# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015

Prepared By:
San Luis Obispo County
Department of Public Works
Utilities Department
Water Quality Laboratory

Nacimiento Water Project, San Luis Obispo County

# 2015 Watershed Sanitary Survey Five-Year Update

System Information

| | |
|---|---|
| SWRCB-DDW System No.: | 4010080 |
| System Name: | San Luis Obispo County- Nacimiento Water Project |
| Survey Period: | January 1, 2011 through December 31, 2015 |
| Initial Survey Completed: | 2011 |

Preparer Information

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9/13/16

SWRCB-DDW Approval, Signature and Date

Survey Description

| | |
|---|---|
| Name of Watershed: | Nacimiento Water Project |
| Total Watershed Size in acres: | *206,060* acres |
| Location: | San Luis Obispo County and Monterey County |

Agencies using this watershed as a source of supply:

Nacimiento Water Project Participants:

City of Paso Robles
Atascadero Mutual Water Company
Templeton Community Services District
City of San Luis Obispo

Other Participants:

County Service Area 10 - Cayucos
Laguna Vista Boat Club
Northshore S & B
Heritage Ranch Community Services District
Monterey County Parks Department
Nacimiento Parks Department (Oak Shores)

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# WATERSHED SANITARY SURVEY CHECKLIST

**With the exception of the severe drought, there were no changes to the general conditions of the Nacimiento Reservoir Watershed since the 2010 survey.**

| General Conditions | Significant | Not Significant | Comments |
|---|---|---|---|
| **I. GENERAL** | | | |
| A. Changes in available water quantity | X | | Severe drought |
| B. Construction of water diversion or reservoir projects | | X | |
| C. Relocation of intakes | | X | |
| **II. CONTAMINANT SOURCES** | | | |
| A. Wastewater Treatment | | | |
| 1. Treatment plant effluent discharges | X | | |
| 2. Storage, transport, treatment, disposal to land | X | | |
| 3. Residential septic systems | | X | |
| 4. Commercial/industrial septic systems | | X | |
| B. Reclaimed Water | | X | |
| C. Urban Areas | X | | |
| D. Agricultural Crop Land Use | X | | |
| E. Pesticide/Herbicide Use | X | | ~5% of the watershed is agricultural. |
| F. Grazing Animals | X | | *Cattle grazing in watershed two miles upstream of dam* |
| G. Concentrated Animal Facilities (feedlots, etc) | | X | |
| H. Wild Animal Populations | | X | |
| I. Mines | | | |
| 1. Active | | X | |
| 2. Inactive | X | | |
| J. Disposal Facilities | | | |
| 1. Solid waste | | X | |
| 2. Hazardous waste | | X | |
| K. Logging | | X | |
| L. Recreation | | | |
| 1. Reservoir body contact | X | | |
| 2. Reservoir non-body contact | X | | |
| M. Unauthorized Activity | | | |
| 1. Illegal dumping | | X | |
| 2. Underground storage tank leaks | | X | |
| 3. Other | | X | |
| N. Traffic Accidents/Spills | | | |
| 1. Transportation corridors | | X | |
| 2. History of accidents/spills | | X | |
| O. Groundwater Discharges | | | |
| 1. Natural discharge | | X | |
| 2. Gas, oil, geothermal wells | | X | |
| P. Seawater Intrusion | | X | |
| Q. Geologic Hazards | | | |
| 1. Landslides | X | | |
| 2. Earthquakes | X | | |
| 3. Floods | X | | |
| 4. Other | | | |
| R. Fires | X | | |
| **III. GROWTH** | | | |
| A. Population/General Urban Area Increase | | X | |
| B. Land Use Changes | | X | |
| C. Industrial Use Increase | | X | |
| **IV. WATER QUALITY** | | | |
| A. Changes in Raw Water Quality | | X | |
| B. Difficulty meeting drinking water standards | | X | |

# ABBREVIATIONS

| | |
|---|---|
| DLR | Detection Limit for the Purposes of Reporting |
| DOC | Dissolved Organic Carbon |
| EPA | (United States) Environmental Protection Agency |
| ft | Feet |
| Hg | Mercury |
| MCWRA | Monterey County Water Resources Agency |
| mg/L | Milligrams per liter |
| µg/L | Micrograms per liter |
| MSL | Mean sea level |
| MTBE | Methyl *tert*-butyl ethylene |
| N | Nitrogen |
| NAVD88 | North American Vertical Datum of 1988 |
| NGVD29 | National Geodetic Vertical Datum of 1929 |
| NPDES | National Pollutant Discharge Elimination System |
| NWP | Nacimiento Water Project |
| OS | (Community of) Oak Shores |
| P | Phosphorus |
| PWD | Public Works Department |
| RWQCB | Regional Water Quality Control Board (Central Coast Region) |
| SDWA | Safe Drinking Water Act |
| SLO | San Luis Obispo |
| SLOCFC&WCD | San Luis Obispo County Flood Control and Water Conservation District |
| SOC | Synthetic Organic Chemical(s) or Semi-volatile Organic Chemical(s) |
| SUVA | Specific Ultraviolet Absorbance |
| SWRCB | (California) State Water Resources Control Board |
| SWTR | (Federal) Surface Water Treatment Rule |
| TOC | Total Organic Carbon |
| TTHM | Total Trihalomethanes |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| UV254 | Ultraviolet Absorbance at 254 nm |
| VOC | Volatile Organic Chemical(s) |
| WQ | Water Quality |
| WTP | Water Treatment Plant |

# 1 SUMMARY of INITIAL WATERSHED SANITARY SURVEY

The Nacimiento Reservoir and its watershed are both large and complex. The reservoir serves as a raw water source of supply for supplemental water. Many different public agencies and private parties own land, work, live, and recreate in the watershed and on the reservoir. The San Luis Obispo County Flood Control and Water Conservation District (District) has an allocation of 17,500 acre-feet per year of Nacimiento Reservoir water. Many different agencies have jurisdictional authority in the watershed. There are many potential contaminant sources in the watershed which present a risk to the reservoir as a drinking water source, nearly all of which derive from human activities. Many of these may present both short term and long term water quality risks.

The reservoir is highly valued for the water-based recreational opportunities that it affords, including fishing, swimming, boating, and water skiing. The reservoir and its watershed both provide highly valued rural living opportunities. The watershed provides opportunities for extensive agricultural activities, including grazing and cropland, especially viticulture. Many other activities occur or have taken place in the watershed, including military uses and mining. Consequently, there are many potential contaminant sources in the watershed which present a risk to the reservoir as a supplemental drinking water source.

The greatest risks to the Nacimiento Reservoir as a drinking water supply come from extensive grazing, unlimited body contact recreation, numerous domestic wastewater facilities, and the potential for a large wildland fire. Urban development and agricultural cropland are increasing and may present future risks. Variable risk levels are presented by military activities and illicit commercial crops. These potential contaminant sources can lead to pathogen loading, solids loading, and algal growth, along with many other deleterious water quality effects.

A special contaminant of concern is mercury from abandoned mercury mines in the watershed. Although mercury currently does not present a risk to the reservoir as a drinking water supply, its presence in the environment has led to its accumulation in fish in Nacimiento Reservoir at levels that are unsafe for human consumption. Public awareness of this issue can lead to concerns about the safety of the water supply.

Control measures that will help reduce the risk from these potential contaminant sources include the use of best management practices in agricultural and industrial operations, implementation of stormwater pollution prevention practices in developed areas, and remediation of abandoned mercury mines.

Whereas the District has no jurisdictional authority in the watershed, and therefore has little ability to directly affect watershed activities and watershed management practices, the County of San Luis Obispo has land use approval authority over the lower portion of the Nacimiento watershed. There are some existing control measures that may protect water quality, but only to the degree that they are implemented and enforced. The large number of potential contaminant sources, the watershed's large size, and the reservoir's remote

location make effective implementation and enforcement efforts difficult. Instead, the District must rely on developing cooperative efforts to protect water quality with individuals and entities that use the watershed and that may have jurisdictional authority. A well-designed water quality monitoring program is important to help the District identify significant water quality impacts from potential contaminant sources and to focus water quality protection efforts where they can be most effective.

## 1.1 Recommendations from Initial Watershed Sanitary Survey

The District should support and pursue efforts to reduce the risk to Nacimiento Reservoir water quality from potential contaminant sources in the watershed, and to increase consumer awareness of the means and benefit of protecting this raw water supply. The District should work with other agencies and private parties to implement the following control measures:

- Encourage implementation of best management practices in agricultural and industrial operations (grazing, crop land, wineries, mines) to minimize:
    - Pathogen loading to reservoir
        - Top priority: restrict direct access of cattle to reservoir and its tributaries
    - Nutrient loading to reservoir
    - Solids loading to reservoir
- Encourage implementation of best management practices for stormwater pollution prevention in lakeside communities and public recreation areas
- Relocate the Oak Shores sewer interceptor system so that the laterals are realigned to a new sewer main to convey wastewater to the treatment plant and abandon the existing interceptor system
- Aid EPA remediation of Klau/Buena Vista mines site
- Advocate property development adherence to currently approved levels and uses (unless the proposed change would result in greater protection of water quality); discourage additional local subdivision and intensification of development; consider potential water quality impacts and advocate water quality protection when evaluating land use or development proposals
- Monitor water quality impacts by recreation and related activities in the watershed; identify, advocate, and implement control measures to minimize adverse water quality impacts

Some of these goals may be accomplished in part or in whole through public outreach and education, through securing funding for infrastructure improvements, or through regulatory action if necessary.

Additionally, the District should continue to monitor source water quality to accomplish the following:

- Identify and evaluate specific sources of contaminants of concern, including magnitude of contamination and temporal and spatial trends
- Evaluate effectiveness of control measures

## 1.2 Status of Recommendations

The District continues to encourage the implementation of best management practices in agricultural and industrial operations to minimize the loading of pathogens, nutrients, and solids to the reservoir. As cattle and other livestock have unrestricted access to the reservoir and its tributaries, this remains as a possible concern. Nutrient data collected throughout the watershed in the last five years has been well below any SWRCB MCLs for drinking water.

The District has maintained a program to monitor source water quality in order to identify and evaluate specific sources of contaminants of concern by recreation, livestock grazing, and human impacts.

Due to budget restraints, any significant efforts to accomplish the following recommendations have not occurred:

- Best management practices for stormwater pollution prevention in lakeside communities and public recreation areas
- Relocation of the Oak Shores sewer interceptor system including realignment of the laterals to a new sewer main in order to convey wastewater to the treatment plant. Abandon the existing interceptor system
- Advocate property development adherence to currently approved levels and uses, discourage additional local subdivision and intensification of development; consider potential water quality impacts and advocate water quality protection when evaluating land use or development proposals.

# 2 WATERSHED and WATER SUPPLY DELIVERY

## 2.1 Reservoir Description

| | |
|---|---|
| System ID: | 4010080 |
| Source: | Nacimiento Reservoir (aka Lake Nacimiento) |
| Infrastructure: | Multi-port intake structure, 45 mile long transmission main, three pump stations, three storage reservoirs, and a SCADA system. |

The Nacimiento Water Project (NWP) is a supplemental raw water supply located entirely within San Luis Obispo County. The NWP is owned and operated by the San Luis Obispo County Flood Control and Water Conservation District (District).

Nacimiento Reservoir is 18 miles long and has approximately 165 miles of shoreline. At maximum pool the reservoir's storage capacity is 377,900 acre-feet with a surface elevation of 800 feet (NGVD 29) and surface area of 5,727 acres. Maximum depth is 175 feet.

## 2.2 Watershed Security

Intake protection is provided by a log boom on the lake and fencing along the shore. A new log boom was installed in 2008. It is located a minimum of 500' away from the intake pipe at all points. Fencing is installed along the lake shore adjacent to the intake, and all around the intake building. No trespassing signs are posted at frequent intervals along the fence to prohibit public access to the lake near the intake and dam.

Due to the enormity of the Nacimiento Watershed, the reservoir's remote location, and the diversity of potential contaminants, an effective management plan is difficult to both implement and enforce. Potential contaminants to the reservoir include:

- Wastewater discharges (both domestic and viticulture)
- Wastewater collection systems
- Septic systems
- Chemical toilets and floating toilets
- Urban runoff
- Industrial runoff (wineries, mines, military facilities)
- Agriculture/cropland
- Herbicides/Pesticides
- Grazing animals
- Wild animals
- Mine runoff (inactive mercury mines)
- Mine runoff (active calcium carbonate mine)

- Hazardous material storage (petroleum products, wine production, water treatment, fueling stations)
- Recreational use (boating, body contact)

- Cultivation of marijuana
- Traffic accidents/spills
- Geologic hazards
- Fire

## 2.3 Project Facilities

Project facilities consist of the following major components (see Figure 1):
Intake Facility

- Location – north shore of Nacimiento Reservoir, east end, adjacent to the dam
- Intake shaft - a 180 foot deep, 20 foot diameter vertical shaft and wet well
- Intake tunnel – a 500 foot long, 48 inch minimum diameter horizontal tunnel, located at elevation 660', which connects the bottom of the shaft to the intake pipe
- Intake pipe – the intake pipe connects to the intake tunnel. It slopes up along the lake bottom from elevation 660' to 810'. Seven ports are located at 20 ft intervals along the intake pipe, from elevation 660' to 780'. The ports are opened and closed using hydraulic pressure system actuating valves. Each port is fitted with a fish screen. Pipeline
- Length – 45 miles
- Size - 36" to 12"
- Materials - ductile iron, welded steel
- River crossings – one below Nacimiento River, five beneath the Salinas River
- Route – from Nacimiento Dam, through Camp Roberts, the communities of Paso Robles, Templeton, Atascadero, and Santa Margarita, through the Cuesta Tunnel (at the top of Cuesta Grade), ending just north of the city of San Luis Obispo.

Turnouts

- Materials – ductile iron, welded steel
- Locations - one each in
    - Paso Robles
    - Templeton
    - Atascadero
    - San Luis Obispo

Pump Stations

- Intake – five pumps, 500 hp each
- Santa Ysabel (south of Paso Robles) – four pumps, 600 hp each
- Rocky Canyon (southeast of Atascadero) – three pumps, 400 hp each

Storage Tanks

- Camp Roberts – 850,000 gallons
- Rocky Canyon (southeast of Atascadero) – 850,000 gallons
- Cuesta Tunnel (top of Cuesta Grade on Highway 101, between Santa Margarita and San Luis Obispo) - 300,000 gallons

Chemical Treatment

- No chemical treatment is provided at any point along the transmission main.

Supervisory Control and Data Acquisition (SCADA) system

- Uses fiber optic cable that was installed for this project

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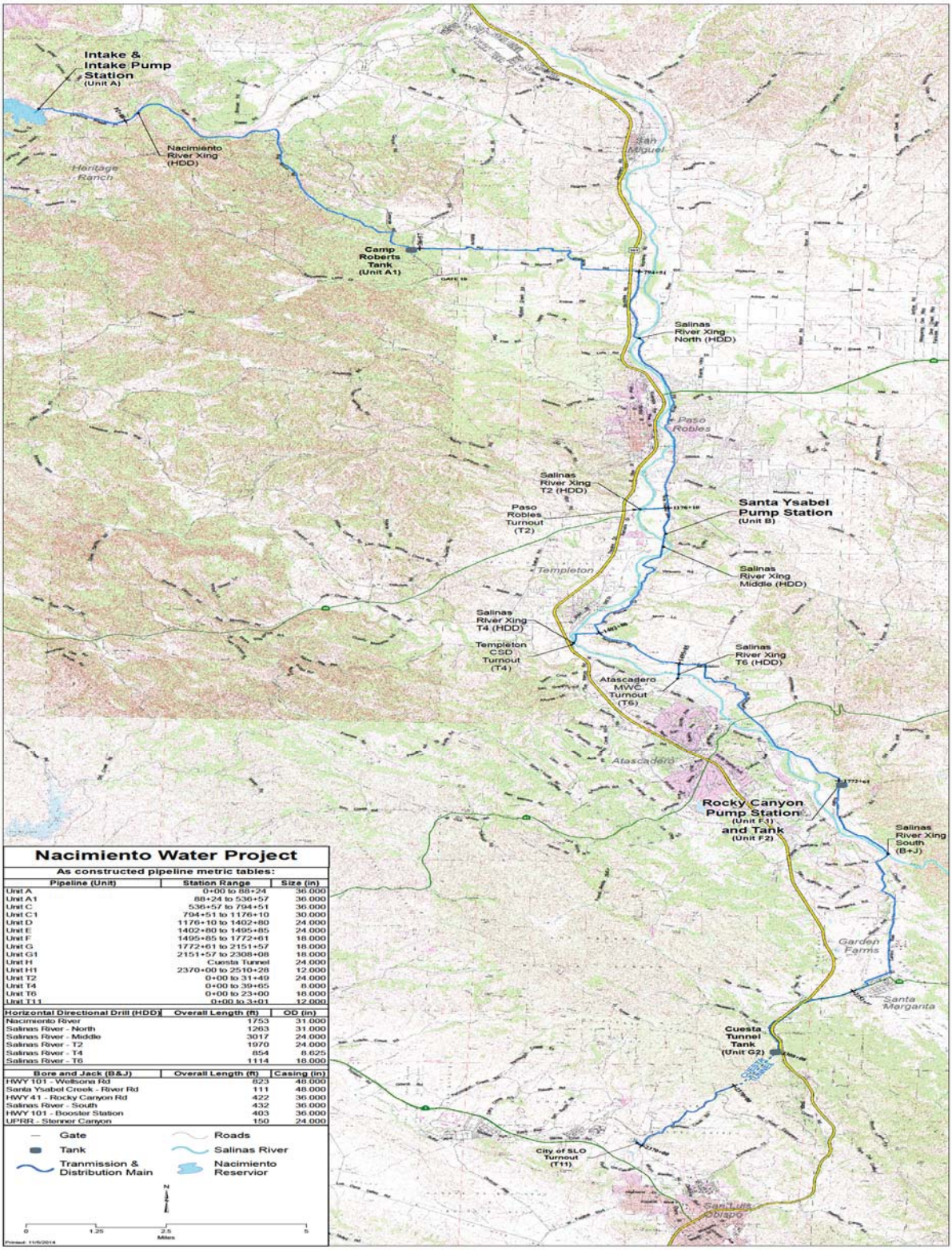



*Source: San Luis Obispo County Public Works Department*

**Figure 1: Nacimiento Water Project Overview**

## 2.4 Water Delivery Entitlement

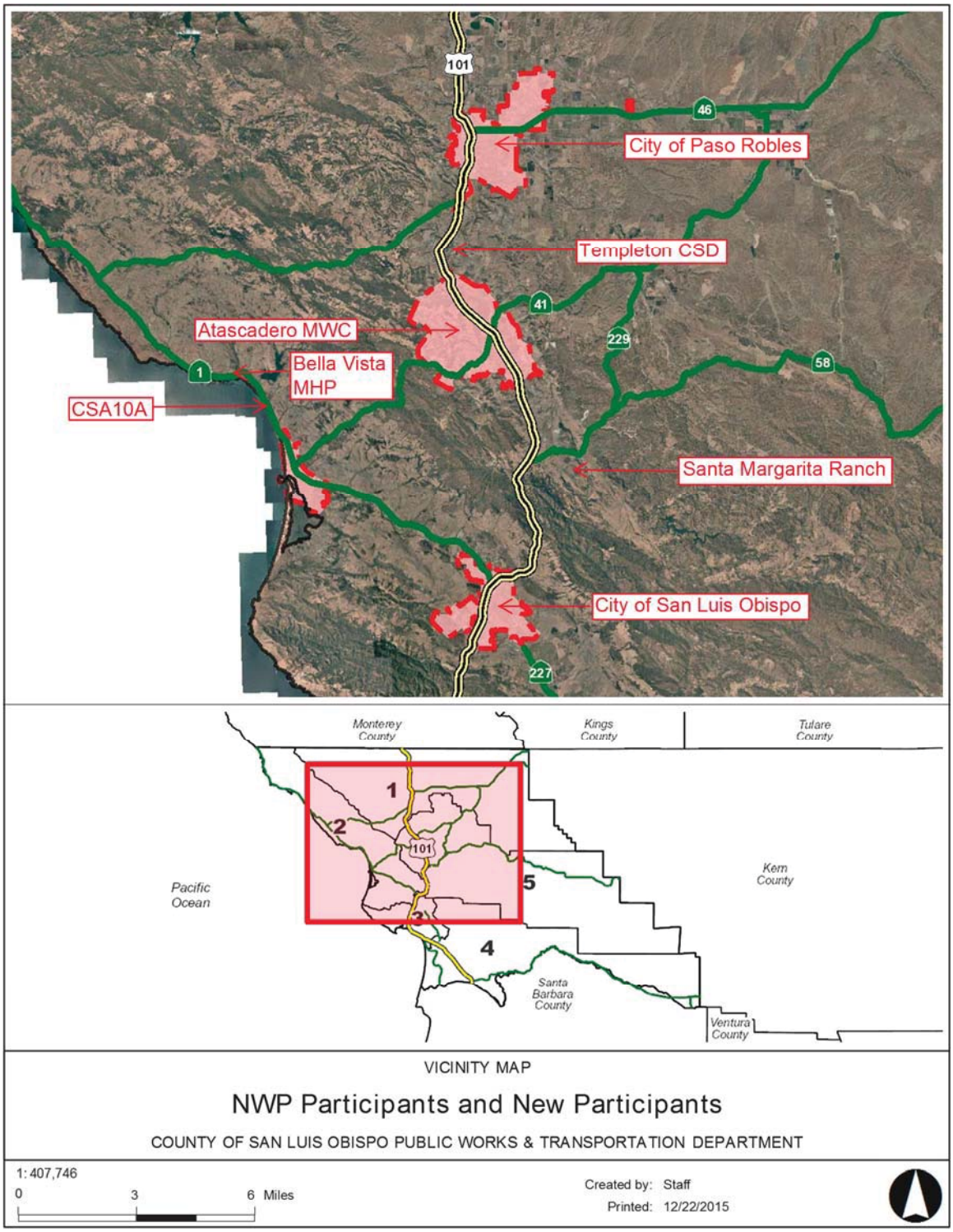
The Nacimiento Reservoir is operated by the Monterey County Water Resources Agency (MCWRA) primarily for the purpose of downstream flood control and ground water conservation, as well as for steelhead trout conservation and recreational use. The supplemental water supply is incidental to the dam's operation and is not a consideration in MCWRA's operational policies.

The Nacimiento Water Project is a raw water supply only. No treatment is provided before the water reaches participating agencies' turnouts. The Project is operated in accordance with the water delivery entitlement contracts signed by the San Luis Obispo County Flood Control & Water Conservation District (District) and participating agencies. Each contract specifies the maximum number of acre-feet per year that each agency may take, the maximum instantaneous rate of flow to be delivered to each agency, and the maximum amount of water to be delivered in any one month.

The District is entitled to no less than 17,500 acre feet of water per year (AFY) from Lake Nacimiento. A portion of that water, 1,750 AFY, is held for lakeside uses, leaving 15,750 AFY available for use in other areas of San Luis Obispo County. See area map of Nacimiento Water Project participants (Figure 2).

The City of Paso Robles, City of San Luis Obispo, Atascadero Mutual Water Company, Templeton Community Services District, and Cayucos (CSA 10A) currently hold entitlement to a combined 9,655 AFY of water. This leaves 6,095 AFY of "Reserve Water" that is not yet contractually committed. The Nacimiento Water Project infrastructure has an existing capacity to deliver the full 15,750 AFY.

Each year, project participants submit three year projections of specific delivery requests to the District. The District then develops a water delivery schedule for the project, taking participants' requests into account. Since March, 2016 participants have been considering whether to amend the Nacimiento Project Water Delivery Entitlement Contract to purchase additional water from the reserve water. The proposed amounts requested are listed in Table 1, below.




*Source: San Luis Obispo County Public Works Department*

**Figure 2: Nacimiento Water Project Participants**

| Water Allocation Participant | Current Delivery Entitlement (AFY) | Proposed Share of Reserve Water (AFY) | Total at Full Allocation (AFY) |
|---|---|---|---|
| **City of Paso Robles** | 4,000 | 2,488 | 6,488 |
| **City of San Luis Obispo** | 3,380 | 2,102 | 5,482 |
| **Atascadero MWC** | 2,000 | 1,244 | 3,244 |
| **Templeton Community Services District** | 250 | 156 | 406 |
| **County Service Area 10A (Cayucos)** | 25 | 15 | 40 |
| **Bella Vista MHP (Cayucos)** | 0 | 10 | 10 |
| **Santa Margarita Ranch MWC** | 0 | 80 | 80 |
| **Reserve Water** | 6,095 | 0 | 0 |
| **Pipeline Total** | **15,750** | **6,095** | **15,750** |
| **Reserved for Lakeside Use** | **1,750** | **0** | **1,750** |
| **TOTAL ALLOCATION** | **17,500** | | **17,500** |

*Source: City of Paso de Robles City Council Meeting 03/014/2016*

**Table 1: Proposed Water Delivery Entitlement**

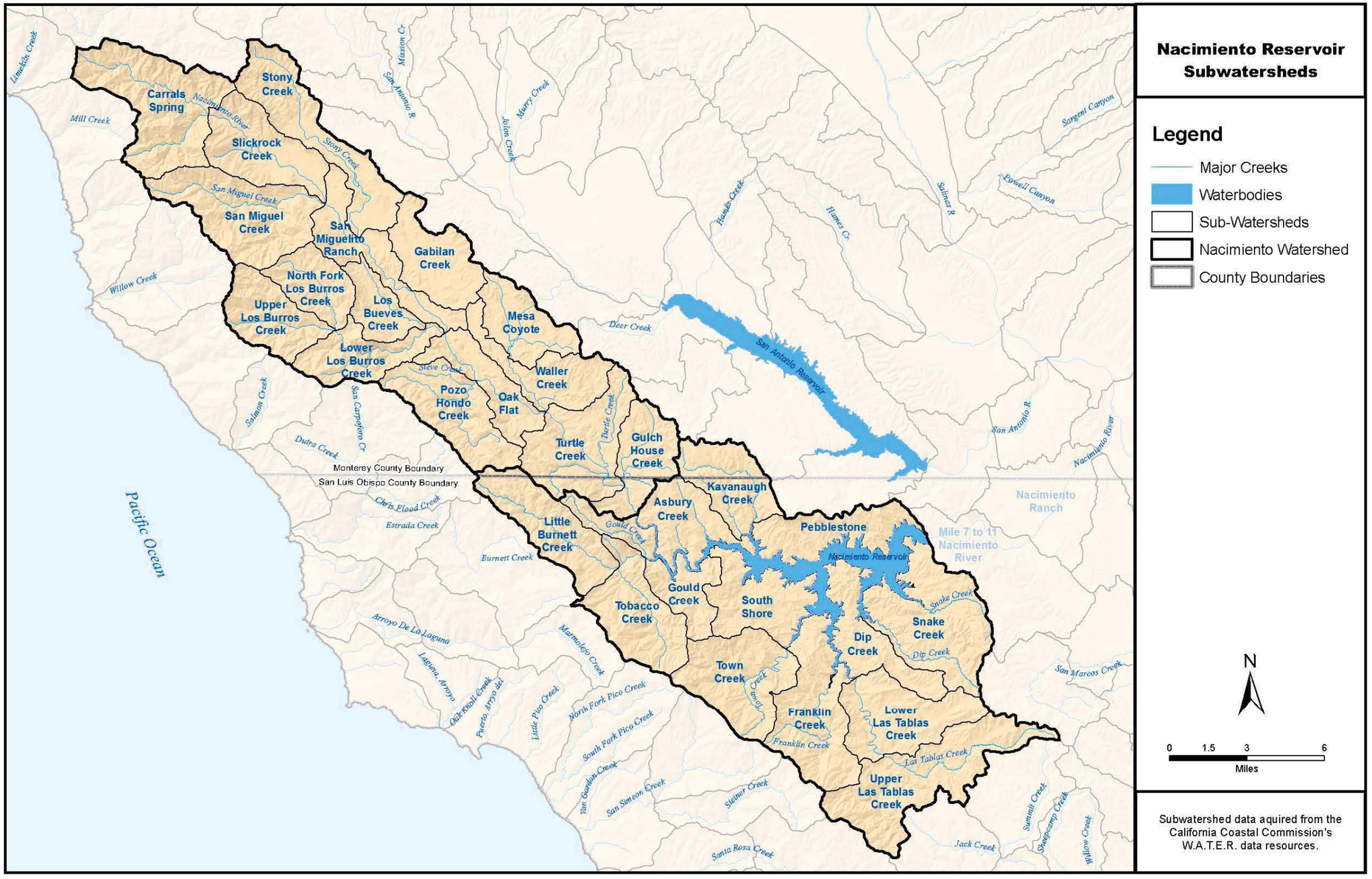
## 2.5 Inspection and Surveillance of the Watershed

At this time, the District's watershed inspection and surveillance program consists of the following ongoing practices:

- Observing conditions on the reservoir and the shoreline east of Lake Nacimiento Resort, including in the vicinity of the NWP intake structure (during monthly profile sample collection events that occur on the lake at the log boom near the Nacimiento Reservoir dam)
- Observing conditions on the reservoir and the shoreline west of Lake Nacimiento Resort (during monthly watershed sample collection events that occur on the lake at several locations around the perimeter of the main body of the lake)
- Observing conditions on shore and on the reservoir at the intake structure (during monthly sample collection events at the intake pump station)
- Observing conditions on shore and on the reservoir at the intake structure (during routine operational visits to the intake pump station, one to five times per week)
- Observing conditions on shore in the public recreation area of the Lake Nacimiento Resort including all campgrounds, day use areas, and the marina (during monthly recreation area inspections)
- Collecting water samples for water quality monitoring and evaluating analytical results from various locations on the reservoir
- Gathering and evaluating data from other water quality monitoring programs that occur in the watershed
- Fostering cooperative working relationships and maintaining communication with public agencies that own property and/or have jurisdictional authority in the watershed
- Fostering positive relationships and maintaining communication with private associations and individuals who own property and/or have some other type of authority in the watershed
- Participating in the technical support group and in the stakeholders group for the EPA Superfund investigation of the Klau/Buena Vista mines site, Las Tablas Creek, and Nacimiento Reservoir

The watershed is large and mostly undeveloped; many parts of it are inaccessible by land or by water. In the areas that are accessible by land, roads are narrow and winding, and travel is slow. Additionally, access to many areas is restricted (e.g. private lakeside communities, and most of Fort Hunter Liggett). Consequently, routine, frequent surveillance of most of the watershed is impractical.

