards of Success: Minimize on- and off-site erosion and prevent introduction of significant amounts of sediment into any stream or drainage.

3.7 GREENHOUSE GAS EMISSIONS

3.7.1 Environmental Setting

The Rock Creek Siphon project is located in Placer County within the Sacramento Valley Air Basin. The proposed Project will provide redundancy to the NID system in the case of an emergency or system failure.

Greenhouse Gases (GHGs)

Greenhouse gases (GHGs) and climate change are a cumulative global issue. California Air Resources Board (CARB) and Environmental Protection Agency (EPA) regulate GHG emissions within the State of California and the United States, respectively. While the CARB has the primary regulatory responsibility within California for GHG emissions, local agencies can also adopt policies for GHG emission reduction.

Many chemical compounds in the Earth's atmosphere act as GHGs, they absorb and emit radiation within the thermal infrared range. When radiation from the sun reaches the Earth's surface, some of it is reflected back into the atmosphere as infrared radiation (heat). GHGs absorb this infrared radiation and trap the heat in the atmosphere. Over time, the amount of energy sent from the sun to the Earth's surface should be about the same as the amount of energy radiated back into space, leaving the temperature of the Earth's surface roughly constant. Many gases exhibit these "greenhouse" properties. Some of them occur in nature (water vapor, carbon dioxide, methane, and nitrous Oxide), while others are exclusively human-made (like gases used for aerosols).

The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere are listed below:

- Carbon Dioxide (CO_2): CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): N_20 is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: HFCs, PFCs, and SF_6 are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochloro fluorocarbons, and halons). These gases arc typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high Global Warming Potential (GWP) gases.

3.7.2 Regulatory Setting

Federal Regulations

U.S. Environmental Protection Agency (EPA)

On April 2, 2007, in Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the EPA must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA was required to follow the language of Section 202(a) of the FCAA. This is because the Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the EPA Administrator signed proposed "endangerment and cause or contributes findings" for GHGs under Section 202(a) of the FCAA. The EPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia and Seattle, Washington. The EPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings.

The EPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The EPA also found that the combined emissions of these GHGs from new motor vehicle engines contribute to the greenhouse as air pollution that endangers public health and welfare under CAA section 202(a). These Findings were based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009. These Findings went into effect on January 14, 2010.

State Regulations

There are a variety of statewide rules and regulations which have been implemented or are in development in California which mandates the quantification or reduction of GHGs. Under CEQA, an analysis and mitigation of emissions of GHGs and climate change in relation to a proposed Project is required where it has been determined that a project will result in a significant addition of GHGs. Certain has proposed their own levels of significance. The PCAPCD, which has regulatory authority over the air emissions from this Project, has not established a significance threshold.

Executive Order S-3-05 Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006 and establishes the following statewide emission reduction targets through the year 2050:

- by 2010, reduce GHG emissions to 2000 levels
- by 2020, reduce GHG emissions to 1990 levels
- by 2050, reduce GHG emissions to 80 percent below 1990 levels

This Executive Order does not include any specific requirements that would pertain directly to the proposed Project. However, actions taken by the State to implement these goals may affect the proposed Project, depending on the specific implementation measures that are developed.

Assembly Bill 32 AB 32, also known as the California Global Warming Solutions Act of 2006, was established in 2006 to mandate the quantification and reduction of GHGs to 1990 levels by 2020. The law establishes periodic targets for reductions, and requires certain facilities to report emissions of GHGs annually. The bill also reserves the ability to reduce emissions targets lower than those proposed in certain sectors which contribute the most to emissions of GHGs, including transportation. Additionally, the bill requires:

- GHG emission standards to be implemented by 2012
- CARB to develop an implementation program and adopt GHG control measures "to achieve the maximum technologically feasible and cost-effective GHG emission reductions from sources or categories of sources." CARB issued a draft Climate Change Scoping Plan in December 2008

The Assembly Bill 32 Scoping Plan contains the main strategies California will use to reduce the GHG that cause climate change. The scoping plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program.

Local

The Placer County General Plan and the City of Auburn General Plan do not have specific goals or policies addressing GHGs.

Placer County Air Pollution Control District

The PCAPCD currently does not have an established threshold for construction or operational related GHG emissions. However, a determination of significance should be disclosed and based on the project's potential to interfere with GHG reduction goals established by regulatory requirements (or environment).

3.7.2 Impact Analysis

Methods

Greenhouse gas emissions associated with the proposed Project construction were estimated using CO_{2e} (Carbon Dioxide Equivalent) emissions as a proxy for all greenhouse gas emissions. In order to obtain the CO_{2e}, an individual GHG is multiplied by its global warming potential (GWP). The GWP designates on a pound for pound basis the potency of the GHG compared to CO_2.

The primary sources of proposed Project-related GHG emissions are anticipated to be combustion of fossil fuels from the operation of internal combustion engines used during Project construction (portable equipment, off road equipment, and vehicles). The Project, once constructed, shall have little to no CO2e

emissions from operations. The proposed Project activities will take approximately 150 days and will be completed in summer/fall within the next five years. In order to analyze GHG emissions for the Project, 2014 was evaluated. While this may not be the exact year of construction, the emissions analysis should not significantly change if construction occurs another year.

For this analysis, predicted Project GHG emissions were compared to AB 32 scoping plan action measures, the South Coast Air Quality Management District (SCAQMD) Interim Guidance GHG threshold for land use projects of 3,000 Metric Tons CO2e/year (for construction GHG emissions). In 2010, the SCAQMD established GHG emission thresholds specific to land use projects. Although these thresholds are not binding on the PCAPCD, they are useful for comparative purposes. SCAQMD emissions significance thresholds consider any land use project emitting over 3,000 metric tons/year of CO2e would be considered significant.

Predicted Project emissions are 121.65 metric tons of CO2e per year. As shown below, Project construction GHG emissions are below the SCAQMD significance threshold of 3,000 metric tons per year. Tables 3.7-1 below summarize the Project CO2e Emissions Estimates.

Table 3.7-1
NID Rock Creek Siphon Project
CalEEMod Predicted CO_{2e} Emissions Estimates

Total Construction Source CO_{2e} Emission Estimates (metric tons/yr unmitigated)	136.31
SCAQMD Interim Guidance GHG Threshold for Land Use Projects CO2e (metric tons/yr unmitigated)	**3000**

Table 3.7-2
CEQA Checklist for Assessing Project-Specific Potential Greenhouse Gas Emissions Impacts

VII.	**GREENHOUSE GAS EMISSIONS --** Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Finding: Less than Significant

Predicted proposed Project construction emissions are well below SCAQMD Interim Guidance GHG threshold for land use projects of 3,000 Metric Tons CO2e/year. The proposed Project will not generate GHG emissions levels that either directly or indirectly have significant impacts on the environment because of low Project CO2e emission estimates. Therefore potential greenhouse gas emissions impacts are considered less than significant.

b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Finding: Less than Significant

The proposed Project will not generate additional greenhouse gas emissions that would conflict with an applicable plan, policy or regulations adopted for the purpose of reducing the emissions of greenhouse gases. Total CO2e levels predicted to be emitted from construction totaled 136.31 metric tons/year. This is well below SCAQMD Interim Guidance GHG threshold for land use projects of 3,000 Metric Tons CO2e/year. Therefore, with the total Project CO2e emission estimates well below the SCAQMD Interim Guidance GHG threshold, potential greenhouse gas emissions impacts are considered to be less than significant.

3.8 HAZARDS AND HAZARDOUS MATERIALS

3.8.1 Regulatory Setting

A hazardous material is defined by the California EPA, Department of Toxic Substances Control (DTSC), as a material that poses a significant present or potential hazard to human health and safety or the environment if released because of its quantity, concentration, or physical or chemical characteristics (26 California Code of Regulations 25501). For the purposes of this analysis, hazardous materials include raw materials and material remaining on-site as a result of past activities. Applicable regulations and policies considered relevant to the proposed Project are summarized below.

Federal Regulations

The principal federal regulatory agency responsible for the safe use and handling of hazardous materials is the U.S. EPA. Two key federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in Titles 29, 40, and 49 of the Code of Federal Regulations.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act enables U.S. EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thus regulating the generation, transport, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, the Superfund was amended through the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws). Title III states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the cleanup, even if the material was dumped illegally when the property was under different ownership.

State Regulations

California regulations are equal to, or more stringent than, federal regulations. U.S. EPA has granted the State of California primary oversight responsibility to administer and enforce hazardous waste management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a report that describes their facilities, inventories, emergency response plans and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations, which describes the following required aspects for the proper management of hazardous waste:

- Identification and classification;
- Generation and transport;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plant to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including the U.S. EPA, the California Highway Patrol, Regional Water Quality Control Boards, air quality management districts, and county disaster response offices.

Other Laws, Regulations, and Programs

Various other state regulations have been enacted that affect hazardous waste management, including:

- Safe Drinking Water and Toxic enforcement Act of 1986 (Proposition 65), which requires labeling of substance known or suspected by the state to cause cancer; and
- California Government Code Section 65962.5, which requires the Office of Permit Assistance to compile a list of possible contaminate sites in the state.

State and federal regulations also require that hazardous materials sites be identified and listed in public records. These lists are:

- Comprehensive Environmental Response, Compensation, and Liability Information System
- National Priorities List for Uncontrolled Hazardous Waste Sites
- Resource Conservation and Recovery Act
- California Superfund List of Active Annual Workplan Sites
- Lists of state-registered underground and leaking underground storage tanks.

3.8.2 Impact Analysis

All hazardous materials are currently regulated and controlled by CalEPA in a manner that minimizes risks of spills or accidents. Any hazardous materials used in the construction, start up, or operations of the Project, such as diesel for equipment, will be handled according to current practices. The potential for construction and operation related impacts from hazardous materials are qualified in Table 3-8 and discussed below.

Table 3-8
CEQA Checklist for Assessing Project Specific Potential Impacts Relative to Hazards and Hazardous Materials

	VIII. HAZARDS AND HAZARDOUS MATERIALS Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐

VIII. HAZARDS AND HAZARDOUS MATERIALS Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☒	☐
f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Finding: Less than Significant

Temporary construction activities associated with the proposed Project will involve the transport and use of limited quantities of miscellaneous hazardous substances including gasoline, diesel fuel, hydraulic fluid, solvents, and oils. These chemicals would be brought to the proposed Project site, as well as transported along the roadways. Federal and state laws regulate the handling, storage and transport of these and other hazardous materials, as well as the mechanisms to respond and clean up any spills along local and regional roadways. Chemicals present on site or used for the proposed Project will be handled in accordance with applicable federal, state, and local regulations (including those laws mentioned in the regulatory setting above) for hazardous substances. Therefore, the potential for impacts related to hazardous materials transport, use, or disposal is considered less than significant.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Finding: Less than Significant with Mitigation

Temporary construction activities associated with the proposed Project will involve the transport and use of hazardous materials including gasoline, diesel fuel, hydraulic fluid, solvents, and oils. Chemicals present on site during Project construction will be handled by the contractor in accordance with applicable federal, state, and local regulations for hazardous substances, and any spills will be immediately cleaned up and disposed of in the appropriate manner. The proposed Project site is not listed by any federal or state database that identifies known hazardous materials sites (EPA 2013, CDTSC 2010). To ensure hazardous materials are not released into the environment during construction, Mitigation Measure HYD-1 (in Section 3.9 below) will be implemented and involves the development and implementation of a Spill Prevention Control and Countermeasure Plan ensuring impacts are reduced to a less than significant level.

c) Would the Project Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Finding: No Impact

The proposed Project is not expected to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The closest school to the proposed Project site is Rock Creek Elementary School, located approximately 0.40 mile away from the Project site. Furthermore, the proposed Project does not involve operational activities that would result in hazardous emissions. Operation would be in the event of any emergency and will merely entail conveyance of raw water. Therefore, no impacts would occur.

d) Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Finding: No Impact

A review of the EPA hazardous materials sites database did not identify the Project site as a known hazardous materials sites (EPA 2013). Therefore, no impacts would occur.

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?

Finding: Less than Significant

Portions of the proposed Project area are approximately 450 feet from the Auburn Municipal Airport. According to the Placer County Airport Land Use Compatibility Plan (2000) the Project area is within 'Compatibility Zone C1 — Zone C1 covers the extended approach/departure corridor for each airport and also includes land beneath the primary traffic patterns. This zone is affected by moderate degrees of both noise and risk.' (Placer County Airport Land Use Compatibility Plan, 2000) The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir and a pipeline from the NID North Auburn WTP to an existing water storage tank. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. This proposed Project will not result in a safety hazard for people residing or working in the Project area. Therefore, impacts are considered less than significant.

f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?

Finding: No Impact

The closest private airstrip to the proposed Project is the Alta Sierra Airport in Grass Valley, CA. This private airstrip is located over 10 miles from the Project area. Therefore, the proposed Project is not located within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the Project area. Therefore, no impacts will occur.

g) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Finding: Less than Significant

Access for all fire, police, and emergency response vehicles would be maintained in the Project area throughout the construction period. The proposed Project water system connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Construction within or adjacent to roadways will occur along Shale Ridge Road for approximately 340 feet and the siphon will cross Locksley Lane. The Project should not interfere with emergency access during construction as Project construction will only last approximately 150 days and minimal construction will take place on or adjacent to roadways. Therefore, impacts to an emergency response plan or emergency evacuation plan are considered less than significant.

h) Would the Project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Finding: Less than Significant

While the proposed Project site is in an industrial park, the risk of fire is always a possibility. Equipment used during trenching, grading and other construction activities may generate sparks that could ignite dry vegetation on or adjacent to the construction area and cause wildland fires in the area. The proposed Project site is in the jurisdiction of the Placer County Fire Protection District (PCFPD). The closest fire station to the Project site is the Atwood Fire Station, located at located at 11645 Atwood Road, Auburn, CA 94603, approximately one mile from the proposed Project site. While the risk is minimal, to reduce the risk of a fire Environmental Commitment HAZ-1: Fire Suppression and Control, has been incorporated into Project design and this impact is considered less than significant.

3.9 WATER QUALITY AND HYDROLOGY

3.9.1 Environmental Setting

Relative to water quality and hydrology, the proposed Project area is located within the Upper Coon-Upper Auburn Watershed. The proposed Project involves work in the Combie Ophir II Canal and Rock Creek Reservoir. Additionally, a portion of construction will be adjacent to an unnamed pond and Rock Creek. The California Department of Water Resources does not have any data on the ground water quality in the Project area (DWR 2013).

3.9.2 Regulatory Setting

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Section 401 of the CWA regulates surface water quality and a Water Quality Certification is required for federal actions (including construction activities) that may entail impacts to surface water. In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs.

National Flood Insurance Policy Act

The Federal Emergency Management Agency (FEMA) is responsible for managing the National Flood Insurance Program (NFIP), which makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways, a requirement that new structures in the 100-year flood zone be elevated to or above the 100-year flood level (known as base flood elevation). To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRMs) that can be used for planning purposes, including floodplain management, flood insurance, and enforcement of mandatory flood insurance purchase requirements.

NPDES General Construction Permit

The National Pollutant Discharge Elimination System (NPDES) was established per 1972 amendments to the federal Water Pollution Control Act, in order to control discharges of pollutants from point sources (Section 402). As described above, under “Federal,” 1987 amendments to the Clean Water Act, created a new section of the Act devoted to storm water permitting (Section 402[p]), with individual States designated for administration and enforcement of the provisions of the Clean Water Act and the NPDES permit program. The State Water Resource Control Board (SWRCB) issues both General Construction Permits and individual permits under this program.

Projects disturbing more than one acre of land during construction are required to file a Notice of Intent (NOI) with the SWRCB to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. The project proponent must implement control measures that are consistent with the State General Permit. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the General Permit. A SWPPP describes Best Management Practices (BMPs) the discharger will use to protect storm water runoff and reduce potential impacts to surface water quality through the construction period. The SWPPP must contain the following: a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment (SWRCB, 2006).

3.9.3 Impact Analysis

The potential for construction and operation related impacts to hydrology and water quality are qualified in Table 3.9-1 and discussed in detail below.

Table 3.9-1
CEQA Checklist for Assessing Project Specific Potential Impacts to Hydrology and Water Quality

IX.	HYDROLOGY AND WATER QUALITY Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐

IX.	HYDROLOGY AND WATER QUALITY Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
e)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

a, f) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality?

Finding: Less than Significant with Mitigation

The Project has been designed to reduce water quality impacts as much as feasible during operation of the Project. The outlet structure was designed to reduce erosion such as a concrete apron and a rack. Large rip-wrap rock to be placed between the outlet and the OHWM of the reservoir, in order to minimize erosion of bare ground. Operation of the project is not expected to substantially degrade water quality.

Construction of the outlet valve will likely result in some increased turbidity along the bank of Rock Creek Reservoir. However, the amount of disturbance is minimal and temporary and relative to the total size of Rock Creek Reservoir, is not expected to have a substantial adverse impact to turbidity. The total rip rap placement in the reservoir below the OHWM is expected to be approximately 10 feet by 5 feet. Rock Creek Reservoir has a maximum surface area of 58 acres, is 0.6 mile long, and has a maximum storage capacity of 485 acre-feet (usable storage is 482 acre-feet). Rock Creek Reservoir water levels will not be manipulated during outlet construction; however, given the small area and temporary nature of the disturbance, outlet construction impacts to water quality are expected to be less than significant. Construction of the inlet will occur during a canal outage or low flow period with water diverted around the construction area so no significant increase in sedimentation is likely.

The pipe installation in upland areas of the proposed Project would result in temporary soil disturbance that would impact an area of 4,000 linear feet. Construction of the proposed Project would result in soil disturbance that would temporarily increase the hazard of erosion and sedimentation to the surrounding waterways and drainages (i.e., Combie Ophir II Canal, Rock Creek, an unnamed pond, and Rock Creek Reservoir). Additionally, maintenance of equipment would require the use of hazardous materials such as gasoline and engine oil, which, if spilled, could contaminate runoff and surface waters in the Project. Discharge of sediment or hazardous material into surface waters during construction could result in violation of certain water quality standards. This impact is potentially significant and requires mitigation. Mitigation Measures GEO-1 (see section 3.6 above) and HYD-1 will be implemented to minimize the potential for contaminants to enter nearby waterways as a result of construction activity, reducing impacts to a less than significant level.

b) Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir and a pipeline between the NID North Auburn WTP and an existing water storage tank. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Implementation of the proposed Project would not deplete groundwater supplies or interfere with groundwater recharge resulting in groundwater loss because the proposed Project will not require any channelization or piping of canals or the use of any groundwater during construction or operation. Therefore impacts are considered less than significant.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed within the same trench from Locksley Lane to Shale Ridge Road. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The Project has been designed to reduce water quality impacts as much as feasible during operation of the Project. The outlet structure was designed to reduce erosion such as a concrete apron and a rack. Large rip-wrap rock to be placed between the outlet and the OHWM of the reservoir, in order to minimize erosion of bare ground. Rock Creek Reservoir water levels will not be manipulated during outlet construction.

Operation of the project is not expected to substantially affect drainage or degrade water quality. Grading, trenching, and other earthwork result in soil disturbance that could temporarily alter minor drainage patterns and increase the hazard of erosion and sedimentation. However, pre-construction drainage patterns of the proposed Project area will be restored post-construction. The proposed Project has minimal to no potential to substantially alter the existing drainage pattern of the site or area, and impacts are considered less than significant.

d) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The proposed Project will not substantially alter the existing drainage pattern of the area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Therefore, impacts are considered less than significant.

e) Would the Project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Finding: Less than Significant with Mitigation

The proposed Project could provide substantial additional sources of polluted runoff during construction. Implementation of best management practices and Mitigation Measure HYD-1 will be implemented to minimize the potential for polluted runoff due to the Project, reducing impacts to less than significant.

g) Would the Project Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Finding: No Impact

The proposed Project does not include the construction of housing and would not place housing in a 100-year flood hazard area. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The FEMA flood Insurance Rate Map (FEMA 1998) designates the Project area as not occurring within a 100-year flood zone. Therefore, no impacts would occur.

h) Would the Project Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Finding: No Impact

The proposed Project will not place structures which would impede or redirect flood flows within a 100-year flood hazard. The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The FEMA flood Insurance Rate Map (FEMA 1998) designates the Project area as not occurring within a 100-year flood zone. Therefore, no impacts would occur.

i) Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. The FEMA flood Insurance Rate Map (FEMA 1998) designates the Project area as not occurring within a 100-year flood zone. Therefore, the proposed Project would not expose people to loss, injury, or death involving flooding and impacts are considered less than significant.

j) Would the Project expose people or structures to a significant risk of loss, injury or death as a result of inundation of seiche, tsunami, or mudflow?

Finding: No Impact

The proposed Project's inland and mountain location negates the risk of a tsunami. The probability of a seiche occurring in Placer County is considered negligible. Furthermore, given the geologic context of the proposed Project, if such an event were to occur, the likelihood of it exposing Project structures or people to a significant risk of injury or death is considered low. Finally, the geologic materials underlying the proposed Project area are generally not associated with mudslides and the Project is located on relatively flat slopes; therefore, there is little or no risk of mudflow (CGS, 2007). The outlet structure will be constructed at Rock Creek Reservoir approximately 35 feet East of all structural aspects of the dam. Therefore, there is no risk of a tsunami, seiche, or the potential risk of injury due to mud flow, and there is no impact.

3.9.4 Mitigation

Mitigation Measure HYD-1: Develop or use current Spill Prevention Control and Countermeasure Plan.

- NID or its contractor will develop and implement a Spill Prevention Control and Countermeasure Plan (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors.
- NID will review and approve the SPCCP before onset of construction activities. NID will routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. NID will notify its contractors immediately if there is a noncompliance issue and will require compliance.
- The federal reportable spill quantity for petroleum products, as defined in the EPA's CFR (40 CFR 110) is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.
- If a spill is reportable, the NID or the contractor would take action to contact the appropriate safety and clean-up crews to ensure the SPCCP is followed. A written description of reportable releases must be submitted to the Regional Water Quality Control Board (RWQCB). The submittal must include a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

Mitigation Measure HYD-1 Implementation

Responsible Party: NID or its contractor will develop and implement a Spill Prevention Control and Countermeasure Plan (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors.

Timing: The SPCCP will be implemented prior to and during all phases of construction.

Monitoring and Reporting: Evaluation of SPCCP will be conducted by NID. Reports of on the SPCCP implementation will be documented and kept on file at the NID offices.

Standard of Success: Minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities for all contractors.

3.10 LAND USE PLANNING

3.10.1 Environmental Setting

Land uses at the proposed Project site are designated by the Placer County General Plan (2013) and City of Auburn General Plan (1992). Land use in the proposed Project area is designated by the Placer County General Plan as Industrial Park, Canal, within intermittent stream 50 feet setback (Rock Creek), and Lake (Rock Creek Reservoir) and as Industrial/Public according to the City of Auburn General Plan

3.10.2 Regulatory Settings

The following land use goals and policies are applicable to the proposed Project.

Placer County General Plan

Goal 1.A: To promote the wise, efficient, and environmentally-sensitive use of Placer County lands to meet the present and future needs of Placer County residents and businesses.

Goal 1.F: To designate adequately-sized, well-located areas for the development of public facilities to serve both community and regional needs.

City of Auburn General Plan

There are no general plan land use Goals and policies that pertain to the proposed Project.

3.10.3 Impact Analysis

The potential land use and planning related impacts for the Project are summarized in Table 3-10 and discussed below.

Table 3-10
CEQA Checklist for Assessing Project-Specific Potential Impacts to Land Use Planning

X.	LAND USE AND PLANNING -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c)	Conflict with any applicable habitat conservation plan or natural communities' conservation plan?	☐	☐	☐	☒

a) Would the Project physically divide an established community?

Finding: No Impact

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. There are little to no residential communities within the Project area. The closest communities to the Project area are the Westview Healthcare Center, the Project is taking place in the Center's parking lot and a KOA camping area approximately 300 feet away from the Project area. However, since this is an underground pipeline Project and there are no existing communities in the Project footprint there is no risk of dividing an established community. Therefore no impacts would occur.

b) Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Finding: Less than Significant

The Project would not conflict with any land use plans, policies, or regulations that are applicable to the Project. No change in land use is proposed or required and none would result from the implementation of the proposed Project. The proposed Project will not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project. As discussed in section 1.4, the proposed Project will likely trigger Federal and State permitting requirements. All necessary permits will be obtained prior to Project construction. Therefore, impacts are considered less than significant.

c) Would the Project conflict with any applicable habitat conservation plan or natural communities' conservation plan?

Finding: No Impact

There are no approved habitat conservation plans or natural communities' conservation plans that apply to the proposed Project site. The Placer County Conservation Plan (PCCP) is currently only in draft form/not yet adopted. The proposed Project site is in an area of non-participation with the PCCP under the current Draft PCCP. Therefore, it would not conflict with any such plan and there would be no impact.

3.11 MINERAL RESOURCES

3.11.1 Environmental Setting

Mineral resources are generally finite and occur in sporadic deposits, which often create a relative scarcity and a need to protect access to supplies. Many mineral resources are important to global, national, state, and local economies. In 2010, California had approximately 700 active mines responsible for approximately 4.2 percent of the U.S. non-fuel mineral production (CGS, 2012). The largest component of this production was derived from sand and gravel mining. Placer County contains known reserves, and active mining operations, for aggregate (sand and gravel, and decomposed granite), clay, stone (granite, limestone), and gold and associated heavy minerals. No area in the vicinity of the proposed Project area is zoned as mineral reserve by Placer County (Placer County, 1994).

3.11.2 Impact Analysis

The potential impacts to mineral recourses are addressed in Table 3-11 and analyzed below.

Table 3-11
CEQA Checklist for Assessing Project-Specific Potential Impacts to Mineral Resources

XI. MINERAL RESOURCES -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a) Would the Project result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?

Finding: No Impact

The proposed Project site does not fall within an area classified as MRZ-2 according to the Placer County General Plan Background Report (1994) Figure 9.9 Existing Mineral Extraction Sites and Figure 9.10 Potential Mineral Resource Sites. Therefore the proposed Project will not result in the loss of availability of a known mineral resource classified MRZ-2 and no impacts will occur.

b) Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Finding: No Impact

The Project will not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan according to the Placer County General Plan Background Report (1994). Therefore, no impacts will occur.

3.12 NOISE

3.12.1 Environmental Setting

The existing noise environment in the vicinity of the proposed Project area retains an urban and industrial quality, and is characterized by noise from vehicles on Highway 49 and Locksley Lane. The nearest sensitive receptor is an RV Park which is approximately one quarter mile away from the Project site.

3.12.2 Regulatory Setting

Placer County General Plan

The Placer County General Plan (1994) describes noise allowable uses and standards. The goals and policies identified in the plan that are directly or indirectly pertinent to the proposed Project include:

Noise Goal 9.A: To protect County residents from the harmful and annoying effects of exposure to excessive noise.

Goal 9.B: To ensure that areas designated for industrial uses pursuant to Goal 1.E. and Policy 1.E.1. are protected from encroachment by noise-sensitive land uses.

Policy 9.B.1. The County shall require that new noise-sensitive land uses established next to existing industrial areas be responsible for self-mitigating noise impacts from industrial activities.

Placer County Noise Ordinance

The Placer County Noise Ordinance describes activities which are exempt from the noise ordinance as, 'Construction between the hours of six a.m. and eight p.m. Monday through Friday, and between the hours of eight a.m. and eight p.m. Saturday and Sunday'. Additionally, all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order (Ordinance 5280-B Article 9.36).

City of Auburn General Plan

The City of Auburn General Plan was adopted on November 29, 1993 and contains several goals and policies that pertain to proposed Project, including the following:

Goal 1: Protect City residents from the harmful and annoying effects of exposure to excessive noise.

City of Auburn Municipal Code

Chapter 93, Section 9: Unlawful Acts

(J) Construction or repair of buildings.

1) The performance of any construction, alteration or repair activities which require the issuance of any building, grading or other permit may occur only during the following hours:

   a) Monday through Friday: 7:00 a.m. to 6:00 p.m. For the period of June 1 through September 30 of each year the permissible hours for masonry and roofing work hereunder shall be from 6:00 a.m. to 6:00 p.m.;

   b) Saturdays 9:00 a.m. to 5:00 p.m.;

   c) Sundays and observed holidays: 10:00 a.m. to 6:00 p.m.

2) Any noise from the above activities, including from any equipment used therewith, shall not produce noise levels in excess of the following:

   (a) Saturdays: 80 dba when measured at a distance of 25 feet;

   (b) Sundays and observed holidays: 70 dba when measured at a distance of 25 feet.

3) The Building Official may grant a permit for building activities during other time periods for emergency work or extreme hardship. Emergency Work means work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from an imminent exposure to danger. Any permit so granted shall be of specified limited duration and may be subject to any conditions necessary to limit or minimize the effect of any noise permitted thereby.

3.12.3 Impact Analysis

Potential noise impacts from construction activities area addressed in Table 3-12 and discussed below.

Table 3-12
CEQA Checklist for Assessing Project-Specific Potential Noise Impacts

XII. NOISE -- Would the Project result in:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☐	☒

XII. NOISE -- Would the Project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☒	☐
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☒	☐
f) For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

a) Would the Project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Finding: Less than Significant

The construction of the proposed Project would entail the use of construction related equipment, backhoe, dump truck, excavators, etc. for approximately 150 days in summer/fall within the next five years. Noise impacts associated with the proposed Project construction would result in temporary or periodic increases in ambient noise levels, especially during grading and trenching activities. Construction noise would result from operation of machinery and equipment used in the construction process. The Placer County Noise Ordinance and City of Auburn Municipal Code allows for construction activities between the hours of Monday through Friday 7am-6pm, Saturdays 9:00 a.m. to 5:00 p.m. and Sundays and observed holidays: 10:00 a.m. to 6:00 p.m. All construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. Any noise from the above activities, including from any equipment used therewith, shall not produce noise levels in excess of 80 dba when measured at a distance of 25 feet on Saturdays and 70 dba when measured at a distance of 25 feet Sundays and observed holidays. The closest residential areas to the Project area are the Westview Healthcare Center, the Project is taking place in the Center's parking lot and a KOA camping area approximately 300 feet away from the Project area. Construction activities will comply with the Placer County Noise Ordinance and City of Auburn Municipal Code as outlined in Environmental Commitment NOISE-1. As such, the potential noise impacts are considered to be less than significant.

b) Would the Project result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Finding: Less than Significant

Construction equipment used during the proposed Project such as excavators, backhoes, dump trucks, and other equipment may generate localized ground borne vibration or noise levels. However, vibration from construction activity is typically below the threshold of perception when the activity is more than about 50 feet from the receiver. Furthermore, potential ground borne vibrations or noise would be temporary and would occur during daylight hours. The Placer County Noise Ordinance and City of Auburn Municipal Code allows for construction activities between the hours of Monday through Friday 7am-6pm, Saturdays 9:00 a.m. to 5:00 p.m. and Sundays and observed holidays: 10:00 a.m. to 6:00 p.m. All construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. Any noise from the above activities, including from any equipment used therewith, shall not produce noise levels in excess of 80 dba when measured at a distance of 25 feet on Saturdays and 70 dba when measured at a distance of 25 feet Sundays and observed holidays. Construction activities will comply with the Placer County Noise Ordinance and City of Auburn Municipal Code as outlined in Environmental Commitment NOISE-1. Therefore, ground borne noise and vibration impacts are considered less than significant.

c) Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?

Finding: No Impact

The proposed Rock Creek Siphon Project (Project) would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed adjacent to the 36 inch pipe from Locksley Lane to Shale Ridge Road. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Specifically, the proposed siphon connection will provide raw water for deliveries for PG&E and Placer County Water Agencies. The operation of the proposed Project will be similar to existing operations of the existing NID infrastructure and will typically be in standby mode and not in use. The proposed Project is not expected to cause a permanent increase in ambient noise levels. Therefore, no impacts would occur.

d) Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?

Finding: Less than Significant

Construction activities of the proposed Project would result in temporary increases in noise above existing levels. However, construction activities are temporary (150 days) and will occur between the hours outlined as part of the Placer County Noise Ordinance and City of Auburn Municipal Code as outlined in Environmental Commitment NOISE-1. Therefore, this impact is considered less than significant.

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

Finding: Less than Significant

The proposed Project area is located approximately 450 feet from the Auburn Municipal Airport and is within an airport land use plan. However, the proposed Project is not expected to expose people in the area to excessive noise levels as a result of the proposed Project. Project construction will comply with the Placer County Noise Ordinance and City of Auburn Municipal Code as outlined in Environmental Commitment NOISE-1 which has been incorporated into the Project design. Therefore, impacts are considered less than significant.

f) For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?

Finding: No Impact

The closest private airstrip to the proposed Project is the Alta Sierra Airport in Grass Valley, CA. This private airstrip is located over 10 miles from the Project area. Therefore, the proposed Project is not located within the vicinity of a private airstrip and would not expose people residing or working within the vicinity of a private airstrip to excessive noise levels. Therefore, no impacts will occur.

3.13 POPULATION AND HOUSING

3.13.1 Environmental Setting

The proposed Project site is located in Placer County in North Auburn at approximately 1,400-1,460 feet in elevation. It is located in a rural residential and industrial area of North Auburn. Impact Analysis

The potential impacts to population and housing are qualified in Table 3-13 and discussed below.

Table 3-13
CEQA Checklist for Assessing Project-Specific Potential Population and Housing Impacts

XIII.	POPULATION AND HOUSING -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c)	Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Would the Project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Finding: Less than Significant

The proposed Rock Creek Siphon Project (Project) would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed parallel to the 36 inch pipe from Locksley Lane to Shale Ridge Road. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Specifically, the proposed siphon connection will provide water for deliveries for PG&E and Placer County Water Agencies. Therefore, this impact is considered less than significant.

b) Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Finding: No Impact

The Project activities are not directly adjacent to any houses. The closest living facilities is the Westview Healthcare Center, an assisted living facility. Construction adjacent to this area will be temporary and will not displace any individuals living in the Westview Healthcare Center. Therefore, the proposed Project will not displace any existing housing or necessitate the construction of replacement housing elsewhere and no impacts will occur.

c) Would the Project displace substantial numbers of people necessitating the construction of replacement housing elsewhere?

Finding: No Impact

The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir and a pipeline from the NID North Auburn WTP to an existing water storage tank. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The Project will not displace any people or necessitate the construction of replacement housing elsewhere. No impact would occur.

3.14 PUBLIC SERVICES

3.14.1 Environmental Setting

Public services are typically provided by fire districts, park districts, public utility districts, school districts, sewer districts, water districts, and other single purpose districts in addition to those provided by Placer County and any state and federal agencies.

Fire protection in the Project area is provided by the Placer County Fire Protection District (PCFPD) and police protection is under the jurisdiction of the Placer County Sheriff's Office. The Project area is within the Auburn Union School District.

Fire Protection

The closest fire station to the Project site is the Atwood Fire Station, located at located at 11645 Atwood Road, Auburn, California 94603, approximately one mile from the proposed Project site. The PCFPD is responsible for any fire-related emergencies within the Project area.

Police Protection

The Project area falls under the jurisdiction of the Placer County Sheriff's Office, who is responsible for police protection and public safety in the vicinity of the Project area. The nearest location of law enforcement services provided by the Placer County Sheriff's Office is located at 2929 Richardson Drive, Auburn, California 95603.

Schools

The Project area is within the Auburn Union School District. The nearest schools are Auburn Elementary School which is 1.2 miles from the Project site and Rock Creek Elementary School which is 0.40 mile from the Project site.

3.14.2 Regulatory Setting

Placer County General Plan

Goal 4.A: To ensure the timely development of public facilities and the maintenance of specified service levels for these facilities.

Goal 4.C: To ensure the availability of an adequate and safe water supply and the maintenance of high quality water in water bodies and aquifers used as sources of domestic supply.

3.14.3 Impact Analysis

The potential impacts to public services are qualified in Table 3-14 and discussed below.

Table 3-14
CEQA Checklist for Assessing Project-Specific Potential Impacts to Public Services

	XIV. PUBLIC SERVICES -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☒	☐
	Police protection?	☐	☐	☒	☐
	Schools?	☐	☐	☒	☐
	Parks?	☐	☐	☒	☐
	Other public facilities?	☐	☐	☒	☐

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Fire protection? Police protection? Schools? Parks?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed parallel to the 36 inch pipe from Locksley Lane to Shale Ridge Road. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Specifically, the proposed siphon connection will provide water for deliveries for PG&E and Placer County Water Agencies in case of an outage upstream in these two agencies raw water source, the Bear River Canal. The proposed pipeline connection between the Combie Ophir II Canal and Rock Creek Reservoir will require an approximate 30 feet easement. Some portions of the Project will require a Right-of-Way to be acquired from private property owners to complete the proposed Project. NID will work with property owners to acquire a permanent easement for the facilities. The proposed Project will not result in the need for additional government facilities. The proposed Project activities will have less than significant impacts on fire protection, police protection, schools, or parks in the proximity of the Project area. There will also be no interruption in public water supply, specifically raw water supply, during the Project and this impact is considered less than significant.

3.15 RECREATION

3.15.1 Impact Analysis

Impacts to recreation are qualified in Table 3-15 and discussed below.

Table 3-15
CEQA Checklist for Assessing Project-Specific Potential Impacts to Recreation

	XV. RECREATION -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b)	Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Finding: No Impact

Rock Creek Reservoir is a Recreation Area. Vehicle access is restricted from the reservoir shoreline. Only day-use is allowed at Rock Creek reservoir, and opportunities include shoreline angling and walking *(FERC 2013)*. Another recreation area adjacent to the Project area is the Auburn Gold Country RV Park which is adjacent to the Project area. Recreation at Rock Creek Reservoir, at the RV Park, or any other recreational facilities will not increase or require the construction of other recreational facilities as a result of the proposed Project. Since the proposed Project is a water pipeline connection Project no impacts would occur increasing the use or deterioration of recreational facilities.

b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Finding: No Impact

The Project does not involve recreational facilities or require the construction or expansion of recreational facilities. Therefore, no adverse physical effect on the environment would occur involving parks or recreational facilities. No impacts would occur.

3.16 TRANSPORTATION AND TRAFFIC

3.16.1 Environmental Setting

The proposed Project alignment begins at the Combie Ophir II Canal at the Westview Healthcare Center and heads South to Shale Ridge Road. The alignment then follows Shale Ridge Road for approximately 340 feet, then crosses approximately 1,020 feet of undeveloped land where it then crosses Locksley Lane into the NID North Auburn WTP property. From the NID North Auburn WTP area the proposed alignment heads Southeast/East across undeveloped land to the Rock Creek Reservoir, just North of the dam.

The main roads on which Project construction equipment and truck trips would occur are Highway 49, Shale Ridge Road, Locksley Lane, and if feasible, Rock Creek Road (a private drive). According to the Placer County General Plan, Highway 49 is considered a “principal arterial” road, defined as roadways carrying some regional traffic and connecting the major population centers within the County. Shale Ridge Road and Locksley Lane are considered “minor arterial” roads, defined as roadways providing primary access from freeways and principal arterials to major origins and destinations. Construction activities would normally occur seven a.m. and six p.m. Monday through Friday, and between the hours of nine a.m. and five p.m. Saturdays and 10 a.m. to six p.m. Sundays.

3.16.2 Regulatory Setting

Placer County General Plan

Goal 3.A: To provide for the long-range planning and development of the County's roadway system to ensure the safe and efficient movement of people and goods.

Policy 3.A7: The County shall develop and manage its roadway system to maintain the following minimum levels of service (LOS). LOS "C" on urban/suburban roadways except within one-half mile of state highways where the standard shall be LOS "D".

City of Auburn General Plan

Circulation Element Goal 1: Provide and maintain a comprehensive, safe, and efficient transportation system.

3.16.3 Impact Analysis

Potential impacts to transportation and traffic are qualified in Table 3-16 and discussed below.

Table 3-16
Potential Impacts to Transportation and Traffic

XVI. TRANSPORTATION / TRAFFIC - Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☒	☐
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

a) Would the Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Finding: Less than Significant

Construction of the proposed Project would result in a temporary increase in truck trips on the local streets in order to deliver materials and machinery to the site. There will also be a limited number of vehicle trips from the work crew during the construction work hours. According to the Placer County General Plan (Policy 3.A7) and the Placer County Regional Transportation Plan, the Project would maintain a Level of Service (LOS) D. LOS D is defined as high density, but stable flow. The Project involves approximately 466 feet (0.09 mile) of construction in the roadway or immediately adjacent to the roadway (Shale Ridge Road and Locksley Lane). As such Project construction within or immediately adjacent to the roadway and general construction trips to and from the Project area would maintain LOS D or better and therefore, impacts are considered less than significant.

b) Would the Project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Finding: Less than Significant

Construction of the proposed Project would result in a temporary increase in truck trips on the local streets in order to deliver materials and machinery to the site. There will also be a limited number of vehicle trips from the work crew during the construction work hours. According to the Placer County General Plan (Policy 3.A7) and the Placer County Regional Transportation Plan, the Project would maintain a Level of Service (LOS) D. LOS D is defined as high density, but stable flow. The Project involves approximately 466 feet (0.09 mile) of construction in the roadway or immediately adjacent to the roadway (Shale Ridge Road and Locksley Lane). As such Project construction within or immediately adjacent to the roadway and general construction trips to and from the Project area would maintain LOS D or better. Therefore, the Project would not conflict with an applicable congestion management program and impacts are considered less than significant.

c) Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Finding: Less than Significant

The Federal Aviation Administration has specific rules and regulations that govern airports and require an air space permit for equipment within a certain distance of an airport over a certain height. While the proposed Project is located approximately 450 feet from the Auburn Municipal Airport, the proposed Project would not change airport operations or traffic. According to the Placer County Airport Land Use Compatibility Plan (2000), construction of permanent or use of temporary structures within Compatibility Zone C1 cannot exceed a height of 70 feet. Since the proposed Project will require an excavator (with a maximum height of 50 feet) and equipment trucks and no cranes or other tall equipment are required, Project construction will not require a FAA permit and will not be in violations of rules governing the Auburn Municipal Airport airspace. Therefore, flight patterns in the Project vicinity would not be affected and therefore, no impacts would occur.

d) Would the Project substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Finding: Less than Significant with Mitigation

The proposed Project does not include any new design features on roadways, and therefore, would not result in any associated hazards. Proposed Project construction would require the transportation of heavy machinery and light trucks on the roads described in the setting section above. The truck trips would be temporary and the frequency minimal and site specific. Therefore, some interruption in road usage will occur during construction, or traffic may be detoured during construction; however, this will not entail an incompatible use of the roadway (or result in a design feature change on the streets). The implementation of Mitigation Measure TRANS-1 to restore roads to pre-construction conditions reduces impacts to a less than significant level.

e) Would the Project result in inadequate emergency access?

Finding: Less than Significant with Mitigation

The proposed Project water system connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. Construction within or adjacent to roadways will occur along Shale Ridge Road for approximately 340 feet and the siphon will cross Locksley Lane. In order to ensure the Project will not result in inadequate emergency access, Mitigation Measure TRANS-2 will be implemented. Therefore, impacts to emergency access are considered less than significant with mitigation incorporated.

f) Would the Project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Finding: No Impact

The proposed Project would not involve a change in land use or affect transportation policies including any policies, plans or programs supporting alternative transportation. The Project would not add residences or other land uses that would generate a need for alternative transportation and would not impact currently existing alternative transportation plans or programs. The nearest bus stop to the Project site is the Quartz/Hwy49 bus stop which is over 0.2 mile (1,180 feet) away from the Project site (Placer County 2013). The Project is not along an existing or planned bus route and does not contain any bicycle or pedestrian facilities. Since the Project will be underground and there are no existing alternative transportation facilities or plans in place during construction no impact would occur.

3.16.4 Mitigation

Mitigation Measure TRANS-1: Restore Roads to Existing Condition

Private or Public roads that are damaged by construction will be restored to pre-construction conditions where feasible by NID or its contractor. This may include repaving, re-graveling or grading disturbed areas. NID shall document road conditions pre-construction to provide a basis for restoration.

Mitigation Measure TRANS-1 Implementation

Responsible Party: NID shall document road conditions pre-construction to provide a basis for restoration by NID's contractor.

Timing: NID shall document road conditions pre-construction to provide a basis for restoration. Post-construction, NID's contractor will restore roads to existing conditions.

Monitoring and Reporting Program: NID shall monitor implementation of the mitigation measure before and after construction is complete.

Standards for Success: Restoration of roads to pre-construction conditions.

Mitigation Measure TRANS-2: Prepare Plan for Traffic Control, Including Emergency Access.

Prior to the commencement of construction, NID or its contractor will prepare a plan to minimize interference with normal traffic flows. The plan may include, but is not limited to the following measures:

- Protection of Traffic: Adequate provision will be made for the protection of the traveling public. Barricades will be fitted with lights at night. All traffic control, including devices and personnel requirements, will be as required by the current State of California Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Minimum Interference with Traffic: All work will be planned and carried out so as to create the least possible inconvenience to the travelling public. Traffic will be permitted to pass at all times unless otherwise specified. One-way traffic may be maintained in the area of work only during daylight hours. Two-way traffic will be maintained at all times during hours of darkness and during daylight hours, where practical.
- Storage of Material: No material will be stored within 8 feet of the edge of the pavement or traveled way or with the shoulder lines where the shoulders are wider than 8 feet.
- Clean Up Right-of-Way: During construction, the paved roadway surfaces will be kept free of dirt or gravel as much as practical. Any potential hazard, such as mud or gravel will be removed immediately. Upon completion of the work, all materials will be removed and the right-of-way left in as presentable a condition as before the work started.

Mitigation Measure TRANS-2 Implementation

Responsible Party: NID or the Contractor shall prepare a plan to minimize interference with normal traffic flows. Document road conditions pre-construction to provide a basis for restoration.

Timing: On-going during Construction

Monitoring and Reporting: NID shall ensure that the Contractor follows the plan.

Standard of Success: Traffic will be protected; there will be minimal interference with traffic, and the right-of-ways cleaned up during construction and after.

3.17 UTILITIES AND SERVICE SYSTEMS

3.17.1 Environmental Setting

Water

Western Placer County receives its surface water supplies (lakes and reservoirs) from water rights held by the Bureau of Reclamation, PG&E, PCWA, and NID. The remainder of the water supply is from wells or combinations of well and reservoir water. The Bureau of Reclamation and PG&E are the major wholesale suppliers to Placer County.

PCWA provides water to the County from the Yuba and Bear Rivers. The primary storage facility for that supply is Lake Spaulding. A portion of the water from the Yuba and Bear rivers is purchased by PCWA from PG&E. PCWA also receives water from the American River through the Bureau of Reclamation Central Valley Project. NID provides surface water to approximately 2,250 customers via the Bear River and Auburn Ravine watersheds. NID's facilities include ten reservoirs with a total capacity of 250,280 acre feet. PCWA operates a number of groundwater wells in Western Placer County which typically serve as backup to the potable water derived from the Yuba, Bear and American Rivers.

Placer County also has a number of smaller water systems managed through special districts, community associations, utility companies, and private water companies. There are over 100 small public water systems in the County serving a variety of connections such as apartments, motels, churches, mobile home parks, restaurants, schools, and campgrounds.

The City of Auburn is served potable water by the NID and PCWA systems. Both NID and PCWA provide raw water for irrigation customers throughout Western Placer County. A significant amount of that water is conveyed using canals and natural stream courses, including Auburn Ravine, Orr Creek, and Rock Creek.

NID's North Auburn WTP is located within the proposed Project area and, along with PCWA and PG&E, provides treated water for the North Auburn community.

Wastewater

Sewer Maintenance District 1 (SMD1) Wastewater Treatment Plant is located west of Highway 49 on Joeger Road and provides wastewater treatment for the North Auburn community. Construction of a sewer regionalization project is planned which would pipe the wastewater from SMD1 to the City of Lincoln's Wastewater Treatment and Reclamation Facility. The proposed NID Rock Creek Siphon Project will not modify water discharges or require additional or modifications of wastewater treatment facilities.

The SMD1 WWTP currently serves a population of approximately 15,000 residents and includes much of the industrial area of North Auburn. The SMD1 WWTP discharges to Rock Creek under Order No. R5-2010-0092. The permitted average ADWF discharge flow is currently 2.18 Mgal/d. The current ADWF at the SMD1 WWTP is 1.7 Mgal/d. When influent flows are 3.5 Mgal/d or less, the WWTP provides tertiary treatment, and when flows are greater than 3.5 Mgal/d the filtration facilities are bypassed and a mixture of secondary and tertiary treated effluent is discharged to Rock Creek.

The SMD1 WWTP treatment system consists of the following: influent flow meter, comminution, and aerated grit removal; four rectangular primary clarifiers; three Rotating Biological Contactors (RBCs); two trickling filters; four circular secondary clarifiers; six gravity filters with anthracite media; chlorine disinfection and dechlorination; primary and secondary digesters; belt press and sludge drying beds. Sludge is treated in the digesters and removed to the belt press or sludge drying beds for liquid removal. The dewatered sludge is disposed of at a Class III municipal waste landfill.

Solid Waste

Placer County contracts with Recology Auburn Placer (RAP), for solid waste collection in Western Placer County. The solid waste is then transported to the Western Placer Waste Management Authority (WPWMA) Materials Recovery Facility (MRF). All of the jurisdictions within Placer County have achieved a lower disposal rate than their target rate (CalRecycle, 2012). Because Placer County had a diversion rate of over 50 percent in 2006, it will only be reviewed for compliance every four years; the first four-year review will be completed in 2013 after receipt and review of 2011 annual reports (CalRecycle, 2012).

The MRF facility sorts through solid waste collected throughout the Western portion of the County and removes recyclable materials, including: wood/green waste processed for compost, ferrous/metallic items, plastic and glass, newspaper, scrap paper, junk mail, magazines, paperboard, and cardboard. Material that is not recycled is taken to the Western Regional Sanitary Landfill (WRSL) located on 320 acres at the Southwest corner of Athens and Fiddyment Road. The WRSL is a Class III non-hazardous landfill owned by WPWMA. It is permitted for a maximum daily tonnage of 1,200 tons and receives an average of 800 tons per day. WPWMA expanded the capacity of the landfill to 25.7 million cubic yards in January 2004. As of October 2005, the landfill had a remaining capacity for another 25,993,222 cubic yards.

The MRF takes construction/demolition debris, mixed municipal waste and sludge. The MRF has a mixed processing capacity of 2,200 tons/day, but is currently only permitted for 1,750 tons per day (Solid Waste Facility Permit 31-AA-0001). However, the MRF currently receives an average of 1,050 tons per day. According to the Solid Waste Facility Permit the WRSL has an estimated closure date of 2042.

City of Auburn: Within the City of Auburn's incorporated area solid waste collection and disposal is provided by RAP. The solid waste is then transported to the WPWMA MRF.

Electricity, Natural Gas, Telecommunication

PG&E provides natural gas and electric service to residents and businesses within Placer County, with the exception of Roseville which has its own electrical utility company. PG&E is regulated by the California

Public Utilities Commission (CPUC). Pacific Bell provides telephone service to most of Placer County, as well as several independent companies. Long distance phone services are provided by AT&T, Sprint, and MCI. Cellular telephone service is also provided by various national service providers. Other communication service providers offering various services are SBC Pacific Bell, Starstream Communications, and Surewest.

Proposed Project

The Project will disturb greater than one acre of land and thus, as discussed in the water quality and biology sections above, coverage under the General Construction Activity Storm Water permit will be obtained from the State Water Resources Control Board. The proposed Project will not greatly increase existing impervious areas or require modification of existing storm drain systems.

The Auburn Placer Disposal Service Transfer Station would service the Project and is located at 12305 Shale Ridge Road, Auburn, California. The proposed Project will minimally and temporarily increase solid waste production over the current levels, and there are facilities available to accept solid waste materials generated by the construction of the proposed Project.

3.17.2 Regulatory Setting

Placer County General Plan

Policy 1.K.5. The County shall require that new roads, parking, and utilities be designed to minimize visual impacts. Unless limited by geological or engineering constraints, utilities should be installed underground and roadways and parking areas should be designed to fit the natural terrain.

Policy 8.F.2. The County shall, within its authority, ensure that emergency dispatch centers, emergency operations centers, communications systems, vital utilities, and other essential public facilities necessary for the continuity of government be designed in a manner that will allow them to remain operational during and following an earthquake or other disaster.

3.17.3 Impact Analysis

The potential impacts to utilities and service systems are qualified in Table 3-17 and discussed below.

Table 3-17
CEQA Checklist for Assessing Project-Specific Potential Impacts to Utilities and Public Services

XVII.	UTILITIES AND SERVICE SYSTEMS -- Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e)	Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Finding: No Impact

As discussed in the environmental setting, the proposed Project is intended for water delivery reliability and will not generate or modify existing wastewater flows or treatment. NID will continue to provide dilution water to SMD-1 WWTP at the request of Placer County and will do so during construction of the proposed project. Since the proposed Project is not associated with wastewater treatment, will not impact wastewater treatment, and will not result in the increased generation of wastewater no impacts to wastewater treatment requirements would occur.

b) Would the Project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Finding: Less than significant

As discussed in the environmental setting and response 'a' above, the proposed is intended for water delivery reliability and will not generate or modify existing wastewater flows or treatment. Since the proposed facility will be utilized for emergency purposes and does not modify existing water deliveries the proposed Project would not require or result in the construction of new or expansion of existing water or wastewater treatment facilities and impacts are considered less than significant.

c) Would the Project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Finding: Less than Significant

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed parallel to the 36 inch pipe from Locksley Lane to Shale Ridge Road. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. This will not significantly increase impervious areas or generate increased storm water flows, therefore will not require or result in the construction of storm water drainage facilities. Therefore, impacts to storm water facilities are considered less than significant.

d) Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?

Finding: No Impact

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP, an additional pipeline would convey water from the NID North Auburn WTP to an existing water storage tank and would be installed parallel to the 36 inch pipe from Locksley Lane to Shale Ridge Road. The purpose of the proposed Project is intended for reliability and redundancy. NID currently has sufficient water supplies and this will not change with the proposed Project. The proposed Project will have sufficient water supplies available to serve the proposed Project from existing entitlements and resources and no impact will occur.

e) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?

Finding: No Impact

As discussed in the environmental setting and responses 'a' and 'b' above, the proposed pipeline Project is intended for water delivery reliability and will not generate or modify existing wastewater flows or treatment and will only be used in emergencies. Therefore the proposed Project will not increase the demand for wastewater treatment services in the area and no impacts will occur.

f) Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?

Finding: Less than Significant

Project construction activities are not expected to generate substantial amounts of solid waste that will need to be disposed of at a landfill. Organic waste from tree trimming will be transferred to the appropriate solid waste handling facility. NID plans on using excavated dirt from the site after the pipe is installed. In the event that surplus soil and demolition materials must be disposed of, solid waste materials from demolition will be transferred to the appropriate solid waste handling facility. The Auburn Placer Disposal Service Transfer Station would service the Project and is located at 12305 Shale Ridge Road, Auburn, California. The proposed Project will minimally and temporarily increase solid waste production over the current levels, and there are facilities available to accept solid waste materials generated by the construction of the proposed Project. Impacts from solid waste generation will be less than significant.

g) Would the Project comply with federal, state, and local statutes and regulations related to solid waste?

Finding: Less than Significant

The California Integrated Waste Management Act requires every county to adopt an Integrated Waste Management Plan (IWMP) that describes county objectives, policies, and programs relative to waste disposal, management, source reduction, and recycling. The removal of solid waste due to construction activities will comply with all federal, state, and local statutes and regulations. Impacts to solid waste statutes and regulations will be less than significant.

3.18 MANDATORY FINDINGS OF SIGNIFICANCE

3.18.1 Impact Analysis

The mandatory findings of significance including potential impacts to sensitive resources, potential cumulative impacts, potential impacts to human beings, and potential global warming impacts are qualified in Table 3-18 and discussed below.

Table 3-18
CEQA Checklist for Assessing Project-Specific Mandatory Findings of Significance

	XVIII. MANDATORY FINDINGS OF SIGNIFICANCE -- Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less than Significant Impact**	**No Impact**
a)	Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b)	Does the Project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	☐	☐	☒	☐
c)	Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Biological and Cultural Impacts (a)

a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As disclosed in Section 4, Biological Resources of this document, biological resources on the site that could be affected by the proposed Project include a moderate potential for Western pond turtle and low to moderate potential for the California red-legged frog (CRLF) to occur in aquatic habitats adjacent to the Project area, nesting raptors and migratory birds. Additionally, tree removal will be kept to a minimum with approximately ten trees no greater than approximately 30 inches DBH either removed or trimmed along the proposed Project area. Recommended avoidance and minimization mitigation, such as contractor environmental awareness training, exclusion fencing installed adjacent to waterways and drainages within 100 feet of construction areas, avoiding disturbance of nesting raptors and other migratory birds and during construction activities, avoiding, minimizing, and compensating for tree removal (including riparian trees), avoiding site wetlands, and compensation for direct impacts to wetlands to ensure all potential impacts are mitigated to less than significant levels.

The proposed Project will not cause a significant change to the quality of the environment at Rock Creek, the unnamed pond, or Rock Creek Reservoir. Construction impacts will be limited in size, temporary and minimized by erosion control BMPs and a SWPPP.

The proposed Project will not substantially reduce fish habitat or wildlife species density. The Project phases will not substantially reduce fish habitat in Rock Creek, the unnamed pond, or Rock Creek Reservoir. In addition, the Project will not substantially reduce wildlife habitat or species. Sediment control measures will be taken to minimize impacts to surrounding waterways and drainages. The majority of this Project's proposed new infrastructure is located on areas that have been previously disturbed already.

The proposed Project will not cause a fish or wildlife species population to drop below self-sustaining levels, or threaten to eliminate a rare or endangered plant or animal because the Project is not expected to significantly impact any locally, state, or federally rare and endangered species (See Table 3-1, 3-2, and Section 3). No state or federally listed rare or endangered plants were identified. Therefore, the Project will not cause a population to drop below self-sustaining levels.

As indicated in Section 5, Cultural Resources of this document, a full accounting of all potential cultural resources located within the Project area was achieved through a records search, Native American consultation, and archaeological pedestrian survey. The survey confirmed that the ground surface within the Project area has been previously disturbed and developed.

Historic Resource P-31-001816 is Rock Creek Dam and this dam is an element of the Drum Spaulding Hydroelectric District (P-31-005407). Rock Creek Dam (as a contributing element to the District) and the Drum Spaulding Hydroelectric District were determined eligible to both the California Register or Historical Resources (CRHR) and National Register of Historic Places (NRHP) in 1998. These resources were determined eligible under National Register Evaluation Criterion A: associated with events that have made a significant contribution to the broad patterns of our history (NRHP, 2011). While these resources are within or immediately adjacent to the Project area, the Project construction will not impact or change these resources as the Rock Creek Siphon will be buried and installation of an outlet structure to reduce velocity, erosion, and to prevent wildlife or persons from entering the pipeline will be constructed at Rock Creek Reservoir just East of the dam. As such the integrity and structures associated with the Rock Creek Dam and Drum Spaulding Hydroelectric District will not be compromised as a result of the proposed Project.

Historic Resource P-31-005005 is an historic artifact concentration. This artifact concentration was evaluated and found ineligible to the California and National Registers. This evaluation was part of the 2011 Cultural Resources Inventory/Evaluation Report with a Finding of Effect for Pacific Gas & Electric Company's Drum-Spaulding Project (FERC Project No. 2310) FERC Boundary Changes, Nevada and Placer Counties, California. As this resource has been deemed ineligible and SHPO has concurred with these recommendations as part of the previous PG&E Project cultural resource evaluations, this resource will require no further consideration for the proposed Project.

We are confident that our identification efforts have adequately explored the Project site and its potential for cultural resources. As such, a finding of No Historic Properties Affected is recommended. No further cultural resources study is warranted unless the design of the Project changes. There is always the possibility, that subsurface archaeological deposits may exist in the Project area, as archaeological sites may be buried with no surface manifestation. If any cultural resources or human remains are encountered during construction, all construction activities will be halted and a professional archeologist shall be consulted. These mitigation measures will reduce the potential impacts to less than significant levels.

Cumulative impacts (b)

a) Does the Project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?

Future projects within the vicinity of the proposed Project include, the City of Lincoln Midwestern Placer Regional Sewer Project, the NID Regional Water Supply Project, and the NID Locksley Lane Intertie Project. Construction of the Regional Sewer Project is anticipated for 2014 as is the Locksley Lane intertie. The NID Regional Water Supply Project will not likely be initiated for 5-10 years.

SMD-1 construction will occur on the West side of Highway 49 along Joeger Road and is not likely to disrupt traffic or noise in the proposed project area. The Locksley Lane Intertie construction will occur over 2-3 months and may occur concurrent with the proposed project. If that is the case, the two projects will add to traffic, air, and noise impacts in the project area; however, given the limited area and temporary nature of both projects, the cumulative nature of these impacts are considered less than significant. In addition, both project employ noise and air quality mitigation that will facilitate a further reduction in potential cumulative impacts. Similarly water quality impacts from both proposed projects occurring simultaneously or in relatively short succession are considered cumulatively less than significant. This is because both projects are limited in scope and duration, are located primarily in uplands and will employ erosion control BMPs and implement SWPPPs.

Regarding operation, the proposed Project infrastructure would normally be on standby status and utilized for emergency purposes. In addition, its purpose is to increase system reliability and facilitate water demands during emergency situations. Therefore, the proposed Project will not contribute to significant cumulative indirect growth impacts in the region and the proposed Project will not accommodate growth.

Affects on Human Beings (c)

a) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

As discussed in the various sections throughout this IS/MND, the proposed Project construction and operation would not include uses, which would result in substantial adverse effects on human beings. All impacts are considered either less than significant with mitigation, less than significant, or no impacts will occur. Mitigation Measures, Environmental Commitments, and BMPs described in the sections above will be incorporated by NID and will ensure all potential effects on human beings are less than significant. Therefore, the proposed Project would not have environmental effects with substantial adverse direct or indirect effects on human beings.

4.0 List of Acronyms and Abbreviations

The following list of Acronyms and Abbreviations is a reference list for all preceding chapters.

Acronyms and Abbreviations	
AB	Assembly Bill
ADWF	Average Dry Weather Flow
APCO	Air Pollution Control Officer
BAGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practices
BR&AW&M	Bear River and Auburn Water and Mining Company
CAA	California Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emission Estimator Model
Cal EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CDRA	Placer County Community Development Administration
CDTSC	California Department of Toxic Substances Control
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CH_4	Methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_{2e}	Carbon Dioxide Equivalent
COF	California Oak Foundation
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
CWA	Clean Water Act
DBH	diameter at breast height
DCP	Dust Control Plan

Acronyms and Abbreviations	
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FIRMs	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FR	Federal Regulation
FYLF	Foothill yellow-legged frog
GCSD	Statewide General Construction Stormwater Discharge Permit
GHG	Greenhouse gases
GWP	Global Warming Potential
HDPE	High-density polyethylene
HFCs	Fluorinated Gases
IS/MND	Initial Study/Mitigated Negative Declaration
IWMP	Integrated Waste Management Plan
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
MLD	most likely descendent
MMRP	Mitigation Monitoring and Reporting Program
MRF	Materials Recovery Facility
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NID	Nevada Irrigation District
NOx	nitrogen oxide
NO_2	nitrogen dioxide
NOA	Naturally occurring Asbestos
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

Acronyms and Abbreviations	
O_3	ozone
OHP	Office of Historic Preservation
OHWM	ordinary high water mark
Pb	lead
PCAPCD	Placer County Air Pollution Control District
PCCP	Placer County Conservation Plan
PCFPD	Placer County Fire Protection District
PCWA	Placer County Water Agency
PFCs	Fluorinated Gases
PG&E	Pacific Gas & Electric
PLA	Placer County
$PM_{2.5}$	particulate matter measuring less than 2.5 microns
PM_{10}	particulate matter measuring less than 10 microns
PRBO	Point Reyes Bird Observatory
PRC	Public Resources Code
PVC	Polyvinyl chloride
RAP	Recology Auburn Placer
RBCs	Rotating Biological Contactors
RGL	Regulatory Guidance Letter
ROG	reactive organic gasses
ROW	right-of-way
RV	Recreational Vehicle
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SBM	USFWS approved biological monitor
SCAQMD	South Coast Air Quality Management District
SF_6	Fluorinated Gases
SHPO	State Historic Preservation Officer
SMD1	Sewer Maintenance District 1
SO_2	sulfur dioxide
SPCCP	Spill Prevention Control and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
TCM	transportation control measures
UAIC	United Auburn Indian Community of the Auburn Rancheria
UBC	Uniform Building Code

Acronyms and Abbreviations	
UC	University of California
USACE	Unites States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VELB	valley elderberry longhorn beetle
VOC	Volatile organic compounds
WPT	Western pond turtle
WPWMA	Western Placer Waste Management Authority
WRSL	Western Regional Sanitary Landfill
WTP	water treatment plant
WWTP	Wastewater Treatment Plant

5.0 References

AirNav.com. Airport Location Information. Accessed September 2013 at: http://www.airnav.com/airports/search.html.