Occasionally District staff have an opportunity to visit parts of the watershed that are remote or otherwise normally inaccessible. When such an opportunity presents itself, District staff attempt to be involved and will continue to do so.




*Source: San Luis Obispo County Public Works Department*

**Figure 3: Nacimiento Reservoir Watershed and sub-watersheds**

## 2.6 WATERSHED LAND USE

The Nacimiento Reservoir watershed encompasses 208,060 acres[1] (325 square miles). Almost exactly half of this area, 104,480 acres, lies in Monterey County. The other half, 103,580 acres, lies in San Luis Obispo County. (Figure 3)

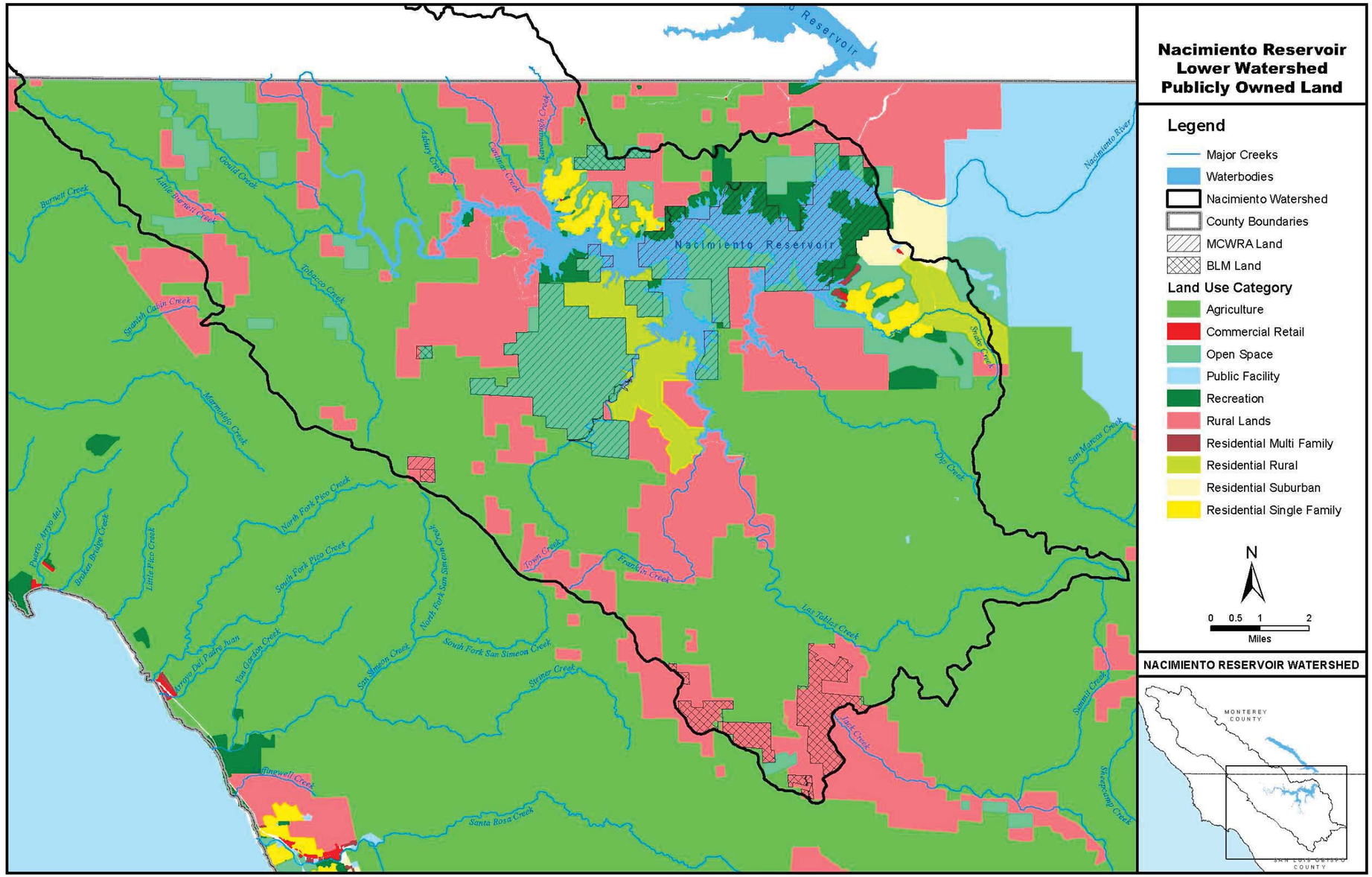
The watershed can be divided into two major sections – the upper watershed, which drains into the Nacimiento River, and the lower watershed, which drains directly into the Nacimiento Reservoir. These two major sections are also nearly identical in size, with 104,670 acres in the upper watershed, and 103,390 acres in the lower watershed. The upper watershed lies almost entirely in Monterey County, and the lower watershed lies almost entirely in San Luis Obispo County.

The upper watershed is comprised largely of federally owned land (87%). The Nacimiento River originates in the Santa Lucia Mountains just south of Cone Peak, within the Los Padres National Forest (LPNF). The Forest is owned and managed by the United States Department of Agriculture Forest Service, and covers 11,400 acres (11%) of the upper watershed. The river travels 10 miles through the forest before reaching Fort Hunter Liggett (FHL), a United States Department of the Army training installation, which occupies 79,960 acres (76%) of the upper watershed. The river travels 19 miles through FHL, then another 7 miles through privately owned land before reaching the 800' elevation which marks the beginning of the reservoir. Nearly all of the remaining 13% of the upper watershed is privately owned and zoned for agricultural use (13,310 acres).

The lower watershed is comprised largely of privately owned land, much of which is zoned for agricultural use (54,500 acres; 53% of lower watershed), along with rural lands (23,400 acres; 23% of lower watershed) and open space (11,250 acres; 11% of lower watershed). At maximum capacity Nacimiento Reservoir occupies 5,727 acres. The remaining 8,510 acres in the lower watershed are zoned for residential use or recreation.

The only significant public land ownership in the lower watershed is that which is owned by the Monterey County Water Resources Agency (MCWRA), which owns and operates the dam and the reservoir. MCWRA owns 10,062 acres of land in the lower watershed. Of this, 7,114 acres are above the 800' elevation and adjacent to the reservoir, and 2,948 acres are below the 800' elevation. Additionally, the Federal Bureau of Land Management owns 2,208 acres of land in the lower watershed (Figure 4).

1 All measurements have some inherent error. Acreage values reported here may differ slightly from those reported elsewhere. All acreages were rounded to the nearest ten for use in this report.




*Source: San Luis Obispo County Public Works Department*

**Figure 4: Nacimiento Reservoir Lower Watershed Land Use**

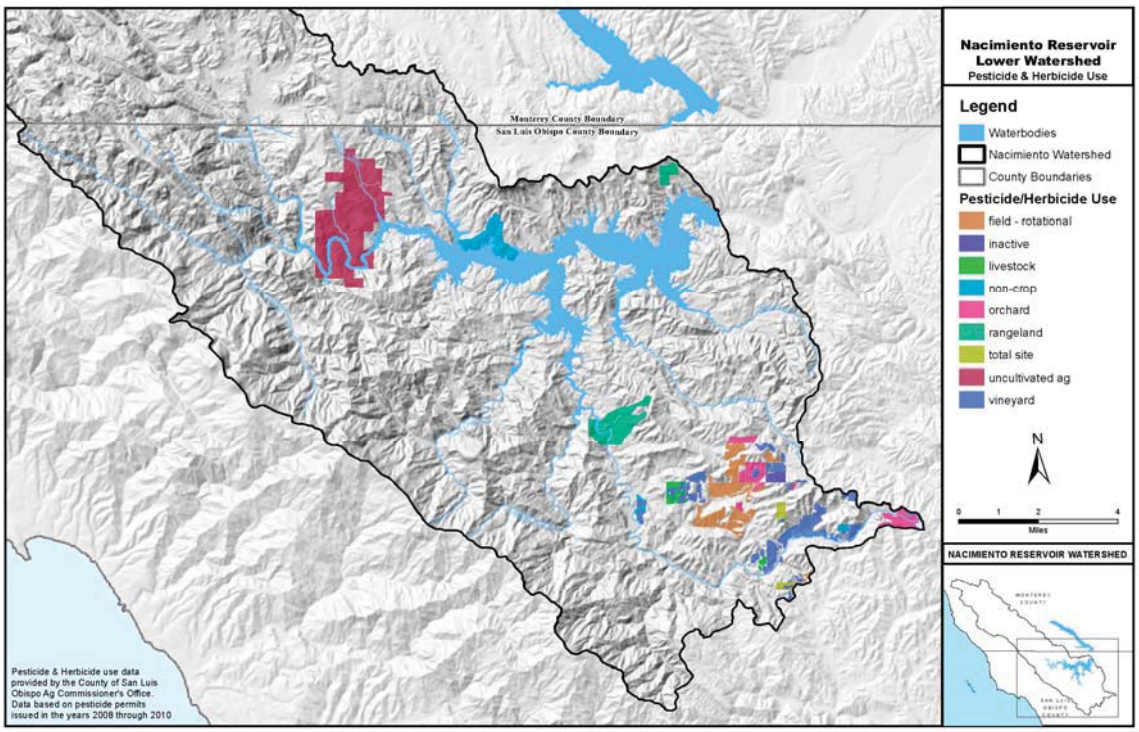
A majority of the watershed is undeveloped open space. The only significant population centers in the watershed are located on the shore of Lake Nacimiento; the remainder of the watershed is rural and sparsely populated. Numerous small communities have been developed along the lake shore. A total of approximately 2,933 lots[2] have been developed for residential use around the lake shore.

2 The estimated number of developed lots is based on the number of sewer connections, including both community wastewater systems and individual septic tanks. The lot may be developed with a permanent house or with a residential trailer.

## 2.7 PESTICIDE and HERBICIDE USE

Pesticide and herbicide use occurs throughout the watershed. Over 22,000 events of pesticide/herbicide use were registered between 2011 and 2015. All registered pesticide/herbicide usage was in the Adelaida area (township 26S range 10E sections 13-17, 20-23, 25-26, 28-29, 35-36; township 26S range 11E sections 19-21, 29-30; and township 27S range 10E section 3). The majority of registered pesticides/herbicides were used on wine grapes. See Figure 5 below.

Pesticides and herbicides registered for use throughout the entire watershed and the amounts applied in 2011 - 2015 are shown in Appendix G.




*Source: San Luis Obispo County Public Works Department (2011)*

**Figure 5: Nacimiento Reservoir Lower Watershed Pesticide and Herbicide Use**

# 3 Watershed Data Evaluation

This section will summarize water quality issues in the watershed based on data collected from analysis and field inspections over the past five years (2011 – 2015). The most significant impact to the watershed area over these years would be the decrease in the amount of rainfall in the watershed as well as throughout the state of California. Vegetation in the watershed has been visibly dry, and water levels in Lake Nacimiento and its watershed are significantly lower. As the drought continues, longer term impacts can emerge and could possibly alter or damage native ecosystems for both aquatic and riparian species.

Data availability has decreased from the previous watershed survey due to budget restrictions placed upon sampling and analysis of the watershed area as well as the decrease in water levels. There was a significant budget decrease in 2013 and much of the monitoring was decreased or eliminated. Monitoring frequency will increase if potential problems warrant more in depth investigation. All data is available for review in the appendicies of this document.

## 3.1 Water Quality – Limnology

Limnology is the study of the chemical, physical, atmospheric, and biological conditions in freshwater. The County of San Luis Obispo routinely monitors Nacimiento reservoir and uses the limnological data to assess seasonal variability in water quality and to determine the cause of objectionable odors or particulate matter. The data is also used to select the Nacimiento Reservoir intake(s) with the best quality water for delivery to the participating water agencies.

Nacimiento Reservoir is a large monomictic lake that does not stratify or de-stratify simultaneously across the entire lake, but otherwise behaves normally. (USGS, USEPA 2015). The lake's significant depth means that a thick anoxic zone (water with dissolved oxygen less than 0.5 mg/L) can develop once stratification sets in. Lake profiles for temperature and dissolved oxygen are conducted monthly at the dam intake structure. A thermocline forms gradually starting in March/April, and the reservoir becomes stratified, peaking in late summer (July/August/September). In the fall (October/ November) the thermocline gradually disappears. Temperatures are typically uniform from top to bottom in December and January.

Desirable qualities for raw source water in drinking water treatment are typified by adequate dissolved oxygen, pH in the range of 6.5 to 8.5, low algae, low odor and turbidity, low bacteria, low iron and manganese, and free of contamination. Once per month, samples are collected at ten foot intervals at the dam intake structure. The samples are analyzed for algae, dissolved oxygen, pH, temperature, odor, turbidity, true and apparent color, iron, and manganese.

In the Nacimiento Reservoir, dissolved oxygen (DO) can exhibit a negative heterograde

curve. In this case, as the thermocline develops, dissolved oxygen is highest at the surface, then decreases through the thermocline, then rises in the hypolimnion before decreasing again (Biodiversity Institue of Ontario) (Government of British Columbia, Ministry of Environment) This uncommon pattern occurs most often when oxygen consumption from decomposition of organic matter exceeds oxygen inputs as the rate of organic matter sinking from the epilimnion is slowed upon entering the colder, denser water of the thermocline. It may also occur due to respiratory demand from large concentrations of zooplankton, and from certain lake mixing patterns.

A summary of field data (temperature, dissolved oxygen, visibility, field notes, and lake elevations) can be found in Appendix A: Field Data.

## 3.2 Water Quality – Bacteriology

Total coliform and *E. coli* levels are routinely monitored as a potential indicator of pathogens in the watershed.

### 3.2.1 Raw Water – Intake in Use

There were a total of 47 bacteriological samples collected from the raw water (intake in use) during January 1, 2011 and December, 2015. There were no water deliveries to participating agencies from June, 2014 through March, 2015 due to a significant leak in the pipeline. No coliform samples were collected during this time period. When delivery resumed, water was drawn simultaneously from the 700' and 720' elevation intakes. During the collection of data for this update, the average total coliform MPN/100mL from the raw water was 29 with a range of 5 to 24,000. The average *E. coli* MPN/100mL was <1 with a range of <1 to 5. Total coliform and *E. coli* levels are shown in the following graphs (Figure 6 and Figure 7).

**Figure 6: Raw Water Total Coliform MPN**

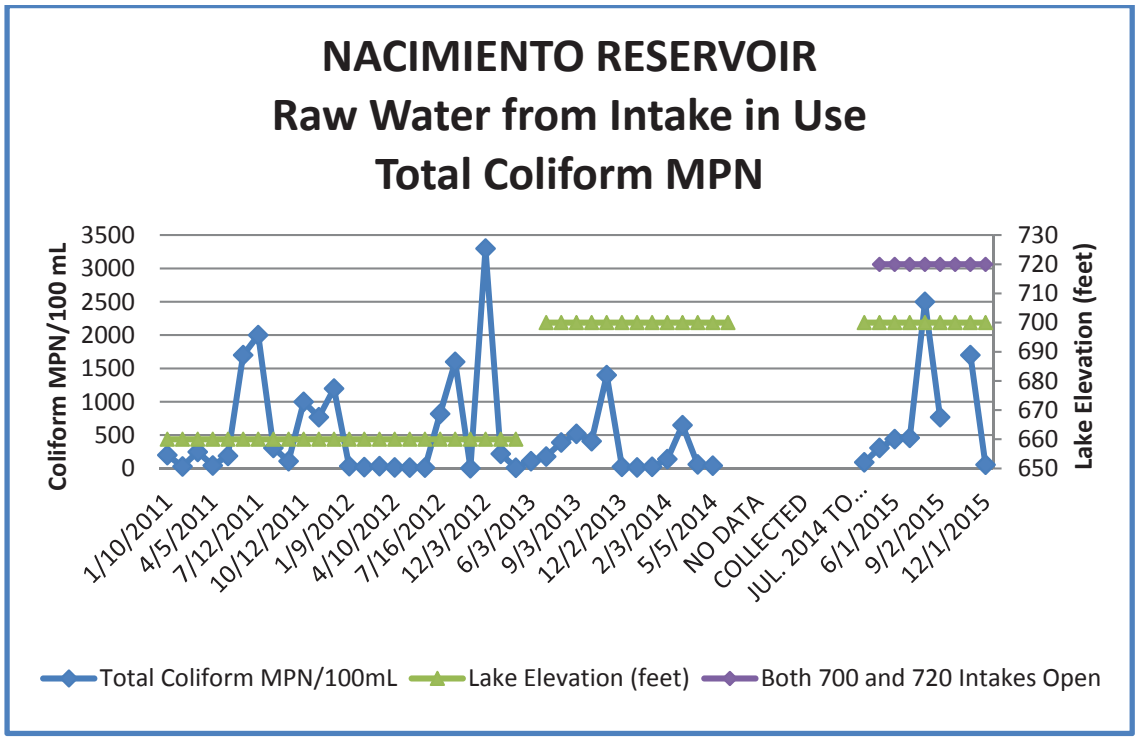
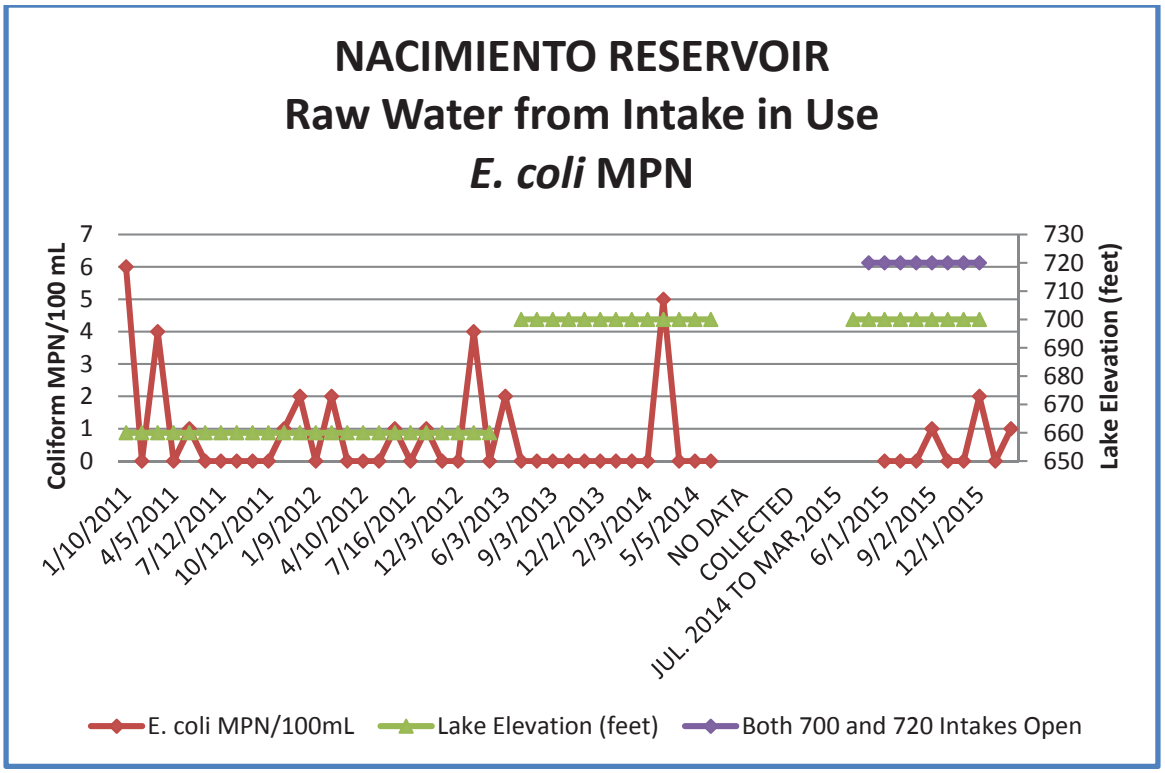


**Figure 7: Raw Water *E. coli* MPN**




## 3.2.2 Reservoir Intakes

In addition to the delivered raw water, bacteriological samples were collected once per month at the Nacimiento dam's intake structure at ten foot intervals. This data aids in intake selection for participating agencies. As water levels decreased, fewer intakes were available for collection. Total coliforms vary greatly in individual intakes and throughout the months. *E. coli* values from the same locations and times are low. Total coliforms ranged from 4 MPN/100mL (Elevation 750' in February, 2012) to greater than 24,000 MPN/100mL (Elevation 720' in October, 2015). *E. coli* throughout the intake profile ranged from less than 1 to 54 MPN/100mL.

See Table 2 below for a summary of bacteriological data for the reservoir intakes. All intake bacteriological data collected can be seen in Appendix B: Bactriological Data.

**Table 2: Reservoir Intakes (Bacteriological Data)**

## Nacimiento Reservoir Intakes: Total Coliform MPN

| NACIMIENTO PROJECT SITE | | Total Coliform MPN/100mL | E. coli MPN/100mL |
|---|---|---|---|
| 790' Elevation | Minimum | 82 | <1 |
| | Maximum | 2400 | 54 |
| | Median | 200 | <1 |
| | Average | 902 | 11 |
| | Count | 5 | 5 |
| 780' Elevation | Minimum | 38 | <1 |
| | Maximum | 8700 | 1 |
| | Median | 165 | <1 |
| | Average | 2302 | <1 |
| | Count | 8 | 8 |
| 770' Elevation | Minimum | 9 | <1 |
| | Maximum | 13000 | 2 |
| | Median | 170 | <1 |
| | Average | 1945 | <1 |
| | Count | 15 | 15 |
| 760' Elevation | Minimum | 11 | <1 |
| | Maximum | 17000 | 35 |
| | Median | 210 | 1 |
| | Average | 1527 | 3 |
| | Count | 20 | 20 |
| 750' Elevation | Minimum | 4 | <1 |
| | Maximum | 24000 | 7 |
| | Median | 230 | 2 |
| | Average | 1736 | 1 |
| | Count | 27 | 27 |
| 740' Elevation | Minimum | 10 | <1 |
| | Maximum | 9200 | 11 |
| | Median | 270 | <1 |
| | Average | 1352 | 1 |
| | Count | 33 | 33 |
| 730' Elevation | Minimum | 7 | <1 |
| | Maximum | 13000 | 5 |
| | Median | 200 | <1 |
| | Average | 1485 | <1 |
| | Count | 30 | 30 |
| 720' Elevation | Minimum | 2 | <1 |
| | Maximum | >24000 | 11 |
| | Median | 310 | <1 |
| | Average | 1640 | <1 |
| | Count | 57 | 57 |

| NACIMIENTO PROJECT SITE | | Total Coliform MPN/100mL | E. coli MPN/100mL |
|---|---|---|---|
| 720' Elevation | Minimum | 2 | <1 |
| | Maximum | >24000 | 11 |
| | Median | 310 | <1 |
| | Average | 1640 | <1 |
| | Count | 57 | 57 |
| 710' Elevation | Minimum | 3 | <1 |
| | Maximum | 16000 | 11 |
| | Median | 190 | <1 |
| | Average | 1375 | 1 |
| | Count | 30 | 30 |
| 700' Elevation | Minimum | 2 | <1 |
| | Maximum | >24000 | 7 |
| | Median | 220 | <1 |
| | Average | 1481 | 1 |
| | Count | 57 | 57 |
| 690' Elevation | Minimum | 2 | <1 |
| | Maximum | 6500 | 19 |
| | Median | 250 | <1 |
| | Average | 973 | 2 |
| | Count | 30 | 30 |
| 680' Elevation | Minimum | 6 | <1 |
| | Maximum | 11000 | 32 |
| | Median | 290 | 1 |
| | Average | 1100 | <1 |
| | Count | 61 | 61 |
| 670' Elevation | Minimum | 6 | <1 |
| | Maximum | 6900 | 34 |
| | Median | 235 | <1 |
| | Average | 1015 | 2.00 |
| | Count | 30 | 30 |
| 660' Elevation | Minimum | 6 | <1 |
| | Maximum | 6900 | 34 |
| | Median | 330 | <1 |
| | Average | 1015 | 2 |
| | Count | 61 | 61 |

### 3.2.3 Creeks and Tributaries

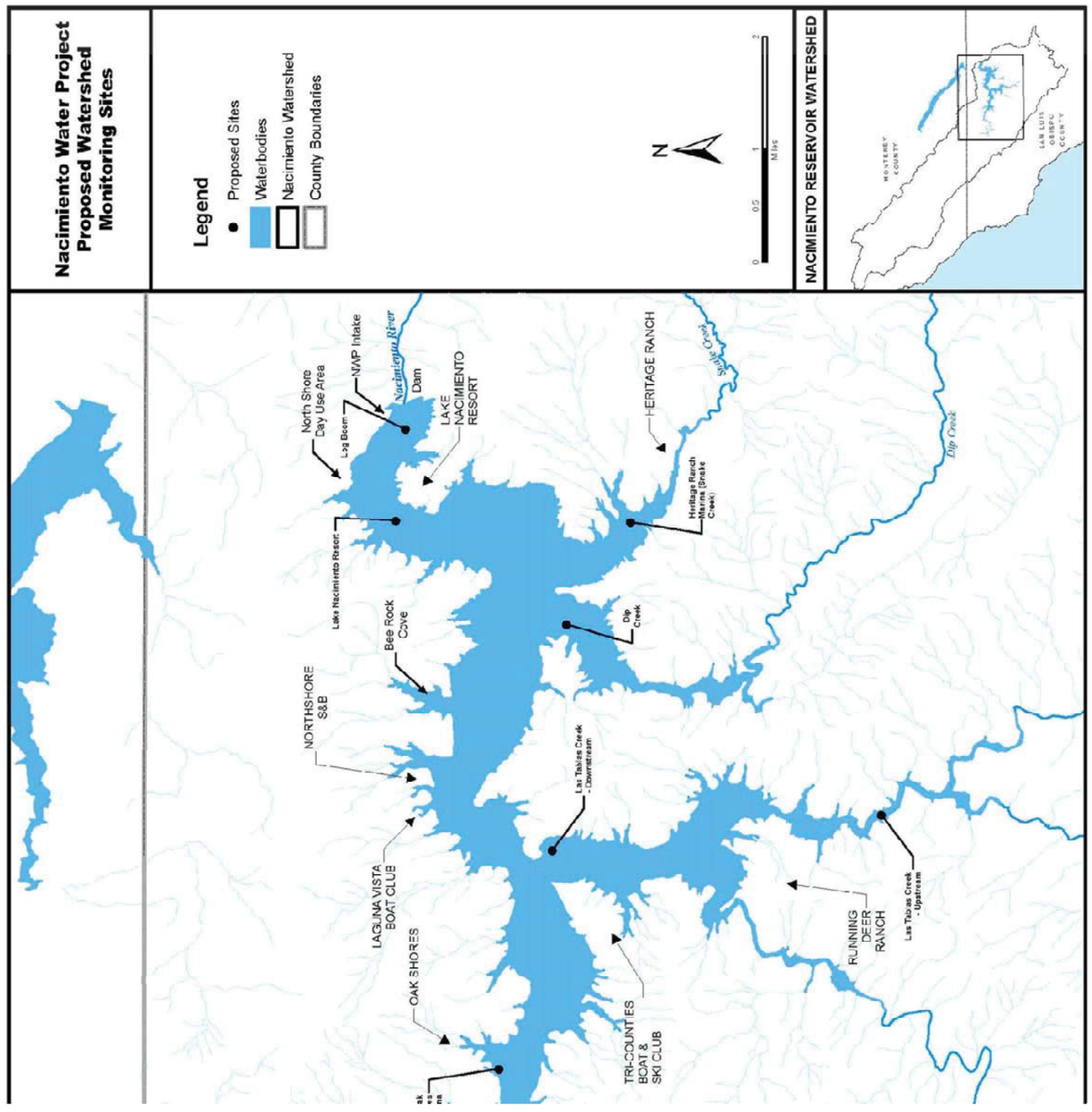
In order to evaluate the source(s) of any bacteriological contamination to the reservoir, samples were collected from various creek tributaries and locations throughout the watershed area. None of these locations exhibited a significant contribution to the reservoir.

See the following summary table (Table 3) for locations and results. A complete summary of data and graphs can be found Appendix B: Bactriological Data. A map of the locations can be found in Figure 8 below.