Auburn, City of. General Plan 1992-2002. November, 1993. Print.

Auburn, City of. 2013. City of Auburn Municipal Code 93.09. Accessed September 2013 at: http://www.amlegal.com/nxt/gateway.dll/California/auburn_ca/cityofauburncaliforniamunicipalcode?fn=altmain-nf.htm$f=templates$3.0&vid=amlegal:auburn_ca

Beals, Ralph Leon. 1933. Ethnology of the Nisenan. University of California Publications in American Archaeology and Ethnology 31(6):335-414.

Bureau of Land Management. 2010. Special status plants. Jepson's onion (Allium jepsonii), Brandegee's biloba (ssp. brandegeae), Stebbins' Morning Glory (Calystegia stebbinsii), Parry's Horkelia (Horkelia parryi). Accessed September 2013. <http://www.blm.gov/ca/st/en/prog/ssp/plants/allium_jepsonii.html>, http://www.blm.gov/ca/st/en/prog/ssp/plants/clarkia_biloba.html, http://www.blm.gov/ca/st/en/prog/ssp/plants/calystegia_stebbinsii.print.html, http://www.blm.gov/ca/st/en/prog/ssp/plants/horkelia_parryi.print.html

California Air Resources Board. 2011/2012. California Air Basins. Accessed September 2013 at: http://www.arb.ca.gov/knowzone/basin/basin.swf.

California Climate Action Team Report. 2011. Accessed September 2013 at: http://www.climatechange.ca.gov/climate_action_team/reports/.

California Department of Conservation. 2010. Farmland Mapping and Monitoring Program (FMMP) Accessed September 2013 at: http://www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx.

California Department of Fish and Game. 2011. Special animals (898 taxa). State of California, The Natural Resources Agency, Department of Fish and Game, Biogeographic Data Branch, California Natural Diversity Database. Accessed September 2013. <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf>.

California Department of Fish and Wildlife. 2013a. California endangered species act (CESA). Accessed August 2013. <http://www.dfg.ca.gov/habcon/cesa/>.

California Department of Fish and Wildlife. 2013b. Threatened and endangered species. Accessed August 2013. < http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/>.

California Department of Fish and Wildlife. 2013c. California Natural Diversity Database (CNDDB) Rarefind Report. Generated August 2013.

California Department of Fish and Wildlife. 2013d. State & federally listed endangered & threatened animals of California. State of California, The Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database. Accessed August 2013. <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf>.

California Department of Fish and Wildlife. 2013e. California laws protecting native plants. Accessed September 2013. <http://www.dfg.ca.gov/habcon/plant/laws.html.>

California Department of Fish and Wildlife. 2013f. Chinook salmon. Accessed August 2013. <http://www.dfg.ca.gov/fish/Resources/Chinook>.

California Department of Toxic Substances Control. 2010. DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List). Accessed September 2013. http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm.

California Department of Transportation. 2011. California Scenic Highway Mapping System Accessed September 2013. http://www.dot.ca.gov/hq/LandArch/scenic_highways/.

California Department of Water Resources. 2013. Water Data Library. Accessed September 2013 at: http://www.water.ca.gov/waterdatalibrary/.

California Emissions Estimator Model. 2013. South Coast Air Quality Management District Developed by ENVIRON International Corporation in collaboration with SCAQMD and other California Air Districts. Analysis conducted by a Stantec Air Quality Specialist December 2013.

California Environmental Resources Evaluation System. 2005. California environmental quality act, article 20. definitions, sections 15350 to 15387. Accessed August 2013. <http://ceres.ca.gov/ceqa/guidelines/art20.html>.

California Geological Survey, Department of Conservation. 2007. Landslides. Assessed September 2013 at: http://www.quake.ca.gov/gmaps/WH/landslidemaps.htm.

California Geological Survey, Department of Conservation. 2010. Alquist-Priolo Earthquake Fault Zoning map. Accessed September 2013 at: http://www.conservation.ca.gov/cgs/geologic_hazards/earthquakes/Pages/Index.aspx.

California Geological Survey, Department of Conservation. 2012. Mineral Production. Accessed September 2013 at: http://www.conservation.ca.gov/cgs/geologic_resources/mineral_resource_mapping/Pages/Index.aspx.

California Herps. 2013. A guide to the amphibians and reptiles of California. Accessed August 2013. <http://www.californiaherps.com/turtles/pages/a.marmorata.html>.

California Historical Resources Information System. 2013. North Central Information Center: Records Search for the NID Rock Creek Siphon Project NCIC File No. PLA-13-80.

California Native Plant Society. 2013a. The California rare plant ranking system. Accessed August 2013. <http://www.cnps.org/cnps/rareplants/ranking.php>.

California Native Plant Society. 2013b. Inventory of rare and endangered plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Accessed August 2013. <http://www.rareplants.cnps.org>.

California Natural Resources Agency. 2013. CEQA: The California Environmental Quality Act. California Natural Resources Agency, Sacramento, California. Accessed September 2013. <http://ceres.ca.gov/ceqa/>.

California Oak Foundation. 2007. California oak report. Accessed August 2013. <http://www.californiaoaks.org/html/oak_report_06-07.html>.

Cook, Sherburne F. 1976. The Population of the California Indians 1769-1970. University of California Press, Berkeley.

Davis, Leonard M. 1974. Trade Routes and Economic Exchange among the Indians of California. Ballena Press Publications in Archaeology, Ethnology, and History No. 3. Ramona, California.

Federal Emergency Management Agency. 1998. Flood Insurance Rate Maps for Placer County.

Federal Energy Regulatory Commission. 2013. Draft Environmental Impact Statement for the Drum-Spaulding Project (P-2310-173) and Yuba-Bear Hydroelectric Project (P-2266-096).

Kroeber, Alfred L. 1925. Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington, DC. (Reprinted by Dover Publications, New York, 1976.)

Kroeber, Alfred L. 1929. The Valley Nisenan. University of California Publications in American Archaeology and Ethnology 24(4):253-290.

Legislative Council of California. 2004. Senate bill 1334, public resources code 21083.4. Accessed August 2013. <http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_1301-1350/sb_1334_bill_20040924_chaptered.html>.

Legislative Council of California. 2013. California fish and game code Online database. Accessed August 2013. <http://www.leginfo.ca.gov/.html/fgc_table_of_contents.html>.

Lienhard, H. 1941. A Pioneer at Sutter's Fort, 1846-1850, The Adventures of Heinrich Lienhard. Marguerite Wilbur, translator. The California Society, Los Angeles.

Littlejohn, H. n.d. Nisenan Geography: Fieldnotes and Manuscript. University of California Archives, Museum of Anthropology Archives, Ethnological Documents (Cu-25.1, ms. No 18).

Mayer, K. E. and W. F. Laudenslayer, Jr., Editors. 1988. A guide to wildlife habitats of California. State of California, Resources Agency. Department of Fish and Game. Sacramento, California. Accessed September 2013. http://www.dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp#Shrub.

McCarthy, Helen. 1994. Ethnography. In Research Design for Prehistoric, Ethnographic, and Historic Cultural Resources at Folsom Reservoir, California, S. A. Waechter and S. D. Mikesell. Prepared for the USDI Bureau of Land Management, Sacramento.

Merriam, C.H., and Z.M. Talbot. 1974. Boundary Descriptions of the California Indian Stocks and Tribes. Miscellaneous Publications of the University of California Archaeological Research Facility.

Milliken, Randall, V. Clay, K. Gobalet, R. Hughes, D. Jones, J. Markos, T. Origer, D. Simons, and E. Wohlgemuth. 1995 Report on the 1994 Archaeological Excavation of the Souza Mound, Sac-42, Sacramento County, California. Far Western Anthropological Research Group, Inc., Davis, California. Submitted to the City of Sacramento.

Native American Heritage Commission. 2013. Sacred Lands File & Native American Contacts List Request.

Nevada Irrigation District. 2013. History. Accessed September 2013 at: http://nidwater.com/about-nid/history/.

National Oceanic and Atmospheric Administration. 2008. California central valley steelhead DPS. National Marine Fisheries Service Southwest Regional Office. Accessed September 2013. <http://swr.nmfs.noaa.gov/recovery/Steelhead_CCVS.htm>.

National Register of Historic Places. 2011. National Register Criteria for Evaluation. Accessed September 2013 at: http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm

Natural Resource Conservation Service. 2012. Soil Survey. Accessed September 2013 at: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Placer, County of. 2000. Airport Land Use Compatibility Plan. Accessed September 2013 at: http://www.pctpa.net/library/aluc_plan_2000.pdf

Placer, County of. 1994. Placer County General Plan Background Report. Accessed September 2013 at http://www.placer.ca.gov/Departments/CommunityDevelopment/Planning/Documents/CommPlans/PCGP.aspx.

Placer, County of. 1994. General Plan. Accessed September 2013 at http://www.placer.ca.gov/Departments/CommunityDevelopment/Planning/Documents/CommPlans/PCGP.aspx.

Placer, County of. 2013. Noise Ordinance 5280-B Article 9.36. Accessed September 2013 at: http://qcode.us/codes/placercounty/.

Placer County Air Pollution Control District. 2012. Accessed September 2013 at: http://www.placer.ca.gov/Departments/Air.aspx.

Placer County Community Development Resource Agency. 2013a. Oak woodland management plan. Placer County Community Development Resource Agency, Placer County, California. Accessed September 2013 at: <http://www.placer.ca.gov/~/media/cdr/Planning/PCCP/BackgroundData/OakWoodlands/OakWoodlandMgtPlan.ashx>.

Placer County Community Development Resource Agency. 2013b. Placer County General Plan. Placer County Community Development Resource Agency, Placer County, California. Accessed September 2013 at: <http://www.placer.ca.gov/Departments/CommunityDevelopment/Planning/Documents/CommPlans/PCGP.aspx>.

Shipley, William F. 1978. Native Languages of California. In California, edited by Robert F Heizer, pp. 80-90. Handbook of North American Indians Vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Spautz, H., N. Nur, and D. Stralberg. 2005. California black rail (Laterallus jamaicensis coturniculus) distribution and abundance in relation to habitat and landscape features in the San Francisco Bay estuary. USDA Forest Service General Technical Report PSW-GTR-191. Accessed September 2013. <http://www.fs.fed.us/psw/publications/documents/psw_gtr191/Asilomar/pdfs/465-468.pdf>.

Storer, T.I., R.L. Usinger, and D. Lukas. 2004. Sierra Nevada natural history. University of California Press, Berkeley, California.

Regional Water Quality Control Board. 2009. Central Valley Region (Region 5). Statewide General Construction Stormwater Discharge Permit Order No. 2009-0009-DWQ.

United States Army Corps of Engineers. 1987. Corps of engineers wetlands delineation manual. Technical Report Y-87-1. Environmental Laboratory, U.S. Army Corps of Engineers. Vicksburg, Mississippi.

United States Environmental Protection Agency. 2013. Clean water act. Accessed September 2013. <http://www2.epa.gov/laws-regulations/summary-clean-water-act>.

United States Environmental Protection Agency. 2013. Green Book Nonattainment Areas for Criteria Pollutants. Accessed September 2013 at: http://www.epa.gov/airquality/greenbk/.

United States Fish and Wildlife Service. 1918. Migratory bird treaty act of 1918. Accessed August 2013. <http://www.fws.gov/laws/lawsdigest/migtrea.html>.

United States Fish and Wildlife Service. 1940. The bald and golden eagle protection act. Accessed August 2013. < http://www.fws.gov/midwest/MidwestBird/EaglePermits/bagepa.html>.

United States Fish and Wildlife Service. 1973. Endangered species act. Accessed August 2013. <http://www.fws.gov/endangered/laws-policies/index.html>.

United States Fish and Wildlife Service. 1999. Draft recovery plan for the giant garter snake

(Thamnophis gigas). U.S. Fish and Wildlife Service, Portland, Oregon.

United States Fish and Wildlife Service. 2011. Federal endangered and threatened species that occur in or may be affected by projects in the USGS 7 ½ minute quads requested. U.S. Fish & Wildlife Service, Sacramento Fish & Wildlife Office, online database. Accessed August 2013. <http://www.fws.gov/sacramento/es_species/lists/es_species_lists-form.cfm>.

University of California, Davis. 2013. California Fish Website. Accessed September 2013. <http://calfish.ucdavis.edu/>.

Waechter, S. A., S. Wee, and C. Toffelmier. 2007. Cultural Resources Inventory for the Sacramento River Water Reliability Study, Sacramento and Placer Counties, California. Far Western Anthropological Research Group, Inc., and JRP Historical Consulting, LLP. Prepared for the USDI Bureau of Reclamation and the Placer County Water Agency. Submitted to MWH Americas, Inc., Sacramento.

Wagner, D.L, C.W. Jennings, T.L. Bedrossian, and E.J. Bortugno. 1987. Geologic Map of the Sacramento Quadrangle. Regional Geologic Map Series. California Division of Mines and Geology. Second Printing

Wilson, Norman L., and Arlean H Towne. 1978. Nisenan. In California, edited by Robert F. Heizer, pp. 387-397. Handbook of North American Indians Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Voegelin, Erminie. 1942. Cultural Element Distributions, XX: Northeast California. University of California Anthropological Records 7(2):47-252.

APPENDIX A

Air Quality and Greenhouse Gas Emissions Background Information

rock_creek_siphon

Placer County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	87.12	1000sqft	2.00	87,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Trips and VMT - Non-default values are based on the engineer’s estimates for the project.

On-road Fugitive Dust - Non-default values are based on the engineer’s estimates for the project.

Grading - Non-default values are based on the engineer’s estimates for the project.

Architectural Coating - Non-default values are based on the engineer’s estimates for the project.

Vehicle Trips -

Road Dust - Non-default values are based on the engineer’s estimates for the project.

Consumer Products -

Area Coating -

Landscape Equipment -

Water And Wastewater -

Land Use Change -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	4.00	75.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	PhaseStartDate	5/24/2014	5/26/2014
tblConstructionPhase	PhaseStartDate	11/29/2014	12/1/2014
tblConstructionPhase	PhaseStartDate	9/6/2014	9/8/2014
tblGrading	AcresOfGrading	37.50	2.00
tblGrading	AcresOfGrading	7.50	3.00
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblRoadDust	MeanVehicleSpeed	40	25

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	3.1624	33.1256	20.8962	0.0247	6.1325	1.7767	7.9092	3.3351	1.6345	4.9696	0.0000	2,607.2684	2,607.2684	0.7527	0.0000	2,623.0746
Total	**3.1624**	**33.1256**	**20.8962**	**0.0247**	**6.1325**	**1.7767**	**7.9092**	**3.3351**	**1.6345**	**4.9696**	**0.0000**	**2,607.2684**	**2,607.2684**	**0.7527**	**0.0000**	**2,623.0746**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	3.1597	33.0952	20.8776	0.0247	6.1325	1.7750	7.9075	3.3351	1.6330	4.9681	0.0000	2,604.9427	2,604.9427	0.7520	0.0000	2,620.7345
Total	**3.1597**	**33.0952**	**20.8776**	**0.0247**	**6.1325**	**1.7750**	**7.9075**	**3.3351**	**1.6330**	**4.9681**	**0.0000**	**2,604.9427**	**2,604.9427**	**0.7520**	**0.0000**	**2,620.7345**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.0866**	**0.0917**	**0.0891**	**0.0810**	**0.0000**	**0.0917**	**0.0206**	**0.0000**	**0.0918**	**0.0302**	**0.0000**	**0.0892**	**0.0892**	**0.0903**	**0.0000**	**0.0892**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Energy	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Mobile	8.4051	8.6813	33.4475	0.0586	3.7608	0.1367	3.8976	1.0047	0.1255	1.1301		5,421.7898	5,421.7898	0.2134		5,426.2717
Total	**10.8740**	**9.1403**	**33.8422**	**0.0613**	**3.7608**	**0.1716**	**3.9325**	**1.0047**	**0.1604**	**1.1651**		**5,972.4690**	**5,972.4690**	**0.2240**	**0.0101**	**5,980.3034**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Energy	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Mobile	8.4051	8.6813	33.4475	0.0586	3.7608	0.1367	3.8976	1.0047	0.1255	1.1301		5,421.7898	5,421.7898	0.2134		5,426.2717
Total	**10.8740**	**9.1403**	**33.8422**	**0.0613**	**3.7608**	**0.1716**	**3.9325**	**1.0047**	**0.1604**	**1.1651**		**5,972.4690**	**5,972.4690**	**0.2240**	**0.0101**	**5,980.3034**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/19/2014	5/23/2014	5	5	
2	Grading	Grading	5/26/2014	9/5/2014	5	75	
3	Trenching	Trenching	9/8/2014	11/28/2014	5	60	
4	Paving	Paving	12/1/2014	12/5/2014	5	5	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Trenching	Rollers	2	8.00	80	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Graders	1	8.00	174	0.41
Trenching	Welders	1	4.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6363	0.0000	0.6363	0.0687	0.0000	0.0687			0.0000			0.0000
Off-Road	2.8511	33.0890	19.0044	0.0239		1.6257	1.6257		1.4956	1.4956		2,534.9389	2,534.9389	0.7491		2,550.6700
Total	**2.8511**	**33.0890**	**19.0044**	**0.0239**	**0.6363**	**1.6257**	**2.2620**	**0.0687**	**1.4956**	**1.5643**		**2,534.9389**	**2,534.9389**	**0.7491**		**2,550.6700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1437	0.0365	0.4764	8.2000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		72.3295	72.3295	3.5700e-003		72.4046
Total	**0.1437**	**0.0365**	**0.4764**	**8.2000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**72.3295**	**72.3295**	**3.5700e-003**		**72.4046**

3.2 Site Preparation - 2014

Mitigated Construction On-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6363	0.0000	0.6363	0.0687	0.0000	0.0687			0.0000			0.0000
Off-Road	2.8485	33.0587	18.9869	0.0239		1.6242	1.6242		1.4943	1.4943	0.0000	2,532.6132	2,532.6132	0.7484		2,548.3299
Total	**2.8485**	**33.0587**	**18.9869**	**0.0239**	**0.6363**	**1.6242**	**2.2605**	**0.0687**	**1.4943**	**1.5630**	**0.0000**	**2,532.6132**	**2,532.6132**	**0.7484**		**2,548.3299**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1437	0.0365	0.4764	8.2000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		72.3295	72.3295	3.5700e-003		72.4046
Total	**0.1437**	**0.0365**	**0.4764**	**8.2000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**72.3295**	**72.3295**	**3.5700e-003**		**72.4046**

3.3 Grading - 2014

Unmitigated Construction On-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0504	0.0000	6.0504	3.3133	0.0000	3.3133			0.0000			0.0000
Off-Road	2.9828	31.6276	20.3007	0.0206		1.7760	1.7760		1.6340	1.6340		2,187.3730	2,187.3730	0.6464		2,200.9472
Total	**2.9828**	**31.6276**	**20.3007**	**0.0206**	**6.0504**	**1.7760**	**7.8264**	**3.3133**	**1.6340**	**4.9472**		**2,187.3730**	**2,187.3730**	**0.6464**		**2,200.9472**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1796	0.0457	0.5955	1.0200e-003	0.0822	6.2000e-004	0.0828	0.0218	5.6000e-004	0.0224		90.4119	90.4119	4.4700e-003		90.5057
Total	**0.1796**	**0.0457**	**0.5955**	**1.0200e-003**	**0.0822**	**6.2000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**90.4119**	**90.4119**	**4.4700e-003**		**90.5057**

3.3 Grading - 2014

Mitigated Construction On-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0504	0.0000	6.0504	3.3133	0.0000	3.3133			0.0000			0.0000
Off-Road	2.9801	31.5986	20.2821	0.0206		1.7744	1.7744		1.6325	1.6325	0.0000	2,185.3662	2,185.3662	0.6458		2,198.9279
Total	**2.9801**	**31.5986**	**20.2821**	**0.0206**	**6.0504**	**1.7744**	**7.8248**	**3.3133**	**1.6325**	**4.9457**	**0.0000**	**2,185.3662**	**2,185.3662**	**0.6458**		**2,198.9279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1796	0.0457	0.5955	1.0200e-003	0.0822	6.2000e-004	0.0828	0.0218	5.6000e-004	0.0224		90.4119	90.4119	4.4700e-003		90.5057
Total	**0.1796**	**0.0457**	**0.5955**	**1.0200e-003**	**0.0822**	**6.2000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**90.4119**	**90.4119**	**4.4700e-003**		**90.5057**

3.4 Trenching - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5262	22.3032	12.5277	0.0159		1.4886	1.4886		1.3765	1.3765		1,655.2458	1,655.2458	0.4897		1,665.5295
Total	**2.5262**	**22.3032**	**12.5277**	**0.0159**		**1.4886**	**1.4886**		**1.3765**	**1.3765**		**1,655.2458**	**1,655.2458**	**0.4897**		**1,665.5295**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2335	0.0594	0.7741	1.3300e-003	0.1996	8.0000e-004	0.2004	0.0511	7.3000e-004	0.0518		117.5355	117.5355	5.8000e-003		117.6574
Total	**0.2335**	**0.0594**	**0.7741**	**1.3300e-003**	**0.1996**	**8.0000e-004**	**0.2004**	**0.0511**	**7.3000e-004**	**0.0518**		**117.5355**	**117.5355**	**5.8000e-003**		**117.6574**

3.4 Trenching - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5238	22.2828	12.5162	0.0159		1.4873	1.4873		1.3752	1.3752	0.0000	1,653.7272	1,653.7272	0.4893		1,664.0015
Total	**2.5238**	**22.2828**	**12.5162**	**0.0159**		**1.4873**	**1.4873**		**1.3752**	**1.3752**	**0.0000**	**1,653.7272**	**1,653.7272**	**0.4893**		**1,664.0015**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2335	0.0594	0.7741	1.3300e-003	0.1996	8.0000e-004	0.2004	0.0511	7.3000e-004	0.0518		117.5355	117.5355	5.8000e-003		117.6574
Total	**0.2335**	**0.0594**	**0.7741**	**1.3300e-003**	**0.1996**	**8.0000e-004**	**0.2004**	**0.0511**	**7.3000e-004**	**0.0518**		**117.5355**	**117.5355**	**5.8000e-003**		**117.6574**

3.5 Paving - 2014

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9808	20.3743	12.2558	0.0176		1.2745	1.2745		1.1738	1.1738		1,841.4815	1,841.4815	0.5346		1,852.7078
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9808**	**20.3743**	**12.2558**	**0.0176**		**1.2745**	**1.2745**		**1.1738**	**1.1738**		**1,841.4815**	**1,841.4815**	**0.5346**		**1,852.7078**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2694	0.0685	0.8932	1.5300e-003	0.1232	9.3000e-004	0.1242	0.0327	8.4000e-004	0.0335		135.6179	135.6179	6.7000e-003		135.7585
Total	**0.2694**	**0.0685**	**0.8932**	**1.5300e-003**	**0.1232**	**9.3000e-004**	**0.1242**	**0.0327**	**8.4000e-004**	**0.0335**		**135.6179**	**135.6179**	**6.7000e-003**		**135.7585**

3.5 Paving - 2014

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9790	20.3556	12.2445	0.0176		1.2734	1.2734		1.1728	1.1728	0.0000	1,839.7921	1,839.7921	0.5341		1,851.0080
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9790**	**20.3556**	**12.2445**	**0.0176**		**1.2734**	**1.2734**		**1.1728**	**1.1728**	**0.0000**	**1,839.7921**	**1,839.7921**	**0.5341**		**1,851.0080**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2694	0.0685	0.8932	1.5300e-003	0.1232	9.3000e-004	0.1242	0.0327	8.4000e-004	0.0335		135.6179	135.6179	6.7000e-003		135.7585
Total	**0.2694**	**0.0685**	**0.8932**	**1.5300e-003**	**0.1232**	**9.3000e-004**	**0.1242**	**0.0327**	**8.4000e-004**	**0.0335**		**135.6179**	**135.6179**	**6.7000e-003**		**135.7585**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.4051	8.6813	33.4475	0.0586	3.7608	0.1367	3.8976	1.0047	0.1255	1.1301		5,421.7898	5,421.7898	0.2134		5,426.2717
Unmitigated	8.4051	8.6813	33.4475	0.0586	3.7608	0.1367	3.8976	1.0047	0.1255	1.1301		5,421.7898	5,421.7898	0.2134		5,426.2717

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	607.23	115.00	59.24	1,338,960	1,338,960
Total	607.23	115.00	59.24	1,338,960	1,338,960

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.435933	0.064283	0.188932	0.172713	0.065635	0.008882	0.012354	0.035619	0.001805	0.001063	0.008394	0.000567	0.003818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
NaturalGas Unmitigated	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	4680.61	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Total		**0.0505**	**0.4589**	**0.3855**	**2.7500e-003**		**0.0349**	**0.0349**		**0.0349**	**0.0349**		**550.6602**	**550.6602**	**0.0106**	**0.0101**	**554.0114**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	4.68061	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Total		**0.0505**	**0.4589**	**0.3855**	**2.7500e-003**		**0.0349**	**0.0349**		**0.0349**	**0.0349**		**550.6602**	**550.6602**	**0.0106**	**0.0101**	**554.0114**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Unmitigated	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4000e-004	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Total	**2.4185**	**9.0000e-005**	**9.3000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0191**	**0.0191**	**6.0000e-005**		**0.0203**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4000e-004	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Total	**2.4185**	**9.0000e-005**	**9.3000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0191**	**0.0191**	**6.0000e-005**		**0.0203**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

rock_creek_siphon

Placer County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	87.12	1000sqft	2.00	87,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Trips and VMT - Non-default values are based on the engineer’s estimates for the project.

On-road Fugitive Dust - Non-default values are based on the engineer’s estimates for the project.

Grading - Non-default values are based on the engineer’s estimates for the project.

Architectural Coating - Non-default values are based on the engineer’s estimates for the project.

Vehicle Trips -

Road Dust - Non-default values are based on the engineer’s estimates for the project.

Consumer Products -

Area Coating -

Landscape Equipment -

Water And Wastewater -

Land Use Change -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	4.00	75.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	PhaseStartDate	5/24/2014	5/26/2014
tblConstructionPhase	PhaseStartDate	11/29/2014	12/1/2014
tblConstructionPhase	PhaseStartDate	9/6/2014	9/8/2014
tblGrading	AcresOfGrading	37.50	2.00
tblGrading	AcresOfGrading	7.50	3.00
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblRoadDust	MeanVehicleSpeed	40	25

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	3.1865	33.1348	20.8646	0.0246	6.1325	1.7767	7.9092	3.3351	1.6345	4.9696	0.0000	2,598.7519	2,598.7519	0.7527	0.0000	2,614.5581
Total	**3.1865**	**33.1348**	**20.8646**	**0.0246**	**6.1325**	**1.7767**	**7.9092**	**3.3351**	**1.6345**	**4.9696**	**0.0000**	**2,598.7519**	**2,598.7519**	**0.7527**	**0.0000**	**2,614.5581**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	3.1837	33.1044	20.8459	0.0246	6.1325	1.7750	7.9075	3.3351	1.6330	4.9681	0.0000	2,596.4263	2,596.4263	0.7520	0.0000	2,612.2180
Total	**3.1837**	**33.1044**	**20.8459**	**0.0246**	**6.1325**	**1.7750**	**7.9075**	**3.3351**	**1.6330**	**4.9681**	**0.0000**	**2,596.4263**	**2,596.4263**	**0.7520**	**0.0000**	**2,612.2180**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.0860**	**0.0916**	**0.0893**	**0.0813**	**0.0000**	**0.0917**	**0.0206**	**0.0000**	**0.0918**	**0.0302**	**0.0000**	**0.0895**	**0.0895**	**0.0903**	**0.0000**	**0.0895**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Energy	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Mobile	9.3566	9.7036	35.5789	0.0535	3.7608	0.1378	3.8986	1.0047	0.1265	1.1311		4,960.4164	4,960.4164	0.2136		4,964.9025
Total	**11.8255**	**10.1626**	**35.9736**	**0.0563**	**3.7608**	**0.1727**	**3.9336**	**1.0047**	**0.1614**	**1.1660**		**5,511.0956**	**5,511.0956**	**0.2242**	**0.0101**	**5,518.9342**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Energy	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Mobile	9.3566	9.7036	35.5789	0.0535	3.7608	0.1378	3.8986	1.0047	0.1265	1.1311		4,960.4164	4,960.4164	0.2136		4,964.9025
Total	**11.8255**	**10.1626**	**35.9736**	**0.0563**	**3.7608**	**0.1727**	**3.9336**	**1.0047**	**0.1614**	**1.1660**		**5,511.0956**	**5,511.0956**	**0.2242**	**0.0101**	**5,518.9342**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/19/2014	5/23/2014	5	5	
2	Grading	Grading	5/26/2014	9/5/2014	5	75	
3	Trenching	Trenching	9/8/2014	11/28/2014	5	60	
4	Paving	Paving	12/1/2014	12/5/2014	5	5	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Trenching	Rollers	2	8.00	80	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Graders	1	8.00	174	0.41
Trenching	Welders	1	4.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6363	0.0000	0.6363	0.0687	0.0000	0.0687			0.0000			0.0000
Off-Road	2.8511	33.0890	19.0044	0.0239		1.6257	1.6257		1.4956	1.4956		2,534.9389	2,534.9389	0.7491		2,550.6700
Total	**2.8511**	**33.0890**	**19.0044**	**0.0239**	**0.6363**	**1.6257**	**2.2620**	**0.0687**	**1.4956**	**1.5643**		**2,534.9389**	**2,534.9389**	**0.7491**		**2,550.6700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1629	0.0457	0.4511	7.2000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		63.8131	63.8131	3.5700e-003		63.8881
Total	**0.1629**	**0.0457**	**0.4511**	**7.2000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**63.8131**	**63.8131**	**3.5700e-003**		**63.8881**

3.2 Site Preparation - 2014

Mitigated Construction On-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6363	0.0000	0.6363	0.0687	0.0000	0.0687			0.0000			0.0000
Off-Road	2.8485	33.0587	18.9869	0.0239		1.6242	1.6242		1.4943	1.4943	0.0000	2,532.6132	2,532.6132	0.7484		2,548.3299
Total	**2.8485**	**33.0587**	**18.9869**	**0.0239**	**0.6363**	**1.6242**	**2.2605**	**0.0687**	**1.4943**	**1.5630**	**0.0000**	**2,532.6132**	**2,532.6132**	**0.7484**		**2,548.3299**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1629	0.0457	0.4511	7.2000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		63.8131	63.8131	3.5700e-003		63.8881
Total	**0.1629**	**0.0457**	**0.4511**	**7.2000e-004**	**0.0657**	**4.9000e-004**	**0.0662**	**0.0174**	**4.5000e-004**	**0.0179**		**63.8131**	**63.8131**	**3.5700e-003**		**63.8881**

3.3 Grading - 2014

Unmitigated Construction On-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0504	0.0000	6.0504	3.3133	0.0000	3.3133			0.0000			0.0000
Off-Road	2.9828	31.6276	20.3007	0.0206		1.7760	1.7760		1.6340	1.6340		2,187.3730	2,187.3730	0.6464		2,200.9472
Total	**2.9828**	**31.6276**	**20.3007**	**0.0206**	**6.0504**	**1.7760**	**7.8264**	**3.3133**	**1.6340**	**4.9472**		**2,187.3730**	**2,187.3730**	**0.6464**		**2,200.9472**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2037	0.0572	0.5638	9.0000e-004	0.0822	6.2000e-004	0.0828	0.0218	5.6000e-004	0.0224		79.7663	79.7663	4.4700e-003		79.8601
Total	**0.2037**	**0.0572**	**0.5638**	**9.0000e-004**	**0.0822**	**6.2000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**79.7663**	**79.7663**	**4.4700e-003**		**79.8601**