**Table 3: Watershed Tributaries (Bacteriological Data)**

| NACIMIENTO WATERSHED | | Minimum | Maximum | Median | Average | # Collected |
|---|---|---|---|---|---|---|
| Dip Creek | | | | | | |
| | Total Coliform MPN/100mL | 7 | 2400 | 210 | 350 | 20 |
| | *E.coli* MPN/100mL | <1 | 12 | <1 | 1 | 20 |
| Heritage Ranch | | | | | | |
| | Total Coliform MPN/100mL | 34 | 2600 | 140 | 510 | 20 |
| | *E.coli* MPN/100mL | <1 | 9 | <1 | 1 | 20 |
| Lake Nacimiento Resort | | | | | | |
| | Total Coliform MPN/100mL | 16 | 3700 | 175 | 640 | 20 |
| | *E.coli* MPN/100mL | <1 | 6 | <1 | 1 | 20 |
| Oak Shores | | | | | | |
| | Total Coliform MPN/100mL | 16 | 1200 | 180 | 280 | 14 |
| | *E.coli* MPN/100mL | <1 | 45 | <1 | 4 | 14 |
| Lake Tablas Creek | | | | | | |
| | Total Coliform MPN/100mL | 5 | 1600 | 43 | 560 | 5 |
| | *E.coli* MPN/100mL | <1 | 1 | <1 | 2 | 5 |
| Lake Tablas Creek - Downstream Site | | | | | | |
| | Total Coliform MPN/100mL | 44 | 2400 | 200 | 460 | 9 |
| | *E.coli* MPN/100mL | <1 | 26 | <1 | 4 | 9 |
| Lake Tablas Creek - Upstream Site | | | | | | |
| | Total Coliform MPN/100mL | 14 | 1600 | 400 | 540 | 8 |
| | *E.coli* MPN/100mL | <1 | 3 | 1 | 1 | 8 |
| The Narrows - Downstream | | | | | | |
| | Total Coliform MPN/100mL | 11 | 8700 | 300 | 1100 | 12 |
| | *E.coli* MPN/100mL | <1 | 2 | <1 | 1 | 12 |
| The Narrows - Downstream | | | | | | |
| | Total Coliform MPN/100mL | 11 | 9200 | 770 | 1700 | 13 |
| | *E.coli* MPN/100mL | <1 | 51 | <1 | 5 | 13 |

**Figure 8: Nacimiento Reservoir Tributaries and Park Locations**



### 3.2.4 Raw Water Distribution

Bacteriological samples were collected from raw water tanks and distribution sites to ensure no additional coliform growth was occurring down the delivery system line. See the following summary table for locations and results. A complete summary of data and graphs can be found Appendix B: Bacteriological Data. A map of the locations can be found in Figure 8.

**Table 4: Raw Water Distribution (Bacteriological Data):**

| NACIMIENTO PROJECT WATER DELIVERY | | Minimum | Maximum | Median | Average | # Collected |
|---|---|---|---|---|---|---|
| Raw Water from Intake Pump Station | | | | | | |
| | Total Coliform MPN/100mL | 1 | 2000 | 150 | 461 | 39 |
| | *E.coli* MPN/100mL | <1 | 5 | <1 | 1 | 39 |
| Camp Roberts Tank | | | | | | |
| | Total Coliform MPN/100mL | <1 | 2400 | 6 | 266 | 21 |
| | *E.coli* MPN/100mL | <1 | 2 | <1 | <1 | 21 |
| Santa Ysabel Pump Station | | | | | | |
| | Total Coliform MPN/100mL | <1 | 1600 | 175 | 383 | 32 |
| | *E.coli* MPN/100mL | <1 | 3 | <1 | 1 | 32 |
| Cuesta Tunnel Tank | | | | | | |
| | Total Coliform MPN/100mL | 3 | 2000 | 160 | 374 | 39 |
| | *E.coli* MPN/100mL | <1 | 8 | <1 | 1 | 39 |
| Rocky Canyon Tank | | | | | | |
| | Total Coliform MPN/100mL | 1 | 1700 | 140 | 335 | 39 |
| | *E.coli* MPN/100mL | <1 | 7 | <1 | 1 | 39 |
| City of San Luis Obispo Turnout (T11) | | | | | | |
| | Total Coliform MPN/100mL | <1 | 1600 | 190 | 375 | 39 |
| | *E.coli* MPN/100mL | <1 | 10 | <1 | 1 | 39 |

### 3.2.5 Surface Water Treatment Rule (Cryptosporidium and Giardia)

The Surface Water Treatment Rule (SWTR) was implemented in June, 1989 in order to reduce illnesses caused by pathogens in drinking water. The disease-causing pathogens include *Legionella*, *Giardia lamblia, and Cryptosporidium*.

The SWTR requires water systems to filter and disinfect surface water sources. Some water systems are allowed to use disinfection only for surface water sources that meet criteria for water quality and watershed protection.

The Nacimiento Project began initial (round 1) Long Term 2 Enhanced Surface Water Treatment Rule (LT2) monitoring in January 2014. In June 2014 the NWP ceased deliveries to project participants due to a significant pipeline leak; consequently, LT2 sampling was discontinued at that time as well. Leak investigation and repair efforts took several months, and the pipeline was not returned to service until April 3, 2015. This lengthy break in service negated the previous LT2 monitoring that was done and necessitated starting the sample collection cycle over again.

The Nacimiento Project began a new initial Long Term 2 Enhanced Surface Water Treatment Rule monitoring program in May 2015. The monitoring site has remained the same as the 2014 sampling event (Nacimiento Reservoir Raw - Intake in Use). The 24-month monitoring is scheduled through April 5, 2017.

In the original sampling, no *Giardia* or *Cryptosporidium* was detected. (Table 5) New LT2-ESWTR monitoring began May, 2015. The first 12-months of the monitoring period had no detection of *Giardia* or *Cryptosporidium* as well. (Table 6)

**Table 5: Long Term 2 Enhanced Surface Treatment Rule Data (2014)**

| **Nacimiento Reservoir: LT2-ESWTR Monitoring (2014 - 2015)** | | | | | |
|---|---|---|---|---|---|
| Collected Date | Cryptosporidium | Giardia | Total Coliform | *E. coli* | Intake Elevation |
| | Oocyst/L | Cysts/L | MPN/100mL | MPN/100mL | feet |
| 01/06/2014 | Not Detected | Not Detected | 17 | <1 | 700 |
| 02/03/2014 | Not Detected | Not Detected | 26 | <1 | 700 |
| 03/03/2014 | Not Detected | Not Detected | 140 | <1 | 700 |
| 04/02/2014 | Not Detected | Not Detected | 650 | 5 | 700 |
| 05/05/2014 | Not Detected | Not Detected | 61 | <1 | 700 |
| 06/02/2014 | Not Detected | Not Detected | 43 | <1 | 700 |
| Total Analyzed | 6 | 6 | 6 | 6 | |
| No water deliveries after June, 2014.due to pipeline leak. | | | | | |

**Table 6: Long Term 2 Enhanced Surface Treatment Rule Data (2015 - 2016)**

| Nacimiento Reservoir: LT2-ESWTR Monitoring (2015 - 2016) | | | | | |
|---|---|---|---|---|---|
| Collected Date | Cryptosporidium | Giardia | Total Coliform | *E. coli* | Intake Elevation |
| | Oocyst/L | Cysts/L | MPN/100mL | MPN/100mL | feet |
| 05/04/2015 | Not Detected | Not Detected | 310 | <1 | 700 & 720 |
| 06/01/2015 | Not Detected | Not Detected | 440 | <1 | 700 & 720 |
| 07/06/2015 | Not Detected | Not Detected | 460 | 1 | 700 & 720 |
| 08/03/2015 | Not Detected | Not Detected | 2500 | <1 | 700 & 720 |
| 09/02/2015 | Not Detected | Not Detected | 770 | <1 | 700 & 720 |
| 10/05/2015 | Not Detected | Not Detected | 16000 | 2 | 700 & 720 |
| 11/02/2015 | Not Detected | Not Detected | 1700 | <1 | 700 & 720 |
| 12/01/2015 | Not Detected | Not Detected | 56 | 1 | 700 |
| 01/06/2016 | Not Detected | Not Detected | 55 | <1 | 700 |
| 02/03/2016 | Not Detected | Not Detected | 140 | <1 | 700 |
| 03/03/2016 | Not Detected | Not Detected | 2800 | <1 | 700 |
| 04/02/2016 | Not Detected | Not Detected | 980 | <1 | 700 |
| Total Analyzed | 12 | 12 | 12 | 12 | |

## 3.3 Water Quality – Nutrients

Contributions of nutrients in watersheds can be caused from a variety of sources and environmental circumstances. Several potential contributors and circumstances may increase the nutrient levels in the Nacimiento watershed. These include:

- domestic animal grazing
- agricultural cropland (especially viticulture)
- agricultural fertilizer (pesticides/herbicides)
- wastewater collection, treatment, and disposal
- urban runoff
- wild animals
- mine runoff
- hazardous materials storage
- recreational use
- unauthorized activity
- traffic accidents and spills
- geological events (earthquakes, landslides, mudslides)
- fires
- temperature
- runoff of nutrient rich soil
- drought conditions

The growth of macrophytes (aquatic plants) and phytoplankton (algae) can be stimulated by nutrients like phosphorus and nitrogen. “Nutrient-stimulated primary production is more often seen in lakes and estuaries, as primary production in flowing water is thought to be controlled by physical factors, such as light penetration, timing of flow, and the type of substrate available, rather

than by nutrients." (See www.water.ncsu.edu/watershedss/info/no3.html, McCabe et al., 1985). However, phosphorus and nitrogen are important plant nutrients and, when in abundance, can lead to over fertilization of the lake. This will promote the growth of aquatic plants, which may deplete the oxygen from the water that many native species need to survive.

Nitrogen and phosphate levels are monitored in the watershed creeks to determine nutrient loading on the Nacimiento Reservoir. When total phosphorus levels exceed 0.025 mg/L in lakes and reservoirs, excessive or nuisance growths of algae and other aquatic plants may be stimulated (EPA Quality Criteria for Water 1986). According to North Carolina State's "WATERSHEDS" program, "the increasing concentration of available phosphorus allows plants to assimilate more nitrogen before the phosphorus is depleted. Thus, if sufficient phosphorus is available, high concentrations of nitrates will lead to phytoplankton and macrophyte production."
(See www.water.ncsu.edu/watershedss/info/no3.html)

In an effort to maintain a healthy water system and to minimize algal growth, the EPA recommends that phosphate levels be below 0.10 mg/L and nitrate levels below 10 mg/L. Monitoring results of nutrient levels in the Nacimiento Reservoir and Watershed are far below any human health concerns or EPA recommendations. The highest values for total nitrogen were seen in the intake hypolimnion (1.3 mg/L) and upstream of the Narrows (0.94 mg/L). The highest values for total phosphate were at Dip Creek, Heritage Ranch, and Lake Nacimiento Resort (all 0.110 mg/L).

A summary of nutrients found in the Nacimiento Reservoir and watershed can be found below. (Table 7)

**Table 7: Nutrient Data Summary**

| NACIMIENTO PROJECT Nutrient Data Summary (2011-2015) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Location | | Nitrate as N (mg/L) | Nitrite as N (mg/L) | Ammonia as N (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Total Nitrogen (mg/L) | Total Phosphate as P (mg/L) | Total Reactive Phosphate as P (mg/L) |
| | DLR | 0.100 | 0.100 | 0.050 | 0.20 | — | 0.020 | 0.020 |
| | MCL | 45 | 1000 | — | — | — | — | — |
| May Limit Algae Growth* | | — | — | — | — | — | <0.010 | <0.010 |
| May Enhance Algae Growth** | | — | — | — | — | >10 | >0.100 | >0.100 |
| Nacimiento Reservoir: Epilimnion | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.198 | ND | 0.05 | 0.40 | 0.60 | 0.053 | 0.038 |
| | Average | ND | ND | ND | 0.22 | 0.22 | ND | ND |
| | Median | ND | ND | ND | 0.24 | 0.24 | ND | ND |
| | # of Samples | 39 | 39 | 29 | 29 | 29 | 29 | 28 |
| Nacimiento Reservoir: Hypolimnion | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.860 | ND | 0.06 | 0.41 | 1.3 | 0.057 | 0.079 |
| | Average | 0.193 | ND | ND | 0.21 | 0.41 | ND | ND |
| | Median | 0.187 | ND | ND | 0.24 | 0.43 | ND | ND |
| | # of Samples | 39 | 39 | 29 | 29 | 29 | 29 | 28 |
| Nacimiento Reservoir: Raw (Intake in Use) | Minimum | ND | ND | — | — | — | — | — |
| | Maximum | 0.228 | ND | — | — | — | — | — |
| | Average | 0.156 | ND | — | — | — | — | — |
| | Median | 0.204 | ND | — | — | — | — | — |
| | # of Samples | 5 | 5 | 0 | 0 | 0 | 0 | 0 |
| Nacimiento Watershed: Dip Creek | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.170 | ND | ND | 0.50 | 0.67 | ND | 0.11 |
| | Average | ND | ND | ND | ND | ND | ND | ND |
| | Median | ND | ND | ND | ND | ND | ND | ND |
| | # of Samples | 20 | 20 | 20 | 19 | 19 | 20 | 20 |
| Nacimiento Watershed: Heritage Ranch | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.162 | ND | ND | 0.33 | 0.49 | ND | 0.110 |
| | Average | ND | ND | ND | 0.24 | 0.24 | ND | ND |
| | Median | ND | ND | ND | 0.25 | 0.25 | ND | ND |
| | # of Samples | 21 | 21 | 21 | 20 | 20 | 20 | 20 |
| Nacimiento Reservoir: Lake Nacimiento Resort | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.178 | ND | ND | 0.41 | 0.59 | ND | 0.110 |
| | Average | ND | ND | ND | 0.21 | 0.21 | ND | ND |
| | Median | ND | ND | ND | 0.23 | 0.23 | ND | ND |
| | # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

**Table 7: Nutrient Data Summary (continued)**

| NACIMIENTO PROJECT Nutrient Data Summary (2011-2015) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Location | | Nitrate as N (mg/L) | Nitrite as N (mg/L) | Ammonia as N (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Total Nitrogen (mg/L) | Total Phosphate as P (mg/L) | Total Reactive Phosphate as P (mg/L) |
| | DLR | 0.100 | 0.100 | 0.050 | 0.20 | — | 0.020 | 0.020 |
| | MCL | 45 | 1000 | — | — | — | — | — |
| May Limit Algae Growth* | | — | — | — | — | — | <0.010 | <0.010 |
| May Enhance Algae Growth** | | — | — | — | — | >10 | >0.100 | >0.100 |
| Nacimiento Reservoir: Las Tablas Creek | Minimum | ND | ND | ND | 0.25 | 0.25 | ND | ND |
| | Maximum | ND | ND | ND | 0.35 | 0.35 | ND | ND |
| | Average | ND | ND | ND | 0.29 | 0.29 | ND | ND |
| | Median | ND | ND | ND | 0.28 | 0.28 | ND | ND |
| | # of Samples | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Nacimiento Reservoir: Las Tablas Creek - Downstream | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.155 | ND | ND | 0.33 | 0.48 | ND | ND |
| | Average | ND | ND | ND | 0.19 | 0.19 | ND | ND |
| | Median | ND | ND | ND | 0.24 | 0.24 | ND | ND |
| | # of Samples | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Nacimiento Reservoir: Las Tablas Creek - Upstream | Minimum | ND | ND | ND | 0.26 | 0.26 | ND | ND |
| | Maximum | 0.134 | ND | 0.05 | 0.41 | 0.54 | ND | 0.038 |
| | Average | ND | ND | ND | 0.32 | 0.32 | ND | ND |
| | Median | ND | ND | ND | 0.30 | 0.30 | ND | ND |
| | # of Samples | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| Nacimiento Reservoir: Oak Shores | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.147 | ND | ND | 0.36 | 0.51 | ND | 0.020 |
| | Average | ND | ND | ND | 0.23 | 0.23 | ND | ND |
| | Median | ND | ND | ND | 0.25 | 0.25 | ND | ND |
| | # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Nacimiento Reservoir: The Narrows - Downstream | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.132 | 0.100 | ND | 0.49 | 0.72 | ND | ND |
| | Average | ND | ND | ND | 0.26 | 0.26 | ND | ND |
| | Median | ND | ND | ND | 0.26 | 0.26 | ND | ND |
| | # of Samples | 18 | 18 | 18 | 18 | 18 | 18 | 18 |
| Nacimiento Reservoir: The Narrows - Upstream | Minimum | ND | ND | ND | ND | ND | ND | ND |
| | Maximum | 0.248 | ND | ND | 0.69 | 0.94 | ND | ND |
| | Average | ND | ND | ND | 0.27 | 0.27 | ND | ND |
| | Median | ND | ND | ND | 0.33 | 0.33 | ND | ND |
| | # of Samples | 19 | 19 | 19 | 19 | 19 | 19 | 19 |

## 3.4 Algae

### 3.4.1 Drinking water limits

Algae is not regulated in drinking water systems. However, many constituents that derive from the presence of algae in source water are regulated, including TOC, odor, color, and turbidity. Additionally, certain algal toxins are under consideration for regulation. Generally speaking, higher levels of algae may lead to higher levels of these constituents, as well as causing other deleterious effects on drinking water. Algae type, quantity, and behavior can each affect the level of concern. Typically, algae counts under 5000 no./mL are not problematic.

### 3.4.2 Algae Concerns

Algae are aquatic plants. Many algae are microscopic in size and float freely in water; these are often referred to as phytoplankton. Other algae are macroscopic, and may attach to surfaces. Algae can cause a multitude of problems in both source water and finished drinking water. In the drinking water industry, discussions of algal-related problems typically include two groups of bacteria, cyanobacteria and actinomycetes, along with true algae. Cyanobacteria are often referred to as "blue-green algae". Under certain conditions algae growth may proliferate, resulting in an algal bloom. There are many types of algae, cyanobacteria, and actinomycetes, which can exert various deleterious effects on a drinking water treatment and distribution system.

Algae are a significant concern in source water because of their impact on intakes, on surface water treatment processes, and on groundwater recharge ponds. Algae may clog the screens on intake portals, preventing or slowing pumping of water from the reservoir to water purveyors and stressing intake pumps. In surface water treatment plants, algae can have the following effects (Plummer):

- affect treatment chemical effectiveness (coagulants and flocculant aids), resulting in compromised treatment process
- increase chemical demand (coagulants and disinfectants),
- increase sludge production
- clog filters, resulting in plant shutdowns
- penetrate filters, resulting in shortened filter runs and increased filter backwashing
- break through filters and pass into the distribution system, resulting in regrowth, slime accumulation, and loss of disinfectant residual.

In ground water recharge ponds, algae can accumulate at the soil-water interface and under certain conditions may grow in the recharge pond, resulting in reduced recharge rates.

Algae are a significant concern for finished drinking water because of health risks and consumer acceptance issues. In finished drinking water, algae may cause:

- formation of disinfection by-products
- presence of neurotoxins, hepatotoxins, and dermatoxins
- unacceptable taste and odor

There are many different algae, which can have many different effects in water. Within each genus there are many species of concern. Some selected algal genera of concern are shown in Appendix C: Algal Data.

In the drinking water industry, *Ceratium* (a common flagellated algae) can be a source of taste and odor problems. For the Nacimiento Water Project, *Ceratium* is also known to be a significant filter clogger for the surface water treatment plant that is operated by the City of San Luis Obispo.

### 3.4.3 Monitoring conducted

Approximately 620 samples have been analyzed for algae over the span of this five-year survey. The majority of these were from various depths in the upper and lower levels of the water column ("epilimnion" and "hypolimnion" respectively, regardless of presence of a thermocline). Samples were collected monthly from the reservoir intake structure at ten foot intervals. Additional algae samples were collected from various creeks and recreational areas throughout the watershed in order to identify the source of any noted algae.

<u>Results</u>

In May of 2014, the laboratory moved to an alternate method for the identification and enumeration of algae in our local reservoirs. The procedure used is more quantitative and is designed to help provide a better understanding of how dense the algae may be in the environment. Combining and comparing data with both types of methods involved would be an inaccurate picture of what is occurring in the watershed. Therefore, data tables for each sample location reported are split into two different groups (methods). Data from January 2011 to March of 2014 will be data from the previous method used (number/mLs), and data using the new method (April, 2014 thru December, 2015) will be in units of "cells/mL".

Total algae counts range from not detected to 11,000 no./mL. The average value is 250 no./mL. Green algae range as high as 10,000 no./mL, blue greens were as high as 4,000 no./mL, and diatoms 3,400 no./mL.

Algae are found throughout the water column year round. In summer months higher algae levels generally occur in the upper level of the water column. Fairly uniform and significant numbers of algae have been found throughout the water column in winter months. Different algal groups have predominated on different occasions.

See summary of intake data below (Table 8). See all data collected in Appendix C: Algae Data

## Table 8: Algae Count Data Summary

# Nacimiento Reservoir: Algae Count Data Summary

| | Total Algae | Blue-greens | Cryptomonads | Diatoms | Dinoflagellates | Flagellates | Goldens | Greens |
|---|---|---|---|---|---|---|---|---|
| **Nacimiento Reservoir - Elevation 790': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 36 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 1100 | 160 | — | 900 | — | 68 | — | 240 |
| Average | 403 | 45 | — | 261 | — | 26 | — | 76 |
| Median | 210 | 25 | — | 160 | — | 32 | — | 11 |
| # of Samples | 5 | 5 | 0 | 5 | 0 | 5 | 0 | 5 |
| **Nacimiento Reservoir - Elevation 780': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 96 | 0 | — | 7 | — | 0 | — | 0 |
| Maximum | 1300 | 580 | — | 670 | — | 50 | — | 170 |
| Average | 396 | 85 | — | 205 | — | 17 | — | 89 |
| Median | 285 | 7 | — | 115 | — | 11 | — | 89 |
| # of Samples | 8 | 8 | 0 | 8 | 0 | 8 | 0 | 8 |
| **Nacimiento Reservoir - Elevation 770': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 7 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 640 | 50 | — | 310 | — | 57 | — | 530 |
| Average | 175 | 11 | — | 81 | — | 7 | — | 75 |
| Median | 82 | 0 | — | 56 | — | 0 | — | 38 |
| # of Samples | 16 | 16 | 0 | 16 | 0 | 16 | 0 | 16 |
| **Nacimiento Reservoir - Elevation 760': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 14 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 710 | 36 | — | 280 | — | 43 | — | 710 |
| Average | 153 | 6 | — | 66 | — | 3 | — | 78 |
| Median | 87 | 0 | — | 26 | — | 0 | — | 34 |
| # of Samples | 20 | 20 | 0 | 20 | 0 | 20 | 0 | 20 |
| **Nacimiento Reservoir - Elevation 750': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 600 | 11 | — | 560 | — | 39 | — | 330 |
| Average | 116 | 1 | — | 58 | — | 4 | — | 54 |
| Median | 82 | 0 | — | 11 | — | 0 | — | 33 |
| # of Samples | 27 | 27 | 0 | 27 | 0 | 27 | 0 | 27 |
| **Nacimiento Reservoir - Elevation 740': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 700 | 62 | — | 600 | — | 50 | — | 500 |
| Average | 162 | 3 | — | 66 | — | 4 | — | 87 |
| Median | 110 | 0 | — | 15 | — | 0 | — | 48 |
| # of Samples | 33 | 33 | 0 | 33 | 0 | 33 | 0 | 33 |
| **Nacimiento Reservoir - Elevation 730': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 340 | 11 | — | 170 | — | 57 | — | 290 |
| Average | 94 | 0 | — | 29 | — | 5 | — | 59 |
| Median | 65 | 0 | — | 7 | — | 0 | — | 27 |
| # of Samples | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |
| **Nacimiento Reservoir - Elevation 720': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 2400 | 29 | — | 460 | — | 57 | — | 1900 |
| Average | 211 | 3 | — | 44 | — | 5 | — | 129 |
| Median | 78 | 0 | — | 21 | — | 0 | — | 29 |
| # of Samples | 40 | 40 | 0 | 40 | 0 | 61 | 0 | 61 |
| **Nacimiento Reservoir - Elevation 720': Algae Count Data (cells/mL)** | | | | | | | | |
| Minimum | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 86000 | 79000 | 18 | 1300 | 11 | 90 | 3200 | 9100 |
| Average | 7185 | 5659 | 3 | 199 | 1 | 8 | 276 | 1019 |
| Median | 580 | 0 | 0 | 25 | 0 | 0 | 10 | 310 |
| # of Samples | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |

| | Total Algae | Blue-greens | Cryptomonads | Diatoms | Dinoflagellates | Flagellates | Goldens | Greens |
|---|---|---|---|---|---|---|---|---|
| **Nacimiento Reservoir - Elevation 710': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 610 | 0 | — | 140 | — | 21 | — | 610 |
| Average | 78 | 0 | — | 19 | — | 2 | — | 56 |
| Median | 42 | 0 | — | 13 | — | 0 | — | 14 |
| # of Samples | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |
| **Nacimiento Reservoir - Elevation 700': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 1900 | 15 | — | 190 | — | 32 | — | 1900 |
| Average | 167 | 1 | — | 25 | — | 1 | — | 141 |
| Median | 36 | 0 | — | 9 | — | 0 | — | 20 |
| # of Samples | 40 | 40 | 0 | 40 | 0 | 40 | 0 | 40 |
| **Nacimiento Reservoir - Elevation 700': Algae Count Data (cells/mL)** | | | | | | | | |
| Minimum | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 4800 | 1500 | 26 | 360 | 11 | 22 | 280 | 3800 |
| Average | 856 | 325 | 4 | 68 | 1 | 3 | 22 | 438 |
| Median | 506 | 29 | 0 | 26 | 0 | 0 | 0 | 230 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| **Nacimiento Reservoir - Elevation 690': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 240 | 18 | — | 84 | — | 86 | — | 240 |
| Average | 47 | 2 | — | 14 | — | 5 | — | 26 |
| Median | 28 | 0 | — | 7 | — | 0 | — | 18 |
| # of Samples | 29 | 29 | 0 | 29 | 0 | 29 | 0 | 29 |
| **Nacimiento Reservoir - Elevation 680': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 980 | 11 | — | 110 | — | 61 | — | 870 |
| Average | 93 | 0 | — | 20 | — | 3 | — | 69 |
| Median | 37 | 0 | — | 7 | — | 0 | — | 11 |
| # of Samples | 40 | 40 | 0 | 40 | 0 | 40 | 0 | 40 |
| **Nacimiento Reservoir - Elevation 680': Algae Count Data (cells/mL)** | | | | | | | | |
| Minimum | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 13000 | 2100 | 25 | 140 | 0 | 18 | 110 | 13000 |
| Average | 1439 | 150 | 2 | 21 | 0 | 2 | 9 | 1250 |
| Median | 110 | 0 | 0 | 15 | 0 | 0 | 0 | 59 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| **Nacimiento Reservoir - Elevation 670': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 120 | 11 | — | 73 | — | 25 | — | 120 |
| Average | 27 | 0 | — | 10 | — | 1 | — | 16 |
| Median | 16 | 0 | — | 0 | — | 0 | — | 7 |
| # of Samples | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |
| **Nacimiento Reservoir - Elevation 660': Algae Count Data (No./mL)** | | | | | | | | |
| Minimum | 0 | 0 | — | 0 | — | 0 | — | 0 |
| Maximum | 940 | 59 | — | 210 | — | 50 | — | 730 |
| Average | 75 | 2 | — | 15 | — | 2 | — | 55 |
| Median | 22 | 0 | — | 4 | — | 0 | — | 11 |
| # of Samples | 40 | 40 | 0 | 40 | 0 | 40 | 0 | 40 |
| **Nacimiento Reservoir - Elevation 660': Algae Count Data (cells/mL)** | | | | | | | | |
| Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 2900 | 430 | 76 | 37 | 4 | 14 | 240 | 2600 |
| Average | 285 | 49 | 4 | 5 | 0 | 2 | 13 | 208 |
| Median | 59 | 0 | 0 | 4 | 0 | 0 | 0 | 37 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

## 3.5 Water Quality – Title 22 Metals

### 3.5.1 Metals

Metals occur naturally in the earth's crust. Some human activities, such as mining, can increase the amount of metals released from the earth into the environment. High levels of some metals may also enter surface water with runoff from urban areas and with runoff from burned areas following a wildfire. Some metals that enter source water can be a concern because of their effect on treatment processes. Some metals that reach the finished drinking water can be a concern because of potential health risks or aesthetic concerns.

#### 3.5.1.1 Iron and Manganese

<u>Drinking water limits</u>

| | |
|---|---|
| Iron | Secondary MCL = 300 µg/L |
| Manganese | Secondary MCL = 50 µg/L |

Iron and manganese are two very abundant metals of significant concern. In source water, they are a concern because they can increase oxidant demand in the treatment process. If they are present in the reduced form in raw source water, they may oxidize in Ground Water Recharge Recovery system recharge ponds, forming fine suspended solids that may be filtered out and accumulate in the soil, thereby reducing injection capacity and decreasing soil permeability. (Carollo Engineers)

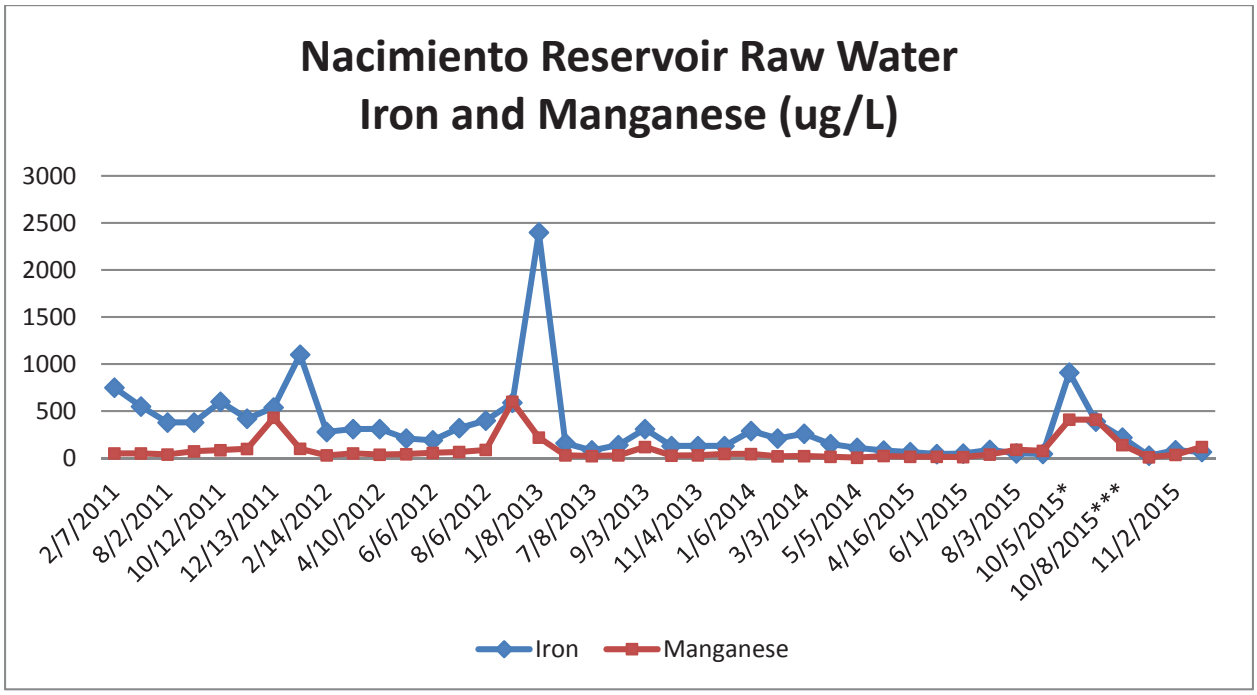
In finished drinking water iron and manganese can cause undesirable color and can stain clothes and plumbing fixtures. In both source water and finished water, iron and manganese can promote the growth of iron bacteria in the pipeline. Iron bacteria can cause corrosion in the pipeline, and can also produce undesirable tastes and odors in finished water.

Approximately 550 samples have been collected and analyzed for iron (Fe) and manganese (Mn) during this 5-year update. Samples have been collected from the raw water intake in use and at the reservoir's intake structure at 10 foot intervals.

Both iron and manganese are found throughout the water column. Values vary widely, ranging from 5 to 2400 µg/ for iron. Manganese ranged from not detected to 2000 ug/L. Higher manganese values were seen in the lower elevations, below the thermocline (hypolimnion). Iron values vary all through the water column. Higher values for both iron and manganese occur more frequently in the cooler winter months.

In the raw water "Intake in Use", iron ranged from 24 to 2400 ug/L with an average value of 330 ug/L (Figure 9). Manganese ranged from 6 to 600 ug/L with an average value of 94 ug/L. The average results for both iron and manganese were above the secondary MCLs for drinking water. These metals are both easily oxidized and will most likely not present an issue for water treatment at the levels detected in the raw water. See all iron and manganese data in Appendix D.

**Figure 9: Raw Water Iron and Manganese**




### 3.5.1.2 Aluminum

<u>Drinking water limits</u>

| | |
|---|---|
| Primary MCL | 1,000 µg/L |
| Secondary MCL | 200 µg/L |

Aluminum is the most abundant metal in the earth's crust. Aluminum may be a concern in the finished water because of associated health risks and also due to aesthetic concerns. From a health risk standpoint, aluminum is a neurotoxin, and it has also been associated with Alzheimer's disease and other dementia, although a causal link has not been established. (California EPA, Office of Environmental Health Hazard Assessment) From an aesthetic standpoint, excess aluminum in drinking water may cause unacceptable color. (USEPA)

Over 360 samples have been collected for aluminum from 2011 thru 2015. Samples were collected from various depths in the upper and lower levels in the water column as well as the raw water

intake in use. Aluminum is found throughout the water column. Results vary widely, ranging from not detected to 1100 µg/L. Samples collected monthly have in general shown higher levels in the winter months and at lower depths. However, high values were seen at various times and elevations throughout the year. See Table 9 and Appendix D.

#### 3.5.1.3 Mercury

Drinking water limits
Mercury Primary MCL = 2 µg/L

There are many historical mercury mines in the Nacimiento Reservoir watershed. Consequently, mercury far above normal background levels has been released to the environment of the watershed. Natural processes convert the mercury to methylmercury. Methylmercury accumulates in the food chain resulting in mercury levels in some Nacimiento Reservoir fish to pose a significant health risk.

According to the USEPA, potentially troublesome levels of methylmercury start to appear in the hypolimnion of Nacimiento Reservoir relatively early during stratification. This is after iron reduction and some amount of sulfate reduction have begun to occur. Methylmercury concentrations appear to increase into the early fall. Methylmercury concentrations for the past two years have ranged from ND (<0.05 ng/L) to 6.6 ng/L in Year 1 (2013) and 10.8 ng/L in Year 2 (2014). Both maximum results occurred in October near the end of the stratification period. During full water-column destratification and mixing in late fall, methylmercury migrating upward from the hypolimnion tends to remain stable at least for a few weeks before breaking down, presumably allowing for uptake of mercury within the cells of plankton and algae, and subsequent tropic migration up the food chain. (USEPA, USGS)

For the Nacimiento Water Project, mercury can be a concern in the source water because of its potential to reach consumers in the finished drinking water. In the source water, mercury would most likely be associated with suspended particles or with dissolved organic carbon. The actual risk to consumers is negligible, as the amount of mercury in the water column should be extremely low, and any small amount that might be present should be removed by a properly functioning water treatment plant or groundwater recharge system. In the scientific literature extensive documentation of health effects from other exposure pathways can be found (fish consumption, vapors, etc), but not a single instance of health effects from drinking water is documented. Nonetheless, these distinctions may not be known to consumers, or if known may not be fully grasped. Therefore, mercury is primarily a concern from the standpoint of public perception and consumer assurance.

During this 5 year survey update, 80 samples were collected at various depths at the reservoir intake structure. All 80 samples had no detection of mercury. See Table 9 and Appendix D.

**Table 9: Summary of Metals of Interest (Aluminum, Iron, Manganese, Mercury)**

| NACIMIENTO RESERVOIR | | Aluminum ug/L | Iron ug/L | Manganese ug/L | Mercury ug/L |
|---|---|---|---|---|---|
| Raw Intake in Use | Minimum | 24 | 27 | 6 | ND |
| | Maximum | 200 | 2400 | 600 | ND |
| | Median | 48.5 | 215 | 45.5 | ND |
| | Average | 80 | 332 | 94 | ND |
| | Count | 4 | 42 | 42 | 33 |
| Epilimnion | Minimum | 120 | 20 | ND | ND |
| | Maximum | 210 | 470 | 43 | ND |
| | Median | 155 | 70.5 | 7 | ND |
| | Average | 158 | 112 | 12 | ND |
| | Count | 6 | 20 | 20 | 7 |
| Hypolimnion | Minimum | 150 | 100 | 7 | ND |
| | Maximum | 870 | 880 | 590 | ND |
| | Median | 580 | 380 | 62 | ND |
| | Average | 522 | 338 | 153 | ND |
| | Count | 6 | 20 | 20 | 7 |
| Elevation 790 | Minimum | ND | 37 | ND | —— |
| | Maximum | 85 | 160 | 6 | —— |
| | Median | 36 | 64 | ND | —— |
| | Average | 38 | 85 | ND | —— |
| | Count | 5 | 5 | 5 | 0 |
| Elevation 780 | Minimum | ND | 42 | ND | —— |
| | Maximum | 130 | 250 | 8 | —— |
| | Median | 15 | 59 | ND | —— |
| | Average | 44 | 103 | 3 | —— |
| | Count | 8 | 8 | 8 | 0 |
| Elevation 770 | Minimum | ND | 31 | ND | —— |
| | Maximum | 150 | 360 | 35 | —— |
| | Median | 22 | 63 | 6 | —— |
| | Average | 35 | 118 | 6 | —— |
| | Count | 16 | 16 | 16 | 0 |
| Elevation 760 | Minimum | ND | 5 | ND | —— |
| | Maximum | 150 | 360 | 35 | —— |
| | Median | 33 | 61 | 7 | —— |
| | Average | 65 | 89 | 21 | ND |
| | Count | 20 | 16 | 20 | 1 |
| Elevation 750 | Minimum | ND | 36 | ND | —— |
| | Maximum | 580 | 700 | 220 | —— |
| | Median | 35 | 99 | 7 | —— |
| | Average | 87 | 202 | 20 | ND |
| | Count | 27 | 27 | 27 | 1 |
| Elevation 740 | Minimum | ND | 40 | ND | —— |
| | Maximum | 490 | 700 | 240 | —— |
| | Median | 37 | 83 | 7 | —— |
| | Average | 87 | 184 | 21 | ND |
| | Count | 30 | 33 | 33 | 1 |

**Table 9: Summary of Metals of Interest (Aluminum, Iron, Manganese, Mercury) cont.**

| NACIMIENTO RESERVOIR | | Aluminum ug/L | Iron ug/L | Manganese ug/L | Mercury ug/L |
|---|---|---|---|---|---|
| Elevation 730 | Minimum | ND | 41 | ND | —— |
| | Maximum | 880 | 1200 | 230 | —— |
| | Median | 55.5 | 140 | 7 | —— |
| | Average | 120 | 251 | 25 | ND |
| | Count | 30 | 30 | 30 | 1 |
| Elevation 720 | Minimum | ND | 16 | ND | —— |
| | Maximum | 1100 | 1400 | 300 | —— |
| | Median | 55 | 84 | 9 | —— |
| | Average | 141 | 183 | 25 | ND |
| | Count | 30 | 57 | 57 | 1 |
| Elevation 710 | Minimum | ND | 52 | 5 | ND |
| | Maximum | 530 | 1400 | 270 | ND |
| | Median | 64.5 | 155 | 12.5 | ND |
| | Average | 133 | 306 | 30 | ND |
| | Count | 30 | 30 | 30 | 1 |
| Elevation 700 | Minimum | ND | 16 | ND | ND |
| | Maximum | 920 | 1600 | 350 | ND |
| | Median | 78 | 120 | 19 | ND |
| | Average | 185 | 229 | 43 | ND |
| | Count | 30 | 61 | 60 | 6 |
| Elevation 690 | Minimum | 28 | 69 | ND | ND |
| | Maximum | 900 | 1600 | 380 | ND |
| | Median | 94.5 | 255 | 16 | ND |
| | Average | 215 | 393 | 37 | ND |
| | Count | 30 | 30 | 30 | 6 |
| Elevation 680 | Minimum | 31 | 41 | 8 | ND |
| | Maximum | 1000 | 1500 | 1700 | ND |
| | Median | 150 | 300 | 55 | ND |
| | Average | 238 | 357 | 144 | ND |
| | Count | 30 | 61 | 61 | 5 |
| Elevation 670 | Minimum | 51 | 110 | 16 | ND |
| | Maximum | 1000 | 1700 | 690 | ND |
| | Median | 145 | 395 | 40 | ND |
| | Average | 247 | 524 | 108 | ND |
| | Count | 30 | 30 | 30 | 5 |
| Elevation 660 | Minimum | 27 | 85 | ND | ND |
| | Maximum | 1100 | 1300 | 2000 | ND |
| | Median | 150 | 340 | 76 | ND |
| | Average | 256 | 399 | 258 | ND |
| | Count | 30 | 61 | 61 | 6 |

## 3.5.2 Trace Metals

Other metals are typically found in small (trace) amounts in water and therefore are often called "trace metals". Regulated trace metals in drinking water include antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, and thallium. Some trace metals are a concern in finished drinking water because they may pose health risks to consumers. The most well-known health risks are those posed by long term exposure to these metals, and many drinking water regulations are based on this kind of exposure. In recent years studies have shown that many metals can accumulate in deposits in finished drinking water distribution system pipes, and may pose a health risk if they are released from the piping in large quantities at various intervals. See additional trace metals data below (Table 10).

**Table 10: Additional Title 22 Metals**

NACIMIENTO PROJECT - Additional Title 22 Metals (2011 - 2015)

| Collected Date | Silver | Arsenic | Barium | Beryllium | Cadmium | Cyanide | Chromium | Chrominm-VI | Copper | Nickel | Lead | Antimony | Selenium | Thallium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DLR (ug/L) | 10 | 2 | 100 | 1 | 1 | 100 | 10 | — | 50 | 10 | 5 | 6 | 5 | 1 | 50 |
| MCL (ug/L) | — | 50 | 1000 | 4 | 5 | 150 | 50 | 10 | — | 100 | | 6 | 50 | 2 | — |
| MCL2 (ug/L) | 100 | — | — | — | — | — | — | — | — | 10 | — | — | — | — | — |
| RAL (ug/L) | — | — | — | — | — | — | — | — | 1300 | 100 | 15 | — | — | — | 5000 |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | | | | | | | | | | | | | | | |
| Minimum | ND | ND | 33 | ND | ND | ND | ND | ND | ND | ND | 0.6 | ND | ND | ND | ND |
| Maximum | ND | 2 | 47 | ND | ND | ND | 1.4 | 0.088 | ND | 5.2 | 3.7 | ND | ND | ND | ND |
| Median | ND | 1.2 | 39 | ND | ND | ND | ND | ND | ND | ND | 0.84 | ND | ND | ND | ND |
| Average | ND | 1 | 38 | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND | ND | ND | ND |
| Count | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 20 |
| EPILIMNION | | | | | | | | | | | | | | | |
| Minimum | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Maximum | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | 78 |
| Median | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Average | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Count | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 20 |
| HYPOLIMNION | | | | | | | | | | | | | | | |
| Minimum | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Maximum | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Median | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Average | — | — | — | — | — | — | — | — | ND | — | — | — | — | — | ND |
| Count | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | .0 | 0 | 0 | 0 | 20 |

DLR: Detection Limit for Purposes of Reporting (ug/L)
MCL: Maximum Contaminant Level (ug/)
MCL2: Secondary Maximum Contaminant Level (ug/)
RAL: Regulatory Action Level; if system exceeds, it must take certain actions such as additional monitoring, corrosion control studies and treatment.

## 3.6 Water Quality – General Physical

### 3.6.1 Odor

Drinking water limits
Secondary MCL 3.0 TON

Objectionable tastes and odors in domestic water supplies are often related to the occurrence of low oxygen levels and/or algal blooms. A frequent cause of musty, earthy odors, especially toward the end of the summer, is naturally occurring organic compounds derived from the decay of plant material in reservoirs. One of these compounds, known as MIB (2-methylisoborneal), has been detected in San Luis Obispo County reservoirs.

When reservoirs stratify, the lower hypolimnion becomes oxygen poor. This results in the formation of hydrogen sulfide gas giving off an objectionable rotten egg smell. Although unusual odor and taste can be objectionable, in general they are not harmful to health.

During the five years of this update, odors at the reservoir intake ranged from ”Not detected” (ND) to 100 TON. Odors in the intake water were described mainly as:

- Fishy
- Grassy
- Musty
- Earthy
- Woody
- Hydrogen sulfide

The majority of the odor samples were described as “grassy” and/or “fishy” and ranged from ND to 12 TON. At times, the 680’ and 660’ elevation intakes had hydrogen sulfide odors that could be detected at levels as high as 100 TON when these lower intakes were oxygen deficient. Comparatively, the Nacimiento Reservoir has overall lower odors in the epilimnion than other reservoirs in San Luis Obispo County.

See data summary below (Table 11).
For all the data collected, view Appendix E: Physical Data.

**Table 11: Summary of Physical Data from Nacimiento Reservoir**

| Nacimiento Reservoir - Physical Data | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Odor Threshold* | Turbidity* | True Color | Apparent Color | Suspended Solids | Temperature |
| | (units) | TON | NTU | CFU | CFU | mg/L | °C |
| | MCL | 3.0* | 5.0* | — | — | — | — |
| | DLR | 1.0 | 0.10 | — | — | — | — |
| Raw Water (Intake in Use) | Minimum | 1.4 | 1.0 | 8 | 5 | — | 10 |
| | Maximum | 7.0 | 4.7 | 8 | 13 | — | 20 |
| | Average | 3.1 | 2.3 | 8 | 10 | — | 15 |
| | Median | 2.0 | 2.1 | 8 | 11 | — | 15 |
| | # of Samples | 4 | 17 | 1 | 4 | 0 | 18 |
| Epilimnion | Minimum | 2.0 | 0.49 | 17 | — | — | 11 |
| | Maximum | 2.0 | 12 | 17 | — | — | 26 |
| | Average | 2.0 | 3.0 | 17 | — | — | 15 |
| | Median | 2.0 | 2.7 | 17 | — | — | 14 |
| | # of Samples | 1 | 34 | 1 | 0 | 0 | 34 |
| Hypolinion | Minimum | 2.0 | 2.3 | 30 | — | — | 9.5 |
| | Maximum | 2.0 | 25 | 30 | — | — | 12 |
| | Average | 2.0 | 1.0 | 30 | — | — | 10 |
| | Median | 2.0 | 8.5 | 30 | — | — | 10 |
| | # of Samples | 1 | 34 | 1 | 0 | 0 | 34 |
| 790' Elevation | Minimum | 1.8 | 1.1 | 5 | 7 | ND | 16 |
| | Maximum | 4.5 | 2.9 | 11 | 14 | 2 | 26 |
| | Average | 2.9 | 1.9 | 8 | 10 | ND | 22 |
| | Median | 2.5 | 1.7 | 7 | 8 | ND | 23 |
| | # of Samples | 5 | 5 | 5 | 5 | 3 | 5 |
| 780' Elevation | Minimum | 1.8 | 0.75 | 4 | 4 | ND | 13 |
| | Maximum | 4.0 | 3.4 | 13 | 16 | 2 | 25 |
| | Average | 2.8 | 1.9 | 8 | 10 | ND | 20 |
| | Median | 2.7 | 1.4 | 7 | 8 | ND | 21 |
| | # of Samples | 8 | 8 | 8 | 8 | 8 | 8 |
| 770' Elevation | Minimum | 1.2 | 0.52 | 4 | 5 | ND | 11 |
| | Maximum | 10 | 4.7 | 14 | 19 | 2 | 24 |
| | Average | 2.8 | 1.8 | 8 | 10 | 1 | 17 |
| | Median | 2.3 | 1.1 | 7 | 8 | 1 | 16 |
| | # of Samples | 16 | 16 | 16 | 16 | 4 | 16 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

**Table 11: Summary of Physical Data from Nacimiento Reservoir continued**

| Nacimiento Reservoir - Physical Data | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Odor Threshold* | Turbidity* | True Color | Apparent Color | Suspended Solids | Temperature |
| | (units) | TON | NTU | CFU | CFU | mg/L | °C |
| | MCL | 3.0* | 5.0* | — | — | — | — |
| | DLR | 1.0 | 0.10 | — | — | — | — |
| 760' Elevation | Minimum | 1.2 | 0.49 | 3 | 4 | ND | 11 |
| | Maximum | 7.0 | 11 | 16 | 24 | 4 | 25 |
| | Average | 2.9 | 2.7 | 9 | 10 | ND | 16 |
| | Median | 2.5 | 1.4 | 8 | 8 | ND | 13 |
| | # of Samples | 20 | 20 | 20 | 19 | 20 | 20 |
| 750' Elevation | Minimum | 1.1 | 0.7 | 3.0 | 4 | ND | 10 |
| | Maximum | 10 | 13 | 18 | 34 | 5 | 25 |
| | Average | 2.9 | 3.5 | 9.2 | 12 | 2 | 16 |
| | Median | 2.0 | 1.6 | 8.0 | 8 | ND | 17 |
| | # of Samples | 26 | 26 | 26 | 25 | 6 | 19 |
| 740' Elevation | Minimum | 1.2 | 0.66 | 2 | 4 | ND | 10 |
| | Maximum | 5.5 | 13 | 18 | 35 | 7 | 26 |
| | Average | 2.5 | 3.3 | 9 | 12 | 1.1 | 16 |
| | Median | 2.3 | 2.0 | 8 | 8 | ND | 13 |
| | # of Samples | 33 | 33 | 30 | 32 | 33 | 33 |
| 730' Elevation | Minimum | 1.0 | 0.81 | 2 | 4 | ND | 9.7 |
| | Maximum | 4.0 | 16 | 20 | 36 | 4 | 24 |
| | Average | 2.4 | 4.0 | 10 | 14 | ND | 13 |
| | Median | 2.1 | 2.0 | 10 | 12 | ND | 11 |
| | # of Samples | 30 | 30 | 30 | 29 | 6 | 29 |
| 720' Elevation | Minimum | 1.0 | 0.6 | 2 | 3 | ND | 10 |
| | Maximum | 9.0 | 20 | 23 | 43 | 6.7 | 27 |
| | Average | 3.5 | 3.3 | 10 | 12 | 1.3 | 15 |
| | Median | 3.0 | 1.9 | 9 | 9 | 1.0 | 13 |
| | # of Samples | 57 | 57 | 45 | 55 | 56 | 57 |
| 710' Elevation | Minimum | 1.0 | 1.0 | 2 | 4 | ND | 9.5 |
| | Maximum | 7.0 | 24 | 27 | 48 | 6.0 | 22 |
| | Average | 2.4 | 5.4 | 11 | 16 | 1.4 | 12 |
| | Median | 2.0 | 2.7 | 11 | 13 | ND | 11 |
| | # of Samples | 30 | 30 | 30 | 29 | 5 | 29 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

**Table 11: Summary of Physical Data from Nacimiento Reservoir continued**

| | Nacimiento Reservoir - Physical Data | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Odor Threshold* | Turbidity* | True Color | Apparent Color | Suspended Solids | Temperature |
| | (units) | TON | NTU | CFU | CFU | mg/L | °C |
| | MCL | 3.0* | 5.0* | — | — | — | — |
| | DLR | 1.0 | 0.10 | — | — | — | — |
| 700' Elevation | Minimum | 1.0 | 0.52 | 4 | 5 | ND | 9 |
| | Maximum | 12 | 27 | 30 | 54 | 10 | 23 |
| | Average | 3.2 | 4.0 | 10 | 13 | 1.6 | 14 |
| | Median | 2.3 | 2.4 | 8 | 11 | ND | 12 |
| | # of Samples | 61 | 61 | 50 | 60 | 60 | 61 |
| 690' Elevation | Minimum | 1.0 | 1.2 | 4 | 6 | ND | 9.3 |
| | Maximum | 7.0 | 28 | 28 | 53 | 9.0 | 19 |
| | Average | 2.2 | 6.8 | 12 | 20 | 3.2 | 11 |
| | Median | 1.8 | 4.8 | 10 | 16 | 1.0 | 11 |
| | # of Samples | 29 | 29 | 28 | 28 | ND | 29 |
| 680' Elevation | Minimum | 1.0 | 1.8 | 5 | 6 | ND | 9 |
| | Maximum | 100 | 29 | 29 | 54 | 16 | 18 |
| | Average | 4.7 | 6.0 | 11 | 17 | 3.2 | 12 |
| | Median | 2.2 | 4.1 | 9 | 14 | 2.0 | 11 |
| | # of Samples | 61 | 61 | 51 | 60 | 58 | 61 |
| 670' Elevation | Minimum | 1.0 | 2.4 | 6 | 9 | ND | 9.2 |
| | Maximum | 9.0 | 29 | 32 | 55 | 12 | 16 |
| | Average | 2.4 | 8.7 | 14 | 23 | 4 | 11 |
| | Median | 2.0 | 6.8 | 12 | 22 | 2 | 10 |
| | # of Samples | 30 | 30.0 | 30 | 29 | 6 | 29 |
| 660' Elevation | Minimum | 1.0 | 1.2 | 3 | 6 | ND | 9.1 |
| | Maximum | 67 | 30 | 32 | 47 | 18 | 14 |
| | Average | 5.8 | 6.1 | 11 | 17 | 3.2 | 11 |
| | Median | 3.0 | 5.1 | 9 | 15 | 2.0 | 11 |
| | # of Samples | 61 | 61 | 49 | 60 | 58 | 61 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

### 3.6.2 Turbidity

Drinking water limits

- Primary MCL: Treatment technique:
  - Conventional or direct filtration systems:
    - At no time can turbidity exceed 1 NTU
    - Samples for turbidity must be less than or equal to 0.3 NTU in at least 95 percent of the samples in any month
  - Systems that use filtration other than conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTU.
- MCLG: Not established

Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Over 1000 samples have been analyzed for turbidity throughout the Nacimiento Reservoir and Watershed during this 5-year update. The majority of these were collected at the dam intake structure at the various intake depths. Turbidity is found throughout the water column. Values vary widely, ranging from 0.30 to 100 NTU with an average turbidity of 5.6 NTU. Somewhat higher turbidity levels are seen in the lower levels of the water column than the upper level.

Turbidity appears to increase rapidly in the late fall and winter, then decrease slowly throughout spring and summer. The rapid increase in turbidity in late fall and winter is likely associated with runoff from rain events.

Refer to Table 11 (above) for turbidity data summary. All data collected can be viewed in Appendix E: Physical Data.

### 3.6.3 Suspended Solids

Drinking water limits
There are no drinking water limits for suspended solids.

Suspended solids are monitored because of their potential impact on drinking water infrastructure and treatment processes. Suspended solids are primarily a concern in raw source water because of their effect on pipelines, tanks, treatment processes, and groundwater recharge ponds.

Solids may settle out of the water into pipelines and tanks. In pipelines solids can build up and restrict flow. Solids that have built up in a tank or pipeline can be dislodged and carried downstream, where they cause problems to treatment processes and groundwater recharge ponds. Solids that settle in pipelines and tanks may contain constituents that promote bacterial growth, corrosion, and taste and odor problems.

In treatment processes solids can reduce treatment chemical effectiveness, increase chemical demand, and clog filters.

In 2011, increased rainfall prompted staff to increase suspended solids monitoring. The majority of high values occurred in the winters of 2011/2012 and 2012/2013.

Suspended solids values range from not detected (ND) to 18 mg/L in the intakes. In the upper intakes (730' to 790') suspended solids were low, with individual intakes averaging ND to 2.0 mg/L. Suspended solids at individual intakes in the lower depths (660' to 720') averaged 1.3 to 4.0 mg/L.

Refer to Table 11 (above) for suspended solids data summary. All data collected can be viewed in Appendix E: Physical Data.

### 3.6.4 General Mineral

General mineral chemicals are general water quality indicators. If there is a change in these indicators this may indicate industrial, agricultural, grazing, or recreational runoff issues in the watershed. Samples were collected quarterly for general mineral analysis, one from the current epilimnion and one from the hypolimnion. A raw water (intake in use) sample was collected once per year. The constituents met all drinking water MCLs.

Refer to Table 12 (below) for general mineral data summary. All data collected can be viewed in Appendix F: General Mineral Data.

**Table 12: General Mineral Data Summary**

| Collected Date | Aggressive Index | Calculated Langelier Index | SUVA-C | Alkalinity, Total as CaCO3 | Carbonate as CaCO3 | Bicarbonate as CaCO3 | Hydroxide Alkalinity as CaCO3 | Bromide | Chloride | Fluoride, (without predistillation) | Nitrite as Nitrogen | Nitrate as Nitrogen | Sulfate | Total Hardness as CaCO3 | Calcium | Magnesium | Sodium | Total Dissolved Solids | Specific Conductance | Temperature | pH | Methylene Blue Activated Substances | Depth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nacimiento Reservoir - Epilimnion: General Mineral Data** | | | | | | | | | | | | | | | | | | | | | | | |
| (units) | — | — | L/mg-M | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | umhos/cm | °C | — | mg/L | feet |
| MCL | — | — | — | — | — | — | — | | 500* | 2 | 1 | 10 | 500* | — | — | — | — | 1000* | 1600* | — | — | 0.5* | — |
| DLR | — | — | — | — | — | — | — | 0.01 | — | 0.1 | 0.1 | 0.1 | 0.5 | — | — | — | — | — | 4 | — | — | 0.1 | — |
| Minimum | 11.1 | -0.90 | 1.6 | 81 | ND | 81 | ND | ND | 4.83 | ND | ND | ND | 22 | 100 | 20 | 11 | 6.5 | 140 | 236 | 10.3 | 7.42 | ND | 10 |
| Maximum | 12.6 | 0.75 | 3.5 | 135 | 23 | 135 | ND | 0.03 | 9.00 | 0.24 | ND | 0.213 | 46.0 | 182 | 38 | 23 | 13 | 240 | 380 | 25.8 | 8.66 | ND | 35 |
| Average | 11.9 | -0.02 | 2.3 | 111 | 7 | 104 | ND | ND | 6.63 | 0.1 | ND | ND | 33.8 | 138 | 30 | 16 | 9.3 | 189.5 | 303 | 17.8 | 8.06 | ND | 15 |
| Median | 12.0 | -0.01 | 2.2 | 110 | ND | 102 | ND | ND | 6.47 | 0.1 | ND | ND | 33.5 | 135 | 30 | 16 | 9.0 | 190 | 293 | 18.9 | 8.08 | ND | 10 |
| # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| **Nacimiento Reservoir - Hypolimnion: General Mineral Data** | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 10.9 | -1.18 | 1.6 | 80 | ND | 80 | ND | ND | 4.22 | ND | ND | ND | 20.6 | 94 | 20.0 | 8.9 | 5.8 | 140 | 220 | 9.2 | 7.03 | ND | 60 |
| Maximum | 11.8 | -0.42 | 4.0 | 132 | ND | 132 | ND | 0.03 | 9.25 | 0.21 | ND | 0.306 | 39.1 | 169 | 36 | 20 | 11 | 240 | 350 | 18.3 | 7.94 | ND | 130 |
| Average | 11.3 | -0.86 | 2.7 | 107 | ND | 107 | ND | ND | 6.34 | 0.09 | ND | 0.132 | 31.2 | 132 | 28.7 | 15 | 8.6 | 187 | 294 | 11.4 | 7.55 | ND | 75 |
| Median | 11.3 | -0.86 | 2.7 | 109 | ND | 109 | ND | ND | 5.88 | 0.10 | ND | 0.144 | 30.3 | 134 | 28.5 | 15 | 8.9 | 190 | 287 | 10.8 | 7.55 | ND | 60 |
| # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| **Nacimiento Reservoir - Raw Water (Intake in Use): General Mineral Data** | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 11.3 | -0.85 | — | 96 | ND | 96 | ND | — | 4.76 | ND | ND | ND | 23.3 | 110 | 23 | 11 | 6.8 | 150 | 250 | 9.7 | 7.40 | ND | 15&35 |
| Maximum | 11.9 | -0.19 | — | 125 | ND | 125 | ND | — | 7.39 | 0.18 | ND | 0.228 | 39.4 | 152 | 31 | 17 | 9.7 | 210 | 340 | 16.0 | 8.08 | ND | 115 |
| Average | 11.6 | -0.51 | — | 108 | ND | 108 | ND | — | 6.10 | 0.10 | ND | 0.156 | 31.1 | 130 | 27 | 14 | 8.6 | 186 | 290 | 12.5 | 7.77 | ND | 90 |
| Median | 11.6 | -0.54 | — | 110 | ND | 110 | ND | — | 5.73 | 0.10 | ND | 0.204 | 29.0 | 130 | 27 | 15 | 8.6 | 190 | 274 | 11.0 | 7.77 | ND | 100 |
| # of Samples | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

### 3.6.5 Synthetic Organic Carbons and Volatile Organic Compounds

Synthetic organic chemicals (SOCs) and Volatile organic chemicals (VOCs) in surface water result from the manufacture, use, and disposal of pesticides (herbicides, fungicides, insecticides, bactericides, rodenticides), petroleum products (gasoline, fuel oil, solvents), and other chemical products, including Styrofoam, plastics, cleaning compounds, paints, and fire retardants. These chemicals can enter surface water sources directly (such as fuel spills and in fire-fighting operations) or can be carried into the reservoir with stormwater runoff. (USDI Bureau of Reclamation)

Synthetic organic chemicals are a concern in finished drinking water because they have health risks. They are a concern in source water because of the potential for them to reach consumers in the finished water. SWRCB currently regulates 27 VOCs and 33 SOCs in drinking water. In the Nacimiento Reservoir watershed, VOCs and SOCs which are most likely to contaminate the water are those associated with agricultural operations (pesticides), with urban land use (pesticides and petroleum products), and with vessels (fuel).