3.3 Grading - 2014

Mitigated Construction On-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0504	0.0000	6.0504	3.3133	0.0000	3.3133			0.0000			0.0000
Off-Road	2.9801	31.5986	20.2821	0.0206		1.7744	1.7744		1.6325	1.6325	0.0000	2,185.3662	2,185.3662	0.6458		2,198.9279
Total	**2.9801**	**31.5986**	**20.2821**	**0.0206**	**6.0504**	**1.7744**	**7.8248**	**3.3133**	**1.6325**	**4.9457**	**0.0000**	**2,185.3662**	**2,185.3662**	**0.6458**		**2,198.9279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2037	0.0572	0.5638	9.0000e-004	0.0822	6.2000e-004	0.0828	0.0218	5.6000e-004	0.0224		79.7663	79.7663	4.4700e-003		79.8601
Total	**0.2037**	**0.0572**	**0.5638**	**9.0000e-004**	**0.0822**	**6.2000e-004**	**0.0828**	**0.0218**	**5.6000e-004**	**0.0224**		**79.7663**	**79.7663**	**4.4700e-003**		**79.8601**

3.4 Trenching - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5262	22.3032	12.5277	0.0159		1.4886	1.4886		1.3765	1.3765		1,655.2458	1,655.2458	0.4897		1,665.5295
Total	**2.5262**	**22.3032**	**12.5277**	**0.0159**		**1.4886**	**1.4886**		**1.3765**	**1.3765**		**1,655.2458**	**1,655.2458**	**0.4897**		**1,665.5295**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2648	0.0743	0.7330	1.1700e-003	0.1996	8.0000e-004	0.2004	0.0511	7.3000e-004	0.0518		103.6962	103.6962	5.8000e-003		103.8182
Total	**0.2648**	**0.0743**	**0.7330**	**1.1700e-003**	**0.1996**	**8.0000e-004**	**0.2004**	**0.0511**	**7.3000e-004**	**0.0518**		**103.6962**	**103.6962**	**5.8000e-003**		**103.8182**

3.4 Trenching - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5238	22.2828	12.5162	0.0159		1.4873	1.4873		1.3752	1.3752	0.0000	1,653.7272	1,653.7272	0.4893		1,664.0015
Total	**2.5238**	**22.2828**	**12.5162**	**0.0159**		**1.4873**	**1.4873**		**1.3752**	**1.3752**	**0.0000**	**1,653.7272**	**1,653.7272**	**0.4893**		**1,664.0015**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2648	0.0743	0.7330	1.1700e-003	0.1996	8.0000e-004	0.2004	0.0511	7.3000e-004	0.0518		103.6962	103.6962	5.8000e-003		103.8182
Total	**0.2648**	**0.0743**	**0.7330**	**1.1700e-003**	**0.1996**	**8.0000e-004**	**0.2004**	**0.0511**	**7.3000e-004**	**0.0518**		**103.6962**	**103.6962**	**5.8000e-003**		**103.8182**

3.5 Paving - 2014

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9808	20.3743	12.2558	0.0176		1.2745	1.2745		1.1738	1.1738		1,841.4815	1,841.4815	0.5346		1,852.7078
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9808**	**20.3743**	**12.2558**	**0.0176**		**1.2745**	**1.2745**		**1.1738**	**1.1738**		**1,841.4815**	**1,841.4815**	**0.5346**		**1,852.7078**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3055	0.0858	0.8457	1.3500e-003	0.1232	9.3000e-004	0.1242	0.0327	8.4000e-004	0.0335		119.6495	119.6495	6.7000e-003		119.7902
Total	**0.3055**	**0.0858**	**0.8457**	**1.3500e-003**	**0.1232**	**9.3000e-004**	**0.1242**	**0.0327**	**8.4000e-004**	**0.0335**		**119.6495**	**119.6495**	**6.7000e-003**		**119.7902**

3.5 Paving - 2014

Mitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9790	20.3556	12.2445	0.0176		1.2734	1.2734		1.1728	1.1728	0.0000	1,839.7921	1,839.7921	0.5341		1,851.0080
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9790**	**20.3556**	**12.2445**	**0.0176**		**1.2734**	**1.2734**		**1.1728**	**1.1728**	**0.0000**	**1,839.7921**	**1,839.7921**	**0.5341**		**1,851.0080**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3055	0.0858	0.8457	1.3500e-003	0.1232	9.3000e-004	0.1242	0.0327	8.4000e-004	0.0335		119.6495	119.6495	6.7000e-003		119.7902
Total	**0.3055**	**0.0858**	**0.8457**	**1.3500e-003**	**0.1232**	**9.3000e-004**	**0.1242**	**0.0327**	**8.4000e-004**	**0.0335**		**119.6495**	**119.6495**	**6.7000e-003**		**119.7902**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	9.3566	9.7036	35.5789	0.0535	3.7608	0.1378	3.8986	1.0047	0.1265	1.1311		4,960.4164	4,960.4164	0.2136		4,964.9025
Unmitigated	9.3566	9.7036	35.5789	0.0535	3.7608	0.1378	3.8986	1.0047	0.1265	1.1311		4,960.4164	4,960.4164	0.2136		4,964.9025

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	607.23	115.00	59.24	1,338,960	1,338,960
Total	607.23	115.00	59.24	1,338,960	1,338,960

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.435933	0.064283	0.188932	0.172713	0.065635	0.008882	0.012354	0.035619	0.001805	0.001063	0.008394	0.000567	0.003818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
NaturalGas Unmitigated	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	4680.61	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Total		**0.0505**	**0.4589**	**0.3855**	**2.7500e-003**		**0.0349**	**0.0349**		**0.0349**	**0.0349**		**550.6602**	**550.6602**	**0.0106**	**0.0101**	**554.0114**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	4.68061	0.0505	0.4589	0.3855	2.7500e-003		0.0349	0.0349		0.0349	0.0349		550.6602	550.6602	0.0106	0.0101	554.0114
Total		**0.0505**	**0.4589**	**0.3855**	**2.7500e-003**		**0.0349**	**0.0349**		**0.0349**	**0.0349**		**550.6602**	**550.6602**	**0.0106**	**0.0101**	**554.0114**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Unmitigated	2.4185	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4000e-004	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Total	**2.4185**	**9.0000e-005**	**9.3000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0191**	**0.0191**	**6.0000e-005**		**0.0203**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8644					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4000e-004	9.0000e-005	9.3000e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0191	0.0191	6.0000e-005		0.0203
Total	**2.4185**	**9.0000e-005**	**9.3000e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**		**0.0191**	**0.0191**	**6.0000e-005**		**0.0203**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

rock_creek_siphon

Placer County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	87.12	1000sqft	2.00	87,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	74
Climate Zone	2			**Operational Year**	2014
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Non-default values are based on the engineer’s estimates for the project.

Trips and VMT - Non-default values are based on the engineer’s estimates for the project.

On-road Fugitive Dust - Non-default values are based on the engineer’s estimates for the project.

Grading - Non-default values are based on the engineer’s estimates for the project.

Architectural Coating - Non-default values are based on the engineer’s estimates for the project.

Vehicle Trips -

Road Dust - Non-default values are based on the engineer’s estimates for the project.

Consumer Products -

Area Coating -

Landscape Equipment -

Water And Wastewater -

Land Use Change -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	4.00	75.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	PhaseStartDate	5/24/2014	5/26/2014
tblConstructionPhase	PhaseStartDate	11/29/2014	12/1/2014
tblConstructionPhase	PhaseStartDate	9/6/2014	9/8/2014
tblGrading	AcresOfGrading	37.50	2.00
tblGrading	AcresOfGrading	7.50	3.00
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblOnRoadDust	MeanVehicleSpeed	40.00	25.00
tblRoadDust	MeanVehicleSpeed	40	25

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.2142	1.9931	1.2597	1.4300e-003	0.2376	0.1186	0.3561	0.1268	0.1093	0.2361	0.0000	135.5047	135.5047	0.0386	0.0000	136.3145
Total	**0.2142**	**1.9931**	**1.2597**	**1.4300e-003**	**0.2376**	**0.1186**	**0.3561**	**0.1268**	**0.1093**	**0.2361**	**0.0000**	**135.5047**	**135.5047**	**0.0386**	**0.0000**	**136.3145**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.2139	1.9907	1.2582	1.4300e-003	0.2376	0.1184	0.3560	0.1268	0.1092	0.2359	0.0000	135.3508	135.3508	0.0385	0.0000	136.1596
Total	**0.2139**	**1.9907**	**1.2582**	**1.4300e-003**	**0.2376**	**0.1184**	**0.3560**	**0.1268**	**0.1092**	**0.2359**	**0.0000**	**135.3508**	**135.3508**	**0.0385**	**0.0000**	**136.1596**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.1074**	**0.1184**	**0.1151**	**0.0000**	**0.0000**	**0.1181**	**0.0393**	**0.0000**	**0.1189**	**0.0551**	**0.0000**	**0.1136**	**0.1136**	**0.1037**	**0.0000**	**0.1136**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4413	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003
Energy	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	325.0950	325.0950	0.0123	3.8600e-003	326.5504
Mobile	1.1379	1.2820	4.5078	7.4900e-003	0.4945	0.0188	0.5134	0.1326	0.0173	0.1499	0.0000	630.0912	630.0912	0.0266	0.0000	630.6496
Waste						0.0000	0.0000		0.0000	0.0000	21.9291	0.0000	21.9291	1.2960	0.0000	49.1446
Water						0.0000	0.0000		0.0000	0.0000	6.3916	31.7131	38.1046	0.6579	0.0158	56.8179
Total	**1.5884**	**1.3658**	**4.5790**	**7.9900e-003**	**0.4945**	**0.0252**	**0.5197**	**0.1326**	**0.0237**	**0.1562**	**28.3207**	**986.9008**	**1,015.2215**	**1.9928**	**0.0197**	**1,063.1641**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4413	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003
Energy	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	325.0950	325.0950	0.0123	3.8600e-003	326.5504
Mobile	1.1379	1.2820	4.5078	7.4900e-003	0.4945	0.0188	0.5134	0.1326	0.0173	0.1499	0.0000	630.0912	630.0912	0.0266	0.0000	630.6496
Waste						0.0000	0.0000		0.0000	0.0000	21.9291	0.0000	21.9291	1.2960	0.0000	49.1446
Water						0.0000	0.0000		0.0000	0.0000	6.3916	31.7131	38.1046	0.6578	0.0158	56.8077
Total	**1.5884**	**1.3658**	**4.5790**	**7.9900e-003**	**0.4945**	**0.0252**	**0.5197**	**0.1326**	**0.0237**	**0.1562**	**28.3207**	**986.9008**	**1,015.2215**	**1.9927**	**0.0196**	**1,063.1539**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6.0217e-003**	**0.1526**	**9.5846e-004**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/19/2014	5/23/2014	5	5	
2	Grading	Grading	5/26/2014	9/5/2014	5	75	
3	Trenching	Trenching	9/8/2014	11/28/2014	5	60	
4	Paving	Paving	12/1/2014	12/5/2014	5	5	

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Trenching	Rollers	2	8.00	80	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Graders	1	8.00	174	0.41
Trenching	Welders	1	4.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5900e-003	0.0000	1.5900e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1300e-003	0.0827	0.0475	6.0000e-005		4.0600e-003	4.0600e-003		3.7400e-003	3.7400e-003	0.0000	5.7491	5.7491	1.7000e-003	0.0000	5.7848
Total	**7.1300e-003**	**0.0827**	**0.0475**	**6.0000e-005**	**1.5900e-003**	**4.0600e-003**	**5.6500e-003**	**1.7000e-004**	**3.7400e-003**	**3.9100e-003**	**0.0000**	**5.7491**	**5.7491**	**1.7000e-003**	**0.0000**	**5.7848**

3.2 Site Preparation - 2014

Unmitigated Construction Off-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	1.0000e-004	1.0800e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1488	0.1488	1.0000e-005	0.0000	0.1489
Total	**3.5000e-004**	**1.0000e-004**	**1.0800e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1488**	**0.1488**	**1.0000e-005**	**0.0000**	**0.1489**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5900e-003	0.0000	1.5900e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1200e-003	0.0826	0.0475	6.0000e-005		4.0600e-003	4.0600e-003		3.7300e-003	3.7300e-003	0.0000	5.7423	5.7423	1.7000e-003	0.0000	5.7779
Total	**7.1200e-003**	**0.0826**	**0.0475**	**6.0000e-005**	**1.5900e-003**	**4.0600e-003**	**5.6500e-003**	**1.7000e-004**	**3.7300e-003**	**3.9000e-003**	**0.0000**	**5.7423**	**5.7423**	**1.7000e-003**	**0.0000**	**5.7779**

3.2 Site Preparation - 2014

Mitigated Construction Off-Site

Acres of Grading: 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	1.0000e-004	1.0800e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1488	0.1488	1.0000e-005	0.0000	0.1489
Total	**3.5000e-004**	**1.0000e-004**	**1.0800e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1488**	**0.1488**	**1.0000e-005**	**0.0000**	**0.1489**

3.3 Grading - 2014

Unmitigated Construction On-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2269	0.0000	0.2269	0.1243	0.0000	0.1243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1119	1.1860	0.7613	7.7000e-004		0.0666	0.0666		0.0613	0.0613	0.0000	74.4132	74.4132	0.0220	0.0000	74.8750
Total	**0.1119**	**1.1860**	**0.7613**	**7.7000e-004**	**0.2269**	**0.0666**	**0.2935**	**0.1243**	**0.0613**	**0.1855**	**0.0000**	**74.4132**	**74.4132**	**0.0220**	**0.0000**	**74.8750**

3.3 Grading - 2014

Unmitigated Construction Off-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5900e-003	1.9400e-003	0.0202	3.0000e-005	2.9400e-003	2.0000e-005	2.9700e-003	7.8000e-004	2.0000e-005	8.0000e-004	0.0000	2.7892	2.7892	1.5000e-004	0.0000	2.7923
Total	**6.5900e-003**	**1.9400e-003**	**0.0202**	**3.0000e-005**	**2.9400e-003**	**2.0000e-005**	**2.9700e-003**	**7.8000e-004**	**2.0000e-005**	**8.0000e-004**	**0.0000**	**2.7892**	**2.7892**	**1.5000e-004**	**0.0000**	**2.7923**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2269	0.0000	0.2269	0.1243	0.0000	0.1243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1117	1.1846	0.7604	7.7000e-004		0.0665	0.0665		0.0612	0.0612	0.0000	74.3247	74.3247	0.0220	0.0000	74.7859
Total	**0.1117**	**1.1846**	**0.7604**	**7.7000e-004**	**0.2269**	**0.0665**	**0.2934**	**0.1243**	**0.0612**	**0.1855**	**0.0000**	**74.3247**	**74.3247**	**0.0220**	**0.0000**	**74.7859**

3.3 Grading - 2014

Mitigated Construction Off-Site

Acres of Grading: 2

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5900e-003	1.9400e-003	0.0202	3.0000e-005	2.9400e-003	2.0000e-005	2.9700e-003	7.8000e-004	2.0000e-005	8.0000e-004	0.0000	2.7892	2.7892	1.5000e-004	0.0000	2.7923
Total	**6.5900e-003**	**1.9400e-003**	**0.0202**	**3.0000e-005**	**2.9400e-003**	**2.0000e-005**	**2.9700e-003**	**7.8000e-004**	**2.0000e-005**	**8.0000e-004**	**0.0000**	**2.7892**	**2.7892**	**1.5000e-004**	**0.0000**	**2.7923**

3.4 Trenching - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0758	0.6691	0.3758	4.8000e-004		0.0447	0.0447		0.0413	0.0413	0.0000	45.0484	45.0484	0.0133	0.0000	45.3283
Total	**0.0758**	**0.6691**	**0.3758**	**4.8000e-004**		**0.0447**	**0.0447**		**0.0413**	**0.0413**	**0.0000**	**45.0484**	**45.0484**	**0.0133**	**0.0000**	**45.3283**

3.4 Trenching - 2014

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8500e-003	2.0200e-003	0.0211	4.0000e-005	5.7100e-003	2.0000e-005	5.7300e-003	1.4600e-003	2.0000e-005	1.4900e-003	0.0000	2.9007	2.9007	1.6000e-004	0.0000	2.9040
Total	**6.8500e-003**	**2.0200e-003**	**0.0211**	**4.0000e-005**	**5.7100e-003**	**2.0000e-005**	**5.7300e-003**	**1.4600e-003**	**2.0000e-005**	**1.4900e-003**	**0.0000**	**2.9007**	**2.9007**	**1.6000e-004**	**0.0000**	**2.9040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0757	0.6683	0.3754	4.8000e-004		0.0446	0.0446		0.0412	0.0412	0.0000	44.9948	44.9948	0.0133	0.0000	45.2744
Total	**0.0757**	**0.6683**	**0.3754**	**4.8000e-004**		**0.0446**	**0.0446**		**0.0412**	**0.0412**	**0.0000**	**44.9948**	**44.9948**	**0.0133**	**0.0000**	**45.2744**

3.4 Trenching - 2014

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8500e-003	2.0200e-003	0.0211	4.0000e-005	5.7100e-003	2.0000e-005	5.7300e-003	1.4600e-003	2.0000e-005	1.4900e-003	0.0000	2.9007	2.9007	1.6000e-004	0.0000	2.9040
Total	**6.8500e-003**	**2.0200e-003**	**0.0211**	**4.0000e-005**	**5.7100e-003**	**2.0000e-005**	**5.7300e-003**	**1.4600e-003**	**2.0000e-005**	**1.4900e-003**	**0.0000**	**2.9007**	**2.9007**	**1.6000e-004**	**0.0000**	**2.9040**

3.5 Paving - 2014

Unmitigated Construction On-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9500e-003	0.0509	0.0306	4.0000e-005		3.1900e-003	3.1900e-003		2.9300e-003	2.9300e-003	0.0000	4.1764	4.1764	1.2100e-003	0.0000	4.2019
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.9500e-003**	**0.0509**	**0.0306**	**4.0000e-005**		**3.1900e-003**	**3.1900e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**4.1764**	**4.1764**	**1.2100e-003**	**0.0000**	**4.2019**

3.5 Paving - 2014

Unmitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.9000e-004	2.0200e-003	0.0000	2.9000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2789	0.2789	2.0000e-005	0.0000	0.2792
Total	**6.6000e-004**	**1.9000e-004**	**2.0200e-003**	**0.0000**	**2.9000e-004**	**0.0000**	**3.0000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2789**	**0.2789**	**2.0000e-005**	**0.0000**	**0.2792**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9500e-003	0.0509	0.0306	4.0000e-005		3.1800e-003	3.1800e-003		2.9300e-003	2.9300e-003	0.0000	4.1714	4.1714	1.2100e-003	0.0000	4.1969
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.9500e-003**	**0.0509**	**0.0306**	**4.0000e-005**		**3.1800e-003**	**3.1800e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**4.1714**	**4.1714**	**1.2100e-003**	**0.0000**	**4.1969**

3.5 Paving - 2014

Mitigated Construction Off-Site

Acres of Paving: 0

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	1.9000e-004	2.0200e-003	0.0000	2.9000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2789	0.2789	2.0000e-005	0.0000	0.2792
Total	**6.6000e-004**	**1.9000e-004**	**2.0200e-003**	**0.0000**	**2.9000e-004**	**0.0000**	**3.0000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2789**	**0.2789**	**2.0000e-005**	**0.0000**	**0.2792**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1379	1.2820	4.5078	7.4900e-003	0.4945	0.0188	0.5134	0.1326	0.0173	0.1499	0.0000	630.0912	630.0912	0.0266	0.0000	630.6496
Unmitigated	1.1379	1.2820	4.5078	7.4900e-003	0.4945	0.0188	0.5134	0.1326	0.0173	0.1499	0.0000	630.0912	630.0912	0.0266	0.0000	630.6496

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	607.23	115.00	59.24	1,338,960	1,338,960
Total	607.23	115.00	59.24	1,338,960	1,338,960

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.435933	0.064283	0.188932	0.172713	0.065635	0.008882	0.012354	0.035619	0.001805	0.001063	0.008394	0.000567	0.003818

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	233.9270	233.9270	0.0106	2.1900e-003	234.8276
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	233.9270	233.9270	0.0106	2.1900e-003	234.8276
NaturalGas Mitigated	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	91.1680	91.1680	1.7500e-003	1.6700e-003	91.7228
NaturalGas Unmitigated	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	91.1680	91.1680	1.7500e-003	1.6700e-003	91.7228

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.70842e+006	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	91.1680	91.1680	1.7500e-003	1.6700e-003	91.7228
Total		**9.2100e-003**	**0.0838**	**0.0704**	**5.0000e-004**		**6.3600e-003**	**6.3600e-003**		**6.3600e-003**	**6.3600e-003**	**0.0000**	**91.1680**	**91.1680**	**1.7500e-003**	**1.6700e-003**	**91.7228**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.70842e+006	9.2100e-003	0.0838	0.0704	5.0000e-004		6.3600e-003	6.3600e-003		6.3600e-003	6.3600e-003	0.0000	91.1680	91.1680	1.7500e-003	1.6700e-003	91.7228
Total		**9.2100e-003**	**0.0838**	**0.0704**	**5.0000e-004**		**6.3600e-003**	**6.3600e-003**		**6.3600e-003**	**6.3600e-003**	**0.0000**	**91.1680**	**91.1680**	**1.7500e-003**	**1.6700e-003**	**91.7228**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	804118	233.9270	0.0106	2.1900e-003	234.8276
Total		**233.9270**	**0.0106**	**2.1900e-003**	**234.8276**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	804118	233.9270	0.0106	2.1900e-003	234.8276
Total		**233.9270**	**0.0106**	**2.1900e-003**	**234.8276**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4413	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003
Unmitigated	0.4413	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1010					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003
Total	**0.4413**	**1.0000e-005**	**8.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5600e-003**	**1.5600e-003**	**0.0000**	**0.0000**	**1.6500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1010					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5600e-003	1.5600e-003	0.0000	0.0000	1.6500e-003
Total	**0.4413**	**1.0000e-005**	**8.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.5600e-003**	**1.5600e-003**	**0.0000**	**0.0000**	**1.6500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	38.1046	0.6578	0.0158	56.8077
Unmitigated	38.1046	0.6579	0.0158	56.8179

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	20.1465 / 0	38.1046	0.6579	0.0158	56.8179
Total		**38.1046**	**0.6579**	**0.0158**	**56.8179**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	20.1465 / 0	38.1046	0.6578	0.0158	56.8077
Total		**38.1046**	**0.6578**	**0.0158**	**56.8077**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.9291	1.2960	0.0000	49.1446
Unmitigated	21.9291	1.2960	0.0000	49.1446

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	108.03	21.9291	1.2960	0.0000	49.1446
Total		**21.9291**	**1.2960**	**0.0000**	**49.1446**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	108.03	21.9291	1.2960	0.0000	49.1446
Total		**21.9291**	**1.2960**	**0.0000**	**49.1446**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

CalEEMod Non-default Input for the Nevada Irrigation District Rock Creek Siphon Project

Construction Phases	Approximate Length of Phase	Approximate Construction Start Date	Approximate Days Per Week of Construction
Site Preparation	5	June 2014	5
Grading	75	June 2014	5
Trenching	60	September 2014	5
Paving	5	November 2014	5

	Site Preparation	Grading	Trenching	Paving
Mean vehicle Speed	5-10 mph	4-5 mph	50 ft/day	50-100 ft/day
Total Acres Disturbed	2.5	0.5	0.45	0.3

APPENDIX B

Native American Consultation Correspondence

Record of Contact with Native Americans for the Nevada Irrigation District Rock Creek Siphon Project			
Name & Affiliation	**Date of Contact**	**Form of Contact**	**Notes**
Native American Heritage Commission (NAHC)	8/7/2013	e-mail and fax	Request for Sacred Land Files search and list of contacts.
Native American Heritage Commission (NAHC)	8/19/2013	fax	Received the NAHC response.
Hermo Olanio, Vice Chairperson Shingle Springs Band of Miwok Indians	9/3/2013	USPS Mail & E-mail	Sent proposed Project introductory letter and map.
Nicholas Fonseca, Chairperson Shingle Springs Band of Miwok Indians	9/3/2013	USPS Mail & E-mail	Sent proposed Project introductory letter and map. E-mail address was rejected.
Daniel Fonseca, Cultural Resource Director Shingle Springs Band of Miwok Indians	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Grayson Coney, Cultural Director T' si-Akim Maidu	9/3/2013	USPS Mail & E-mail	Sent proposed Project introductory letter and map. E-mail address was rejected.
Eileen Moon, Vice Chairperson T' si-Akim Maidu	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Don Ryberg, Chairperson T' si-Akim Maidu	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Danny Rey, THPO United Auburn Indian Community of the Auburn Rancheria	9/3/2013	USPS Mail & E-mail	Sent proposed Project introductory letter and map.

(UAIC)			
David Keyser, Chairperson United Auburn Indian Community of the Auburn Rancheria (UAIC)	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Marcos Guerrero, Tribal Preservation Committee United Auburn Indian Community of the Auburn Rancheria (UAIC)	9/3/2013	USPS Mail & E-mail	Sent proposed Project introductory letter and map.
Judith Marks Colfax-Todds Valley Consolidated Tribe	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Rose Enos Maidu/Washoe	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
April Wallace Moore Nisenan-So Maidu/ Konkow/ Washoe	9/3/2013	USPS Mail	Sent proposed Project introductory letter and map.
Hermo Olanio, Vice Chairperson Shingle Springs Band of Miwok Indians	9/19/2013 11:19am	Phone Call	Left voicemail for Mr. Olanio.
Nicholas Fonseca, Chairperson Shingle Springs Band of Miwok Indians	9/19/2013 11:13am	Phone Call	Left voicemail for Mr. Fonseca.
Daniel Fonseca, Cultural Resource Director Shingle Springs Band	9/19/2013 11:13am	Phone Call	Left voicemail for Mr. Fonseca.

of Miwok Indians			
Grayson Coney, Cultural Director T' si-Akim Maidu	9/19/2013 11:00am	Phone Call	Mr. Coney discussed Native American sites near but not within the Project area and explained that the Project area would have been used in the past as a destination not a habitation area with a high likelihood of below surface isolates in the Project area. Mr. Coney requested a copy of the IS/MND and any other Cultural Resource reports associated with the proposed Project and requested that the CEQA mitigation measures state that the T' si-Akim Maidu be contacted if any cultural resources or Native American human remains are found during construction.
Eileen Moon, Vice Chairperson T' si-Akim Maidu	9/19/2013 10:21am	Phone Call	Called but no voicemail available. Mr. Coney, Cultural Director for the T' si-Akim Maidu stated that he was the Native American consultation contact.
Don Ryberg, Chairperson T' si-Akim Maidu	9/19/2013 10:21am	Phone Call	Called but no voicemail available. Mr. Coney, Cultural Director for the T' si-Akim Maidu stated that he was the Native American consultation contact.
Danny Rey, THPO United Auburn Indian Community of the Auburn Rancheria (UAIC)	9/19/2013 10:15am	Phone Call	Receptionist referred me to Marcos Guerrero with the UAIC Tribal Preservation Committee.
David Keyser, Chairperson United Auburn Indian Community of the Auburn Rancheria (UAIC)	9/19/2013 10:15am	Phone Call	Receptionist referred me to Marcos Guerrero with the UAIC Tribal Preservation Committee.
Marcos Guerrero, Tribal Preservation Committee United Auburn Indian Community of the	9/19/2013 10:15am	Phone Call	There were no specific comments on the Project from Mr. Guerrero. A search of the UAIC records did not come up with anything in the Project area. Mr. Guerrero requested a copy of the IS/MND and any other Cultural Resource reports associated with the proposed Project and

Auburn Rancheria (UAIC)			requested that the CEQA mitigation measures state that the UAIC be contacted if any cultural resources or Native American human remains are found during construction.
Judith Marks Colfax-Todds Valley Consolidated Tribe	9/19/2013 1:02pm	Phone Call	Left voicemail for Ms. Marks.
Rose Enos Maidu/Washoe	9/19/2013 11:21am	Phone Call	Left voicemail for Ms. Enos.
April Wallace Moore Nisenan-So Maidu/ Konkow/ Washoe	9/19/2013 12:45pm	Phone Call	Ms. Wallace Moore requested a copy of the IS/MND and any other Cultural Resource reports associated with the proposed Project. She also discussed both known Native American and known Historic sites near but not within the proposed Project area.
Gorgiana Shingle Springs Band of Miwok Indians	9/19/2013 4:35pm	Phone Call	Received a return call from the Shingle Springs Band of Miwok Indians. Stated that the Shingle Springs Band of Miwok Indians would review the letter and contact if there were any concerns about the proposed Project.
Andrew Godsey, Assistant Cultural Resourse Director/NAI Shingle Springs Band of Miwok Indians	9/20/2013 9:03am	Phone Call	Received a return call from the Shingle Springs Band of Miwok Indians. The Shingle Springs Band of Miwok Indians requested a copy of the IS/MND and any other Cultural Resource reports associated with the proposed Project

Print Form

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Nevera Irrigation District (NID)

County: Placer

USGS Quadrangle

Name: Auburn

Township: 13N Range: 8E Section(s): 28

Company/Firm/Agency:

Stantec Consulting on behalf of NID

Contact Person: Meagan O'Deegan, Cultural Resource Specialist

Street Address: 101 Providence Mine Road, Suite 202

City: Nevada City Zip: 95959

Phone: (530) 470 – 0515

Fax:

Email: meagan.odeegan@stantec.com

Project Description:

The proposed Project would allow NID to convey water from the Combie Ophir II Canal to Rock Creek Reservoir, as well as turnout to the NID North Auburn WTP. The Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed pipeline will not increase the existing system capacity and is intended only for reliability.

X Project Location Map is attached

File Path: W:\1840\active\184030377_NID_rock_creek_siphon\gis\mxd\project_location.mxd

Coordinate System: NAD 1983 StatePlane California II FIPS 0402 FeetProjection: Lambert Conformal Conic

Stantec

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1 inch = 750 feet

Projedt Features

- Preferred Alignment
- Potential Staging Areas

Project: 184030377; Sources: Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013, ESRI 2013; Create By: K. Gross; Updated: 8/1/2013

Figure 2
Project Location

Nevada Irrigation District • Rock Creek Siphon Project

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

August 19, 2013

Meagan O'Deegan
Stantec Consulting
101 Providence Mine Road, Ste 202
Nevada City, CA 95959

Sent by Fax 530-470-0518

Number of Pages: 5

Re: Nevada Irrigation District, Auburn USGS Quadrangle, Placer County

Dear Ms. O'Deegan:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 651-1490.

Sincerely,

Lyta Wenston for

Rob Wood
Associate Government Program Analyst

Native American Contact List
Placer County
August 19, 2013

Shingle Springs Band of Miwok Indians
Hermo Olanio, Vice Chairperson
P.O. Box 1340 Miwok
Shingle Springs , CA 95682 Maidu
holanio@ssband.org
(530) 676-8010
(530) 676-8033 Fax

T' si-Akim Maidu
Grayson Coney, Cultural Director
P.O. Box 1316 Maidu
Colfax , CA 95713
akimmaidu@att.net
(530) 383-7234

Rose Enos
15310 Bancroft Road Maidu
Auburn , CA 95603 Washoe
(530) 878-2378

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, Tribal Preservation Committee
10720 Indian Hill Road Maidu
Auburn , CA 95603 Miwok
mguerrero@auburnrancheria.com
530-883-2364
530-883-2320 - Fax

United Auburn Indian Community of the Auburn Rancheria
David Keyser, Chairperson
10720 Indian Hill Road Maidu
Auburn , CA 95603 Miwok
530-883-2390
530-883-2380 - Fax

April Wallace Moore
19630 Placer Hills Road Nisenan - So Maidu
Colfax , CA 95713 Konkow
530-637-4279 Washoe

T' si-Akim Maidu
Eileen Moon, Vice Chairperson
1239 East Main St. Maidu
Grass Valley , CA 95945
530-274-7497

Shingle Springs Band of Miwok Indians
Daniel Fonseca, Cultural Resource Director
P.O. Box 1340 Miwok
Shingle Springs , CA 95682 Maidu
(530) 676-8010
(530) 676-8033 Fax

Shingle Springs Band of Miwok Indians
Nicholas Fonseca, Chairperson
P.O. Box 1340 Miwok
Shingle Springs , CA 95682 Maidu
nfonseca@ssband.org
(530) 676-8010
(530) 676-8033 Fax

Colfax-Todds Valley Consolidated Tribe
Judith Marks
1068 Silverton Circle Miwok
Lincoln , Cali 95648 Maidu
916-580-4078

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting local Native Americans with regard to cultural resources for the proposed Nevera Irrigation District Project, Auburn USGS Quadrangle, Placer County

Native American Contact List
Placer County
August 19, 2013

United Auburn Indian Community of the Auburn Rancheria
Danny Rey, THPO
10720 Indian Hill Road Maidu
Auburn , CA 95603 Miwok
dannyr@auburnrancheria.com
916-368-9742 - cell
530-883-2390
530-888-5476 - Fax

T' si-Akim Maidu
Don Ryberg, Chairperson
1239 East Main St. Maidu
Grass Valley , CA 95945
530-274-7497

This list is current only as of the date of this document.

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Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

Rose Enos
15310 Bancroft Road
Auburn, CA 95603

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Ms. Enos:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

The overall project area is located in Placer County in T13N, R8E, S 28, on the Auburn USGS 7.5' Quad. The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir with a turnout to the NID North Auburn WTP. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. A Project Location map is attached.

In response to our inquiry, the Native American Heritage Commission stated that no resources are recorded in the Sacred Lands File. A records search for the Project area and a ¼ mile around the Project area was conducted. The results of the records search did not indicate that any known Native American cultural resources are within or immediately adjacent to the project area. A cultural resource survey of the project area was also completed and no surface evidence of Native American sites was observed. That said, the possibility for encountering unanticipated cultural resources during Project construction is a possibility. Therefore, Mitigation Measures will be implemented by NID to ensure proper handling of inadvertent discovery of cultural resources and human remains.

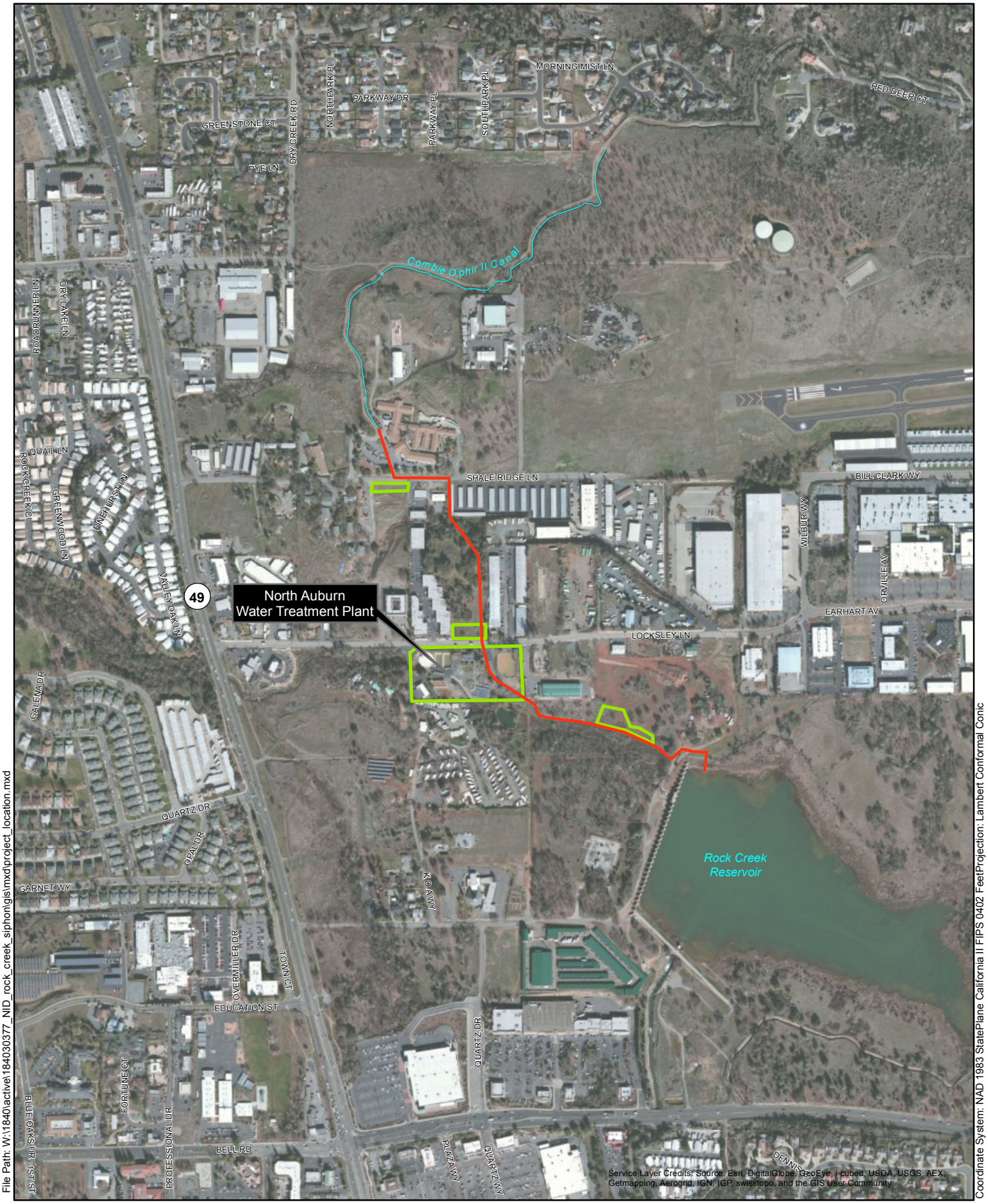
If you have any information regarding Native American cultural resources within or adjacent to the project area or if you have any questions, please feel free to contact me directly via telephone (530) 470-0515 or e-mail at meagan.odeegan@stantec.com. Thank you for your assistance in this matter.

Sincerely,
STANTEC CONSULTING SERVICES INC.

Meagan O'Deegan

Meagan O'Deegan
Cultural Resource Specialist
Tel: (530) 470-0515
meagan.odeegan@stantec.com

Attachment:
Project Location Map



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Stantec

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Projedt Features

- Preferred Alignment
- Potential Staging Areas

Project: 184030377; Sources: Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013, ESRI 2013; Create By: K. Gross; Updated: 8/7/2013

Figure 2
Project Location

Nevada Irrigation District • Rock Creek Siphon Project

Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

April Wallace Moore
19630 Placer Hills Road
Colfax, CA 95713

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Ms. Wallace Moore:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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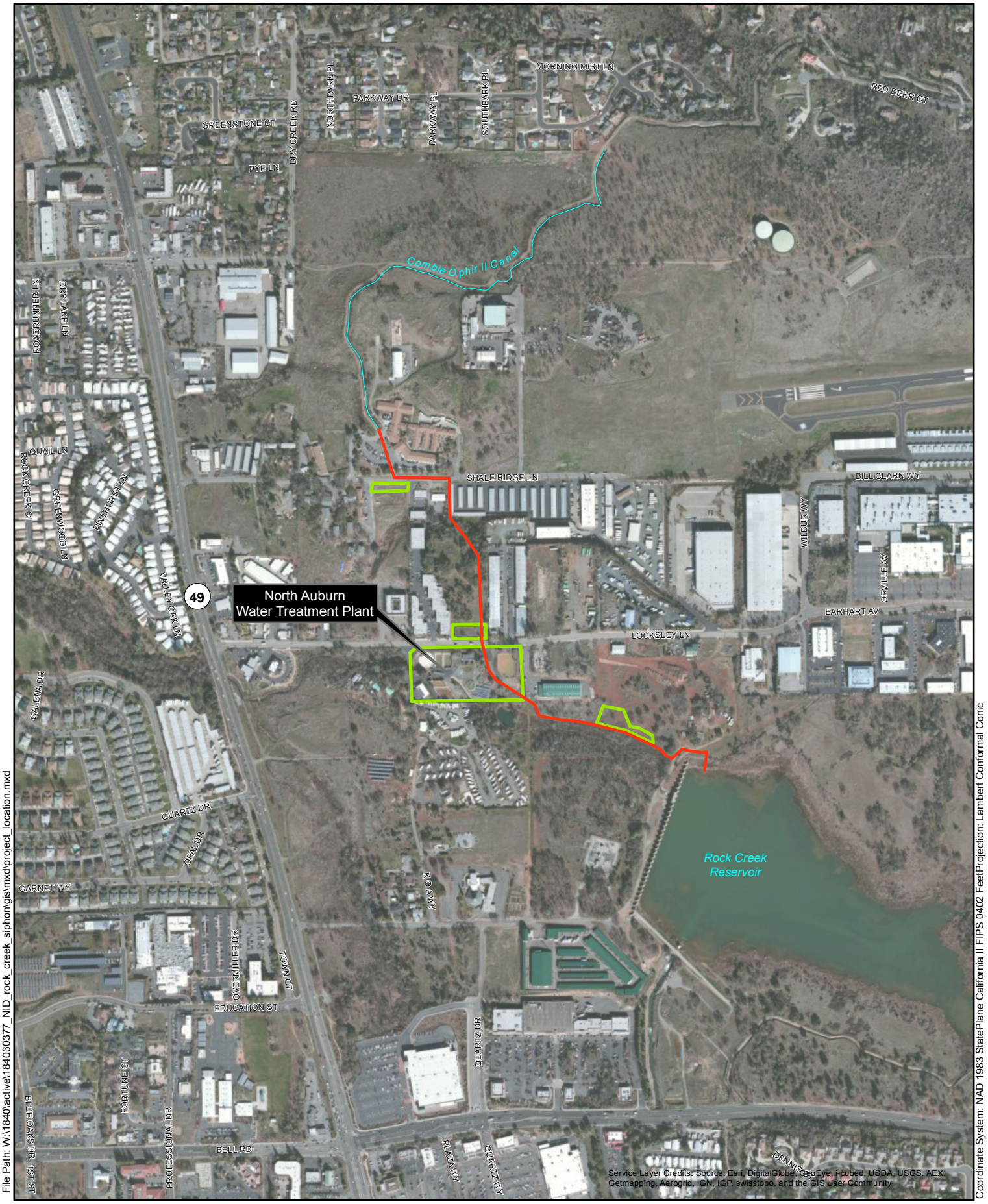

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Nevada Irrigation District • Rock Creek Siphon Project

Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

United Auburn Indian Community of the Auburn Rancheria
David Keyser, Chairperson
10720 Indian Hill Road
Auburn, CA 95603

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Keyser:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

The overall project area is located in Placer County in T13N, R8E, S 28, on the Auburn USGS 7.5' Quad. The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir with a turnout to the NID North Auburn WTP. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. A Project Location map is attached.

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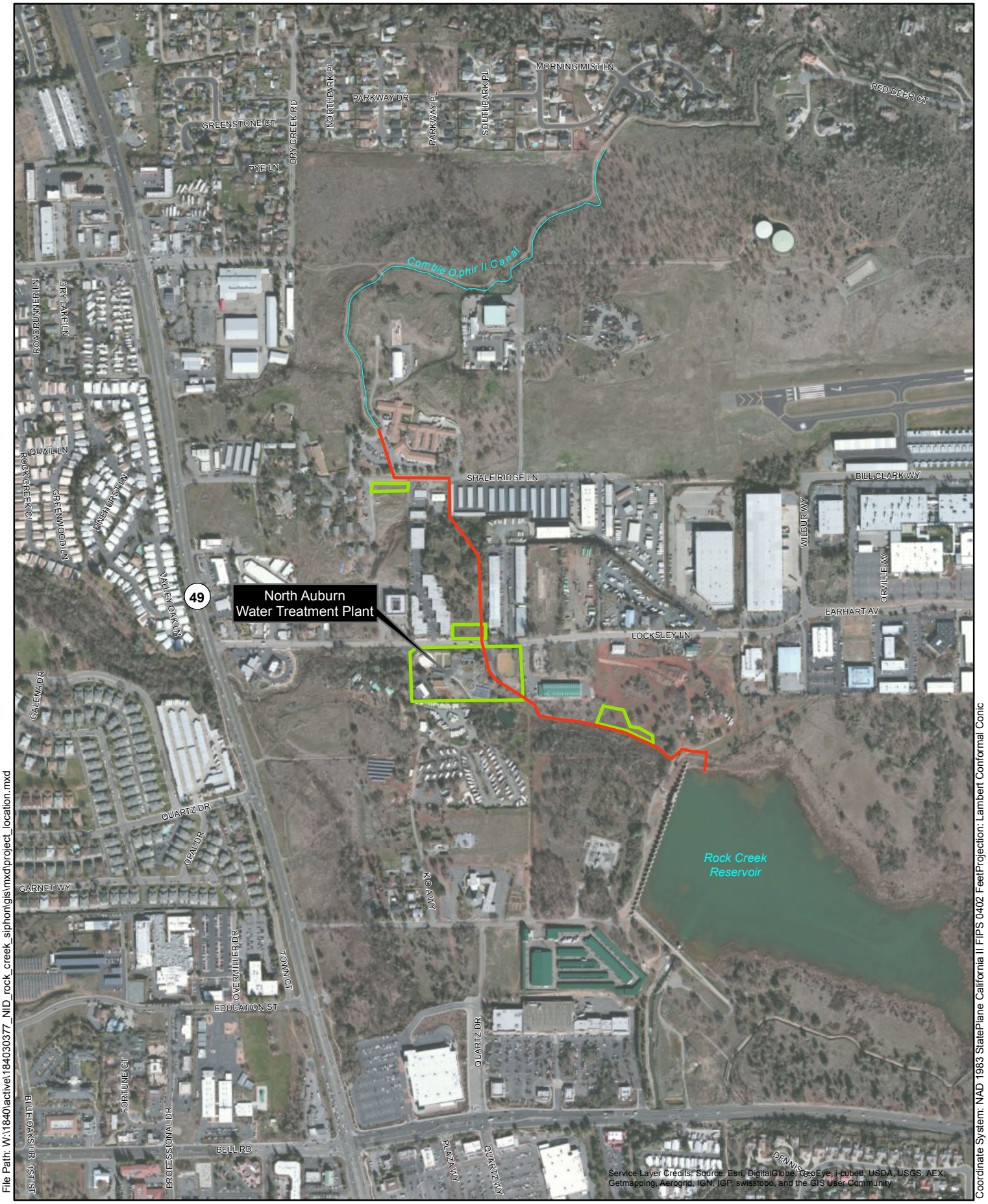

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Nevada Irrigation District • Rock Creek Siphon Project

Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

United Auburn Indian Community of the Auburn Rancheria
Danny Rey, THPO
10720 Indian Hill Road
Auburn, CA 95603

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Rey:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

The overall project area is located in Placer County in T13N, R8E, S 28, on the Auburn USGS 7.5' Quad. The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir with a turnout to the NID North Auburn WTP. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. A Project Location map is attached.

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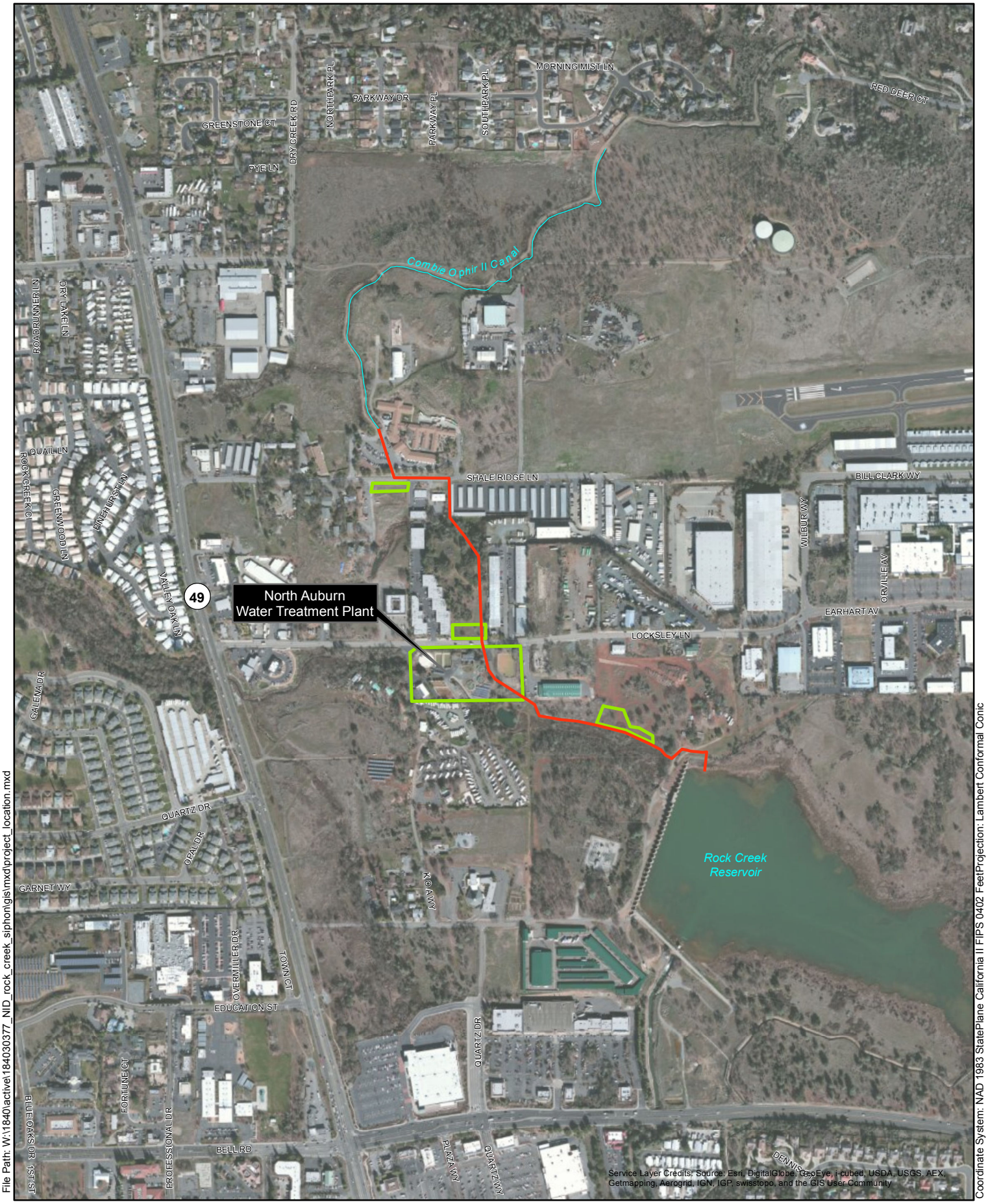

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Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

United Auburn Indian Community of the Auburn Rancheria
Marcos Guerrero, Tribal Preservation Committee
10720 Indian Hill Road
Auburn, CA 95603

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Guerrero:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

The overall project area is located in Placer County in T13N, R8E, S 28, on the Auburn USGS 7.5' Quad. The proposed Project involves the installation of a gravity pipeline to interconnect the existing Combie Ophir II Canal to Rock Creek Reservoir with a turnout to the NID North Auburn WTP. The connection will increase the reliability of the raw and treated water systems in the North Auburn area providing an increased level of service and fire protection. The proposed pipeline will not increase the existing system capacity and is intended only for reliability. A Project Location map is attached.

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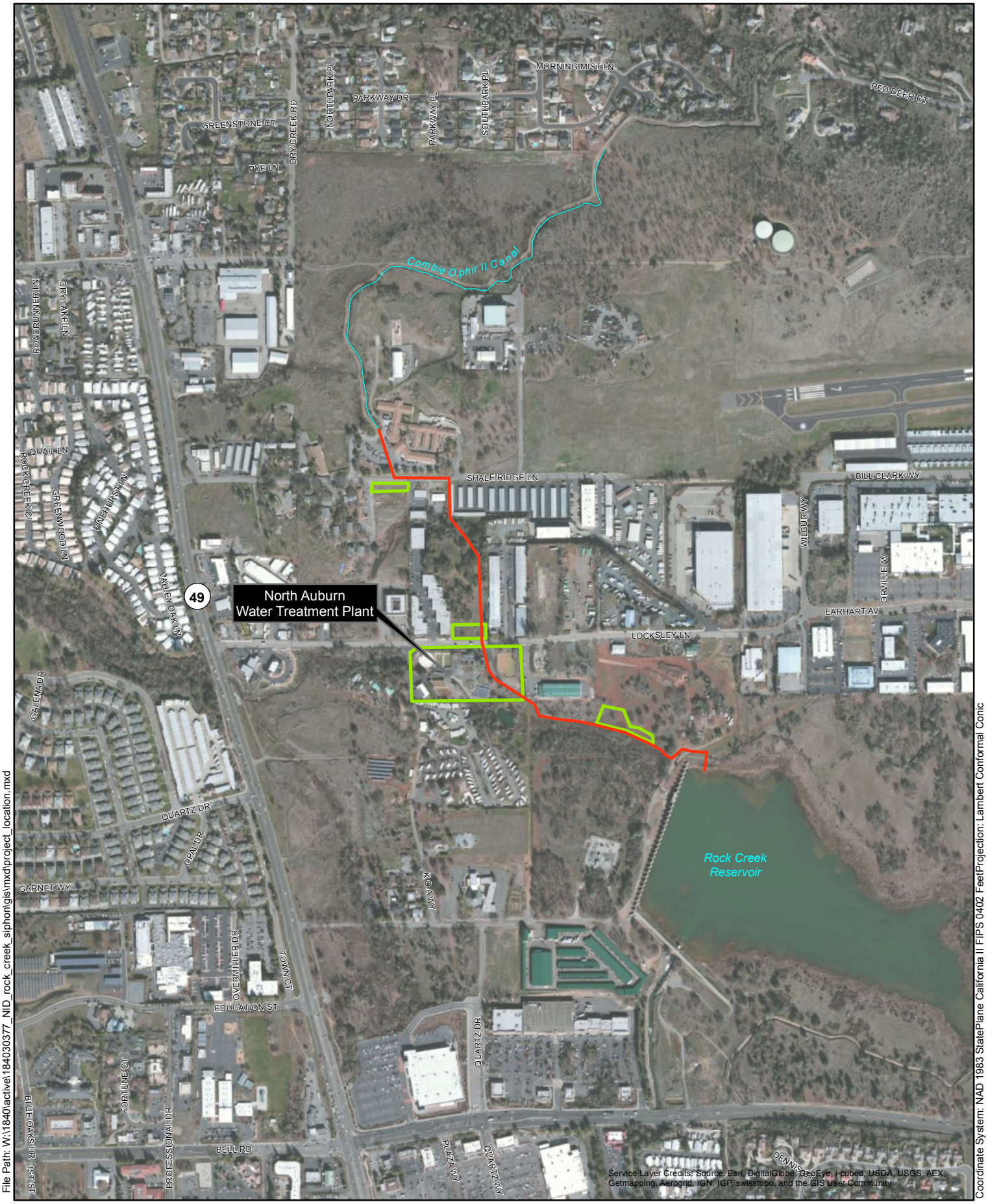

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Nevada Irrigation District • Rock Creek Siphon Project

Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

Shingle Springs Band of Miwok Indians
Daniel Fonseca, Cultural Resource Director
P.O. Box 1340
Shingle Springs, CA 95682

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Fonseca:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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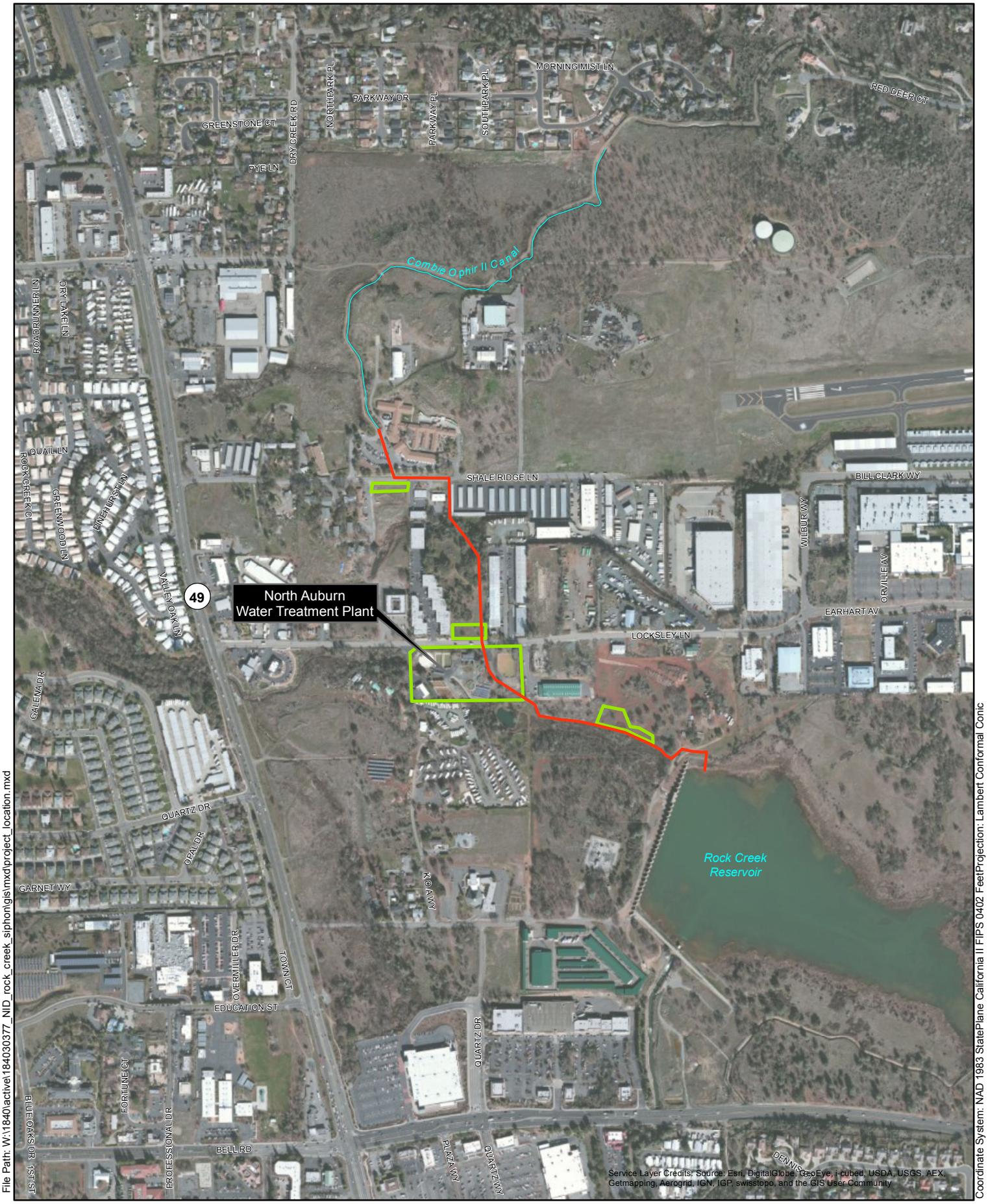

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Stantec Consulting Services Inc.
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Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

Shingle Springs Band of Miwok Indians
Nicholas Fonseca, Chairperson
P.O. Box 1340
Shingle Springs, CA 95682

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Fonseca:

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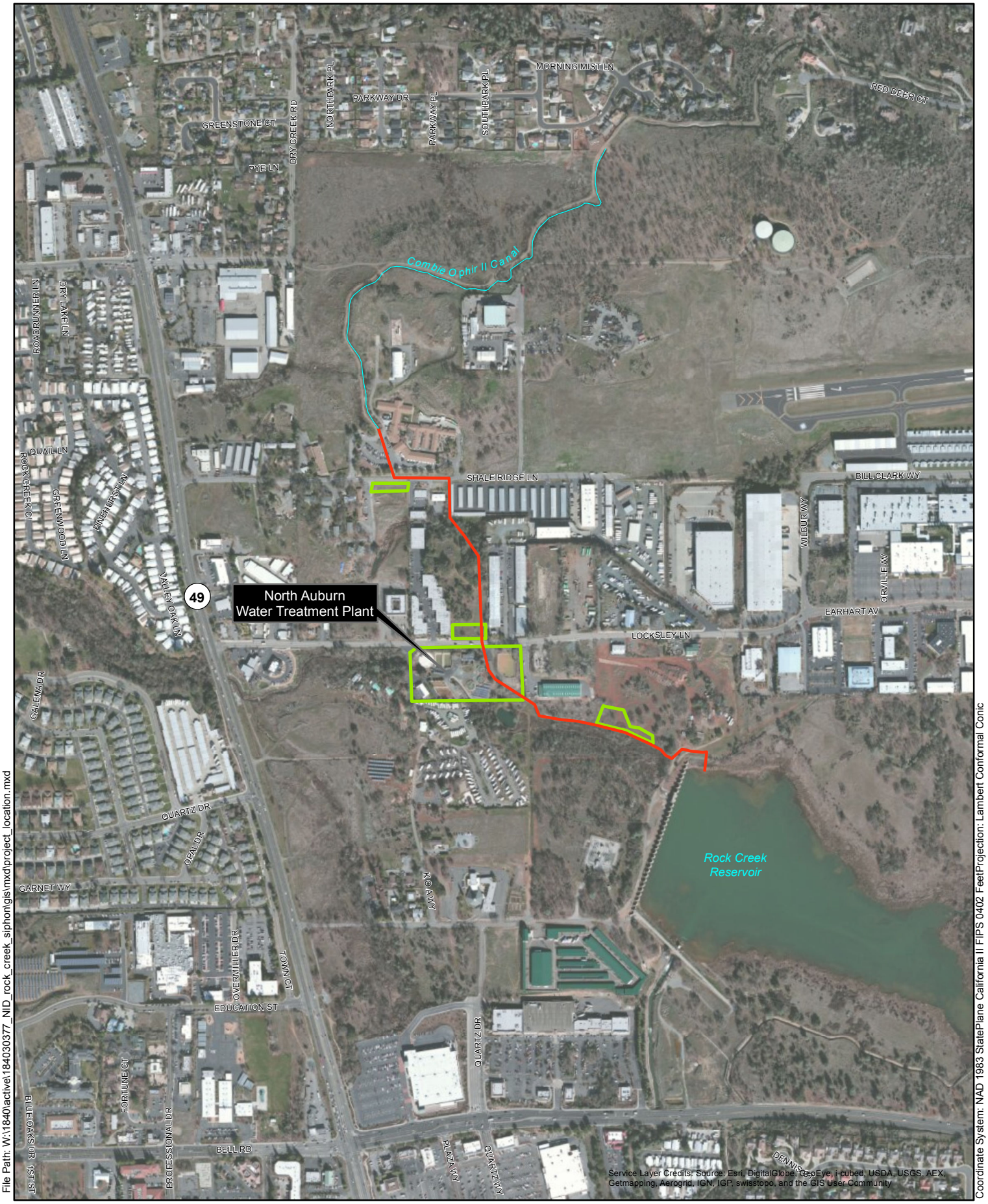

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Stantec

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- Potential Staging Areas

Project: 184030377; Sources: Stantec GIS 2013, NID GIS 2013, Placer County GIS 2013, ESRI 2013; Create By: K. Gross; Updated: 8/7/2013

Figure 2
Project Location

Nevada Irrigation District • Rock Creek Siphon Project

Stantec Consulting Services Inc.
101 Providence Mine Road, Suite 202
Nevada City, CA 95959
Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

Shingle Springs Band of Miwok Indians
Hermo Olanio, Vice Chairperson
P.O. Box 1340
Shingle Springs, CA 95682

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Olanio:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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If you have any information regarding Native American cultural resources within or adjacent to the project area or if you have any questions, please feel free to contact me directly via telephone (530) 470-0515 or e-mail at meagan.odeegan@stantec.com. Thank you for your assistance in this matter.

Sincerely,
STANTEC CONSULTING SERVICES INC.