Monitoring is required by the SWRCB for VOCs every 3 years and SOCs every 9 years. Samples are collected at the Nacimiento Reservoir raw water (intake in use). VOCs and SOCs were last collected 6/3/2013. There were no VOCs or SOCs detected. The next monitoring event is scheduled in June, 2016 for VOCs and June, 2022 for SOCs.

## 3.7 Water Quality Monitoring Programs

### 3.7.1 San Luis Obispo County Flood Control and Water Conservation District

The San Luis Obispo County Flood Control and Water Conservation District (District) currently conducts three water quality monitoring programs in Nacimiento Reservoir in support of the Nacimiento Water Project, as described below. Additionally, the District monitors for the presence of invasive mussels; a brief program description is included here as well.

SWRCB Required Monitoring

The District conducts monitoring in accordance with its Domestic Water Supply Permit (No. 04-06-10P-006) issued by the State Water Resources Control Board on October 21, 2010, as follows:

Location: Intake in Use
Duration: Ongoing. Began in 2010.

| Constituent (individual or group) | Frequency |
|---|---|
| Coliform bacteria, E. coli bacteria | Monthly |
| General Mineral | Annual |
| General Physical | Annual |
| Inorganic Chemicals | Annual |
| Asbestos, Cyanide | Every 9 years |
| Radiological (Gross Alpha only) | Every 9 years |
| Regulated VOCs | Every 3 years |
| Regulated SOCs (Atrazine, Simazine only) | Every 9 years |

#### 3.7.1.1 Source Water Assessment and Protection

Log Boom

In 1993, in anticipation of the potential development of the Nacimiento Water Project, the District began to conduct some limited monitoring in Nacimiento Reservoir. The initial purpose of this monitoring was to aid project evaluation, to aid project design decisions, and to provide information for potential treatment alternatives. Since project completion in 2010, some monitoring has continued for the purposes of treatment plant design and source water assessment and protection.

Samples have been collected at various depth intervals. Most often, two samples have been collected per sampling event; one from the upper portion of the water column and one from the lower portion of the water column. These sites are referred to as epilimnion and hypolimnion respectively, even when there is no temperature stratification in the lake. The exact depth from which these two samples have been collected varies.

| | |
|---|---|
| Location: | Log boom near dam at east end of reservoir. |
| Duration: | Intermittent, ongoing. Began in 1993 |
| Frequency: | Varied. Typically monthly or quarterly |
| Constituents: | Varied. Primarily total coliforms, E. coli, algae, general physical, general minerals, inorganic chemicals |

Lakewide

In fall 2011 the District began monitoring at various sites around the reservoir for the purpose of source water assessment and protection. All sites are collected on the reservoir itself. Stream sampling is neither practical nor meaningful due to lack of year-round stream flow, difficult topography, lack of roads in some areas, and long driving times in others.[3]

| | |
|---|---|
| Location: | Oak Shores marina, the Narrows, Las Tablas Creek arm, Dip Creek arm, Heritage Ranch marina, Lake Nacimiento Resort marina |
| Duration: | Ongoing. Began November 2011 |
| Frequency: | Monthly |
| Constituents: | Total coliforms, E. coli, algae, general physical, nutrients |

#### 3.7.1.2 Intake Selection

The Nacimiento Water Project intake structure has 7 portals located at 20 ft. intervals, ranging from elevation 660' to 780' (NAVD88). The concentration of many water quality constituents varies from top to bottom and also over time, and is dependent on several factors, including lake stratification, surface runoff, and other factors. Several constituents are monitored at various depths through the water column in order to aid District staff in selecting the best water quality for downstream use. The best water quality is that which:

- Minimizes health risks to consumers
- Is most aesthetically acceptable to consumers
- Minimizes treatment costs
- Minimizes operating costs

| | |
|---|---|
| Location: | Log boom near dam at east end of reservoir |
| Duration: | Ongoing. Partial profiles began in 2006; complete profiles began in 2011 and have continued through 2015. |
| Frequency: | Monthly |
| Constituents: | Algae, total coliforms, E. coli, general physical, DBP precursors, iron, manganese |

3 Note: Lakewide monitoring was discontinued in July 2013 due to lack of funding support.

Some key components to consider in the overall use and selection of an intake are described for various elevations in the Nacimiento Reservoir in the following table (Table 13)

**Table 13: Key Elevations of Nacimiento Reservoir**

| KEY ELEVATIONS OF LAKE NACIMIENTO | | |
|---|---|---|
| **Elevation (ft above MSL, NGVD 29)** | **Storage (acre-feet)** | **Description** |
| 800.0 | 377,900 | Elevation at which Lake Nacimiento is considered full; top of spillway; maximum physical permanent water elevation |
| 782.5 | 285,050 | Bottom of the FERC Flood Pool; maximum water surface elevation during January and February without maximum releases being made |
| 777.3 | 260,000 | Top of the Water Conservation Pool; bottom of the MCWRA Flood Pool |
| 766.5 | 212,700 | Both launch ramps at Lake Nacimiento Resort are operational in a range of two to three feet above this elevation |
| 755.0 | 168,350 | Minimum elevation at which water can be released from the High Level Gates |
| 748.0 | 144,200 | Elevation defined in MOA with Fish & Game, below which drought conditions are defined to exist, and the minimum release can be reduced from 25 cfs to 10 cfs |
| 730.0 | 92,150 | Elevation above which most boat ramps around the Lake are operational |
| 687.8 | 22,300 | Minimum pool; lowest Lake elevation at which water is available to MCWRA for release |
| 670.0 | 10,300 | Minimum elevation (at which) water can be released from the Low Level Outlet Works; physical minimum pool; lowest possible Lake elevation (at which) water can flow from outlet works by gravity. |
| *Source: Monterey County Water Resources Agency, provided to Nacimiento and San Antonio Watershed Committee, September 2008* | | |

#### 3.7.1.3 Invasive Mussels

Monitoring for the presence of invasive mussels began in June 2008 and is ongoing. Eight monitoring sites have been established at various locations around the reservoir. Sites are checked on a monthly basis. Additionally, staff perform visual and tactile inspections of infrastructure surfaces that may be seen or felt below the surface of the water, and of surfaces that become exposed as the reservoir surface elevation decreases. The monitoring program is a cooperative effort among several agencies, with resources (staff and/or infrastructure) currently provided by the District, Monterey County Parks Department, Monterey County Water Resources Agency, Oak Shores Community Association, and Heritage Ranch Owners Association.

No suspicious organisms or evidence of their existence in the reservoir or watershed has been observed since the monitoring began.

# 4 Investigations and Future Projects

## 4.1 Nacimiento Pipeline - Water Infiltration Investigation

### 4.1.1 Introduction

On June 2, 2014, a leak was discovered on the Nacimiento pipeline approximately two miles downstream of Nacimiento Dam at marker STA 115 +30/35. An attempt to repair the suspected leak in the pipe ended in a failed pressure test. A video of the pipeline revealed additional leaks, bubbling of the epoxy coating, and possible buckling of the pipe. Pipeline measurements were taken by divers to determine the extent of the buckling (Figure 10). A pipe expert was hired by the County to review the data and make suggestions about the repair/replacement of the pipe. Currently, the Public Works Department is working with Black and Veatch to determine the best course of action for bringing the pipeline back into service.

During the pipeline investigation, SLO County's Assistant Waters Systems Superintendent, noted a strong hydrogen sulfide odor emanating from the water. There was concern that the leaks may be caused by the pipe sitting in corrosive water. A request was made to collect samples from of the pipeline water to determine its chemical characteristics.

Several samples were collected of the water infiltrating the pipe. Initial samples were from standing water in the pipeline. To ensure a water sample was collected representing the water seeping into the pipeline, the pipe was purged of all standing water and allowed to refill before collecting a sample. Water samples from Nacimiento River were also collected to determine similarity to water infiltrating the pipe. This testing was conducted on September 11, 2014.

**Figure 10: Divers enter Nacimiento pipeline to videotape**

### 4.1.2 Sampling

September 11, 2014 – County staff collected samples from the Nacimiento River and pipeline. The pipeline samples were collected from a pump at a depth of approximately 90'. Water had been pumped from the pipeline for several hours prior to sample collection so the water collected would be fresh infiltration water. Samples were collected via the pump hose as water was delivered to a receiving tank as shown in Figure 11. At the sample collection point, there was significant $H_2S$ off-gassing. Field sulfide test results were 4 mg/L. The high air temperature for the day was 101 °F.

Grab samples were collected from the river as shown in Figure 12. Samples for inorganic and general minerals were sent to FGL labs for analysis. Sulfate Reducing Bacteria, Iron Related Bacteria, and physical analyses were analyzed at the County Water Quality Lab.

**Figure 11: Pipeline water entering tank. Sample collection point at top of stairs.**

**Figure 12: Location of river sample collection point**

### 4.1.3 Analytical Results

Sulfide and Odor – Nacimiento River water had no detectable $H_2S$ odor or sulfide. The water from the pipeline had a strong hydrogen sulfide odor and maxed out on the odor scale used at the lab. Sulfide levels were detected at 4 mg/L in the field. A 1-2 ppm hydrogen sulfide concentration gives water a "rotten egg" odor and makes the water very corrosive to plumbing.[4]

Langelier (LI), Aggressive (AI), and Ryzner Stability Index (RSI) – These are just a few of the measurements to determine the ability of water to dissolve or deposit calcium carbonate or scale and is often used as an indicator of the corrosion potential of water. The LI for river water indicated in was moderately aggressive water. The pipeline water LI indicated it was nonaggressive. The AI of river and pipeline samples were 11.3 and 12.1 respectively indicating moderately aggressive water. The RSI indicated both river and pipeline waters were aggressive and corrosion could be significant. These results can seem confusing as they are indicators only and use different analytical data for their calculations. They do not take into account bacteria or sulfide levels in the water.

Sulfate reducing (SRB) and iron related bacteria (IRB) – River and pipeline samples both contained SRB at a level of 1400 CFU/mL. IRB was detected at levels of 2200 CFU/mL in both samples. This is considered moderately aggressive water. SRB can reduce sulfate to hydrogen sulfide gas which can rapidly corrode steel. [5] [6] Iron related bacteria can also create slime and corrode pipes. [7]

Calcium, Magnesium, Sulfate, Chloride, Potassium , Sodium, Bicarbonate, Carbonate - A piper diagram allows one to quickly compare and classify different types of water (Figure 13) based on the predominant inorganic cation and anion electrical equivalents of the above constituents.[8] Extending the points on the cation and anion diamonds to find their point of intersection on the central diamond, provides a visual tool to compare water's chemical constituents. The Paso Robles sulfur spring that developed after the San Simeon earthquake is shown in comparison to both river water and water infiltrating the pipe on the Piper diagram.

4 Sulfate, Hydrogen Sulfide, Sulfate Reducing Bacteria – How to Identify and Manage, http://www.water-research.net/index.php/sulfates
5 http://arvanitakis.com/en/bio/sulfate_reducing.htm . "Sulfate reducing bacteria"
6 http://www.ngwa.org/Documents/ClipCopy/Iron-Bacteria.pdf
7 http://www.ngwa.org/Documents/ClipCopy/Hydrogen-Sulfied.pdf
8 A User's Guide to RockWare AqQA, Version 1.1, 2003-2004, Data Analysis-Water Type

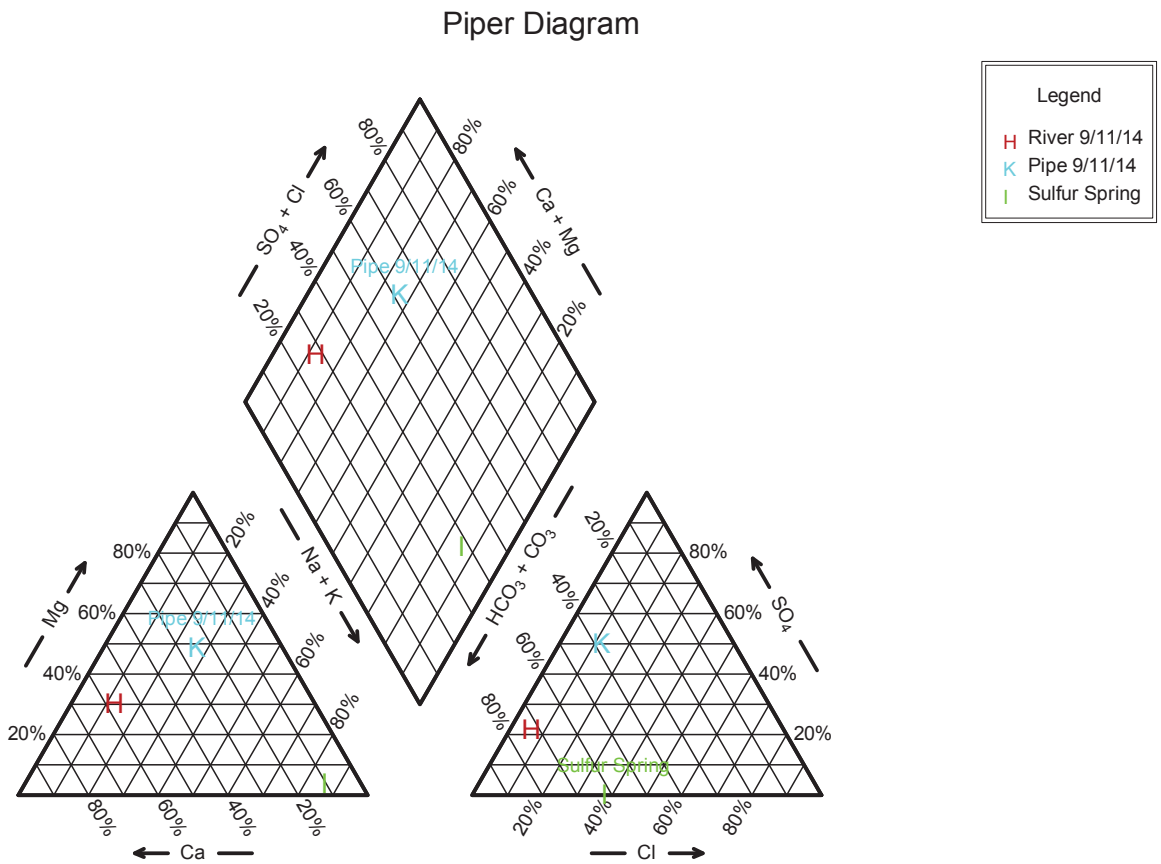



**Figure 13: Piper diagram comparing river water, pipeline water and PR Sulfur Spring water**

Samples collected previously from the lake, river, and pipeline show how water from the same or similar sources align closely with samples collected on 9/11(Figure 14).

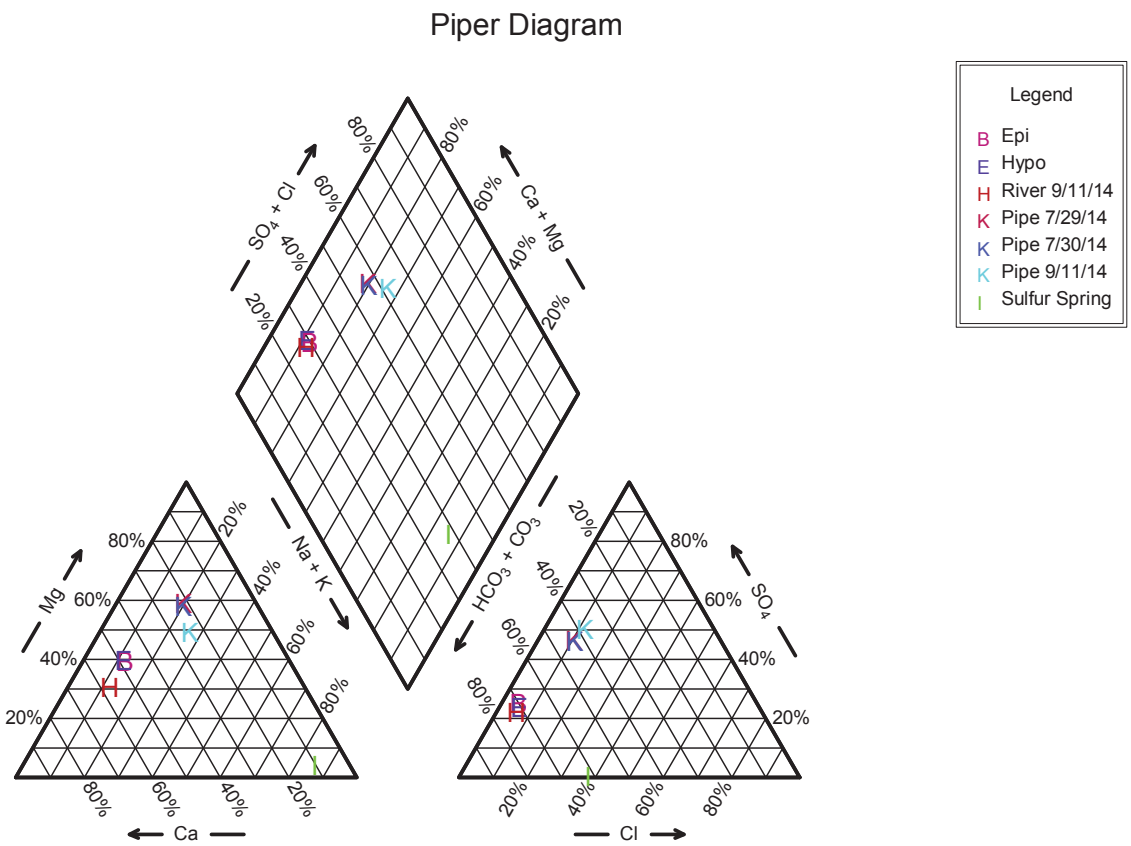



**Figure 14: Water samples collected from lake, river, and pipe on different days.**

### 4.1.4 Additional Field Information

During the repair of the pipeline, the divers took equipment underwater with them. The divers noted that black staining occurred on the equipment almost instantaneously. Within six hours of the dive, the internal components of the micrometer showed rust and pitting. Damage to the threads of the equipment made this piece unusable and new equipment had to be purchased. Areas on the equipment shown in Figure 15 that still look new were covered with tape prior to the dive.

**Figure 15: Inside piece of micrometer exposed to pipeline water for six hours showing rust development**

### 4.1.5 Conclusion

River water chemical characteristics closely match water from Nacimiento Reservoir (river source), but differ from water infiltrating the pipeline. Pipe water had elevated sulfide, TDS, chloride, sulfate, iron, conductivity as compared to river water. SRB, IRB, and sulfide levels suggest the water infiltrating the pipeline is potentially moderately aggressive for corrosion and bio-fouling. The RSI indicates corrosion could be significant. Anecdotal information to support corrosivity of the water is corrosion of the pipeline diver's equipment after contact with water in the pipeline.

## 4.2 Interlake Tunnel Project

From the Monterey County Water Resources Agency website (April, 2016):

**Figure 16: Proposed approximate tunnel alignment**

The Interlake Tunnel Project (Interlake Tunnel) was included in the July 1991 Water Facilities Capital Plan (Volume I, Volume II), prepared by Boyle Engineering Corporation for the Monterey County Water Resources Agency (MCWRA). Operationally, the Interlake Tunnel would divert water from Nacimiento Reservoir to San Antonio Reservoir that would have otherwise been spilled at Nacimiento Dam. The Nacimiento River basin produces nearly three times the average annual flow of the San Antonio River basin, therefore, capturing high Nacimiento River flows and diverting those flows to San Antonio Reservoir increases the overall storage capacity of the system.

Subsequent to 1991, MCWRA efforts were focused on completion of the Salinas Valley Water Project (Salinas River Diversion Facility and modification to the Nacimiento Dam Spillway). The current drought has created a renewed interest in the Interlake Tunnel concept.

The Interlake Tunnel requires a detailed engineering analysis; but is generally planned to consist of an 11,000 foot gravity flow tunnel with an intake structure in Nacimiento Reservoir and an exit structure in San Antonio. Total project cost is estimated at $48 million, including $3.4 million in contingency. Depending upon the degree of environmental documentation required the Interlake Tunnel could be completed in two to three years.

The Interlake Tunnel has been divided into three phases: project feasibility, including preliminary engineering and water rights requirements analysis; pre-construction tasks, including environmental review, permit applications, geotechnical and final design, right-of-way acquisition and financing arrangements; and construction.

The MCWRA, with approval of the Board of Supervisors of the MCWRA, proceeded to contract with a Program Manager to begin project feasibility and pre-construction tasks. However, the MCWRA will not proceed beyond the preliminary engineering and water rights requirements analysis until environmental review is completed and authorization to proceed is received from the Board of Supervisors of the MCWRA. The estimate of Pre-construction Phase costs is as follows:

| Task | Cost |
|---|---|
| Preliminary Engineering | $ 222,478 |
| Permit Applications | 311,805 |
| Geotechnical & Final Design | 945,190 |
| ROW Acquisition | 103,560 |
| Financing | 286,000 |
| Pro Rata Program Management | 634,372 |
| Total | $ 2,503,405 |

**Timeline of Events:**
On June 3, 2014, the Board of Supervisors of the MCWRA authorized negotiation and execution of a funding agreement between Monterey County and the MCWRA for an amount not to exceed $500,000 for program management, engineering and environmental review of the Interlake Tunnel, said funds to be reimbursed to Monterey County if the Interlake Tunnel is approved and financed; and directed staff to return to the Board of Supervisors in July 2014 with a project status report and information on financial impact to the County in regards to funding the agreement. The Board of the MCWRA also authorized the MCWRA General Manager to enter into the necessary agreements to prepare for and commence environmental review of the Interlake Tunnel in an initial amount not to exceed $500,000 provided funding is approved by Monterey County.

On July 1, 2014, the Monterey County Board of Supervisors approved a funding Agreement and approved the use of County funds for the Agreement. The MCWRA has contracted EPC Consultants as the Program Manager and Construction Manager, a legal firm to perform the water rights analysis, and will solicit a qualified environmental firm.
On August 25, 2014, the Board of the MCWRA held a public workshop to provide background information about the Interlake Tunnel and to provide an update of current project activities and accomplishments.

On November 19, 2014, the Board of the MCWRA held a public workshop to provide current feasibility status on the Interlake Tunnel.

On January 15, 2015, MCWRA published an Informational Notice of pending RFP's for engineering design.

On February 26, 2015, MCWRA held a public meeting on the proposed Interlake Tunnel and San Antonio Spillway Modification project. The meeting was held in the Heritage Ranch Conference Room, Paso Robles, CA.

On March 13, 2015, MCWRA published an UPDATED Informational Notice of pending RFP's for engineering design. This notice contains the RFP schedule.

On April 16, 2015, a RFP pre-proposal meeting was held.

The completion date for this project is anticipated to be in July, 2018.

## 4.3 NEW STATEWIDE NPDES PERMIT

On September 15, 2015 all water purveyors were required to submit a permit application for the new statewide National Pollutant Discharge Elimination System (NPDES) permit.

The NPDES Program is a federal program which has been delegated to the State of California for implementation through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). In California, NPDES permits are also referred to as waste discharge requirements (WDRs) that regulate discharges to waters of the United States.

The new permit requires any discharge of a pollutant from a drinking water system, regardless of the size of the system, to be regulated by an NPDES permit if the discharge(s) flow into a water of the U.S.

The NPDES program fulfills Clean Water Act requirements and assures water purveyors that they will not be exposed to regulatory enforcement for discharging without a permit. The new permit minimizes monitoring and solely requires annual reporting. The Nacimiento Water Project had previously held a general NPDES "Low Threat to Water Quality" permit regulated under a RWQCB permit. The termination of the current Regional permit coverage will be coordinated with the SWRCB issuance of Notice of Applicability.

The current and new permit covers the following discharges for the Nacimiento Water Project:

- Raw Water Delivery to Participating Agencies
- Pipeline from Nacimiento Lake to San Luis Obispo
- Storage Tanks
- Pump Stations
- Turnouts

# 5 CONCLUSIONS and RECOMMENDATIONS

## 5.1 Conclusions

Many variables can influence constituent concentrations in both the short term and the long term. These include seasonal temperature differences, drought conditions, runoff events, and dam operation. They also include changes in potential contaminant sources such as the extent of recreational use of the reservoir and surroundings, increased urban development, changes in agricultural uses and practices, changes in military base operations, and other factors.

The two highest risk sources remain the same as the initial survey. These activities being, grazing livestock and body contact recreation. Both occur extensively and without any meaningful restrictions on and around the reservoir itself. Additionally, grazing occurs extensively throughout the lower watershed.

No significant changes have occurred in the Nacimiento Watershed or the water quality of the reservoir raw water since the last survey. No significant home building or changes in land use occurred in the last five years or are planned at this time.

A special contaminant of concern is mercury, not because of any actual risk to the drinking water supply, but rather because of public perception concerns.

Although the County of San Luis Obispo has land use authority over the lower Nacimiento watershed, they have no jurisdictional authority in the watershed, and therefore have little ability to directly affect watershed activities and watershed management practices. There are some existing control measures that may protect water quality, but only to the degree that they are implemented and enforced. The large number of potential contaminant sources, the watershed's large size, and the reservoir's remote location make effective implementation and enforcement efforts difficult.

The Emergency Response Plan was updated in August 2015 for the Nacimiento Project. The County of San Luis Obispo will continue to follow current and future regulations.

## 5.2 2016 Recommendations
### Water Quality – Future Water Quality Monitoring

A shift in water quality monitoring is planned for the next few coming years. Increased monitoring of nutrients such as nitrate, nitrite, ammonia, TKN, and phosphate will provide important information in evaluating the source and level of nutrient loading into the Nacimiento Reservoir.

Nutrient loading in the Nacimiento watershed can come from cropland, grazing, wineries, urban runoff, recreational use, as well as potential wildfires, landslides, and wastewater spills. Nutrients can lead to harmful algal blooms, which can compromise drinking water treatment processes and can contribute toxins and undesirable taste and odor to the water. Nutrients can also affect nutrients groundwater recharge and recovery systems. Increased nutrient monitoring will enable the Project's participants to anticipate treatment needs for their individual uses of the Nacimiento raw water delivery.

The monitoring of other constituents will be reduced in order to maintain the current budget. These reductions will include the reduction of monitoring for suspended solids, alkalinity, apparent color, and true color. An overall reduction in monitoring since the initial watershed assessment and background data collection is an ongoing process. As new regulations, public concerns, and changes in the reservoir and watershed occur, the spectrum of analytical and field monitoring will change as well. The current monitoring plan for the watershed and reservoir are listed in the following table.