Meagan O'Deegan

Meagan O'Deegan
Cultural Resource Specialist
Tel: (530) 470-0515
meagan.odeegan@stantec.com

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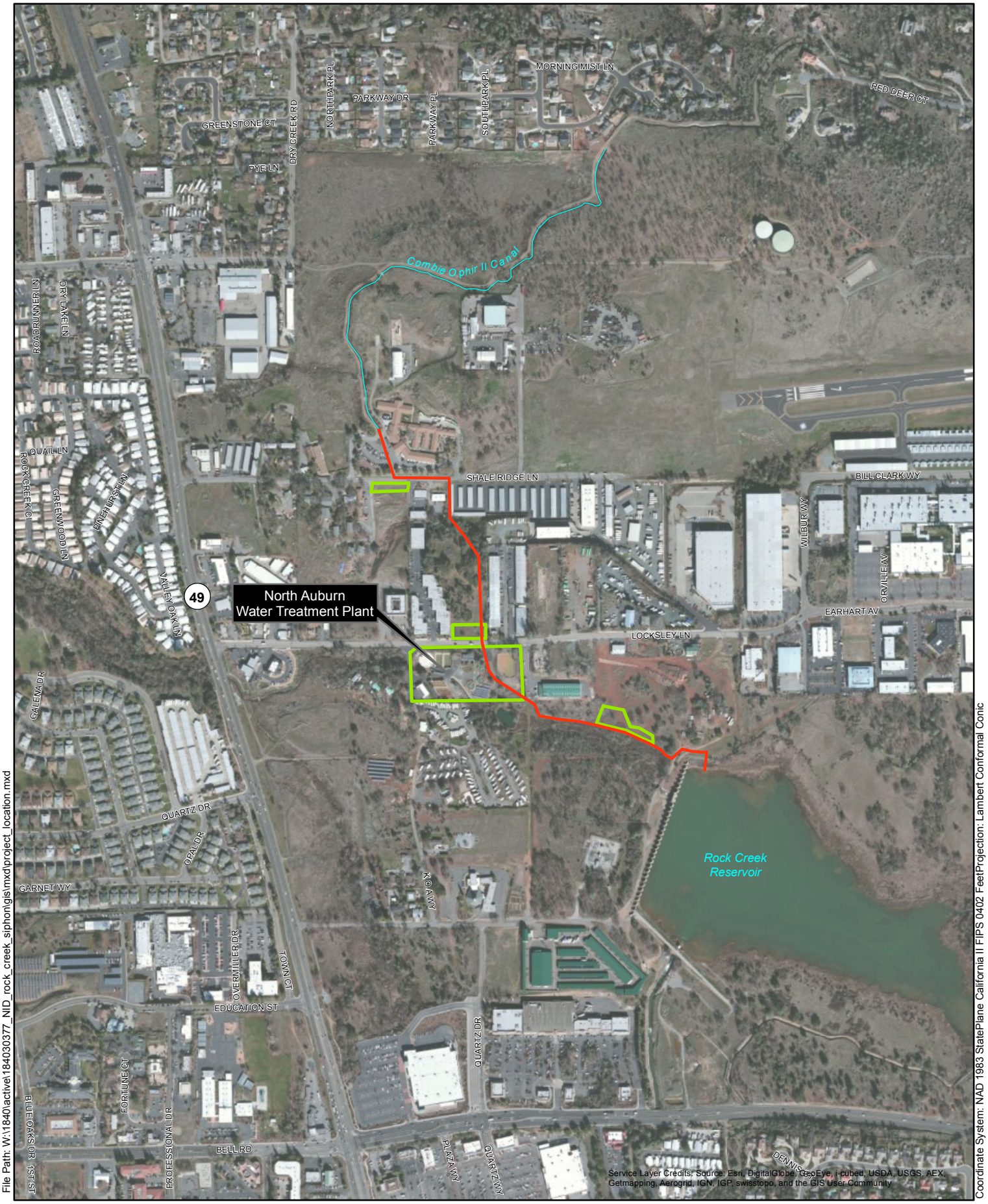

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September 3, 2013
File: 184030377

Colfax-Todds Valley Consolidated Tribe
Judith Marks
1068 Silverton Circle
Lincoln, CA 95648

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Ms. Marks:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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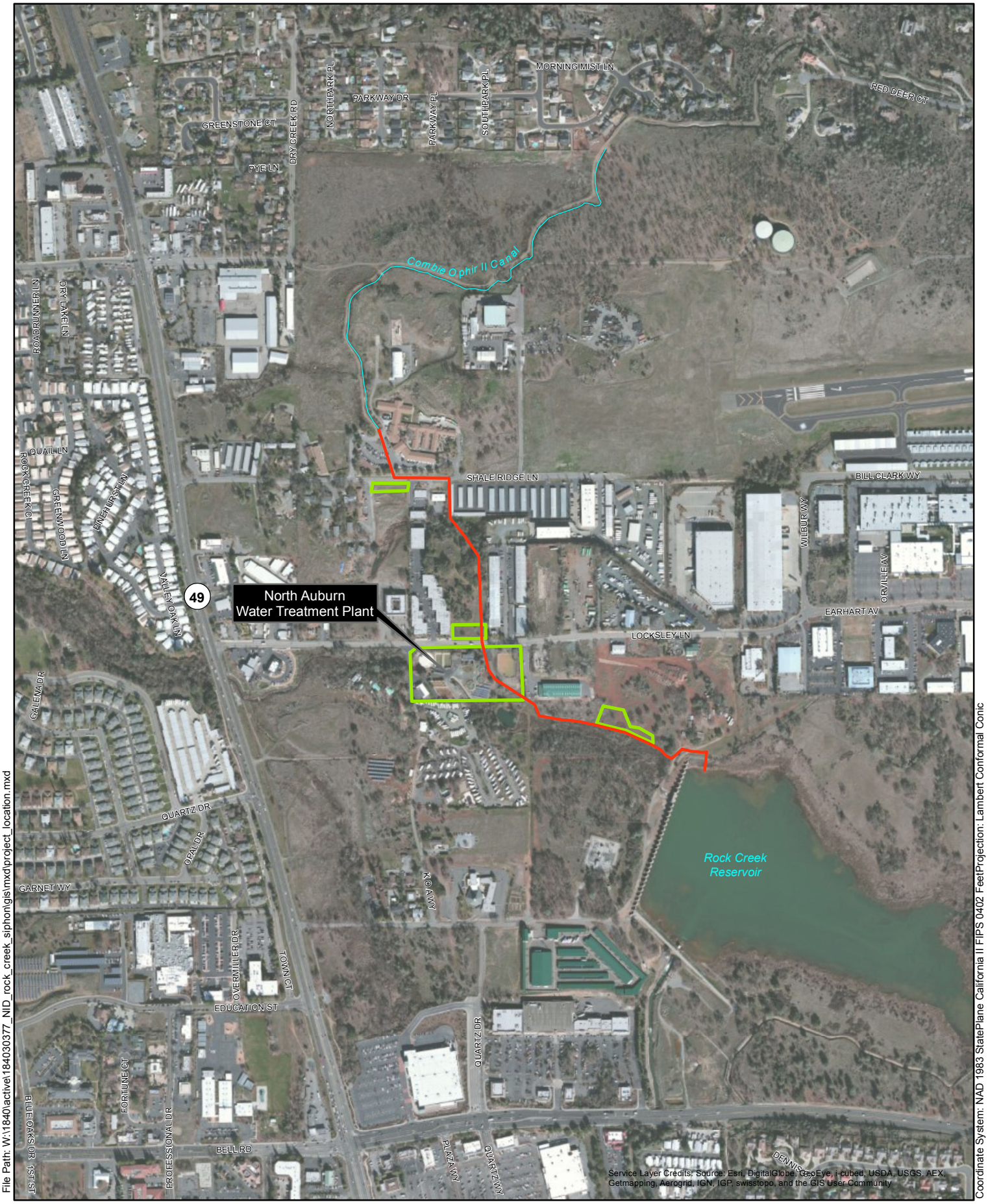

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Tel: (530) 470-0515
Fax: (530) 470-0518

September 3, 2013
File: 184030377

T' si-Akim Maidu
Grayson Coney, Cultural Director
P.O. Box 1316
Colfax, CA 95713

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Coney:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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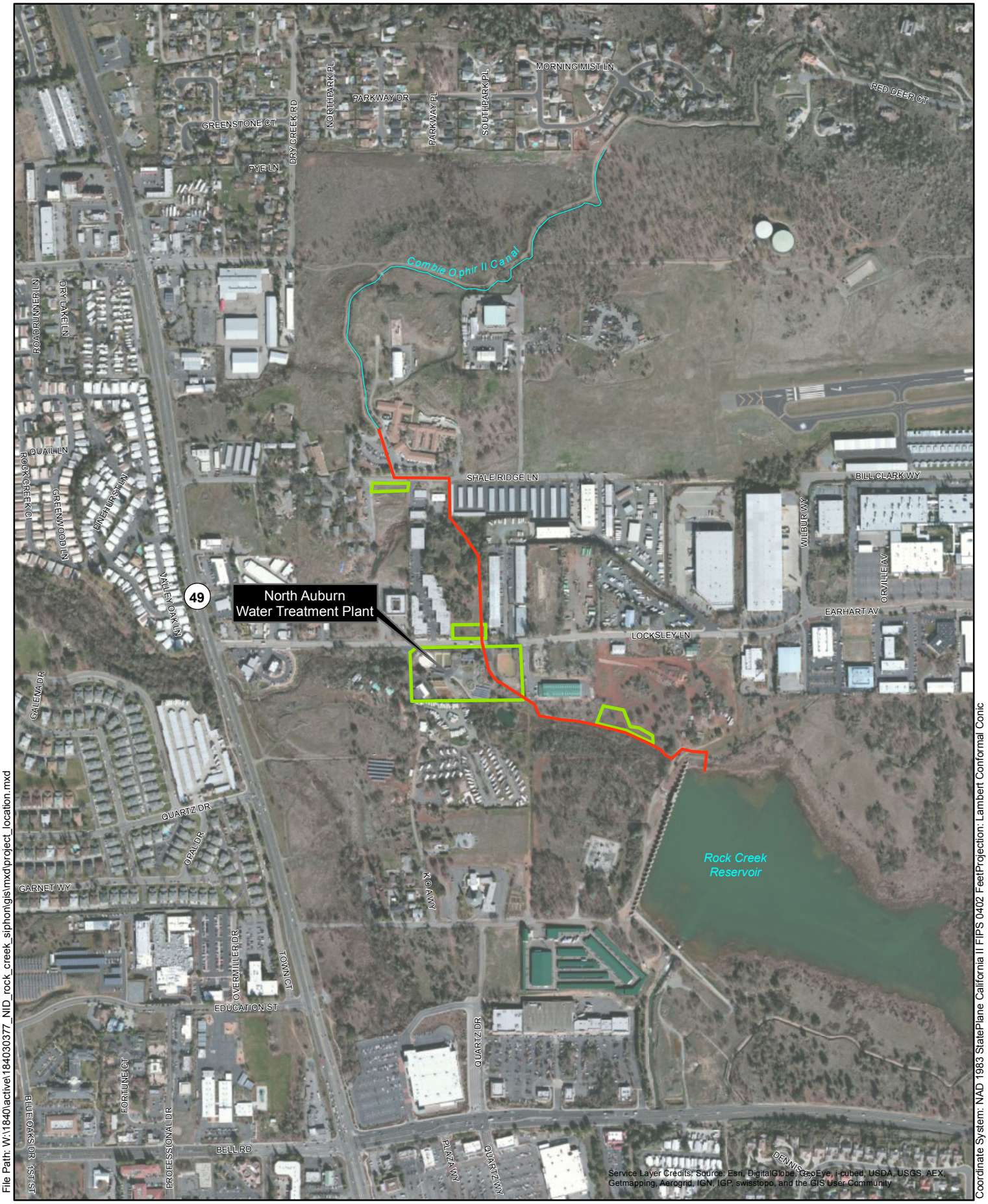

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Fax: (530) 470-0518

September 3, 2013
File: 184030377

T' si-Akim Maidu
Eileen Moon, Vice Chairperson
1239 East Main Street
Grass Valley, CA 95945

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Ms. Moon:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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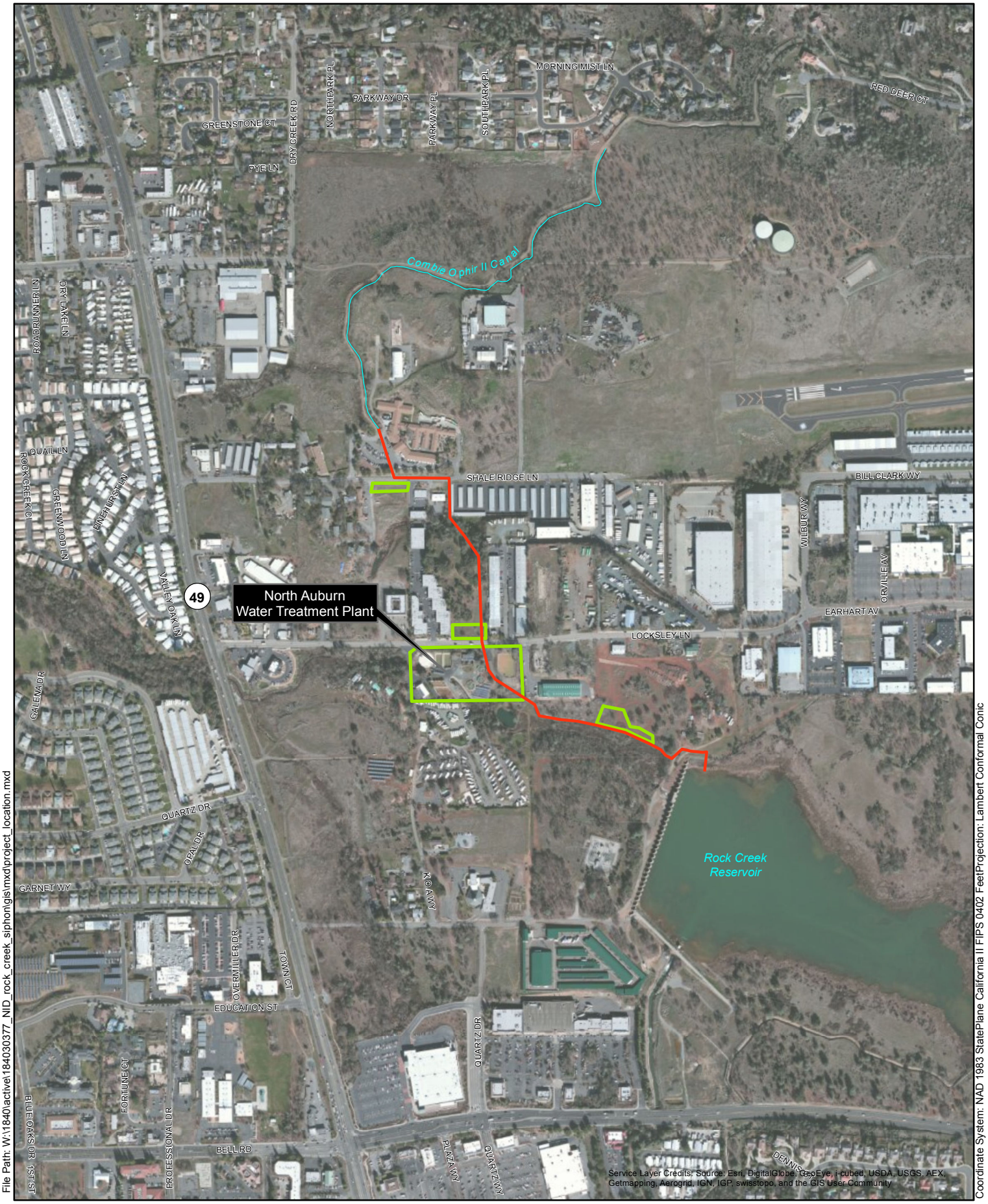

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Tel: (530) 470-0515
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September 3, 2013
File: 184030377

T' si-Akim Maidu
Don Ryberg, Chairperson
1239 East Main Street
Grass Valley, CA 95945

Reference: Nevada Irrigation District (NID) Rock Creek Siphon Project

Dear Mr. Ryberg:

Stantec Consulting is conducting a cultural resources study in support of the above referenced project. We would like to request any information you may have regarding Native American cultural resources within or adjacent to the project area.

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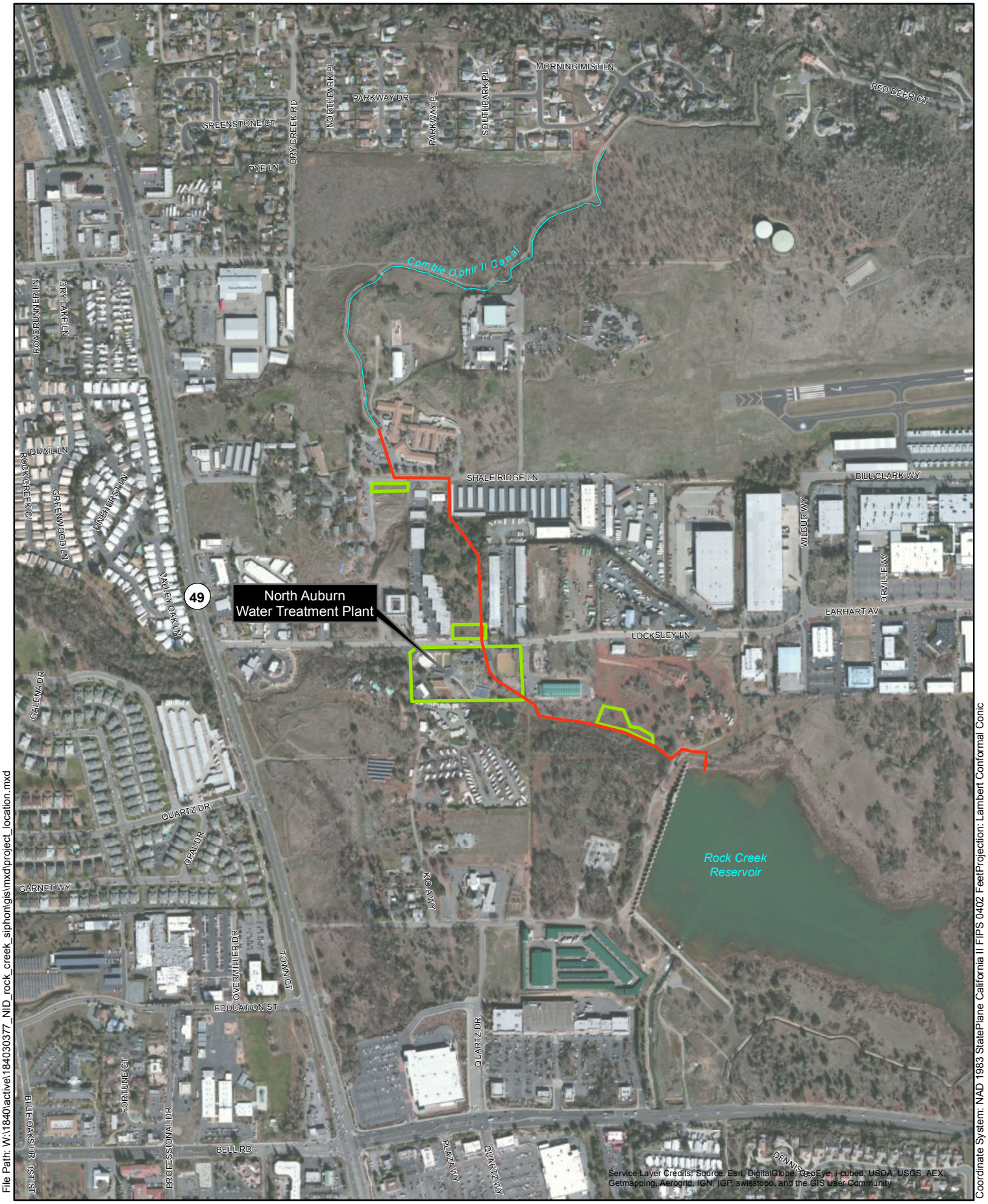

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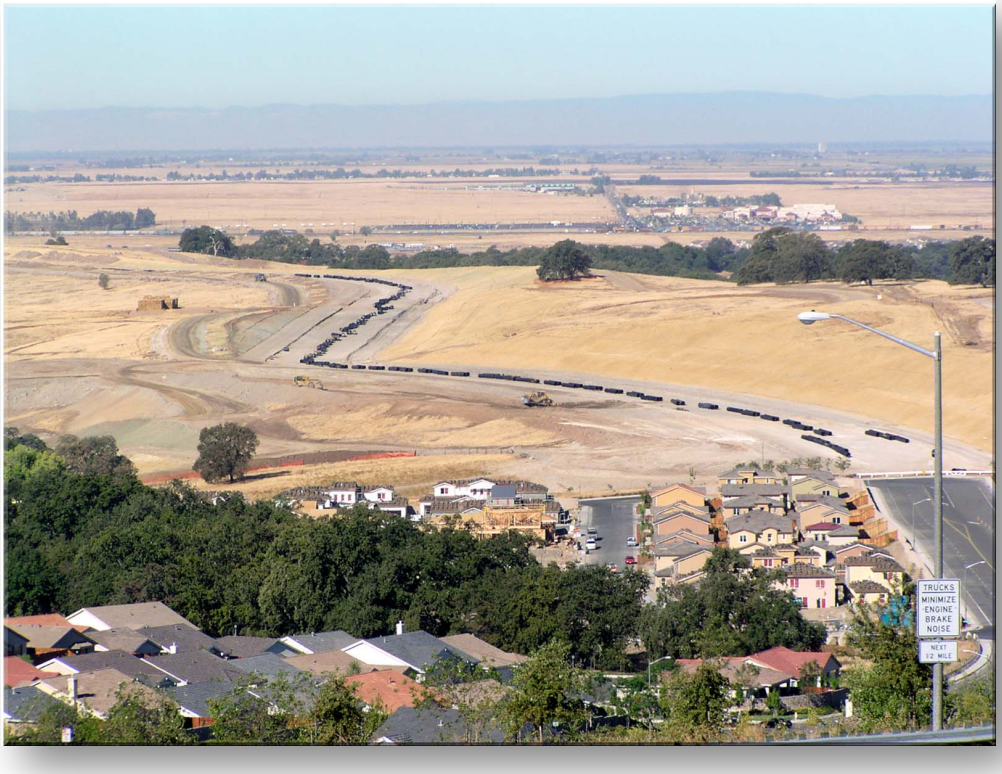
Project Location

Nevada Irrigation District • Rock Creek Siphon Project

Placer County Water Agency
2010 Urban Water Management Plan



ADOPTED JUNE 16, 2011

water • energy • stewardship

APPENDICES (*ABRIDGED VERSION)

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Appendix B-4 Water Shortage Contingency Plan

Appendix B-4 Water Shortage Contingency Plan

Western Water System

Through its Western Water System PCWA currently provides approximately 123,000 acre-feet of water annually, either directly or indirectly, to over 62,000 individual homes, businesses and irrigation customers, serving a total population of over 150,000.

The area served by the Western Water System extends from the community of Alta on the east, down the interstate 80 corridor, to the Sutter and Sacramento county lines on the west and south. The service area includes treated water deliveries to the communities of Alta, Monte Vista, Applegate, Colfax, Auburn, Loomis, Rocklin and Lincoln and much of the surrounding unincorporated areas. In addition to treated water service, PCWA provides irrigation water through its extensive canal system to individual customers, and untreated water for treatment and resale by other retail water purveyors.

The Western Water System has three primary sources of surface water: (1) PG&E contract supplies from the Yuba and Bear Rivers delivered through PG&E's Drum-Spaulding hydroelectric system into a network of distribution canals at various locations that are owned and operated by PCWA, (2) PCWA's Middle Fork Project water rights that can be delivered through a pump station on the American River near Auburn into the Auburn Ravine Tunnel, and (3) water rights on Canyon Creek. PCWA also has limited access to groundwater in the farthest western portions of its service area and it has a number of emergency intertie connections with other purveyors.

In 2009 the total delivery from the PG&E Yuba-Bear River source was about 105,000 acre-feet, an additional 11,000 acre-feet was delivered from the American River, 3,000 acre-feet was delivered from Canyon Creek, and 2,000 acre-feet was transferred from Nevada Irrigation District.

PCWA's canal system is the backbone of its Western Water System, taking gravity water delivery from PG&E at various locations, and delivering water to PCWA treatment plants, the treatment plants of several other public and private water purveyors and delivering irrigation water to approximately 3,900 customers.

The American River supply has only recently been developed as a reliable source; the infrastructure was constructed to facilitate continued planned urban developments as the Agency has reached its maximum allowed delivery rate under its PG&E Zone 1 water supply contract. The design delivery rate from the American River is about 100 cfs,

which is intended to provide about 35,500 acre-feet annually into the Western Water System.

In 2009 approximately 82,000 acre-feet (68%) was used for irrigation purposes serving approximately 3,900 customers and 39,000 acre-feet (32%) was delivered as treated water for municipal and industrial purposes serving a population in excess of 150,000.

Dry Year Supply Reliability

A review of historic PG&E delivery records, including the 1977 drought, and modeling studies done on the Middle Fork Project indicate that the worst case dry year scenario, at current levels of development, should assume only a 50% supply from PG&E and other watershed supplies, but a full supply from the Middle Fork Project on the American River.

Water Shortage Actions - General

A 50% cutback in PG&E and other non-American River deliveries means the loss of about 55,000 acre-feet based on 2009 deliveries.

One of the keys to understanding how to respond to the loss of such a significant amount of water is to first understand what is possible in terms of the use of other resources, such as Middle Fork Project water.

Middle Fork Project water can be double pumped, from the American River into the Auburn Ravine Tunnel, and from the tunnel up to the ground surface near Ophir, from where it can be delivered to PCWA's Foothill water treatment plant. At peak demand on the treated water system, Middle Fork Project water would be able to supply the Foothill Water Treatment Plant with enough water to meet lower Zone 1 treated water demands of about 32,000 acre-feet. But the American River supply facilities have little to no additional capacity to supply water for PCWA irrigation customers.

During a 50% cutback, the estimated 55,000 acre-feet of available supply would need to be distributed to treated water customers from Alta down through Auburn and to irrigation customers throughout the Western Water System. With the Lower Zone 1 treated water customers moved off the PG&E supply, the remaining normal demand for treated water and irrigation water is about 7,000 acre-feet (8%) for treated water and 82,000 acre-feet (92%) for irrigation.

Based upon these physical delivery characteristics and the large difference between treated and irrigation demands dependent upon the reduced PG&E supply, more severe cuts in delivery must be implemented in irrigation canals than in the treated water

systems. Additionally, state law and practical necessity dictate that public health and safety needs be prioritized, which rely on the treated water systems, and include fire protection, sanitation, hospitals, schools, and other critical needs. It should be noted that actions taken to reduce treated water demands are different than those taken in the canal system. Actions taken in the treated water system are generally requests upon the customers, whereas, actions taken in the canal system are operational changes made by the Agency.

Water Shortage Actions – Irrigation Canal Systems

With only a 50% supply, about 55,000 acre-feet, available from PG&E and other non-American River supplies, Lower Zone 1 treated water demands, approximately 32,000 acre-feet, would be supplied from the American River, and the other 7,000 acre-feet of treated water demands would be supplied from the remaining 55,000 acre-feet, which would leave 48,000 acre-feet of water to meet about 82,000 acre-feet of irrigation demands within the Western Water System.

The above scenario assumes full delivery to meet normal treated water demands with the remaining water available to meet irrigation demands. A water supply shortage that would result in a 50% reduction in water deliveries would be a regional water supply crisis, and probably a statewide crisis as well, with major news coverage. Treated water customers would be asked by the Agency to significantly reduce their water consumption and would no doubt respond favorably. However, even a 25% reduction in treated water consumption, which would be substantial given that it would be on top of the Agency's already aggressive normal year water conservation program, yields a relatively small amount of water (9,800 acre-feet) compared to a normal year irrigation demand of 82,000 acre-feet. Planning for the worst case in the irrigation system and then adaptively managing any cutbacks in treated water use to supplement irrigation deliveries is the recommended approach.

The actions required to reduce irrigation deliveries by 34,000 acre-feet (41%) shall include, but are not limited to, suspending deliveries to Zone 5 customers, changing the sizes of the orifices through which water is delivered to customers and instituting "rolling" or alternating canal outages. A variance procedure shall be established to excuse some customers from these actions based upon undue hardship. Such variances shall not prevent the Agency from meeting public health and safety needs.

Water Shortage Actions – Treated Water Systems

Actions intended to meet target demand reductions are detailed below for each of the stages. These actions shall be used as a starting point to meet targets and shall be monitored, as described later in this plan, for performance. The specific actions are not limited to the stages under which they are described and may be implemented in earlier or later stages as needed to meet targets.

Stage 1, "Water Alert," up to 10% Shortage - In addition to all the above, the Agency shall:

Strongly encourage the following treated water actions:

1. Use a broom or rake to clean streets, sidewalks, parking lots or driveways; do not use water for outdoor cleaning.
2. To the extent possible, do not add water to decorative fountains, pools, ponds and decorative waterways and do not refill them until the water shortage emergency is over. Use water recirculation system in all decorative water features.
3. Run dishwashers and washing machines only when there is a full load.
4. Repair toilet leaks and dripping faucets.
5. If drained, swimming pools should not be refilled.
6. Do not run water needlessly such as when brushing teeth, washing dishes by hand or shaving.
7. Limit shower time to five minutes and install low-flow shower heads and faucet aerators.
8. Never put water down the drain when you can use it for purposes such as watering plants, garden, or cleaning.
9. Avoid flushing the toilet unnecessarily. Dispose of facial tissues and other such waste in the trash rather than the toilet.
10. Serve water to commercial patrons only if expressly requested.

Stage 2, "Water Warning," up to 25% Shortage – In addition to all the above, the Agency shall:

Request all residential, commercial, and wholesale customers of treated water to reduce their water consumption by 25% or more by implementing at least the following actions:

1. Customers with an even-numbered street address should use water outdoors only on Tuesday, Thursday and Saturday.
2. Customers with an odd-numbered street address should use water outdoors only on Wednesday, Friday and Sunday.
3. Do not use water outdoors on Mondays.
4. Water only during early morning or after sunset and avoid watering during daylight hours.
5. Reset water timers to reduce by 25% the minutes a valve station is operating, to reduce outdoor irrigation to the extent practicable. Inspect your landscape irrigation systems for leaks, adjust spray heads to minimize overspray and prevent runoff.
6. Prohibit the use of treated water for non-essential flushing of mains and fire hydrants.
7. Applications for use of water from public hydrants will be granted subject to limitations of hydrant location and such other conditions as are reasonably necessary to prevent depletion of supplies needed for public health and safety purposes.
8. Contact all resale water suppliers to which the Agency provides water and urge that each request its customers to conserve water and reduce water use by 25% by adhering to the indoor, outdoor, commercial and hydrant water use practices set forth herein and as implemented by PCWA.

Stage 3, "Water Crisis," 35% Shortage – In addition to all the above, the Agency shall:

Request all residential, commercial, and wholesale customers of treated water to reduce their water consumption by 35% or more by implementing at least the following actions:

1. Customers with an even-numbered street address should use water outdoors only two days a week, Wednesday and Saturday.
2. Customers with an odd-numbered street address should use water outdoors only two days a week, Thursday and Sunday.

3. No watering on Monday, Tuesday and Friday.
4. Water only during early morning or after sunset and avoid watering during daylight hours.
5. Reset water timers to reduce by 35% the minutes a valve station is operating, to reduce outdoor irrigation to the extent practicable. Inspect your landscape irrigation systems for leaks, adjust spray heads to minimize overspray and prevent runoff.
6. Implement conservation pricing on treated water.
7. Public facilities should reduce their outdoor water usage by at least 35% from water they purchased under normal conditions.
8. Require the use of reclaimed water for dust control, earthwork, or road construction.
9. Implement stricter enforcement of the Agency's Rules and Regulations regarding waste.

Stage 4, "Water Emergency," 50% and Greater Shortage—Under stage 4 conditions, In addition to all the above, the Agency Shall:

Request all residential, commercial, and wholesale customers of treated water to reduce their water consumption by 50% or more by implementing at least the following actions:

1. Require that all treated water customers reduce their water usage by 50% of normal usage.
2. Suspend all new treated water connections.
3. Prohibit all residential lawn, garden, and landscape irrigation except for those customers who utilize water efficient irrigation systems.

Eastern Water System

Through its Eastern Water System PCWA currently provides approximately 150 acre-feet of water annually to residential and commercial customers located in Martis Valley just south of Truckee. This water system, named Zone 4, is disconnected from the Agency's other water system infrastructure. Zone 4 is neighbored by Northstar Community Services District (CSD) to the south and Truckee Donner Public Utility District (PUD) to the north. Currently, a single intertie exists with Northstar CSD.

The Eastern Water System is served entirely by groundwater from the Martis Valley Groundwater Basin located directly beneath the service area. The groundwater basin has a storage volume that far exceeds current annual withdrawals. The estimated annual safe-yield is 24,000 acre-feet, whereas, the current annual withdrawals are approximately 7,000 acre-feet. Based on the more than adequate storage and safe-yield of the basin, the likely cause of a water shortage in the Eastern Water System is infrastructure failure.

The repair time for an infrastructure failure in the Eastern Water System would generally be on the order of days for pipelines and weeks for major infrastructure, such as tanks and wells. However, the system is designed with significant redundancy, such that risk of a water shortage resulting from infrastructure failure is greatly reduced and generally includes only dead-end water mains.

In the case of a water shortage in the Eastern Water System, the water shortage actions detailed above for treated water systems shall be used.