**Table 14: Summary of Water Quality Monitoring**

| Summary of Water Quality Monitoring | Nacimiento Reservoir Inlet: Raw Water Delivery | Reservoir Intakes (elevation in feet: 780, 760, 740, 720, 700, 680, 660) | Epilimnion | Hypolimnion | Camp Roberts Tank | Next Sampling Event |
|---|---|---|---|---|---|---|
| Bacteriological (Coliform MPN) | M | M | — | — | — | — |
| Cryptosporidium and Giardia | M | — | — | — | — | — |
| Algae Enumeration and Identification | M | M | — | — | — | — |
| Physical (odor, turbidity, pH, dissolved oxygen, temperature) | A | M | — | — | — | — |
| Iron and Manganese | M | M | — | — | — | — |
| Mercury | M | — | — | — | MS | — |
| Total Organic Cabon, SUVA | M | — | Q | Q | — | May 2016 |
| General Mineral | A | — | Q | Q | — | May 2016 |
| Title 22 Metals, Perchlorate | A | — | — | — | — | May 2016 |
| Volatile Organic Carbons | 3Y | — | — | — | — | May 2016 |
| 525.2 (Atrazine, BZP, DEHP, DEHA, HCB, HEX, Molinat, Simazine, Thiobencarb) | 9Y | — | — | — | — | May 2019 |
| Gross alpha, Asbestos | 9Y | — | — | — | — | May 2019 |
| **Monitoring Frequency:** | | | | | | |
| M = Monthly | Q = Quarterly | | 3Y = Every 3 Years | | | |
| MS = Monthly Seasonal (June - Sept) | A = Annually | | 9Y = Every 9 Years | | | |

# 6 REFERENCES

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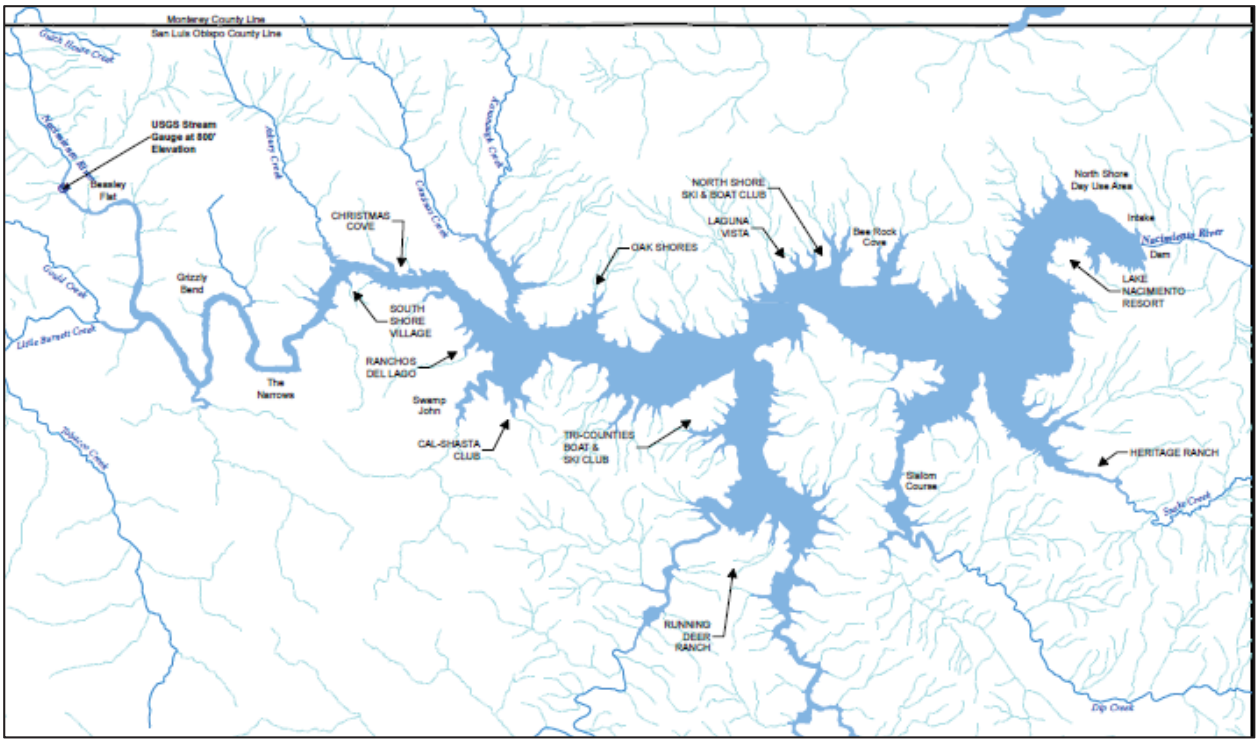
## APPENDIX A

# FIELD DATA

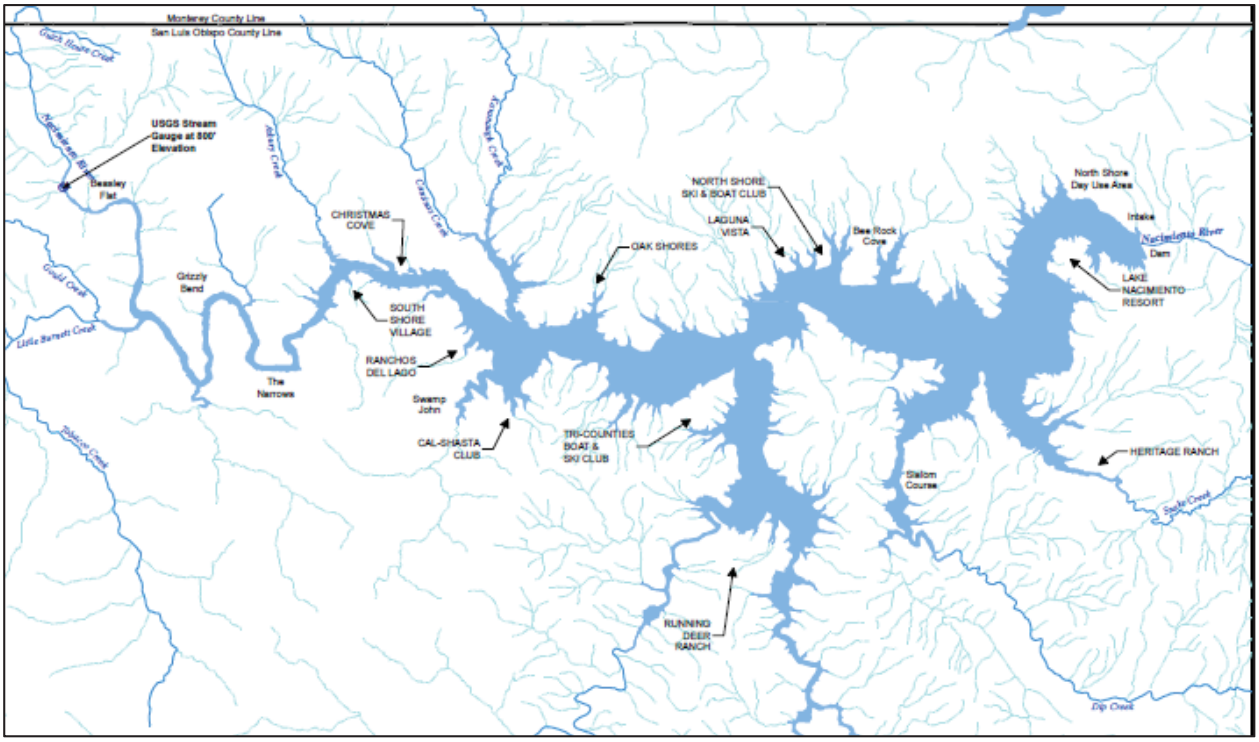
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX B

# BACTERIOLOGICAL DATA

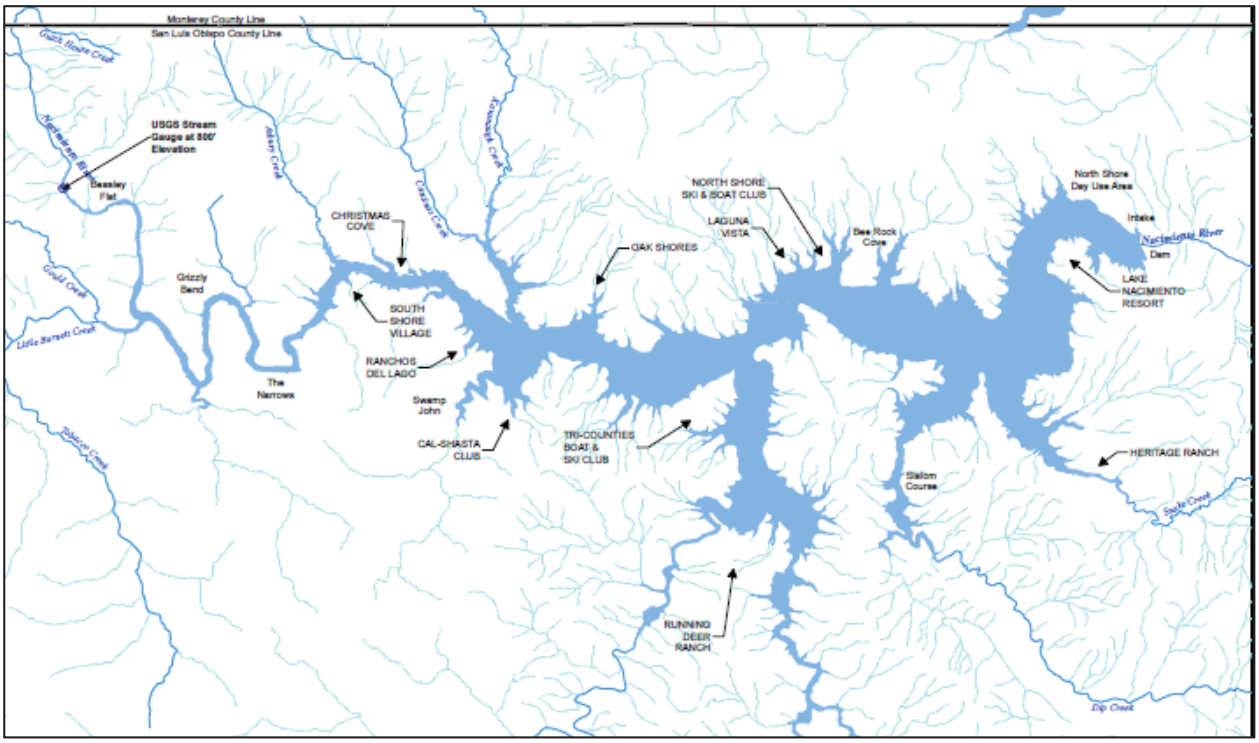
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX C

# ALGAE DATA

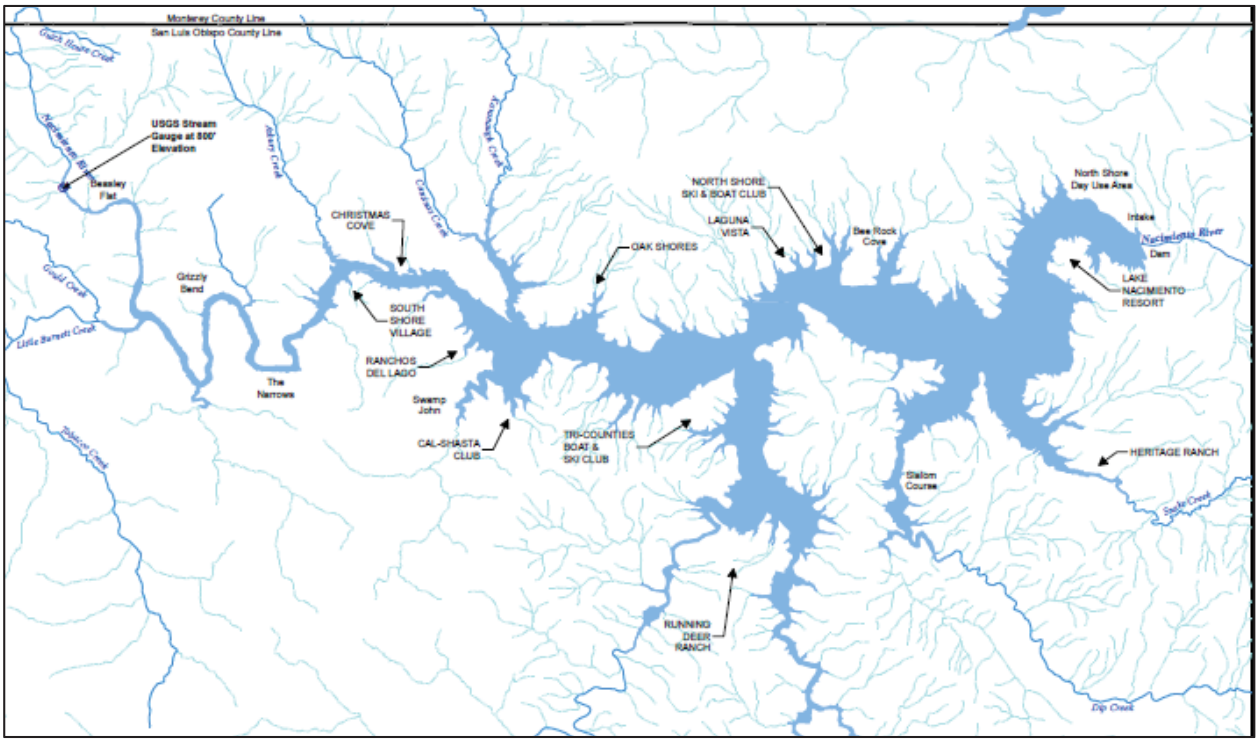
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX D

# METALS DATA

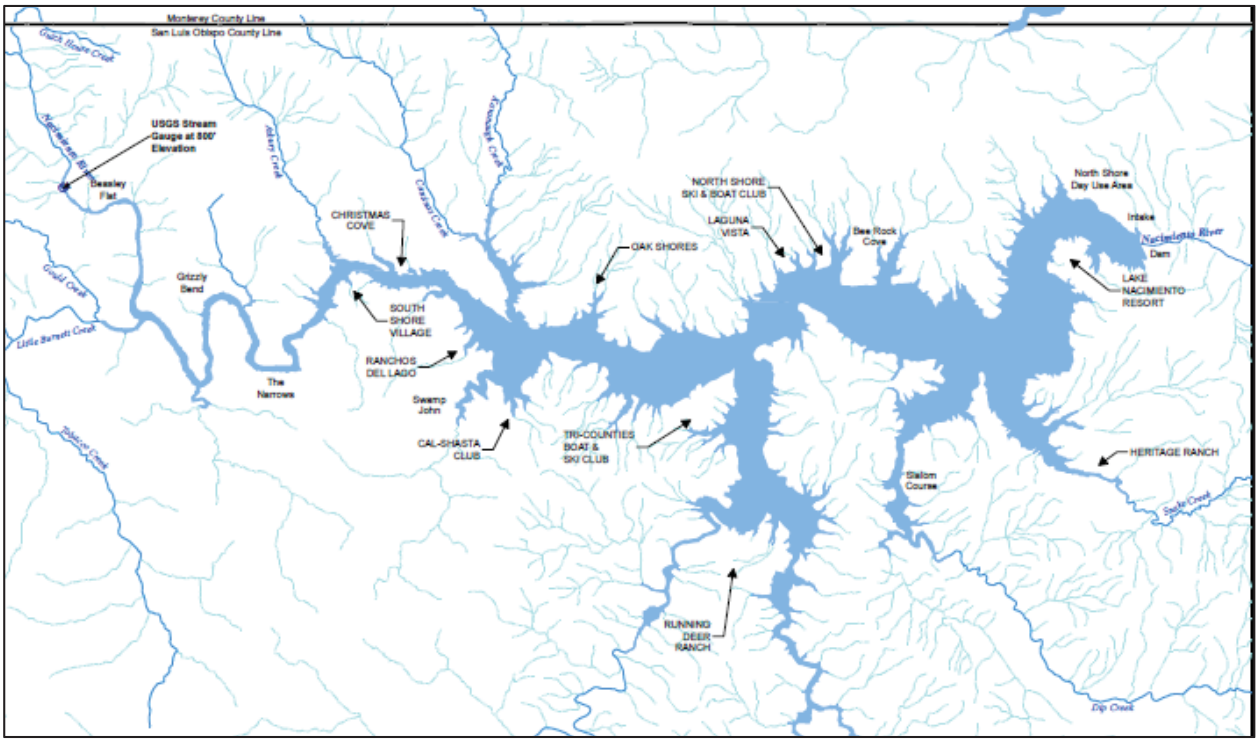
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX E

# PHYSICAL DATA

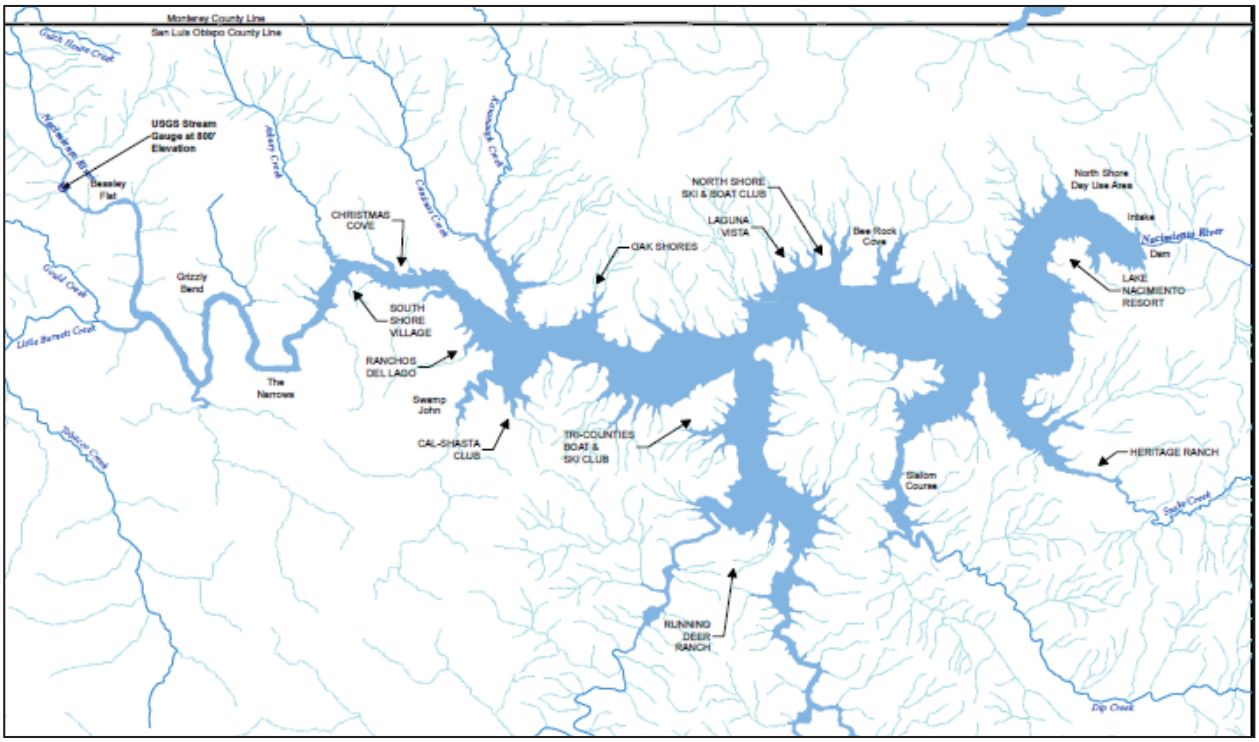
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX F

# GENERAL MINERAL DATA

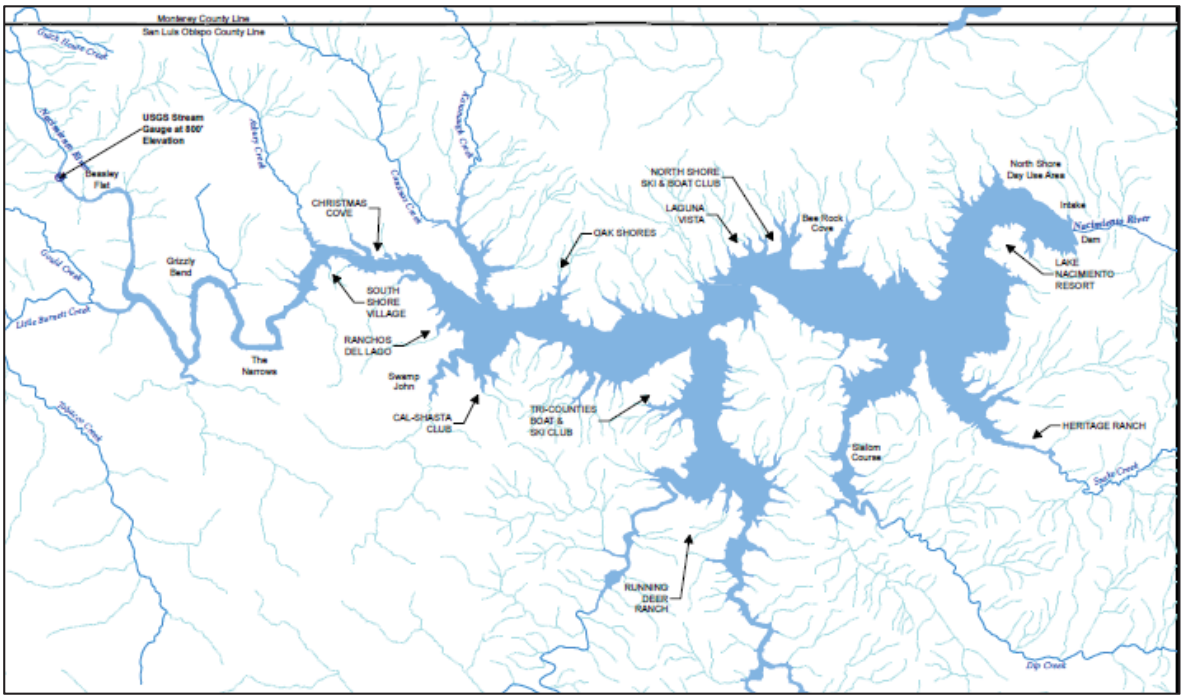
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



## APPENDIX G

# PESTICIDE AND HERBICIDE USE

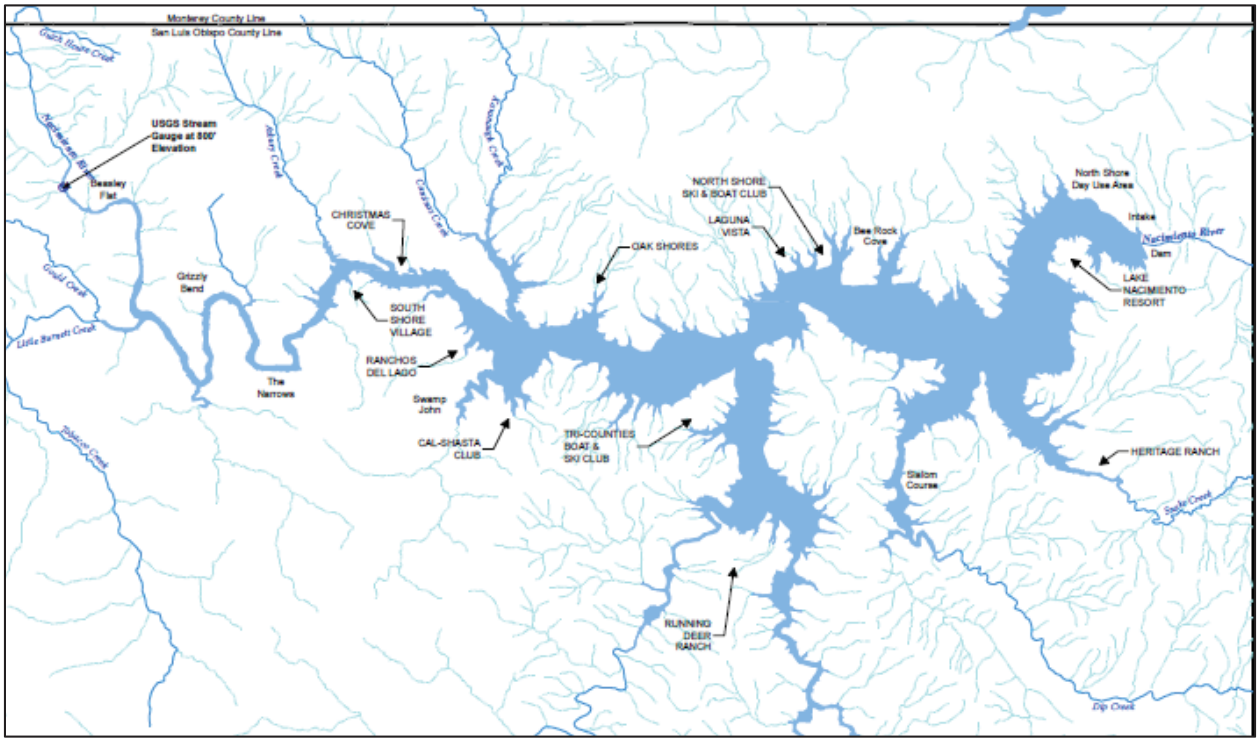
# NACIMIENTO WATER PROJECT WATERSHED SANITARY SURVEY FIVE YEAR UPDATE - 2015



APPENDIX A

# FIELD DATA

# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



## Temperature Profile 2011 - 2015 (degrees Celcius)

| Date | Surface | Air | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70 ' | 75' | 80' | 85' | 90' | 95' | 100' | 105' | 110' | 115' | 120' | 125' | 130' | 135' | 140' | 145' | 150' | 155' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/10/2011 | 763.2 | 6.0 | 11.1 | 11.1 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.9 | 10.8 | 10.7 | 10.6 | 10.4 | 10.4 | 10.3 | 10.1 | 10.0 | 9.9 | 9.9 | 9.9 | 9.9 | — | — | — | — | — | — | — | — | — | — | — |
| 2/7/2011 | 764.5 | 20.0 | 13.1 | 12.6 | 11.4 | 11.3 | 11.2 | 11.1 | 10.9 | 10.8 | 10.7 | 10.6 | 10.5 | 10.3 | 10.2 | 10.1 | 10.1 | 9.9 | 9.9 | 9.9 | 9.8 | 9.8 | 9.8 | 9.7 | 9.6 | — | — | — | — | — | — | — | — | — |
| 3/7/2011 | 783.9 | 14.5 | 14.2 | 13.9 | 13.9 | 12.4 | 11.0 | 10.7 | 10.6 | 10.4 | 10.2 | 10.1 | 9.9 | 9.7 | 9.6 | 9.5 | 9.5 | 9.5 | 9.4 | 9.4 | 9.3 | 9.3 | 9.3 | 9.3 | 9.3 | 9.3 | 9.3 | 9.3 | 9.3 | — | — | — | — | — |
| 4/5/2011 | 799.6 | 25.0 | 18.1 | 17.1 | 16.2 | 14.1 | 12.7 | 12.0 | 11.7 | 11.4 | 11.1 | 11.0 | 10.8 | 10.7 | 10.5 | 10.4 | 10.3 | 10.2 | 10.1 | 10.1 | 10.0 | 10.0 | 9.9 | 9.9 | 9.8 | 9.7 | 9.7 | 9.6 | 9.6 | 9.6 | 9.5 | 9.5 | — | — |
| 5/2/2011 | 799.5 | 26.3 | 20.3 | 19.3 | 18.9 | 18.0 | 17.3 | 13.4 | 12.1 | 11.6 | 11.3 | 11.1 | 10.9 | 10.8 | 10.7 | 10.6 | 10.4 | 10.4 | 10.3 | 10.3 | 10.2 | 10.2 | 10.1 | 10.0 | 10.0 | 10.0 | 9.9 | 9.9 | 9.8 | 9.8 | 9.7 | 9.7 | — | — |
| 6/15/2011 | 798.1 | 28.0 | 24.4 | 23.7 | 23.2 | 20.8 | 19.8 | 18.1 | 15.8 | 13.7 | 12.3 | 11.6 | 11.3 | 11.1 | 11.0 | 10.9 | 10.7 | 10.6 | 10.6 | 10.5 | 10.5 | 10.5 | 10.4 | 10.4 | 10.3 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | 9.9 | — | — |
| 7/12/2011 | 794.9 | 22.3 | 25.9 | 25.7 | 25.3 | 24.4 | 21.4 | 18.6 | 16.8 | 14.2 | 12.1 | 11.7 | 11.3 | 11.1 | 10.9 | 10.8 | 10.8 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 10.6 | 10.5 | 10.5 | 10.4 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | — | — |
| 8/2/2011 | 791.0 | 22.5 | 25.2 | 25.2 | 25.1 | 24.9 | 23.2 | 19.3 | 16.0 | 14.4 | 13.0 | 12.0 | 11.6 | 11.4 | 11.1 | 11.0 | 10.9 | 10.9 | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 10.5 | 10.5 | 10.4 | 10.2 | 10.1 | 10.1 | 10.1 | — |
| 9/12/2011 | 784.5 | 24.7 | 24.5 | 23.8 | 23.6 | 23.6 | 23.5 | 23.4 | 20.7 | 17.8 | 14.4 | 13.2 | 12.2 | 11.8 | 11.5 | 11.3 | 11.2 | 11.1 | 11.0 | 10.9 | 10.9 | 10.9 | 10.9 | 10.8 | 10.8 | 10.8 | 10.6 | 10.5 | 10.4 | 10.3 | 10.3 | — | — | — |
| 10/12/2011 | 779.0 | 25.7 | 21.8 | 21.4 | 21.1 | 21.0 | 20.9 | 20.9 | 20.5 | 19.8 | 15.4 | 14.2 | 13.1 | 12.5 | 12.0 | 11.7 | 11.5 | 11.4 | 11.2 | 11.2 | 11.1 | 11.1 | 11.0 | 11.0 | 10.9 | 10.8 | 10.6 | 10.5 | 10.4 | 10.4 | 10.3 | — | — | — |
| 11/2/2011 | 775.5 | 18.3 | 19.2 | 19.2 | 19.1 | 19.0 | 19.0 | 19.0 | 19.0 | 18.9 | 17.7 | 14.6 | 13.4 | 12.6 | 12.0 | 11.8 | 11.6 | 11.5 | 11.4 | 11.3 | 11.2 | 11.2 | 11.2 | 11.1 | 10.9 | 10.7 | 10.6 | 10.5 | 10.5 | 10.4 | 10.4 | 10.4 | — | — |
| 12/13/2011 | 775.7 | 12.4 | 12.7 | 12.6 | 12.5 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.3 | 12.2 | 12.1 | 12.1 | 12.1 | 12.0 | 11.7 | 11.6 | 11.5 | 11.4 | 11.3 | 11.2 | 11.2 | 11.1 | 10.9 | 10.7 | 10.6 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | — |
| 1/9/2012 | 774.9 | 18.3 | 11.1 | 11.2 | 10.8 | 10.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.5 | 10.5 | 10.4 | 10.4 | 10.4 | 10.4 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | — |
| 2/14/2012 | 777.5 | 11.8 | 12.1 | 12.1 | 11.8 | 11.8 | 11.7 | 11.7 | 11.7 | 11.3 | 11.2 | 10.5 | 10.3 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 |
| 3/13/2012 | 776.8 | 17.7 | 13.7 | 13.6 | 13.4 | 13.0 | 12.6 | 11.5 | 11.0 | 10.5 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | — |
| 4/10/2012 | 776.5 | 12.9 | 15.6 | 15.7 | 15.7 | 15.6 | 15.4 | 14.2 | 12.8 | 12.0 | 11.5 | 11.0 | 10.8 | 10.6 | 10.5 | 10.4 | 10.4 | 10.4 | 10.3 | 10.3 | 10.2 | 10.2 | 10.2 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | — |
| 5/15/2012 | 775.0 | 17.8 | 22.1 | 22.0 | 22.0 | 22.0 | 19.7 | 16.7 | 15.2 | 13.9 | 12.7 | 12.0 | 11.5 | 11.2 | 11.0 | 10.8 | 10.7 | 10.6 | 10.5 | 10.5 | 10.5 | 10.4 | 10.4 | 10.3 | 10.3 | 10.3 | 10.2 | 10.2 | 10.3 | 10.1 | 10.1 | 10.1 | 10.1 | — |
| 6/6/2012 | 771.8 | 17.0 | 21.7 | 21.8 | 21.8 | 21.7 | 21.7 | 20.4 | 18.0 | 14.3 | 13.2 | 12.2 | 11.6 | 11.3 | 11.1 | 11.0 | 10.9 | 10.8 | 10.7 | 10.6 | 10.5 | 10.4 | 10.4 | 10.3 | 10.3 | 10.3 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | — | — |
| 7/16/2012 | 764.6 | 21.7 | 24.8 | 24.8 | 24.8 | 24.8 | 24.5 | 23.3 | 19.5 | 16.7 | 14.9 | 13.8 | 13.0 | 12.5 | 12.1 | 11.8 | 11.5 | 11.4 | 11.3 | 11.2 | 11.0 | 10.8 | 10.7 | 10.6 | 10.5 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | — | — | — | — |
| 8/6/2012 | 761.2 | 29.7 | 24.3 | 23.8 | 23.6 | 23.5 | 23.4 | 23.3 | 21.7 | 19.3 | 16.8 | 14.6 | 14.0 | 13.0 | 12.5 | 12.3 | 12.0 | 11.9 | 11.7 | 11.5 | 11.2 | 11.1 | 10.9 | 10.7 | 10.6 | 10.5 | 10.5 | 10.5 | 10.5 | 10.4 | — | — | — | — |
| 9/4/2012 | 753.4 | 25.1 | 24.4 | 24.2 | 24.0 | 23.9 | 23.8 | 23.7 | 23.6 | 21.2 | 19.2 | 17.4 | 15.9 | 14.9 | 14.1 | 13.5 | 13.1 | 12.7 | 12.5 | 11.9 | 11.5 | 11.2 | 11.0 | 10.8 | 10.7 | 10.6 | 10.6 | 10.6 | — | — | — | — | — | — |
| 10/1/2012 | 747.9 | 27.2 | 22.9 | 23.1 | 22.6 | 22.5 | 22.4 | 22.3 | 22.2 | 22.2 | 22.0 | 20.2 | 18.4 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 12.6 | 12.2 | 11.5 | 11.1 | 10.9 | 10.8 | 10.7 | 10.7 | 10.6 | — | — | — | — | — | — | — |
| 11/5/2012 | 743.1 | 23.9 | 19.4 | 18.9 | 18.8 | 18.7 | 18.7 | 18.7 | 18.7 | 18.6 | 18.6 | 18.6 | 18.6 | 18.5 | 18.3 | 17.6 | 16.3 | 14.3 | 12.7 | 11.7 | 11.2 | 11.0 | 10.8 | 10.8 | 10.7 | 10.7 | — | — | — | — | — | — | — | — |
| 12/3/2012 | 742.0 | 20.6 | 15.9 | 15.7 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.5 | 15.5 | 15.5 | 15.4 | 15.4 | 15.3 | 15.3 | 15.2 | 15.1 | 14.5 | 13.7 | 12.2 | 11.4 | 11.1 | 11.0 | 10.9 | 10.8 | 10.8 | — | — | — | — | — | — | — |
| 12/5/2012 | 746.8 | 15.0 | 15.4 | 15.4 | 15.4 | 15.4 | 15.4 | 15.3 | 15.3 | 15.3 | 15.3 | 15.2 | 15.1 | 15.0 | 14.9 | 14.8 | 14.7 | 14.5 | 14.2 | 14.0 | 12.4 | 11.4 | 11.0 | 10.8 | 10.8 | 10.8 | 10.7 | — | — | — | — | — | — | — |
| 1/7/2013 | 757.3 | 8.9 | 11.4 | 11.4 | 11.4 | 11.5 | 11.5 | 11.5 | 11.4 | 11.4 | 11.4 | 11.4 | 11.2 | 11.1 | 11.0 | 10.9 | 10.9 | 10.9 | 10.9 | 10.8 | 10.8 | 10.8 | 10.7 | 10.5 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | — | — | — | — | — |
| 2/8/2013 | 758.5 | 11.7 | 10.9 | 10.6 | 10.3 | 10.1 | 10.1 | 10.1 | 10.1 | 10.0 | 10.0 | 10.1 | 9.9 | 9.9 | 9.8 | 9.7 | 9.7 | 9.6 | 9.5 | 9.4 | 9.2 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | — | — | — |
| 3/4/2013 | 758.3 | 13.5 | 13.0 | 12.8 | 11.9 | 11.3 | 10.9 | 10.5 | 10.2 | 10.2 | 10.1 | 10.0 | 10.0 | 9.9 | 9.9 | 9.8 | 9.8 | 9.7 | 9.6 | 9.6 | 9.5 | 9.5 | 9.4 | 9.3 | 9.3 | 9.3 | 9.3 | 9.2 | 9.2 | 9.2 | 9.2 | — | — | — |
| 4/2/2013 | 757.7 | 18.1 | 17.7 | 17.6 | 17.6 | 17.5 | 14.9 | 12.1 | 11.2 | 10.6 | 10.3 | 10.2 | 10.0 | 10.0 | 9.9 | 9.9 | 9.9 | 9.8 | 9.8 | 9.7 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.4 | — | — | — | — | — |
| 5/6/2013 | 756.0 | 16.0 | 21.3 | 21.3 | 21.4 | 21.3 | 17.3 | 12.4 | 11.2 | 10.6 | 10.4 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | 10.0 | 9.9 | 9.9 | 9.8 | 9.8 | 9.7 | 9.7 | 9.7 | 9.7 | 9.6 | 9.6 | 9.6 | — | — | — | — | — |
| 6/3/2013 | 757.3 | 20.8 | 22.4 | 22.4 | 22.2 | 22.1 | 20.9 | 17.8 | 15.1 | 12.4 | 11.4 | 10.9 | 10.6 | 10.5 | 10.4 | 10.3 | 10.3 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | 9.9 | 9.9 | 9.9 | 9.8 | 9.8 | 9.7 | — | — | — | — | — | — |
| 7/8/2013 | 755.6 | 28.9 | 26.3 | 26.2 | 26.1 | 25.7 | 22.3 | 18.8 | 15.9 | 13.1 | 12.1 | 11.4 | 11.1 | 10.9 | 10.8 | 10.7 | 10.6 | 10.5 | 10.4 | 10.4 | 10.3 | 10.2 | 10.1 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | — | — | — | — | — | — |
| 7/17/2013 | 753.2 | 20.2 | 23.7 | 24.5 | 24.4 | 24.2 | 23.4 | 20.2 | 16.4 | 13.8 | 12.5 | 11.7 | 11.2 | 10.8 | 10.7 | 10.6 | 10.5 | 10.3 | 10.2 | 10.1 | 10.1 | 10.0 | 9.9 | 9.9 | 9.9 | 9.9 | 9.8 | — | — | — | — | — | — | — |
| 8/5/2013 | 748.0 | 26.0 | 24.5 | 24.0 | 23.8 | 23.7 | 23.6 | 20.5 | 16.7 | 13.6 | 12.1 | 11.4 | 11.1 | 10.9 | 11.0 | 10.8 | 10.8 | 10.6 | 10.4 | 10.4 | 10.2 | 10.1 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | — | — | — | — | — | — | — |
| 9/3/2013 | 743.3 | 25.0 | 25.3 | 25.4 | 25.2 | 24.7 | 23.6 | 22.2 | 19.0 | 16.6 | 13.7 | 12.5 | 11.8 | 11.5 | 11.1 | 11.0 | 10.9 | 10.6 | 10.4 | 10.2 | 10.2 | 10.1 | 10.1 | 10.0 | 10.0 | 10.0 | — | — | — | — | — | — | — | — |
| 10/2/2013 | 735.5 | 25.5 | 21.3 | 21.0 | 20.9 | 20.8 | 20.8 | 20.7 | 20.7 | 20.7 | 20.2 | 17.6 | 15.5 | 14.1 | 13.0 | 12.1 | 11.2 | 10.6 | 10.3 | 10.2 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | — | — | — | — | — | — | — | — | — |
| 11/4/2013 | 733.0 | 15.2 | 16.6 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.6 | 16.3 | 13.2 | 11.9 | 11.1 | 10.6 | 10.4 | 10.3 | 10.3 | 10.3 | — | — | — | — | — | — | — | — | — | — | — |
| 12/2/2013 | 731.9 | 17.9 | 14.1 | 14.1 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.9 | 13.9 | 13.8 | 13.8 | 13.7 | 13.6 | 13.5 | 12.5 | 11.2 | 10.5 | 10.3 | 10.3 | 10.2 | 10.2 | — | — | — | — | — | — | — | — | — | — | — |
| 1/6/2014 | 730.1 | 13.3 | 10.0 | 10.0 | 9.9 | 9.9 | 9.8 | 9.7 | 9.7 | 9.7 | 9.7 | 9.6 | 9.6 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | — | — | — | — | — | — | — | — | — | — | — | — |
| 2/13/2014 | 729.1 | 12.6 | 11.0 | 10.5 | 10.5 | 10.4 | 10.1 | 9.6 | 9.4 | 9.3 | 9.3 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | 9.2 | — | — | — | — | — | — | — | — | — | — | — |
| 3/3/2014 | 729.9 | 18.8 | 14.0 | 13.9 | 13.8 | 13.7 | 13.5 | 12.6 | 11.0 | 10.8 | 10.3 | 10.0 | 9.8 | 9.7 | 9.6 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.4 | 9.4 | — | — | — | — | — | — | — | — | — | — | — |
| 4/2/2014 | 729.8 | 14.9 | 16.7 | 16.5 | 16.4 | 16.4 | 16.3 | 12.6 | 12.1 | 11.4 | 10.9 | 10.4 | 10.0 | 9.8 | 9.6 | 9.5 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | — | — | — | — | — | — | — | — | — | — | — |
| 6/2/2014 | 723.0 | 24.2 | 22.9 | 22.8 | 22.7 | 22.3 | 20.9 | 17.6 | 14.8 | 13.8 | 12.5 | 11.6 | 11.0 | 10.5 | 10.0 | 9.9 | 9.8 | 9.8 | 9.7 | 9.7 | 9.7 | 9.7 | — | — | — | — | — | — | — | — | — | — | — | — |
| 7/8/2014 | 723.9 | 31.3 | 24.6 | 24.5 | 24.2 | 24.0 | 22.6 | 20.7 | 19.5 | 15.8 | 14.4 | 13.0 | 12.0 | 11.3 | 10.9 | 10.5 | 10.3 | 10.2 | 10.1 | 10.1 | 10.1 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 8/4/2014 | 720.3 | 31.4 | 26.8 | 26.1 | 25.5 | 25.2 | 23.0 | 21.0 | 19.2 | 17.3 | 14.7 | 13.1 | 12.1 | 11.3 | 10.9 | 10.8 | 10.6 | 10.5 | 10.4 | 10.3 | 10.2 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 9/2/2014 | 721.2 | 23.4 | 24.3 | 24.2 | 24.2 | 23.6 | 23.0 | 22.1 | 19.6 | 16.8 | 15.5 | 14.0 | 12.7 | 11.6 | 11.2 | 11.0 | 10.8 | 10.7 | 10.6 | 10.5 | 10.5 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 11/3/2014 | 718.3 | 15.3 | 18.3 | 18.2 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 17.8 | 17.2 | 14.6 | 13.0 | 12.0 | 11.5 | 11.2 | 11.0 | 10.9 | 10.8 | 10.7 | 10.7 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 12/1/2014 | 717.3 | 14.0 | 15.0 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.7 | 14.7 | 14.5 | 14.3 | 13.5 | 12.2 | 11.6 | 11.2 | 10.9 | 10.8 | 10.8 | 10.8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 1/5/2015 | 730.1 | 11.4 | 11.8 | 11.6 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.3 | 11.0 | 10.9 | 10.9 | — | — | — | — | — | — | — | — | — | — | — |
| 2/3/2015 | 730.1 | 17.3 | 13.1 | 12.9 | 12.5 | 11.8 | 11.5 | 11.4 | 11.3 | 11.2 | 11.1 | 11.0 | 10.9 | 10.8 | 10.7 | 10.6 | 10.6 | 10.6 | 10.5 | 10.4 | 10.3 | 10.3 | 10.3 | — | — | — | — | — | — | — | — | — | — | — |
| 3/3/2015 | 738.8 | 16.9 | 14.6 | 14.4 | 14.4 | 14.3 | 14.2 | 13.0 | 12.4 | 12.1 | 11.7 | 11.4 | 11.2 | 11.1 | 11.0 | 10.9 | 10.8 | 10.7 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | 10.5 | 10.5 | — | — | — | — | — | — | — | — | — |
| 3/23/2015 | 738.8 | 23.3 | 19.2 | 18.9 | 18.6 | 15.8 | 13.8 | 13.1 | 12.4 | 12.0 | 11.8 | 11.6 | 11.3 | 11.2 | 11.1 | 11.1 | 11.0 | 10.9 | 10.9 | 10.8 | 10.7 | 10.7 | 10.6 | 10.6 | 10.6 | — | — | — | — | — | — | — | — | — |
| 4/16/2015 | 735.0 | 23.4 | 18.3 | 18.0 | 17.8 | 17.7 | 17.2 | 15.7 | 13.2 | 12.6 | 12.3 | 12.0 | 11.8 | 11.7 | 11.5 | 11.4 | 11.2 | 11.1 | 11.1 | 11.0 | 10.9 | 10.8 | 10.8 | 10.8 | — | — | — | — | — | — | — | — | — | — |
| 5/4/2015 | 735.3 | 19.8 | 21.7 | 21.3 | 21.4 | 21.3 | 18.5 | 16.7 | 13.9 | 13.0 | 12.5 | 12.2 | 12.0 | 11.9 | 11.7 | 11.6 | 11.4 | 11.4 | 11.2 | 11.1 | 11.0 | 11.0 | 10.9 | 10.9 | — | — | — | — | — | — | — | — | — | — |
| 6/1/2015 | 733.7 | 24.2 | 23.0 | 22.7 | 22.6 | 22.4 | 20.2 | 17.5 | 14.9 | 13.9 | 13.1 | 12.6 | 12.3 | 12.2 | 12.0 | 11.7 | 11.5 | 11.5 | 11.4 | 11.2 | 11.1 | 11.1 | 11.0 | 11.0 | — | — | — | — | — | — | — | — | — | — |
| 7/8/2015 | 730.7 | 25.2 | 26.8 | 26.5 | 26.3 | 25.3 | 21.2 | 19.1 | 16.5 | 14.9 | 13.9 | 13.0 | 12.6 | 12.3 | 12.0 | 11.8 | 11.6 | 11.4 | 11.3 | 11.2 | 11.2 | 11.1 | 11.1 | — | — | — | — | — | — | — | — | — | — | — |
| 8/3/2015 | 729.3 | 29.4 | 26.6 | 26.1 | 25.8 | 25.6 | 24.5 | 21.4 | 18.2 | 15.5 | 14.5 | 13.5 | 13.1 | 12.7 | 12.3 | 11.7 | 11.6 | 11.5 | 11.4 | 11.3 | 11.3 | 11.3 | 11.2 | — | — | — | — | — | — | — | — | — | — | — |
| 9/2/2015 | 725.8 | 24.6 | 25.9 | 25.6 | 25.4 | 25.1 | 24.4 | 23.1 | 19.8 | 17.0 | 15.4 | 14.5 | 13.6 | 13.1 | 12.4 | 12.0 | 11.8 | 11.7 | 11.5 | 11.4 | 11.4 | 11.3 | — | — | — | — | — | — | — | — | — | — | — | — |
| 10/6/2015 | 725.2 | 21.3 | 22.4 | 22.4 | 22.3 | 22.3 | 22.2 | 22.1 | 20.8 | 18.7 | 16.7 | 15.2 | 14.1 | 13.4 | 12.8 | 11.9 | 11.7 | 11.6 | 11.5 | 11.5 | 11.4 | 11.1 | 11.4 | — | — | — | — | — | — | — | — | — | — | — |
| 11/4/2015 | 722.2 | 15.2 | 19.2 | 19.2 | 19.0 | 19.0 | 19.0 | 18.9 | 18.9 | 18.9 | 18.4 | 16.6 | 14.6 | 13.1 | 12.3 | 11.9 | 11.8 | 11.6 | 11.6 | 11.6 | 11.5 | 11.5 | — | — | — | — | — | — | — | — | — | — | — | — |
| 12/1/2015 | 721.0 | 7.2 | 13.4 | 13.4 | 13.3 | 13.3 | 13.3 | 13.2 | 13.2 | 13.2 | 13.2 | 13.1 | 13.1 | 13.1 | 13.0 | 12.8 | 12.1 | 11.8 | 11.6 | 11.6 | 11.6 | — | — | — | — | — | — | — | — | — | — | — | — | — |

**Temperature Profile (degrees Centigrade)**

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 - 30 | 19.0 - 21.9 | 17.0 - 18.9 | 14.0 - 16.9 | 12.0 - 13.9 | 11.0 - 11.9 | 10.0 - 10.9 | 8.0 - 9.9 |

## Dissolved Oxygen Profile (mg/L) 2011-2015

| Date | Surface Elevation | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70 ' | 75' | 80' | 85' | 90' | 95' | 100' | 105' | 110' | 115' | 120' | 125' | 130' | 135' | 140' | 145' | 150' | 155' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/10/2011 | 763.2 | 4.1 | 4.2 | 4.4 | 4.3 | 4.4 | 4.4 | 4.3 | 4.3 | 4.4 | 5.9 | 7.5 | 8.2 | 8.7 | 8.8 | 8.8 | 8.7 | 9.1 | 9.2 | 9.2 | 9.2 | 9.3 | — | — | — | — | — | — | — | — | — | — | — |
| 2/7/2011 | 764.5 | 10.6 | 9.8 | 9.8 | 9.5 | 9.3 | 7.8 | 7.3 | 7.0 | 6.9 | 6.9 | 7.1 | 7.7 | 8.0 | 7.8 | 8.2 | 8.1 | 7.9 | 8.1 | 8.1 | 8.0 | 8.0 | 7.9 | 7.8 | — | — | — | — | — | — | — | — | — |
| 3/7/2011 | 783.9 | 11.5 | 11.5 | 11.4 | 11.1 | 8.4 | 8.1 | 7.6 | 7.5 | 7.2 | 7.0 | 6.8 | 6.9 | 6.9 | 7.4 | 8.0 | 8.4 | 8.7 | 8.9 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.4 | 9.4 | 9.4 | 9.4 | — | — | — | — | — |
| 4/5/2011 | 799.6 | 7.9 | 8.4 | 8.0 | 8.6 | 7.8 | 7.7 | 7.6 | 7.5 | 7.5 | 7.5 | 7.3 | 7.1 | 7.0 | 7.1 | 7.0 | 6.8 | 6.8 | 6.7 | 6.6 | 6.4 | 6.5 | 6.3 | 6.1 | 7.0 | 7.1 | 7.0 | 6.9 | 6.7 | 6.7 | 6.4 | — | — |
| 5/2/2011 | 799.5 | 9.7 | 9.9 | 10.7 | 10.9 | 9.9 | 8.1 | 8.4 | 9.0 | 9.2 | 8.9 | 9.0 | 8.9 | 8.6 | 8.3 | 8.1 | 8.1 | 8.0 | 7.8 | 7.7 | 7.6 | 7.6 | 7.6 | 7.5 | 7.5 | 7.5 | 7.5 | 7.3 | 7.2 | 7.1 | 7.0 | — | — |
| 6/15/2011 | 798.1 | 9.0 | 9.2 | 9.5 | 10.4 | 9.4 | 7.5 | 6.0 | 6.0 | 6.6 | 7.1 | 7.6 | 7.7 | 7.6 | 7.6 | 7.6 | 7.6 | 7.4 | 7.4 | 7.2 | 7.2 | 7.1 | 6.9 | 7.0 | 6.9 | 6.7 | 6.6 | 6.4 | 6.2 | 5.9 | 5.9 | — | — |
| 7/12/2011 | 794.9 | 7.6 | 7.9 | 8.8 | 9.0 | 7.0 | 5.2 | 4.4 | 4.6 | 5.9 | 6.7 | 6.8 | 6.9 | 7.0 | 7.0 | 6.7 | 6.8 | 6.7 | 6.6 | 6.6 | 6.6 | 6.5 | 6.4 | 6.2 | 5.8 | 5.4 | 5.1 | 4.8 | 5.4 | 4.5 | 4.4 | — | — |
| 8/2/2011 | 791.0 | 7.4 | 7.9 | 9.1 | 8.2 | 6.5 | 4.2 | 3.4 | 3.8 | 4.8 | 5.1 | 5.6 | 6.2 | 6.5 | 6.6 | 6.5 | 6.4 | 6.3 | 6.2 | 6.1 | 6.1 | 5.4 | 5.6 | 5.2 | 5.0 | 4.9 | 4.7 | 4.3 | 3.8 | 3.6 | 3.4 | 3.3 | — |
| 9/12/2011 | 784.5 | 6.9 | 7.3 | 6.3 | 6.3 | 6.2 | 6.0 | 1.2 | 0.7 | 1.2 | 1.9 | 2.8 | 3.6 | 3.7 | 3.7 | 4.1 | 3.8 | 4.2 | 4.3 | 4.1 | 4.1 | 3.6 | 3.4 | 3.1 | 2.8 | 2.6 | 2.3 | 2.2 | 2.1 | 2.2 | — | — | — |
| 10/12/2011 | 779.0 | 6.7 | 7.7 | 7.3 | 8.0 | 6.7 | 6.9 | 5.3 | 3.5 | 1.4 | 1.5 | 1.7 | 2.8 | 3.3 | 3.7 | 4.1 | 4.1 | 3.9 | 4.2 | 4.4 | 3.7 | 3.7 | 3.3 | 2.7 | 2.0 | 1.8 | 1.8 | 1.8 | 1.7 | 1.5 | — | — | — |
| 11/2/2011 | 775.5 | 5.5 | 6.5 | 5.9 | 6.2 | 5.4 | 5.4 | 5.3 | 4.2 | 0.8 | 0.7 | 0.8 | 1.3 | 2.0 | 2.4 | 2.7 | 2.8 | 3.1 | 3.3 | 2.7 | 2.3 | 2.0 | 1.5 | 0.9 | 0.9 | 0.9 | 1.0 | 0.8 | 0.7 | 0.5 | 0.5 | — | — |
| 12/13/2011 | 775.7 | 5.6 | 5.5 | 6.1 | 5.6 | 6.2 | 5.6 | 4.9 | 4.8 | 4.4 | 3.8 | 3.6 | 3.5 | 3.4 | 3.3 | 2.8 | 2.2 | 2.2 | 2.3 | 2.3 | 1.6 | 1.1 | 0.7 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | — |
| 1/9/2012 | 774.9 | 5.8 | 6.0 | 6.3 | 6.1 | 5.7 | 5.2 | 5.2 | 5.1 | 4.1 | 4.0 | 4.8 | 4.8 | 4.9 | 5.1 | 5.0 | 4.7 | 4.6 | 4.6 | 4.5 | 4.2 | 4.2 | 4.1 | 4.0 | 4.1 | 4.2 | 4.2 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | — |
| 2/14/2012 | 777.5 | 9.8 | 9.6 | 9.5 | 9.6 | 9.7 | 9.5 | 9.5 | 9.1 | 8.6 | 7.0 | 6.6 | 6.3 | 6.6 | 6.5 | 6.4 | 6.3 | 6.4 | 6.3 | 6.4 | 6.3 | 6.3 | 6.3 | 6.3 | 6.2 | 6.2 | 6.2 | 6.2 | 6.1 | 5.9 | 5.9 | 5.7 | 5.7 |
| 3/13/2012 | 776.8 | 9.6 | 9.5 | 9.5 | 9.1 | 9.5 | 8.1 | 7.6 | 7.1 | 7.0 | 7.0 | 6.7 | 6.5 | 6.3 | 6.1 | 6.7 | 6.6 | 6.5 | 6.1 | 6.2 | 6.2 | 6.3 | 6.3 | 6.0 | 5.8 | 5.8 | 5.7 | 5.6 | 5.2 | 5.4 | 4.9 | 5.1 | — |
| 4/10/2012 | 776.5 | 8.8 | 8.8 | 8.5 | 8.2 | 9.0 | 9.1 | 8.2 | 7.4 | 6.9 | 6.3 | 6.3 | 6.3 | 6.2 | 5.9 | 6.0 | 5.8 | 5.8 | 5.6 | 5.2 | 5.2 | 5.2 | 5.1 | 5.1 | 4.9 | 4.8 | 4.8 | 4.7 | 4.7 | 4.8 | 4.4 | 4.1 | — |
| 5/15/2012 | 775.0 | 8.3 | 7.6 | 8.0 | 7.6 | 8.1 | 8.5 | 7.5 | 7.3 | 6.3 | 5.9 | 5.4 | 5.4 | 5.3 | 5.4 | 5.3 | 5.2 | 5.1 | 4.9 | 4.7 | 4.6 | 4.7 | 4.6 | 4.6 | 4.4 | 4.1 | 4.1 | 3.8 | 3.7 | 3.7 | 3.1 | 3.1 | — |
| 6/6/2012 | 771.8 | 8.1 | 7.9 | 7.9 | 8.2 | 8.0 | 8.4 | 8.9 | 7.5 | 6.3 | 6.2 | 6.1 | 5.8 | 5.6 | 5.7 | 5.2 | 5.1 | 5.0 | 5.0 | 4.3 | 4.0 | 4.0 | 3.7 | 3.8 | 3.8 | 3.7 | 3.7 | 3.6 | 3.5 | 3.5 | 3.2 | — | — |
| 7/16/2012 | 764.6 | 7.4 | 7.4 | 7.5 | 7.5 | 7.3 | 7.5 | 7.2 | 6.7 | 6.0 | 5.3 | 4.8 | 4.7 | 4.4 | 4.4 | 4.5 | 3.5 | 3.6 | 2.6 | 2.2 | 1.9 | 1.7 | 1.7 | 1.9 | 2.0 | 2.1 | 2.0 | 1.9 | 1.6 | — | — | — | — |
| 8/6/2012 | 761.2 | 6.9 | 6.9 | 6.9 | 6.8 | 6.9 | 6.8 | 5.9 | 5.5 | 5.0 | 4.3 | 3.8 | 3.5 | 3.6 | 3.4 | 3.0 | 2.4 | 1.6 | 1.2 | 0.8 | 0.7 | 0.6 | 0.7 | 1.0 | 1.1 | 1.1 | 1.1 | 0.9 | 0.7 | — | — | — | — |
| 9/4/2012 | 753.4 | 7.4 | 7.0 | 7.3 | 7.2 | 7.0 | 7.1 | 7.0 | 4.9 | 4.2 | 3.5 | 3.3 | 3.0 | 2.9 | 2.0 | 1.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — |
| 10/1/2012 | 747.9 | 7.6 | 6.8 | 7.1 | 7.1 | 6.5 | 6.1 | 6.1 | 5.8 | 5.6 | 2.4 | 2.1 | 1.5 | 1.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — |
| 11/5/2012 | 743.1 | 6.9 | 6.8 | 6.7 | 6.3 | 6.0 | 5.2 | 5.5 | 5.3 | 5.4 | 5.2 | 5.8 | 5.5 | 3.4 | 0.7 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — |
| 12/3/2012 | 742.0 | 8.2 | 8.1 | 7.8 | 7.8 | 7.2 | 7.0 | 7.2 | 7.1 | 6.3 | 6.4 | 6.2 | 6.6 | 6.6 | 6.6 | 4.9 | 4.6 | 1.5 | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — |
| 12/5/2012 | 746.8 | 7.5 | 7.3 | 7.1 | 6.5 | 6.8 | 6.6 | 6.7 | 6.6 | 5.8 | 5.6 | 5.6 | 5.2 | 4.2 | 4.6 | 3.7 | 3.1 | 1.7 | 0.7 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | — | — | — | — | — | — | — |
| 1/7/2013 | 757.3 | 6.4 | 6.0 | 5.9 | 5.7 | 5.7 | 5.8 | 5.7 | 5.8 | 5.7 | 5.3 | 4.3 | 4.4 | 4.2 | 3.7 | 3.4 | 3.0 | 2.6 | 1.2 | 0.9 | 1.1 | 1.9 | — | — | — | — | — | — | — | — | — | — | — |
| 2/8/2013 | 758.5 | 10.6 | 9.0 | 8.1 | 7.6 | 8.0 | 7.8 | 8.0 | 7.9 | 7.8 | 7.4 | 6.8 | 6.9 | 7.2 | 7.2 | 7.0 | 7.5 | 7.2 | 7.2 | 7.2 | 6.6 | 6.4 | 6.2 | 6.5 | 6.4 | 6.0 | 5.9 | 5.6 | 5.4 | 5.4 | — | — | — |
| 3/4/2013 | 758.3 | 9.6 | 9.7 | 9.5 | 9.2 | 9.1 | 7.9 | 7.3 | 7.1 | 6.8 | 6.5 | 6.5 | 6.8 | 6.5 | 6.3 | 6.2 | 6.7 | 6.5 | 6.7 | 6.2 | 6.3 | 6.8 | 6.2 | 5.4 | 6.2 | 5.7 | 5.6 | 5.1 | 5.2 | 5.1 | — | — | — |
| 4/2/2013 | 757.7 | 8.6 | 8.5 | 8.7 | 8.5 | 8.5 | 6.9 | 6.3 | 6.4 | 6.4 | 5.9 | 6.0 | 6.2 | 6.4 | 6.4 | 6.3 | 5.7 | 5.7 | 5.5 | 5.4 | 5.5 | 5.4 | 5.3 | 5.4 | 5.7 | 5.5 | 5.2 | 4.9 | — | — | — | — | — |
| 5/6/2013 | 756.0 | 7.9 | 7.6 | 7.6 | 7.7 | 8.2 | 5.1 | 4.8 | 4.9 | 5.3 | 5.3 | 5.3 | 5.3 | 5.5 | 5.6 | 5.5 | 5.3 | 5.3 | 5.1 | 5.1 | 5.1 | 5.1 | 4.8 | 4.7 | 4.6 | 4.0 | 3.5 | 4.9 | — | — | — | — | — |
| 6/3/2013 | 757.3 | 8.4 | 8.4 | 8.0 | 7.8 | 8.1 | 7.2 | 5.9 | 3.7 | 3.5 | 4.0 | 4.3 | 4.6 | 4.8 | 4.8 | 4.9 | 5.1 | 4.8 | 5.0 | 4.8 | 5.0 | 4.8 | 4.6 | 4.5 | 4.5 | 4.0 | 3.5 | — | — | — | — | — | — |
| 7/17/2013 | 753.2 | 7.6 | 7.6 | 7.6 | 7.6 | 7.4 | 5.6 | 3.3 | 2.6 | 2.3 | 2.1 | 2.3 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.6 | 2.7 | 2.6 | 3.2 | 3.0 | 2.9 | 2.7 | 2.3 | — | — | — | — | — | — | — |
| 8/5/2013 | 748.0 | 7.8 | 7.7 | 7.6 | 7.7 | 7.4 | 2.9 | 1.1 | 1.0 | 0.6 | 1.2 | 1.1 | 0.9 | 1.0 | 1.2 | 1.3 | 1.5 | 1.8 | 1.6 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 1.8 | — | — | — | — | — | — | — |
| 9/3/2013 | 743.3 | 6.9 | 7.1 | 6.9 | 5.0 | 3.4 | 1.6 | 0.6 | 0.7 | 0.8 | 0.6 | 0.6 | 0.6 | 0.5 | 0.3 | 0.2 | 0.4 | 0.5 | 0.6 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 | — | — | — | — | — | — | — | — |
| 10/2/2013 | 735.5 | 7.6 | 7.0 | 6.0 | 6.1 | 7.1 | 6.9 | 7.1 | 6.5 | 2.2 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | — | — | — | — | — | — | — | — | — |
| 11/4/2013 | 733.0 | 7.2 | 7.1 | 7.1 | 6.3 | 6.5 | 6.0 | 6.6 | 6.3 | 6.1 | 6.3 | 6.3 | 5.0 | 3.5 | 1.0 | 1.0 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | — | — | — | — | — | — | — | — | — | — | — |
| 12/2/2013 | 731.9 | 8.5 | 8.6 | 8.3 | 8.3 | 8.3 | 7.1 | 7.2 | 7.0 | 6.9 | 6.4 | 5.9 | 5.8 | 5.0 | 3.6 | 1.0 | 0.9 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | — | — | — | — | — | — | — | — | — | — | — |
| 1/6/2014 | 730.1 | 8.3 | 8.1 | 8.3 | 8.4 | 8.4 | 7.5 | 7.5 | 6.9 | 7.0 | 6.7 | 6.6 | 6.4 | 6.6 | 6.5 | 6.7 | 6.6 | 6.4 | 6.5 | 6.4 | 6.2 | — | — | — | — | — | — | — | — | — | — | — | — |
| 2/13/2014 | 729.1 | 10.1 | 8.8 | 7.2 | 6.4 | 5.7 | 5.3 | 5.1 | 5.1 | 5.1 | 4.9 | 4.8 | 4.7 | 4.7 | 4.7 | 4.7 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.7 | — | — | — | — | — | — | — | — | — | — | — |
| 3/3/2014 | 729.9 | 10.3 | 10.3 | 10.8 | 10.8 | 10.6 | 9.7 | 8.9 | 8.0 | 7.1 | 6.8 | 6.6 | 6.4 | 6.4 | 6.3 | 6.3 | 6.1 | 6.2 | 6.1 | 6.0 | 5.8 | 5.7 | — | — | — | — | — | — | — | — | — | — | — |
| 4/2/2014 | 729.8 | 10.1 | 9.8 | 8.8 | 8.6 | 9.3 | 9.1 | 8.1 | 6.3 | 5.8 | 4.9 | 4.6 | 4.6 | 4.5 | 4.5 | 4.5 | 4.3 | 4.1 | 4.0 | 3.7 | 3.5 | 2.8 | — | — | — | — | — | — | — | — | — | — | — |
| 6/2/2014 | 723.0 | 8.7 | 8.3 | 8.4 | 8.4 | 7.2 | 6.7 | 6.0 | 5.4 | 3.6 | 2.1 | 1.6 | 1.3 | 1.8 | 1.8 | 1.8 | 1.5 | 1.2 | 1.2 | 1.2 | 0.1 | — | — | — | — | — | — | — | — | — | — | — | — |
| 7/8/2014 | 723.9 | 7.7 | 7.6 | 7.8 | 6.9 | 5.0 | 2.7 | 1.2 | 0.4 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.0 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 8/4/2014 | 720.3 | 7.3 | 7.3 | 6.9 | 6.9 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 9/2/2014 | 721.2 | 6.5 | 6.8 | 6.6 | 4.9 | 2.7 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 11/3/2014 | 718.3 | 6.5 | 6.3 | 6.5 | 6.4 | 6.3 | 6.1 | 6.0 | 2.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 12/1/2014 | 717.3 | 6.8 | 6.2 | 6.3 | 5.9 | 6.0 | 5.6 | 5.4 | 4.3 | 5.7 | 2.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 1/5/2015 | 730.1 | 4.6 | 4.5 | 4.4 | 4.4 | 4.3 | 4.3 | 4.2 | 4.6 | 4.6 | 4.7 | 4.3 | 4.2 | 3.3 | 2.5 | 1.6 | 1.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — | — |
| 2/3/2015 | 730.1 | 12.7 | 12.5 | 11.5 | 7.8 | 5.9 | 5.9 | 5.9 | 5.2 | 3.2 | 2.7 | 3.0 | 3.1 | 3.5 | 3.3 | 3.3 | 3.0 | 3.2 | 3.2 | 3.3 | 2.5 | 1.5 | — | — | — | — | — | — | — | — | — | — | — |
| 3/3/2015 | 738.8 | 11.2 | 11.6 | 11.2 | 11.1 | 11.4 | 5.6 | 5.9 | 5.4 | 4.0 | 3.1 | 2.6 | 2.5 | 2.5 | 2.6 | 2.5 | 2.2 | 2.1 | 1.9 | 1.5 | 1.2 | 0.8 | 0.5 | 0.2 | — | — | — | — | — | — | — | — | — |
| 3/23/2015 | 738.8 | 8.0 | 8.1 | 8.0 | 6.7 | 3.9 | 2.9 | 3.2 | 2.5 | 2.3 | 1.7 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — |
| 4/16/2015 | 735.0 | 9.6 | 9.4 | 8.5 | 7.6 | 6.5 | 4.2 | 2.6 | 2.6 | 2.4 | 2.1 | 1.7 | 1.5 | 1.1 | 1.0 | 0.8 | 0.7 | 0.6 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — |
| 5/4/2015 | 735.3 | 7.8 | 7.8 | 7.5 | 7.5 | 5.1 | 2.8 | 1.5 | 1.6 | 1.6 | 1.5 | 1.2 | 1.1 | 0.8 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | — | — | — | — | — | — | — | — | — |
| 6/1/2015 | 733.7 | 8.1 | 8.1 | 8.0 | 7.9 | 5.9 | 1.2 | 0.4 | 0.2 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | — | — | — | — | — | — | — | — | — | — |
| 7/8/2015 | 730.7 | 7.7 | 7.4 | 7.3 | 7.1 | 2.4 | 0.7 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | — | — | — | — | — | — | — | — | — | — | — |
| 8/3/2015 | 729.3 | 8.1 | 7.6 | 7.6 | 6.3 | 3.3 | 0.5 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.5 | 0.5 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | — | — | — | — | — | — | — | — | — | — | — |
| 9/2/2015 | 725.8 | 7.9 | 7.1 | 7.0 | 6.2 | 1.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | — | — | — | — | — | — | — | — | — | — | — | — |
| 10/6/2015 | 725.2 | 5.8 | 5.1 | 5.1 | 4.9 | 4.9 | 3.8 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | — | — | — | — | — | — | — | — | — | — | — |
| 11/4/2015 | 722.2 | 5.3 | 5.5 | 4.6 | 4.7 | 4.8 | 4.6 | 4.7 | 4.3 | 1.3 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | — | — | — | — | — | — | — | — | — | — | — | — |
| 12/1/2015 | 722.2 | 5.4 | 5.4 | 5.1 | 5.1 | 5.2 | 5.2 | 5.2 | 5.1 | 5.0 | 4.7 | 4.5 | 3.7 | 1.4 | 0.9 | 0.7 | 0.5 | 0.5 | 0.4 | 0.4 | — | — | — | — | — | — | — | — | — | — | — | — | — |