Stage Implementation and Monitoring Procedures

The Agency maintains a draft water shortage contingency resolution that is adopted during water shortages. Resolution 11-17 resulting from the April 19, 2011 failure of PG&E's Bear River Canal is provided as an example as referenced in the next section of this plan. Legal requirements, including public notices and hearings, shall be followed in adopting any resolution. However, Agency staff may implement operational changes in the canal systems and request voluntary actions by treated water customers on an interim basis to meet public health and safety needs as detailed above until such a resolution can be adopted.

In a water shortage, and particularly that resulting from failure of infrastructure, critical roles shall be established and appointed by the General Manager. These roles may include, but are not limited to Incident Commander, Operations Manager, and Public Information Officer. Other supporting roles that should be considered are engineering, mapping, customer service, information service, and public outreach. Other more detailed instructions may be found in the Agency's Emergency Response Plan.

Under normal water supply conditions, water production figures are recorded daily by Field Services and Technical Services operations staff. Totals are reported monthly and incorporated into a water supply report.

During a Stage 1 water shortage, weekly production figures are reported to the Director of Technical Services, or his or her designee. Monthly production is compared to the

target production to verify that the reduction goal is being met. Appropriate monthly reports are forwarded to the department heads and General Manager's office. Appropriate monthly reports are also sent to the General Manager and are included in the Board of Directors meeting materials.

During a Stage 2, 3, and 4 water shortages, daily production figures are reported to the Director of Technical Services, or his or her designee. Weekly production is compared to the target weekly production to verify that the reduction goal is being met. Appropriate weekly reports are forwarded to the department heads and General Manager's office. Appropriate monthly reports are sent to the General Manager and are included in the Board of Directors meeting materials.

In all stages, if targets are not met, Agency staff may implement further actions as long as they fall within the limits set by the resolution adopted by the Board of Directors in response to the shortage. Actions needed in excess of these limits, or reductions in actions, must be approved by the Board of Directors.

Case Study – 2011 Failure of PG&E's Bear River Canal

PG&E's Bear River Canal, the primary source of water to PCWA's Zone 1 system, completely failed due to landslide on April 19, 2011 about 1.5 miles downstream of Rollins Reservoir, near the City of Colfax. Repairs were completed and normal water service from PG&E to PCWA was restored 48 days later, on June 5, 2011. For those 48 days PCWA operated under severe water shortage conditions. Initially the only water available from PG&E to the Western Water System was water that could be delivered into the Agency's Boardman Canal near Alta, above the point of the failure. Given the time of year, this amounted to a 90% reduction in normal deliveries from PG&E. In this case the cause was infrastructure failure and not a drought, but the impact to PCWA customers and PCWA's responses were similar to what they would be in a drought, and providing the record of this experience herein may provide useful information in a future water shortage situation.

Catastrophic Supply Interruption

The Agency's water systems are susceptible to interruption in water supply due to catastrophic events. In particular, fire, landslides, major pipeline failures, power outages, and earthquakes are risks to PCWA water supply infrastructure.

Water supplied by PG&E is delivered through a canal system that traverses hillsides and crosses valleys using raised flumes and pipelines. The Agency has established a Renewal and Replacement Program to replace aging infrastructure along the canal system;

however, this program is phased over a long period of time. The remaining supplies are delivered through pumping stations that have back-up power, with the exception of the American River and Ophir Road Pump Stations.

The Agency has prepared a Security Vulnerability Assessment and maintains an Emergency Response Plan. The Emergency Response Plan provides general procedures for responding to catastrophic supply interruption (i.e. infrastructure failure).

Analysis of Expenditures and Revenue during Shortages

There are two primary objectives during a water shortage, reduce water use and maintain adequate revenues to meet revenue requirements. Portions of the Agency's revenues are derived from volumetric based water sales, hence, during a water shortage the Agency's revenues would decrease. Depending on the root cause of a water shortage, additional unbudgeted expenses would most likely be incurred and can vary substantially. A drought induced water shortage would result in additional expenses for public outreach, conservation enforcement and various other associated costs. A infrastructure failure induced water shortage would incur similar costs as a drought situation, plus other costs such as construction of alternate source facilities or alternative supply transmission costs, such as pumping which can be very expensive.

For example, if there is water available, the Agency has the ability to access water in the American River through double lift pumping, which based on the current energy prices are estimated at $1 million per month and would pump an amount equal to approximately 90% of peak demand in a certain service area. However, these costs can vary significantly depending on demand. In an water shortage caused by an infrastructure failure, pumping costs would most likely be the most significant expense. Other non-capital expenses can vary substantially from $0 to $50,000 or more per month depending on the nature, magnitude, and duration of the water shortage.

The Agency formally adopted a Net Asset Reserve and Designation Policy that provides for the setting aside of funding for, among other matters, unforeseen needs. This policy is designed to ensure reasonable and adequate funding of Agency reserves and designations. The policy establishes distinct purposes, funding and use for designated amounts, as well as, setting target-funding levels, both minimums and maximums. The policy identifies events or conditions, which would prompt the use of these funds. The Agency has established several Operational Designations as follows: contingencies, operations, catastrophic event and revenue volatility. Each of these designations has varying levels of amounts from zero to $2.9 million.

The 2010 budget for the Western Water Division and Eastern Water Division were $35.5 million and $0.55 million, respectively. The Operational Designation for these two Divisions total $6 million and $5,000, respectively. In the event of a water shortage, to maintain adequate revenue requirements, the Agency's Board of Directors could consider the use of designations or a water rate adjustment. The use of designations requires Board approval. Currently, the Agency does not have an established drought or water shortage pricing schedule, thus, any rate adjustment would be required to follow the Proposition 218 notification process and other rate adjustment regulations.

Prohibitions and Penalties

The Agency prohibits water waste in its Rules and Regulations and has established a water waste charge to recover costs of Agency staff time to respond to the water waste. Additionally, the Rules and Regulations provide for use of flow restrictors and discontinuance of service as enforcement during water shortages.

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Placer County Water Agency

Water Shortage Contingency Plan

2011 Failure of PG&E's Bear River Canal

Selected Documents

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News Releases

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NEWS RELEASE

FOR IMMEDIATE RELEASE:

April 19, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

Foothill Water Agencies Hustle to Keep Supplies Flowing After Canal Break

AUBURN -- The Placer County Water Agency is striving to keep customers supplied with water after a major break on the Pacific Gas and Electric Company Bear River Canal cut water flows to the Agency and its customers.

PG&E spokesman Paul Moreno said the incident was reported about 5 a.m. Tuesday (Apr. 19) at a remote location near Colfax, below Rollins Reservoir. He said the canal was flowing at a rate of about 400 cubic feet per second when the break occurred and that flows into the canal were stopped directly following the report.

Moreno said the company is still assessing damages but it appears a section of the large canal ruptured after a supporting earthen berm collapsed. Water from the canal ran about 100 feet down the steep canyon wall into the Bear River.

“The canal system was inspected by foot patrol on Apr. 1,” Moreno said. “No potential issues were identified at that time. It is not known at this time if heavy recent rains may have contributed to the earthen berm failure.”

Meanwhile, PCWA, which receives most of its water supply through the PG&E canal system, was working under emergency procedures to re-route water supplies to the Agency’s network of canals and to water quality plants in order to serve its treated water customers.

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PCWA immediately took proactive steps to open interties with Nevada Irrigation District (NID) and City of Roseville and began pumping water from the American River to make up for some of the water shortages.

Even so, PCWA Director of Field Services Mike Nichol said irrigation water customers would be impacted the most and that there will be shortages and rolling 24-hour outages until PG&E supplies to raw water customers are fully restored.

PCWA General Manager David Breninger said, "The agency is focused on how to best serve our customers. Treated water customers will be impacted to a lesser extent; but shortages and rolling 24-hour outages are expected, unfortunately, to impact up to 4,000 customers who use raw water from the PCWA canal system until repairs can be made by PG&E to their canal and flows are fully restored to PCWA."

Breninger said, "PCWA is urging all water customers, those using treated, metered water, as well as those using canal water, to please conserve water and to use it efficiently and wisely during the emergency."

Also, NID, which receives water through the same PG&E Bear River Canal for service to irrigation water users in the rural Auburn to Lincoln area, was working with PCWA and making arrangements for alternate water supplies to its Placer County service areas.

Nichols said, "PG&E has advised PCWA that it was unknown at this time how long it will take to repair the PG&E canal and how long the water shortage would last."

A similar incident occurred Apr. 10, 1996 when the Bear River Canal ruptured near the Bear River Campground. The water supply emergency lasted several weeks as PG&E worked its way through a lengthy permitting and repair process.

More information on the water emergency and the areas affected is being made available on the PCWA website at *www.pcwa.net.*

The agency's Customer Service representatives may be reached at (530) 823-4850.

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NEWS RELEASE

FOR IMMEDIATE RELEASE:

April 22, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

PCWA Response in Wake of Canal Failure: Conservation

AUBURN -- Water supplies to the Placer County Water Agency and its customers remain limited following a major break to a Pacific Gas & Electric Company water supply canal. A comprehensive report of the emergency was given to the PCWA Board of Directors at Thursday's (Apr. 21) board meeting.

"The message to all PCWA customers at this time is water conservation," said PCWA Director of Field Services Mike Nichol, who termed the incident the most serious outage he's seen in 22 years with the water agency.

PCWA staff and officials of the Pacific Gas and Electric Company briefed the board on their respective responses to the Apr. 19 failure of a portion of PG&E's Bear River Canal.

The canal is critically important for conveying water to PCWA and its customers. The PG&E canal was nearly full when a 40-foot section of it ruptured when ground beneath it slid down the hillside. The canal is located in rugged terrain along the Bear River canyon near Colfax.

PG&E Director of Power Generation Alvin Thoma who traveled from San Francisco and Bill Williams, PG&E Hydro Superintendent of PG&E's regional office, briefed the Board about the canal's failure.

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Thoma said inspectors, engineers, surveyors, foresters and construction workers were at the scene assessing damages, planning repairs, working with property owners and creating access to the remote site.

He said PG&E is studying all options for a permanent reconstruction of the canal and restoration of water supplies to the agency.

Thoma said PG&E had inspected the canal earlier this month and it showed no apparent signs of stress. He said the incident does not appear to be seismic related and is most likely due to saturated ground from this year's heavy rains.

PCWA staff described the agency's rapid response to the emergency and outlined a variety of strategies being pursued to both cope with and to keep water flowing to agency customers with limited supplies.

Agency General Manager David Breninger said, "The water agency is coordinating with the Nevada Irrigation District, City of Roseville, City of Lincoln and others, as well as pumping water from the agency's American River supplies to supplement flows to the PCWA water system. However, these sources will not make up for all of the shortage caused by the canal's failure."

"The agency is asking all water customers to voluntarily conserve, reduce water usage and to use water efficiently and wisely during the emergency," said Breninger.

In responding to the emergency and in striving to spread as much water as possible to customers across the agency's expansive Zone 1 irrigation canal system, PCWA had to immediately implement rolling canal system "water outages."

"Rotation of canal water availability is necessary so that we can equitably spread as much water and as often as possible to as many Zone 1 irrigation canal customers with our limited supplies. Rolling water outages will continue and may have to extend beyond 24-hour durations until PG&E completes canal repairs and full water supply flows are returned to PCWA," said Breninger.

He added, "Our agricultural growers in far western Placer County, Zone 5 will also receive limited water deliveries through the Auburn Ravine conveyance system."

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Breninger urged irrigation canal customers "to implement their own contingency plans for storage, watering animals, livestock and crops while the agency is faced with diminished supplies."

To alert irrigation canal water users to the seriousness of the situation, the agency staff activated its emergency alert telephone notification system, posted information on its website and sent letters to irrigation canal customers.

"Adjustments have also been made to the agency's extensive treated water system to reduce usage system-wide," said Breninger. He emphasized the need for "voluntary water conservation actions by every treated water customer during this emergency."

He concluded, "At the moment, the recent cool and damp weather is working in everyone's favor, but conditions will change as seasonal warming and demands for water pick up. As this occurs, it will become difficult for PCWA to meet every customer's expectations for water until full supplies from PG&E to PCWA returns to normal conditions."

The board thanked the PG&E representatives for their presence and the company's response to the emergency. The board complemented PCWA staff for their swift actions in wake of the emergency.

Status reports about the emergency will be made at each board meeting. The next regular meeting is Thursday, May 5, 2:00 p.m., at the PCWA Business Center, 144 Ferguson Road, Auburn.

Information about the emergency is posted on the agency's website at *www.pcwa.net* or by calling weekdays the PCWA Customer Services Center at (530) 823-4850 or toll-free (800) 464-0030 or by e-mail at customerservices@pcwa.net

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NEWS RELEASE

April 29, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Conservation Urged

Water Shortage Emergency Considered in Placer County

AUBURN – The Placer County Water Agency is preparing to declare a water shortage emergency because its main water supply was severed when a Pacific Gas and Electric Company (PG&E) canal failed. General Manager David A. Breninger called this "a dire, catastrophic situation."

He said, “Staff is doing everything we can to strive to keep water flowing to our tens of thousands of customers with the very limited supplies available to us since Apr. 19 when the PG&E’s Bear River Canal failed.” The canal is the main water supply to PCWA and its customers.

Breninger said, “I’m extremely disappointed that more than 10 days after the incident PG&E has not been able to provide a realistic timetable for an emergency water bypass or a permanent repair to assure the prompt return of water supplies to PCWA for our customers.”

Meeting in special session late Thursday afternoon (Apr. 28), the PCWA Board of Directors set a public hearing for Tuesday, May 10, to further review the situation and to consider an emergency water shortage declaration. The public hearing is set for 5:30 p.m. at the Holiday Inn conference room, 120 Grass Valley Highway, in Auburn.

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PG&E representatives said, at the April 28 Board meeting, that the repair is a top priority but the site remains unstable and unsafe for workers. "It's very difficult," said PG&E partnership coordinator Kevin Goishi. "We're talking about a very substantial structure on a landslide. The subsurface conditions are unknown."

PG&E has reviewed the site and is studying all options for a temporary bypass and permanent solution. Goishi said he is hopeful PG&E will be able to provide more information in coming days.

The slide that severed the canal is in a remote, rugged area near Colfax. At the time of the break, the canal was flowing at about 400 cubic feet of water per second (cfs). The supply is normally shared between PCWA and Nevada Irrigation District for their customers in Placer County.

"Normally up to 244 cfs of water would be flowing to PCWA, but now there is absolutely none," said Breninger.

Adjoining water utilities immediately responded to PCWA's call for help on April 19 by providing what they can of limited supplemental supplies to the Agency. "But this won't be enough water as the weather heats up and the demand for water increases," Breninger said. "All PCWA irrigation and treated water customers are asked to conserve now what limited water is available." Breninger expects in the weeks ahead the agency to face "extremely serious shortages and probably won't be able to meet many customers' water needs."

"Basically without a massive infusion of water very soon from PG&E to PCWA thousands of our customers face a stark reality of little to no water in certain regions of our vast service area," added Breninger.

Serious impacts are anticipated to irrigation water customers who use canal water along the Interstate-80 corridor from Christian Valley, Bowman, north Auburn, City of Auburn, Shirland Tract, Ophir and Newcastle. The agency supplies nearly 4000 canal water customers. Rolling canal outages began in many areas at the first reports of the PG&E canal's failure that severed all supplies to PCWA.

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Agency officials expressed extremely serious concern for all of their customers.

PCWA directors noticed the irony of the situation, an inability to provide enough water following one of the wettest winters on record. "There's water everywhere but we can't get to it," said District 2 Director Alex Ferreira. "We're in a terrible position."

Information about the emergency is posted on the agency's website at *www.pcwa.net* or by calling weekdays the PCWA Customer Services Center at (530) 823-4850 or toll-free (800) 464-0030 or by e-mail at customerservices@pcwa.net.

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NEWS RELEASE

May 4, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Conservation Urged

PCWA Faces Emergency; Pushes PG&E for Canal Repair

AUBURN – "Crisis management is in full swing at the Placer County Water Agency, where the agency's primary supply of water remains severed two weeks after an Apr. 19 failure of the Pacific Gas and Electric Company's Bear River Canal," said PCWA Chairman Lowell Jarvis.

The canal conveys water to PCWA Zone 1 customers. The supply serves a huge area including Auburn, Newcastle, Loomis Basin, Rocklin, Lincoln and other communities and farms. The PCWA Board of Directors met in special session Tuesday afternoon (May 3) for another briefing on the situation.

The agency will host a public outreach and informational meeting on the water crisis at 5:30 p.m. today (May 4) and again Thursday (May 5) at 5:30 p.m. (which follows a regularly scheduled 2 p.m. Thursday board meeting). The May 4 and 5 informational meetings will be held at the PCWA Business Center located at 144 Ferguson Road in Auburn.

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A water emergency declaration is under consideration for a public hearing at 5:30 p.m. on May 10 at the Gold Country Fairgrounds, Auburn. (In anticipation of a large crowd and parking, the meeting was moved from the Auburn Holiday Inn.) The public hearing on May 10 at the Auburn Fairgrounds will include a public informational session starting at 5:30 p.m. with the Board meeting and hearing to commence at 6:00 p.m.

PCWA General Manager David A. Breninger said, "Currently, the area most impacted is Upper Zone 1 where 50 percent or less of normal supplies are available for our customers." He said, "The situation, unfortunately, will only grow worse as the weather warms and water demands rise."

In a May 2 letter to PG&E's corporate office in San Francisco, Jarvis wrote, "Unless PG&E can provide at least significant amounts of temporary water supplies within days, the damage to PCWA's 150,000 water users, their property, their livelihoods, their businesses and their livestock will be dire if not catastrophic."

An estimated 40-foot section of the Bear River Canal was ruptured when the land beneath it slid down a canyon wall above the Bear River, about 1.5 miles downstream from Rollins Reservoir. At the time, the canal was carrying about 400 cubic feet of water per second (cfs). PCWA is entitled to as much as 244 cfs of the total. "Currently no water is flowing to PCWA from the breached canal which is the cause of the water supply crisis," said Breninger.

Attending the PCWA board meeting was Alvin Thoma, PG&E's director of power generation, who said the company recognizes the urgency of the situation and a rapid repair is a top priority at every level of PG&E management. He said PG&E is mobilized at the site, studying best options for temporary and permanent repairs, and should be able to announce a plan "in a matter of days."

Thoma said a temporary bypass could carry from 150-200 cfs of water. PCWA Director of Strategic Affairs Einar Maisch added that the agency, at minimum, definitely needs at least 80 cfs to get through the coming weeks.

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In reports to the board, Breninger and members of his management team reported on system adjustments, rerouting of water supplies, rotating water outages for irrigation water customers, and cooperative efforts with surrounding water suppliers.

Rui Cunha, assistant director for emergency services for Placer County, said the incident could be included in a county emergency declaration. Brad Harris, division chief for CALFIRE, said firefighters are concerned about wildland and residential fires that could occur during a water shortage. A preliminary estimate given at the meeting indicated initial Placer County agriculture could face $10 million in losses due to an extended water shortage.

Short of a rapid solution, PCWA customers may face voluntary to mandatory water restrictions. Rotating outages already have been implemented on the most seriously impacted irrigation customers, those on canals in the greater Auburn to Newcastle areas.

“PCWA is asking all customers to conserve water now,” said Breninger.

“We’re asking our customers for their continued support, understanding and conservation during this time of crisis,” said Jarvis.

The PCWA website (www.pcwa.net) is being updated daily on the water shortage emergency and includes outage information and maps of affected areas. Customers may also call the PCWA Customer Services Center at (530) 823-4850 or toll-free (800) 464-0030.

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NEWS RELEASE

May 6, 2011
Contact: David A. Breninger, (530) 823-4850
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

AUBURN -- Financial assistance program funds were approved as grants to four community water purveyors in Placer County Thursday (May 5) by the Placer County Water Agency Board of Directors.

This year fifteen applications were received from nine public water entities for projects totaling $336,100. The program has eligibility criteria and a screening committee which reviews and makes recommendations to the board. The program has funds for 2011 of $35,000.

The 2011 grants include:

• $10,000 to the Christian Valley Community Services District to complete a site study for a new water storage tank.

• $5,000 to the Foresthill Public Utility District for a water rights investigation and analysis.

• $10,000 to the Heather Glen Community Services District for a water storage tank site study.

• $10,000 to the Squaw Valley Public Service District to provide emergency backup power during electrical outages at the district's East Pump Station.

Since 1993, PCWA has approved more than $1.5 million in funding to local public water entities in Placer County under the program.

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In other business, PCWA directors:

• extended for one year a pilot program that allows housing developers to use a payment plan to pay the Water Connection Charge (WCC) for new water services.

• approved a cost sharing agreement with the Nevada Irrigation District to jointly fund an update of a watershed sanitary survey for the Yuba and Bear river watersheds. The agencies are required by state law to update their surveys every five years. PCWA has budgeted $50,000 to the effort.

• Congratulated the agency's new Director of Customer Services Matt Young, whose promotion was announced by General Manager David A. Breninger. Young succeeds former director John Kingsbury who left the agency earlier this year when he was selected as executive director of the Mountain Counties Water Resources Assoc. Young joined PCWA a year ago as Deputy Director of Customer Services after serving as assistant customer services manager for the City of Provo, Utah. He holds BS and MPA degrees from Brigham Young University (BYU).

"Matt has distinguished himself during his tenure with the agency and he stood out among the 135 candidates who applied for the position. I'm pleased to have him lead our Customer Services department," said Breninger.

The PCWA board will next meet in a Special Meeting to conduct a public hearing on the current water shortage emergency crisis facing the agency and its customers. The meeting will be held in Placer Hall at the Gold Country Fairgrounds, 1273 High Street, in Auburn. It opens at 5:30 p.m. with public information with agency staff; the board convenes at 6 p.m. with public hearing to follow. The public is invited and encouraged to attend.

The next regular meeting of the PCWA Board of Directors will be held at 2 p.m. on Thursday, May 19, at the PCWA Business Center, 144 Ferguson Road, in Auburn.

Information on PCWA board meetings may be obtained through the Clerk to the Board at (530) 823-4850 or (800) 464-0030.

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NEWS RELEASE

May 6, 2011
Contact: David A. Breninger, (530) 823-4850
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Conservation Urged

PCWA Declares Water Emergency

AUBURN -- A water shortage emergency was declared by the Directors of the Placer County Water Agency on Thursday (May 5) due to the Apr. 19 failure of the Pacific Gas and Electric Company's Bear River Canal that severed water supplies to PCWA for its customers.

"A water supply crisis exists for all PCWA water customers across western Placer County. I ask that everyone reduce, conserve and use as little water as possible and to use it wisely as every drop counts until this crisis ends," said Lowell Jarvis, board Chairman.

The emergency declaration followed agency and PG&E staff reports on the status of conditions, the severity of impacts upon all PCWA customers and PG&E's needs to pursue emergency canal repairs. Also, Thursday, PG&E officials asked the agency's board for the declaration to support expediting permitting and other approvals needed for rapid repairs by PG&E.

"Since the PG&E canal failure," said David A. Breninger, General Manager, "the agency has focused upon keeping together a 'patch quilt' pattern of very limited emergency water supplies to try to service as many of our customers as long as possible with some water. We've had to reroute supplies and collaborate in innovative

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ways with nearby water districts and cities for help."

"Now we need a strong spirit of individual cooperation and community support by all PCWA water customers to immediately and drastically reduce water use," said Breninger.

The impacts of the shortage are significant and remain acute for irrigation customers served along the agency's 165 mile canal system serving 4,000 accounts. Irrigation customers along many canals are now or will be facing rolling water outages and delivery restrictions until the crisis passes.

"The many canals serving the greater Auburn to Newcastle areas and along Auburn-Folsom Road are currently the most severely impacted. PCWA has only one third supplies to meet these needs," said Breninger.

And, in far western Placer County, no water is available at all from PCWA for farmers located west of Lincoln.

Treated water customers, numbering 32,500 accounts serving 150,000 people are asked to immediately use the absolute least amount of water possible indoors and out.

"Outdoor residential watering is the largest use of treated water and I ask everyone to dramatically curtail that use now," said Breninger.

Specific actions needed during the water crisis:

- Only water outdoor landscaping, grass and yards three (3) days a week and reduce watering times.
- Water outside only between sunset and sunrise. No daytime watering.
- Addresses ending in an odd digit: water only outside on Wednesday, Friday and Sunday nights to sunrise.
- Addresses ending in an even digit: water only outside on Tuesday, Thursday and Saturday nights to sunrise.
- Do not wash down driveways, sidewalks or parking lots at any time.

PCWA will hold a special board meeting with public hearing at 6:00 p.m. on Tuesday (May 10) at the Gold Country Fairgrounds, Maurine Dobbas Placer Hall, 1273

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High Street, Auburn. The session begins at 5:30 p.m. with agency staff available with information to respond to questions. The Board will convene in special session and public hearing at 6:00 p.m. The agency invites the public to attend. Following the hearing, the board will consider adopting regulations and restrictions on the delivery and use of water.

The PCWA website is updated daily with the latest on the water crisis, water conservation, and other information. Customers may go to *www.pcwa.net* or call the PCWA Customer Services Center at (530) 823-4850 or toll-free (800) 464-0030.

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NEWS RELEASE

May 11, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Conservation Urged
PCWA Declares Water Emergency
Water Users: Reduce Usage by 25 Percent or More

AUBURN -- Directors of the Placer County Water Agency on Tuesday (May 10) declared a water shortage emergency and asked that all water users reduce their water use by 25 percent or more until the emergency ends.

It is expected to be in mid-June (or later) until normal flows of water return to PCWA for its customers. Both irrigation canal customers and treated water customers are asked immediately to significantly reduce their water use. “With community support of a 25-percent or more reduction in water use, I think we’ll be able to get through this,” said PCWA General Manager David Breninger.

The Board’s action followed a public hearing that attracted about 170 people to Placer Hall at the Gold Country Fairgrounds. PCWA had moved the meeting to the fairgrounds to accommodate a large crowd.

The agency’s response and public concern are a result of the April 19th failure of the Pacific Gas and Electric Company’s Bear River Canal. A section of the canal slid down a steep canyon wall above the Bear River when the earth beneath the canal gave way.

The incident cut off the main source of water to 150,000 water users of PCWA in areas from Auburn to Loomis, Rocklin and Lincoln.

PG&E, which has mounted a massive restoration effort at the site, is now estimating

-more-

that full water delivery may be available by mid-June. Until Tuesday, the company had been estimating a late June completion.

Mike Jones, PG&E's acting vice president for power generation, said the schedule has been moved up because of the good progress made on the repairs. Crews have been working around the clock. He offered special thanks to nearby property owners and the City of Colfax for putting up with the "24/7 construction schedule."

Jones also announced that PG&E had offered up to $1.8 million to PCWA and the Nevada Irrigation District to help compensate for the electrical energy they have consumed in pumping alternate water supplies to customers.

Fourteen members of the public, mostly agricultural water users, addressed the Board during the public hearing portion of the meeting. Concerns included potential losses of income, crops and pasture. Several speakers said they could endure rotating outages, but low levels in some canals, especially near the ends of canals, have not delivered enough water.

Board Chairman Lowell Jarvis encouraged everyone in the audience to do his or her part. "We can conserve, and we'll get through this together," he said.

PCWA directors will review the emergency situation at each of their meetings until the water shortage is over and the water shortage emergency declaration can be rescinded.

Conservation Measures to Follow
How You Can Help Save Water

PCWA is conducting a wide public outreach effort that includes letters this week to its 37,000 customer accounts.

All customers using piped and treated drinking water and those using irrigation water from the canal system are urged to conserve water by 25 percent or more.

These are some of the primary conservation measures called for in the PCWA water shortage declaration:

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Treated Water

- Customers are requested to reduce use by 25 percent
- Outdoor irrigation only on Tuesdays, Thursdays and Saturdays for those with even-numbered (last digit) street addresses
- Outdoor irrigation only on Wednesdays, Fridays and Saturdays for those with odd-numbered addresses
- No outdoor irrigation on Mondays
- Numerous other conservation methods (see *www.pcwa.net*)

Canal Water

- PCWA will reduce the size of orifices in canal water boxes in Zones 1 and 3, placing priority for public health and safety reasons on preserving adequate flows in canals that supply water treatment plants. Reductions will allow 50-75 percent of normal summer deliveries or 1/2 miners' inch, whichever is larger.
- Rotating outages on canals will continue as needed
- PCWA canal operators will closely monitor canal flows and maintain communication with Customer Services personnel responsible for providing canal flow information to customers.
- Canal water customers who inform the agency they wish to forego this year's water purchase for the duration of the water shortage emergency will not lose entitlements or face charges for turning service off and on.

The PCWA website is being updated daily with outage information, maps of affected areas and helpful hints for saving water. Customers are encouraged to stay up to date at *www.pcwa.net.* The PCWA Customer Services Center may be reached at (530) 823-4850 or toll-free (800) 464-0030.

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NEWS RELEASE

May 20, 2011
Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Conservation Urged

Water Emergency Continues in Placer

PCWA Customers Asked to Reduce Usage by 25 Percent

AUBURN -- The PCWA water shortage emergency in western Placer County is expected to continue until mid-June, it was reported at Thursday's (May 19) meeting of the Placer County Water Agency Board of Directors.

The water agency has been proactively managing the water shortage emergency in wake of the Apr. 19 sudden failure of the Pacific Gas and Electric Company's Bear River Canal. A landslide took out a section of the canal (which is located above the Bear River canyon about a mile south of Rollins Reservoir and a mile west of Colfax.)

When this occurred, water supplies ceased flowing to PCWA. The Agency and its customers are heavily dependent upon this supply as are approximately 150,000 people. PCWA had to immediately devise and implement numerous alternatives for securing temporary water supplies and enact bold water conservation reduction actions.

PG&E spokesman Brian Jensen said, at the board meeting, the company is making very good progress in repairing the canal and expects to have normal deliveries restored by mid-June to PCWA.

Meanwhile, he said, the company has begun pumping a small amount of water from the Bear River into the PG&E canal (downstream from the break) for PCWA's use.

-more-

The company also has plans, he said, for a second temporary water supply that may be flowing by the first of June to PCWA.

In the meantime PG&E has also been trucking water to PCWA's Lake Arthur and to other locations to supplement agency supplies. (PG&E has initiated a livestock watering program coordinated with Placer County Resource Conservation District.) The trucks have delivered more than 3.1 million gallons of water to date, Jensen said.

The agency is also relying on many other alternate sources of water from neighboring water entities. PCWA is also pumping water from the American River to supplement supplies for the duration of the emergency.

PCWA has instituted a wide range of water shortage emergency management actions since April 19. Staff also enacted an aggressive customer outreach program since the day of the emergency. These include direct mail to all customers, telephone and e-mail communications, news media coverage, advertising campaigns and presentations at governmental, civic and community meetings.

Rocklin Fire Chief Bill Mikesell attended the agency board meeting and said PCWA has done an "outstanding job" in communicating with his department and keeping water available for fire protection purposes.

PCWA General Manager David Breninger said, "With public understanding, a 'patch quilt' pattern of many temporary water supplies that have been pieced together like dominos and aggressive water conservation reduction actions by our customers, I'm hopeful that adequate flows of water can be sustained to serve our customers throughout our vast distribution system until this emergency ends."

PCWA directors will continue to review the status of the situation at each meeting. The board's next regular meeting is scheduled at 2 p.m. on June 2 at the PCWA Business Center, 144 Ferguson Road, in Auburn. Information about PCWA board meetings is available from the Clerk to the Board at (530) 823-4850 or (800) 464-0030.

-more-

The PCWA website is updated daily on the water emergency and actions to be taken to reduce water usage. Customers can stay up to date at *www.pcwa.net*. The PCWA Customer Services Center may be reached by e-mail at customerservices@pcwa.net or by calling (530) 823-4850 or toll-free (800) 464-0030.

-30-

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NEWS RELEASE

June 3, 2011

Contact: David A. Breninger
(530) 823-4850
Or: Dave Carter
(530) 265-NEWS

FOR IMMEDIATE RELEASE:

Bear River Canal Flowing Soon
PCWA Board Meets Monday to Declare End of Water Emergency Condition

AUBURN -- At Thursday's (June 2) meeting of the Placer County Water Agency Board of Directors, a PG&E official reported the Bear River Canal is in the final stages of repair and staged re-watering should commence within the next few days. This is six weeks after a massive landslide wiped out a section of the PG&E canal near Colfax that serves as the primary water supply to PCWA.

Alvin Thoma, director of power generation for PG&E, told the board that PG&E is performing a final check on the Bear River Canal and water flow will be restored in the next several days with flows ramping up to normal levels during the week of June 6.

Meanwhile, he said, PG&E crews would be at the site for another week or so, completing cleanup and land restoration work following the emergency repair. "We've been working 24/7 and it's taken us six and a half weeks," he said. "It would take three to four months on a normal construction schedule."

PCWA officials expressed relief that the water shortage emergency was not as bad as it might have been. Cool and wet weather over the past several weeks reduced demand, coupled with customers' water conservation efforts, allowed PCWA to spread alternate water supplies to its various service areas.

PCWA directors will meet in adjourned session at 2 p.m. Monday (June 6) to hear a canal break status report and, barring any unforeseen developments, may plan to officially call an end to the water shortage emergency condition.

-more-

PG&E has taken steps to ease the financial burdens of the water shortage on PCWA and the neighboring Nevada Irrigation District, which also has been impacted. PG&E has voluntarily set aside up to $1.8 million to offset additional pumping costs and to reimburse the agency for lost revenue from its billing adjustments to irrigation canal customers who did not receive water during the canal outage.

Members of the board complimented PG&E for its rapid canal restoration efforts and for PG&E's outreach and coordination with PCWA.

District 4 Director Mike Lee said he has seen a bright side of the unfortunate situation. "I think it has increased public awareness and appreciation," he said. "People realize what a valuable resource we have here."

District 2 Director Alex Ferreira said the water is arriving too late for some rice growers in Zone 5 west of Lincoln who have not planted their crop, but that others who have planted and are using groundwater will welcome the more affordable supply.

General Manager David Breninger thanked the agency staff for many long hours spent dealing with the water emergency and PCWA customers who saved water and helped a reduced supply go further.

In a related matter, Breninger said the agency's emergency management during the six-week outage has been documented and will be used as a case study in the current update of its Urban Water Management Plan.

In other business, directors received and filed the 2010 audit of the water agency's financial statements performed by Maze & Associates Accountancy Corp. of Pleasant Hill.

PCWA directors will next meet in adjourned session at 2 p.m. Monday, June 6, at the PCWA Business Center, 144 Ferguson Road, in Auburn. The next regular meeting of the board is scheduled for 2 p.m. on June 16.

Information on PCWA board meetings may be obtained through the Clerk to the Board at (530) 823-4850 or (800) 464-0030.

Information about the Agency is available on the web at *www.pcwa.net.*

-30-

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NEWS RELEASE

June 7, 2011

Contact: David A. Breninger, (530) 823-4860
or: Dave Carter, (530) 265-NEWS

FOR IMMEDIATE RELEASE:

Water Shortage is Over

PCWA Board Declares End of Water Shortage Emergency

AUBURN -- With the recently repaired PG&E Bear River Canal returning to normal operation, the Placer County Water Agency Board of Directors on Monday (June 6) terminated the water shortage emergency.

The board had declared the emergency on May 5 following the April 19 collapse of a section of PG&E's Bear River Canal. The canal failure, caused by a landslide in a steep river canyon near Colfax, cut a primary water supply to PCWA.

PCWA Director of Field Services Mike Nichol said Monday the agency is again receiving deliveries of water from PG&E and water flows are ramping-up in canals throughout PCWA's Western Water System.

Impacts of the water shortage were most apparent for the 3,800 PCWA irrigation canal water customers as reduced deliveries or rolling outages were implemented to equitably spread water throughout the western water system. The water agency, with assistance from other area water suppliers and voluntary customer conservation, was able to maintain uninterrupted water for the treated water customers and fire flows. Placer County Agricultural Commissioner Josh Huntsinger and Placer County Resource Conservation District Manager Rick Gruen attended Monday's adjourned meeting of the board and thanked PCWA for the work it did to limit the impacts on local agriculture.

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Huntsinger said some rice farmers in far western Placer County did not plant this year, beyond that, he had not heard of any serious local crop damage. “The cool, wet weather has been a real godsend,” he said. Gruen said the RCD mobilized a livestock water delivery program but did not have to make deliveries.

In declaring the end to the emergency, PCWA directors said no reconnection charges would be imposed for those who voluntarily gave up water supplies, and that 7,000 acre-feet of supplemental water would be available to agricultural growers in Zone 5. The board’s resolution also commends PG&E for its rapid repair of the canal.

Directors also voted to accept PG&E’s offer to offset PCWA’s pumping costs and to reimburse PCWA for lost revenue resulting from customer billings being adjusted for water they did not receive as a result of the Bear River Canal outage. PG&E voluntarily set-aside $1.8 million to reimburse the agency and the Nevada Irrigation District for emergency pumping and other associated costs resulting from the canal outage.

Directors then approved a motion to direct staff to adjust charges on irrigation canal customers’ bills for the days that water was not delivered.

PCWA Director of Financial Services Joseph Parker said the agency is working on a canal by canal formula through which irrigation canal customers would be billed only for the days and amounts of water they received during the emergency water shortage.

District 2 Director Alex Ferreira said Mother Nature caused the canal failure and it was Mother Nature that helped minimize the impact to our customers (with the unseasonable cool, wet weather).

Board Chairman Lowell Jarvis said the emergency situation was not nearly as serious as it could have been due in large part to the unusually wet weather over the past month. He commended PG&E, PCWA staff, neighboring water suppliers and customers who pitched in and reduced their water use.

-more-

Monday's meeting of the PCWA board was a special adjourned session. The next regular meeting of the board will be held at 2 p.m. on June 16 at the PCWA Business Center, 144 Ferguson Road, in Auburn.

Information on PCWA board meetings may be obtained through the Clerk to the Board at (530) 823-4850 or (800) 464-0030. More information is available at *www.pcwa.net.*

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Placer County Resource Conservation District

May 17, 2011

For immediate release
RCD: (530) 885-3048
PCWA: (530) 823-4850
PG&E: (415) 973-5930
NID: (530) 273-6185, or Toll-Free from Placer County (800) 222-4102

EMERGENCY WATER DELIVERIES SLATED FOR PLACER COUNTY LIVESTOCK

Water for livestock is available through the Temporary Emergency Livestock Water Delivery Program to livestock owners who have lost all or a portion of their raw ditch water due to the Bear River Canal outage.

This short-term relief will have limited capacity to deliver raw water to help meet livestock requirements. It is not intended for other uses such as crop, pasture or garden irrigation.

The program may be able to provide up to a three-day to five-day supply of water for animals, depending on the delivery site and the existing storage capacity. Landowners are encouraged to seek other alternative water supplies, such as wells or ponds, to supplement livestock watering requirements. Large animals require 10-15 gallons of water per day.

The program and the water deliveries are anticipated to continue until the water shortage has been resolved. That is projected to be mid-June when permanent repairs are completed for the Bear River Canal. PG&E has been trucking water from Rollins Reservoir to PCWA's Lake Arthur and other points. On Sunday, May 15, PCWA increased its capability to pump water from the American River into PG&E's South Canal. While not eliminating the shortage, this should increase the supplies available to serve PCWA's irrigation customers west of Newcastle.

Landowners in need of livestock water through this program should contact the Placer County Resource Conservation District. Livestock owners' watering sites must be readily and safely accessible by large water delivery trucks.

The Temporary Emergency Livestock Water Delivery Program is a free service and made possible through a partnership of the Placer County Resource Conservation District, Pacific Gas and Electric Company, the Placer County Agriculture Commissioner's Office, the Placer County Water Agency, the Nevada Irrigation District and the University of California Cooperative Extension Service.

For additional information on the Temporary Emergency Livestock Water Delivery Program, as well as other District programs and services, please call 530-885-3048, or visit the District's website at www.placercountyrcd.org .

251 Auburn Ravine Road | Suite 107 | Auburn | CA | 95603
ph: 530.885.3046 | fax: 530.823.5504 | www.placercountyrcd.org

Nevada Irrigation District

Memo

To: Gary King, Chief Engineer
Nate Wasley, Operations
Chip Close, Distribution
Brian Martin, PCWA

From: Adrian Schneider, PE

Date: July 17, 2012

Re: Alternative Pipe Route Analysis
Rock Creek Pipe – WO# 6898

Engineering Dept.

This memo is to provide an alternative analysis for review of the Rock Creek Bypass.

The Rock Creek pipe is to supply water to the Rock Creek Reservoir from the Combie Ophir II canal. This will supply water to the reservoir during scheduled PG&E shutdowns, and to provide a backup water supply for emergencies (PG&E's Bear River Canal). The pipe is to carry a maximum 35 cfs peak, and 12 cfs off-season flow per Placer County Water Agency's stated needs. The assumed pipe size is 36-inches in diameter.

The nearest practical location for the source water for the Rock Creek Pipe is near the inlet of the Rock Creek Siphon, located just west of the nursing home on Shale Ridge Road (figure 1). The District's maximum capacity at this location is 40 cfs (Dry Creek Siphon, Phase II Raw Water Master Plan, 2011). Flow records indicate maximum flows up to 48 cfs during peak summer operation and approximately 15-20 cfs during wintertime flows.

The elevation drop between Rock Creek siphon and the Rock Creek Reservoir is approximately 16 feet. Three different pipeline routes were reviewed (figure 1). The following table presents the different alternatives, their lengths, approximate costs, and a summary of the advantages and disadvantages.

The existing Rock Creek Siphon (Siphon), a 30" steel pipe, was looked at to potentially feed a portion of the new siphon. The Siphon also feeds the North Auburn Treatment Plant through a connecting 18" pipe. The siphon was built in the late 1940's and was cement mortar lined in 1991. The siphon is leaking near the inlet. The pipe could only be reasonably accessed during the wintertime when flows are lowest. However, the age and condition of the pipe, and constructing during the wintertime makes this alternative unattractive.

The preferred alternative pipe route is route B shown in the attached table. Field survey has been completed for this alternative and can be used for future design/construction plans.

Sue Sindt says 8 cfs is allocated for sales, therefore the max is 40 cfs

Route	Length	Cost Est	Advantages	Disadvantages
A	4,190	$1.5 - $2.3 million	• Existing NID easement related to 10” wtr line • Low impact to existing land use • Crosses Locksley Lane	• Longest route • Parallels Shale Ridge Rd with other utilities • Multiple crossings of large diameter storm drains through Mountain Peoples Warehouse property • Minimum 15-foot deep excavation through Locksley Lane area to facilitate hydraulics
B	3,750	$1.3 - $2.1 million	• Shortest route • Reduces trenching within Shale Ridge • Uses undeveloped property • Uses existing NID easement from WTP to Reservoir • Crosses Locksley Lane	• Requires crossing large 48-60” storm drain • Biggest potential impact to existing-future land use (Ace Storage property)
C	4,090	$1.4 - $2.4 million	• Minimizes trenching within Shale Ridge Rd • Uses portion of property undeveloped • Uses existing NID easement from WTP to Reservoir	• Crosses annual stream/wetland area • Routes near multiple sewer laterals or gas line • Parallels Locksley Lane with other utilities

Cc: file

Attachments: Figure 1 – Pipe Route Alternatives
Figure B4 – Phase II Raw Water Master Plan, December 2011, Kleinschmidt
Hydraulic Analysis – 36” pipe diameter
Flow Records – Rock Creek Siphon (Combie Ophir II Canal)

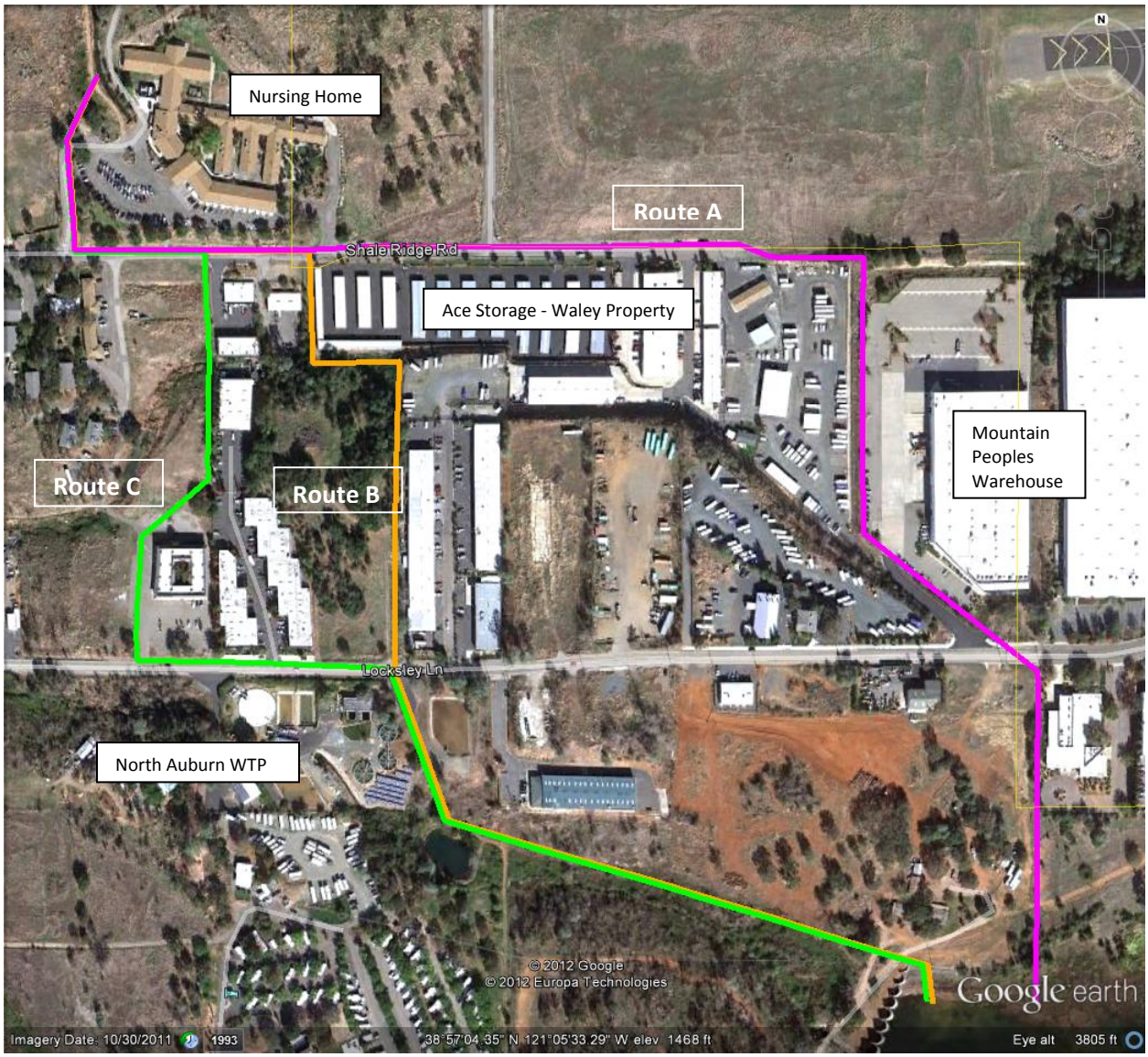
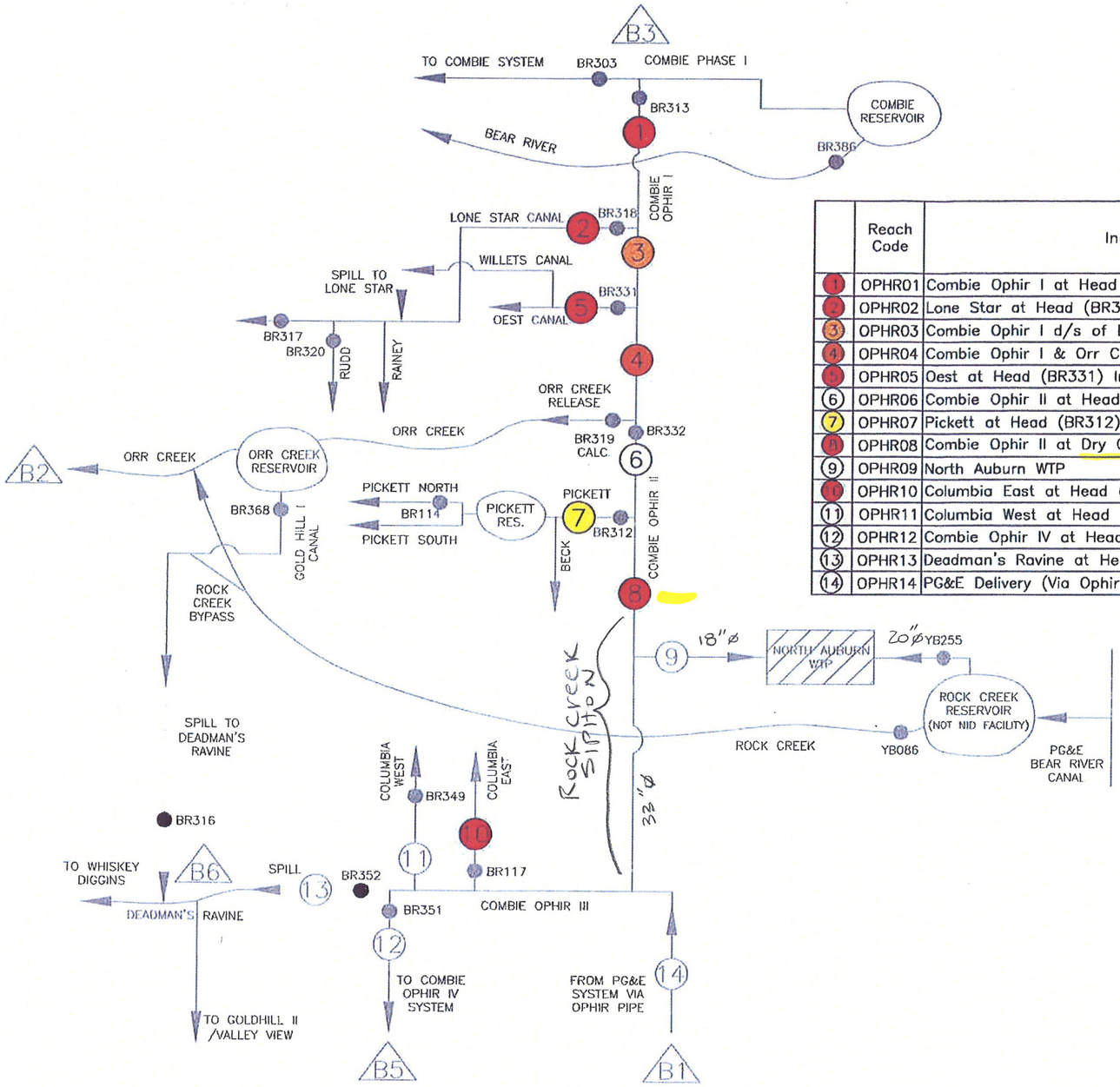


Figure 1 – Pipe Route Alternatives

Route A	4,190 feet	Shale Ridge Road, Mountain Peoples Warehouse, Cross Country
Route B	3,750 feet	Shale Ridge Road, Whaley Property, NID Property, Cross Country
Route C	4,090 feet	Shale Ridge Road, Harmon Property, NID Property, Cross Country



	Reach Code	Index	Estimated[1] Current Capacity (cfs)	Estimated Peak Flow[2] (cfs)								Est. Capital Const. Cost (2010)
				2007	2008	2012	2016	2020	2024	2028	2032	
1	OPHR01	Combie Ophir I at Head (BR313)	105.0	81.9	106.9	112.4	118.0	123.6	129.1	134.9	140.6	$2,295,000
2	OPHR02	Lone Star at Head (BR318) Including Rainey	6.7	6.5	7.0	7.3	7.5	7.5	7.5	7.5	7.5	$3,679,000
3	OPHR03	Combie Ophir I d/s of Lone Star Canal	105.0	74.9	99.4	104.6	109.9	115.5	121.0	126.8	132.5	$372,000
4	OPHR04	Combie Ophir I & Orr Creek Release (Combined)	105.0	69.1	99.7	105.1	110.6	116.5	122.6	129.1	135.6	$330,000
5	OPHR05	Oest at Head (BR331) Including Willits Canal	5.4	5.5	5.3	5.6	5.9	6.2	6.2	6.2	6.2	$2,921,000
6	OPHR06	Combie Ophir II at Head (BR332)	44.0	46.5	46.0	47.9	49.6	51.5	53.4	55.3	57.0	–
7	OPHR07	Pickett at Head (BR312) Including Beck Canal	2.5	2.5	2.2	2.4	2.5	2.6	2.8	2.9	3.1	$2,621,000
8	OPHR08	Combie Ophir II at Dry Creek Siphon Inlet	40.0	42.6	41.5	43.1	44.6	46.2	47.9	49.5	50.8	$16,028,000
9	OPHR09	North Auburn WTP	12.4	7.4	7.6	8.8	9.9	10.8	11.5	12.1	12.4	–
10	OPHR10	Columbia East at Head (BR117)	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	$1,652,000
11	OPHR11	Columbia West at Head	0.7	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	–
12	OPHR12	Combie Ophir IV at Head (BR351)	35.0	31.9	31.4	32.0	32.5	33.0	33.5	33.9	34.5	–
13	OPHR13	Deadman's Ravine at Head (BR352)	–	24.3	23.0	24.2	25.5	26.9	28.3	29.7	30.7	–
14	OPHR14	PG&E Delivery (Via Ophir Pipe) Addition	–	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–14.1	–

LEGEND

PROJECTED YEAR OF FACILITY EXPANSION NEED

- Immediate
- 2012
- 2016
- 2020
- 2024
- 2028
- 2032

[1] PER DISTRICT INPUT
[2] CALCULATED AND PROVIDED BY KLEINSCHMIDT ASSOCIATES

NOTE 1: FUTURE FLOW VALUES THAT DO NOT INCREASE INDICATE THAT CANAL SEGMENT HAS REACHED ASSUMED SATURATION LIMIT
NOTE 2: SCHEMATIC MAPPING AND ESTIMATED PEAK FLOWS PROVIDED BY KLEINSCHMIDT ASSOCIATES.

Appendix E

Nevada Irrigation District
PROPOSED CIP
COMBIE OPHIR I, II & III
IMPROVEMENTS

WEST YOST ASSOCIATES Consulting Engineers

Scale: NTS	RAW WATER MASTER PLAN UPDATE WATER DEMAND ANALYSIS
Project No: 894.007	COMBIE OPHIR I, II, & III FLOW SCHEMATIC
Drawn by: JAQ	Kleinschmidt — Energy & Water Resource Consultants — 341 South Auburn Street, Suite C, Grass Valley, California 95945, Telephone (530) 477-5808, Fax (530) 477-5805, www.KleinschmidtUSA.com
Date Revised: 08-20-09	B4

R:\Clients\264 Roseville\261 Kleinschmidt\00-03-01 NID Raw Water MP\CAD\Figures\261-00-0301-BR Figs1-8.dwg

11x17

ROCK CREEK PIPE - AUBURN

Pipe Diameter:	36 inches	Water Surface Elevation - Inlet	1,453.7	ft MSL
Max Flow:	35 cfs	Water Surface Elevation - Outlet	1,439.5	ft MSL
Min Flow:	12 cfs	Feet of Head Available	14.2	feet
		Maximum Head Loss	8.7	feet

Assumptions: *PVC or HDPE Pipe
Pipe Flowing Partially Full Above Low point in Siphon

Hazen - Williams Head Loss Calculations

Headloss in Feet= $L \left[\frac{Q}{0.28176(C)(D^{2.63})} \right]^{1.85}$

Where:

L = Length in feet	35.0	Q in cfs
Q = gpm	15,708	Q in gpm
C = Hazen-Williams Coeficient		
D = inside diameter in inches	12.0	Q in cfs
V = Volocity in feet per second	5,386	Q in gpm

						Head Loss in ft - Max Flow			
Route	Length	Diameter	Fittings	Q	H-W*	Pipe	Fittings	**Total**	V
A	4,190	36.00	9	15,708	130	8.3	0.4	8.7	4.95
B	**3,750**	**36.00**	**8**	**15,708**	**130**	**7.4**	**0.4**	**7.8**	**4.95**
C	4,090	36.00	7	15,708	130	8.1	0.3	8.4	4.95

						Head Loss in ft - Min Flow			
Route	Length	Diameter	Fittings	Q	H-W*	Pipe	Fittings	**Total**	V
A	4,190	36.00	9	5,386	130	1.1	0.05	1.2	1.70
B	3,750	36.00	8	5,386	130	1.0	0.04	1.1	1.70
C	4,090	36.00	7	5,386	130	1.1	0.00	1.1	1.70

Fittings	30°	45°	90°	Total Estimated Feet in Equivalent Pipe lengths
A	3	3	3	204
B	3	1	4	192
C	3	2	2	156

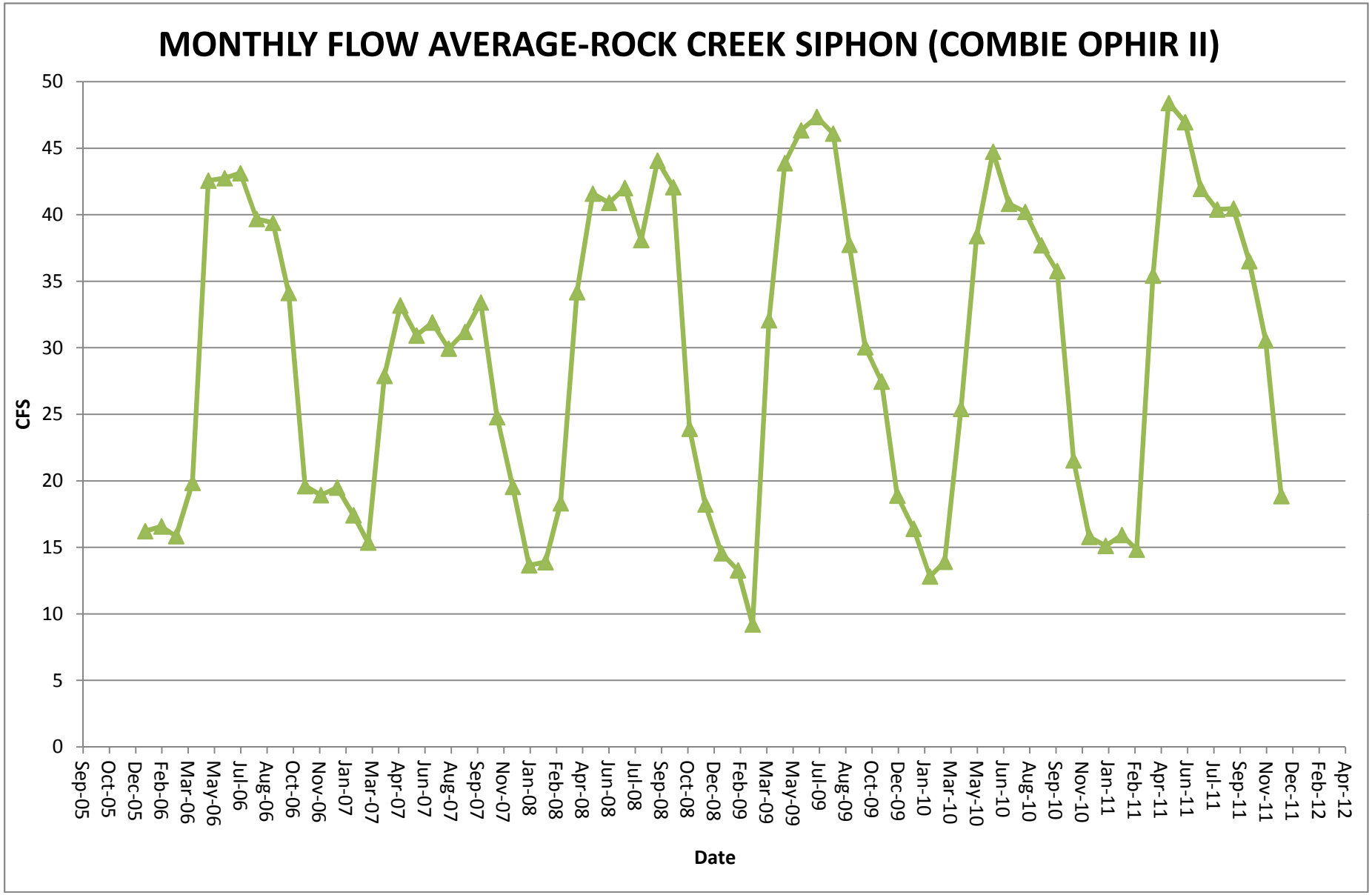
*Assume 20 ft equivalent pipe lengths for 30 & 45 bends
*Assume 28 ft equivalent pipe lengths for 90 bends

** From Equivalent Pipe Lengths of Straight Pipe, Cast Iron Fittings, 24" diameter*
Appendix L, Page 3-53, Civil Engineering Reference Manual, 6th ed.
Note, pipe is 36" in diameter. Using 24" value provides a conservative estimate

Monthly Averaged Flow Records

Date	BR332 Combie Ophir II @ Head cfs	BR312 Pickett @ Head cfs	Flow Downstream (Rock Creek Siphon) cfs	
Jan-06	16.50	0.28	16.22	
Feb-06	16.93	0.35	16.58	
Mar-06	16.25	0.40	15.85	
Apr-06	20.88	1.03	19.85	
May-06	44.32	1.75	42.57	
Jun-06	44.82	2.08	42.75	2006
Jul-06	45.54	2.42	43.12	
Aug-06	41.95	2.27	39.68	
Sep-06	41.50	2.11	39.40	
Oct-06	35.92	1.80	34.12	
Nov-06	20.17	0.56	19.61	
Dec-06	19.39	0.46	18.93	
Jan-07	19.82	0.33	19.50	
Feb-07	17.75	0.33	17.42	
Mar-07	15.81	0.44	15.37	
Apr-07	29.42	1.53	27.90	
May-07	35.07	1.89	33.19	
Jun-07	33.08	2.15	30.93	2007
Jul-07	34.04	2.13	31.90	
Aug-07	32.06	2.12	29.94	
Sep-07	33.13	1.93	31.20	
Oct-07	34.49	1.08	33.41	
Nov-07	25.43	0.64	24.79	
Dec-07	20.19	0.63	19.55	
Jan-08	14.24	0.58	13.66	
Feb-08	14.45	0.56	13.89	
Mar-08	19.09	0.77	18.32	
Apr-08	35.95	1.76	34.19	
May-08	43.76	2.17	41.58	
Jun-08	43.05	2.15	40.90	2008
Jul-08	44.19	2.18	42.01	
Aug-08	40.22	2.13	38.10	
Sep-08	46.13	2.06	44.07	
Oct-08	43.71	1.64	42.07	
Nov-08	24.77	0.85	23.92	
Dec-08	18.93	0.71	18.23	
Jan-09	15.20	0.64	14.56	
Feb-09	14.01	0.73	13.28	
Mar-09	9.68	0.47	9.21	
Apr-09	33.36	1.29	32.07	
May-09	45.55	1.67	43.88	
Jun-09	48.32	1.97	46.35	2009
Jul-09	49.48	2.13	47.35	
Aug-09	48.13	2.04	46.10	
Sep-09	39.79	2.04	37.75	
Oct-09	31.47	1.42	30.05	
Nov-09	28.17	0.71	27.47	
Dec-09	19.50	0.61	18.89	
Jan-10	17.01	0.60	16.41	
Feb-10	13.36	0.55	12.82	
Mar-10	14.77	0.85	13.92	
Apr-10	26.57	1.15	25.41	
May-10	39.75	1.36	38.40	
Jun-10	46.47	1.73	44.74	2010
Jul-10	42.81	1.99	40.82	
Aug-10	42.21	2.00	40.21	
Sep-10	39.59	1.89	37.70	
Oct-10	37.10	1.33	35.77	
Nov-10	22.24	0.70	21.54	
Dec-10	16.43	0.64	15.80	
Jan-11	15.71	0.60	15.12	
Feb-11	16.56	0.63	15.93	
Mar-11	15.31	0.49	14.83	
Apr-11	36.70	1.26	35.44	
May-11	50.02	1.62	48.40	
Jun-11	48.80	1.84	46.96	2011
Jul-11	44.03	2.07	41.96	
Aug-11	42.57	2.17	40.40	
Sep-11	42.56	2.09	40.47	
Oct-11	37.99	1.48	36.52	
Nov-11	31.38	0.81	30.57	
Dec-11	19.49	0.63	18.86	

March 5-8, 2007: 0 cfs flows
March 3-6, 2009: 0 cfs flows
February 15-17, 2010: 0 cfs flows
March 1-3, 2011: 0 cfs flows


MONTHLY FLOW AVERAGE-ROCK CREEK SIPHON (COMBIE OPHIR II)
CFS
50
45
40
35
30
25
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Date