**Dissolved Oxygen (mg/L)** 9.5 - 12 | 8.6 - 9.4 | 6.6 - 8.5 | 4.6 - 6.5 | 2.6 - 4.5 | 1.5 - 2.5 | 0 - 1.4

## Reservoir Visibility (feet) and Field Notes 2011 - 2015

| Date | Air Temp (oC) | Sunlight | Wind (mph) | Surface Elevation (feet) | Visibility (feet) | Comments |
|---|---|---|---|---|---|---|
| 1/10/2011 | 6 | 95% | 3-5 | 763.2 | 2.5' | Bottom >100' (will bring longer cable) - Epilimnion: 740' - Hypolimnion: 680'; IM insp. Done - non-detect. No field turbidimeter avail. Today; only a couple of other boats on lake; a couple of campers; low visibility; brown-green water; quite a few waterfowl on lake. |
| 2/7/2011 | 20 | 100% | Calm | 764.5 | 6.5' | Bottom: 139' (longer cable) - Epilimnion: 24' - Hypolimnion: 84' - I.M. inspection done (non-detect); water more greenish than brown with small twigs and branches in logboom area; better visibility; a small number of waterfowl near logboom; several small fishing boats on lake, but not close to logboom; the water was smooth, and very few breezes; |
| 3/7/2011 | 14.5 | 60% | 10-20 | 783.9 | 5.5' | Bottom: >150' - Epilimnion: 23' - Hypolimnion: 63' - I.M. Inspection done - non detect. Very windy; choppy waves; a lot of logs/branches/trash and other debris floating on water; a lot of birds on water; bird excrement on floats in sampling area; tied up one buoy south of "gate" because a boat was exiting area inside logboom (Mont. Co.); bailer failed to close many times, causing multiple dips; a challenging event; one boat on water; very few campers. |
| 4/5/2011 | 25 | 98% | 1-5 | 799.6 | 11' | Bottom: >180' - Epilimnion: 20' (780) - Hypolimnion: 120' (680) - Lake full and spilling! A LOT of wood/trash/debris on surface. A few boats on water, one swimmer, and quite a few birds perched on log boom. Visibility surprisingly good; IM inspection done: non-detect, but substrates and rope are ready to be replaced. I took a lot of pictures to show different areas of the lake. |
| 5/2/2011 | 26.3 | 100% | 0-5 | 799.5 | 7.5 | Bottom @ 180' - Epilimion: 25' - Hypolimion: 100' - At 20' Algae strands and small aquatic swimmers about 1/8". Two dead fish floating on lake, Bass and Carp. |
| 6/15/2011 | 28 | 100% | 15 | 798.1 | 17' | Bottom 176' - Epi 35' - Hypo 105' - Two dead fish on lake. Campground seemed full. Quite a bit of boaters, skiers and water rec. going on. |
| 7/12/2011 | 22.3 | 100% | 0-5 | 794.9 | 10' | Bottom 172.5' - Epi 35' - Hypo 115' - Lots of boats,skiers and summer thrill seekers. Surface of lake very clean. |
| 8/2/2011 | 22.5 | 100% | 0 | 791.0 | 12 | Epi 35', Hypo 110', Bottom 170', pH meter before sampling in 8.00 pH test solution = 7.99, after sampling = 7.91. |
| 9/12/2011 | 24.7 | 100% | 0-5 | 784.5 | 10.5 | Epi = 35', Hypo = 105'; TURBIDIMETER <0.1 std=0.15, 20.0 std=20.4; pH METER 8.00 std =8.04 @ 08:15, 7.96 @ 17:00. |
| 10/12/2011 | 25.7 | 100% | 5-10 | 779.0 | 13' | Epi 40', Hypo 110', pH meter 8.00 solution, 10/12/11 0825 = 7.99, 10/13/11 1305 = 7.95 |
| 11/2/2011 | 18.3 | 100% | 0-5 | 775.5 | 14' | Epi = 25', Hypo = 115', Bottom = 155'. pH meter 0830-8.02, 1735-7.96 11/2/2011 |
| 12/13/2011 | 12.4 | 98% | 0-5 | 775.7 | 14' | Bottom = 155', Epi = 35', Hypo = 115'. Lake appeared very clean, 1 boater, and a few water fowl. |
| 1/9/2012 | 18.3 | 100% | 5-6 | 774.9 | 7' | Bottom 153', Epi 15', Hypo 115'. Log boom gate was opened by Montery Cnty. so workers could get to intakes at hydro plant. Lake was clean not much debris, One or two boats on lake. |
| 2/14/2012 | 11.8 | 90% | 15-30 | 777.5 | 15' | Noticed small water insects at 15' (EPI)no activity on lake noticed. BOTTOM: 155'; EPI:15'; HYPO:75' |
| 3/13/2012 | 17.7 | 85% | 0 | 776.8 | 22' | Bottom 155', Epi 20' (760'), Hypo 120' (660'), pH 8 std = 8.05 before sampling, 7.99 after sampling. |
| 4/10/2012 | 12.9 | 65% | 5-10 | 776.5 | 17' | Fish in the marina.<br>pH meter....8.02 AM<br>7.94 PM |
| 5/15/2012 | 17.8 | 100% | 0-5 | 775.0 | | |
| 6/6/2012 | 17 | Full | 0-5 | 771.8 | 12 | Tire on north shore. |
| 7/16/2012 | 21.7 | Full | 20-30 | 764.6 | 12 | |
| 8/6/2012 | 29.7 | 100% | 0-5 | 761.2 | 18' | HYPO-100', EPI-25' |
| 9/4/2012 | 25.1 | Full | 0 | 753.4 | | Water appeared murky as much less fish were visible from the surface. Lots of deer inand around the campgrounds and marina, with very few campers. Water was free of trash or debris with few boaters of the lake. HYPO @ 90', EPI @ 30' |
| 10/1/2012 | 27.2 | 100% | 4-5 | 747.9 | 11' | Bttom = 125'. Epi = 10'. Hypo = 60'. Water is green and murky. No garbage or debris on shore. 1 - 2 boaters on lake by intake. No animals present near water. Some algae and plant material present on artificial substrate. |
| 11/5/2012 | 23.9 | 100% | 5-10 | 743.1 | 15.5 | Lake seems more blue this month, possibly less algae growth. Clearer water quality. Very calm with 2 - 3 boats between the marina and the log boom. Elevation 670 had a sulfur smell as it was brought up and sampled. |

## Reservoir Visibility (feet) and Field Notes 2011 - 2015

| Date | Air Temp (oC) | Sunlight | Wind (mph) | Surface Elevation (feet) | Visibility (feet) | Comments |
|---|---|---|---|---|---|---|
| 12/3/2012 | 20.6 | 40% | 0 | 742.0 | 7' | Water appeared green. No boats present by log boom. Trash and litter on shore by log boom. Water free of trash but contained a lot of twigs and other debris from recent storm water runoff from Naci Ricver/creek. Heard hawks overhead. Two waterfowl sitting on log boom. Some construction work taking place on N. launch ramp. |
| 12/5/2012 | 15 | 10% | 5-10 | 746.8 | 9 | Elevations were determined by 11/30/12 levels. |
| 1/7/2013 | 8.9 | 50% | 5 | 757.3 | 2' | D.O. probe sensor had air bubble starting at 105' thru 130' (no data). Water very brown and contains log debris. A few large objects seen floating around log boom area. Water fowl in water. Turkey vultures by camp grounds. No boaters on lake. Large barge with crane on north shore launch dock and divers around intake valves. |
| 2/8/2013 | 11.7 | 20-100% | 0 | 758.5 | 4 | MRP calibrated DO instrument to 97.3% and set the O2 to 0.0 mg on 2/4/13 at 1032. KFH recalibrated DO instrument to 97.3% and set the O2 to 0.0 mg on 2/4/13 1141. Replicated values were as follows: @2', 11.2mg/L; @70', 7.2 mg/L; and @140', 5.9 mg/L. DO values rechecked due to suspcious values in regards to previous profiles. After recalibrating and rechecking at 3 representative depths, values found were similar to original profile results. |
| 3/4/2013 | 13.5 | 50% | 5 | 758.3 | 13 | Fence at intake was bent and has space to crawl under. *Boat came by and stirred the water. Sensor port loose inside instrument. |
| 4/2/2013 | 18.1 | 20% | 5 | 757.7 | 21 | Water clarity was good. Could see algae growth on log boom. Several large fish seen swimming near surface (carp?) |
| 5/6/2013 | 16 | 10% | 5-10 | 756.0 | 10 | |
| 6/3/2013 | 20.8 | 80% | 15+ | 757.3 | 16 | Boats and jet skiis were recreating around the log boom causing waves that may have disrupted DO field analysis. |
| 7/8/2013 | 28.9 | 100% | 0 | 755.6 | 7.5 | At 45 feet the DO meter seemed to have mechanical issues. DO spiked up to 7.7 and then increased up to 23. The readings below 40 feet were not recorded for this reason. There were many skiers on the lake and especially around the log boom. Many people were seen swimming near the marina. The Oak Knoll campground was almost full. |
| 7/17/2013 | 20.2 | Full | 0 | 753.2 | | Used old DO probe to take DO measurements and temperature recorded here. Previous DO analysis on 7/8/13 was performed with a newly purchased DO meter, but measurements appeared false and did not represent true lake DO profile. |
| 8/5/2013 | 26 | 99% | 0 | 748.0 | 7 | |
| 9/3/2013 | 25 | 100% | 0 | 743.3 | 7.25 | Surface elevation from NWP SCADA (NAVD88). Bottom 122'. YSI DO ProPlus fluctuating between 5.5 and 6.4 at 10', between 5.2 and 4.7 at 15'. |
| 10/2/2013 | 25.5 | 100% | 0-5 | 735.5 | 11 | |
| 11/4/2013 | 15.2 | 100% | 5-15 | 733.0 | 9 | Bottom 108.5' |
| 12/2/2013 | 17.9 | 100% | 0-10 | 731.9 | 6 | Intake 660/depth of 70' smelled of sulfur. |
| 1/6/2014 | 13.3 | 80% | 0-5 | 730.1 | 4.5 | Surface eleve of 730.1 per NWP SCADA (NAVD88). Bottom = 104.5'. Used old YSI DO proble & meter; big fluctuations near surface. Hard to get stable DO reading; recorded lowest value observed. |
| 2/13/2014 | 12.6 | 50% | 0 | 729.1 | 12 | Calibrated DO (YSI Model 58) @1037 in field. Set %Sat @97.3%, Sal @ 0.00. DO(air) 10.77 @ 1038, took each reading after instrument stablized and mg/L stayed within a range of 0.01 mg/L. Based on these parameters, DO instrument performed optimally and readings stabilized rapidly. |
| 3/3/2014 | 18.8 | 10% | 0-10 | 729.9 | | Bottom 105'.<br>Temp & DO from YSI ProPlus (purchased April 2013). Readings basically stable. |
| 4/2/2014 | 14.9 | 50% | 0-5 | 729.8 | 20 | Waited 30 minutes for YSI 58 to stabilize out in the field and then calibrated at 97.5%. Many fish were jumping near the log boom. Water was pretty clear at 20 ft. visibility. Runoff from recent rain did not cause much debris in the water near the log boom area. |
| 6/2/2014 | 24.2 | 100% | 5-10 | 723.0 | | |
| 7/8/2014 | 31.3 | 100% | 0-5 | 723.9 | 8' | Bottom 99'.<br>Temp & DO measured using YSI Pro 2019.<br>pH measured using Accumet AP85.<br>Turbidity measured using Hach 2100P. |
| 8/4/2014 | 31.4 | 100% | 0-5 | 720.3 | | Green and murky. A lot of boat traffic (recreational and fishing) and on-shore trash. No fish or deer seen on or around the lake. Very few birds still in the water. Also, no rangers were seen on the lake. |

## Reservoir Visibility (feet) and Field Notes 2011 - 2015

| Date | Air Temp (oC) | Sunlight | Wind (mph) | Surface Elevation (feet) | Visibility (feet) | Comments |
|---|---|---|---|---|---|---|
| 9/2/2014 | 23.4 | 100 | 10 | 721.2 | 6 | Moderate amount of trash on shore, i.e. deflated rafts, firewood, paper, plastic toy wrappers, etc. Animal feces was also observed on shore by marina ramp. Water is green and smells fishy. Spotted deer near Sandy Point CG and a van had two large dogs in front of the general store. 660 (and 680 a little bit as well) had a sulfuric smell. Tons of fish were jumping all day. |
| 11/3/2014 | 15.3 | Partial | 0-5 | 718.3 | 7 | Water was green. Samples taken at 660 elevation smelled sulfurous. Mussel Substrate covered with algae. Not much more erosion with recent rain. |
| 12/1/2014 | 14 | 5% | 0-5 | 717.3 | 5.5 | Light drizzle and boat traffic is minimal. Air is cold and water is a dark green color. No odor observed from surface. Recent rain has washed debris into lake and has accumulated around log boom. |
| 1/5/2015 | 11.4 | 100% | 5-10 | 730.1 | | |
| 2/3/2015 | 17.3 | 75% | 0-5 | 730.1 | 7 | On 2/2/15, an equipment failure occurred. The sending unit of the bailer became dislodged and was lost upon retrieving the bailer. We were therefore unable to collect samples for Intake 720 and Epimillion. We plan to resample the following day.<br><br>2/3/15: 720 and epi collected. 1 patrol boat docked. |
| 3/3/2015 | 16.9 | 100% | 5-10 | 738.8 | 6 | Water was brown and murky (possibly from runoff of last storm). Fish were jumping and there were four fishing boats around the sampling area. Mussel Substrate was full of slimy algae like plant/animal.<br>Depth 114' |
| 3/23/2015 | 23.3 | 100 | 0-5 | 738.8 | 15.5' | Special sampling request. Pipeline restart within the next couple of weeks. MRP |
| 4/16/2015 | 23.4 | 100 | 5-10 | 735.0 | 12' | DO 9.3 mg/L and 21.6 C above water prior to measurements |
| 5/4/2015 | 19.8 | 75% | 5 | 735.3 | 15 | |
| 6/1/2015 | 24.2 | 100% | 0-5 | 733.7 | 11 | |
| 7/8/2015 | 25.2 | 100% | 5-10 | 730.7 | 9 | Water is green and has low visibility. Light boat traffic in front of log boom. Little fish observed. Air is warm and weather is calm and sunny. Water level is low and DO dropped at 15ft. |
| 8/3/2015 | 29.4 | 90% | 0-5 | 729.3 | 5.5 | Water is green and has low visibility. Light boat traffic in front of log boom. Little fish observed. Air is warm and weather is calm and sunny. Water level is low and DO dropped at 20ft. |
| 9/2/2015 | 24.6 | 95 | 0-5 | 725.8 | 4.5 | |
| 10/6/2015 | 21.3 | 100% | 0-5 | 725.2 | 16 | Water had a greenish tint. |
| 11/4/2015 | 15.2 | 100 | 5-10 | 722.2 | 7 | |
| 12/1/2015 | 7.2 | 100 | 0-5 | 721.0 | 6 | Very cold, intake #3 in use, sand bar in middle of lake, stay left. |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2011

**Month**

| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 749.65 | 744.5 | 743.3 | 756.35 | 764.35 | 782.05 | 799.8 | 799.5 | 798.1 | 796 | 790.95 | 786.65 |
| 2 | 749.4 | 744.4 | 743.3 | 757.7 | 764.35 | 782.35 | 799.8 | 799.45 | 798 | 795.9 | 790.8 | 786.45 |
| 3 | 749.15 | 744.35 | 743.25 | 761.2 | 764.35 | 782.85 | 799.65 | 799.45 | 797.95 | 795.8 | 790.6 | 786.15 |
| 4 | 748.9 | 744.25 | 743.25 | 762.1 | 764.45 | 783.2 | 799.5 | 799.4 | 797.95 | 795.7 | 790.45 | 785.9 |
| 5 | 748.65 | 744.15 | 743.25 | 762.55 | 764.45 | 783.5 | 799.55 | 799.35 | 798.05 | 795.6 | 790.25 | 785.65 |
| 6 | 748.45 | 744.1 | 743.25 | 762.95 | 764.4 | 783.7 | 799.6 | 799.35 | 798.45 | 795.45 | 790 | 785.35 |
| 7 | 748.25 | 744.05 | 743.25 | 763.15 | 764.4 | 783.9 | 799.65 | 799.3 | 798.45 | 795.3 | 789.75 | 785.05 |
| 8 | 748 | 744.05 | 743.25 | 763.35 | 764.35 | 784 | 799.65 | 799.2 | 798.45 | 795.2 | 789.5 | 784.8 |
| 9 | 747.85 | 744 | 743.15 | 763.45 | 764.35 | 784.1 | 799.7 | 799.15 | 798.45 | 795.1 | 789.3 | 784.5 |
| 10 | 747.65 | 743.95 | 743.15 | 763.55 | 764.35 | 784.3 | 799.7 | 799.1 | 798.45 | 795 | 789.1 | 784.25 |
| 11 | 747.55 | 743.95 | 743.15 | 763.65 | 764.35 | 784.35 | 799.75 | 799.05 | 798.4 | 794.9 | 788.9 | 784.05 |
| 12 | 747.35 | 743.9 | 743.1 | 763.75 | 764.35 | 784.45 | 799.75 | 799 | 798.3 | 794.7 | 788.7 | 783.85 |
| 13 | 747.15 | 743.85 | 743.1 | 763.8 | 764.35 | 784.55 | 800.1 | 798.95 | 798.25 | 794.5 | 788.5 | 783.7 |
| 14 | 746.95 | 743.8 | 743.05 | 763.9 | 764.3 | 784.65 | 800.1 | 798.85 | 798.2 | 794.25 | 788.3 | 783.55 |
| 15 | 746.75 | 743.75 | 743.05 | 763.95 | 764.35 | 784.75 | 800.15 | 798.85 | 798.1 | 794 | 788.1 | 783.4 |
| 16 | 746.5 | 743.7 | 743.05 | 764 | 764.5 | 784.65 | 800.1 | 798.85 | 798 | 793.85 | 787.95 | 783.25 |
| 17 | 746.3 | 743.65 | 743 | 764.05 | 765.15 | 784.55 | 800.1 | 798.85 | 797.9 | 793.65 | 787.85 | 783 |
| 18 | 746.05 | 743.65 | 743 | 764.1 | 768.95 | 784.45 | 800.05 | 798.85 | 797.75 | 793.4 | 787.75 | 782.8 |
| 19 | 745.9 | 743.6 | 743.1 | 764.15 | 774 | 784.35 | 800.05 | 798.85 | 797.6 | 793.15 | 787.6 | 782.6 |
| 20 | 745.75 | 743.55 | 749.25 | 764.15 | 776.1 | 787.8 | 800.05 | 798.85 | 797.45 | 792.95 | 787.45 | 782.35 |
| 21 | 745.55 | 743.55 | 750.05 | 764.2 | 776.95 | 791.55 | 800 | 798.8 | 797.35 | 792.8 | 787.3 | 782.1 |
| 22 | 745.35 | 743.55 | 750.9 | 764.2 | 777.35 | 792.7 | 799.9 | 798.75 | 797.2 | 792.65 | 787.2 | 781.95 |
| 23 | 745.25 | 743.5 | 751.9 | 764.25 | 777.75 | 792.65 | 799.85 | 798.65 | 797 | 792.5 | 787.1 | 781.85 |
| 24 | 745.15 | 743.45 | 752.5 | 764.25 | 778.05 | 793.8 | 799.75 | 798.65 | 796.85 | 792.35 | 787 | 781.75 |
| 25 | 745.05 | 743.4 | 752.7 | 764.3 | 778.35 | 797.1 | 799.75 | 798.55 | 796.7 | 792.1 | 786.9 | 781.65 |
| 26 | 744.95 | 743.4 | 753.5 | 764.3 | 780.9 | 798.7 | 799.65 | 798.55 | 796.55 | 791.95 | 786.8 | 781.5 |
| 27 | 744.9 | 743.35 | 753.8 | 764.35 | 781.3 | 798.55 | 799.65 | 798.45 | 796.45 | 791.75 | 786.6 | 781.3 |
| 28 | 744.85 | 743.35 | 754.1 | 764.35 | 781.7 | 800.1 | 799.6 | 798.35 | 796.3 | 791.55 | 786.4 | 781.1 |
| 29 | 744.75 | 743.35 | 754.7 | 764.35 | | 800.15 | 799.55 | 798.3 | 796.2 | 791.4 | 786.2 | 780.95 |
| 30 | 744.65 | 743.35 | 755.7 | 764.35 | | 800.15 | 799.55 | 798.25 | 796.1 | 791.25 | 786 | 780.8 |
| 31 | 744.6 | | 756.1 | 764.35 | | 800.05 | | 798.2 | | 791.1 | 785.8 | |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2012

**Month**

| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 780.3 | 776.5 | 775.95 | 775.05 | 777.6 | 777.1 | 777.1 | 776.4 | 772.7 | 766.8 | 761.65 | 753.25 |
| 2 | 780.1 | 776.45 | 775.9 | 775 | 777.6 | 777.1 | 777.05 | 776.3 | 772.55 | 766.7 | 761.4 | 753.1 |
| 3 | 779.9 | 776.35 | 775.85 | 775 | 777.55 | 777.1 | 777 | 776.2 | 772.4 | 766.5 | 761.2 | 752.9 |
| 4 | 779.7 | 776.3 | 775.85 | 775 | 777.6 | 777.05 | 776.95 | 776.05 | 772.2 | 766.4 | 761.05 | 752.7 |
| 5 | 779.65 | 776.25 | 775.8 | 774.9 | 777.55 | 777.05 | 776.9 | 775.9 | 772.05 | 766.3 | 760.9 | 752.45 |
| 6 | 779.45 | 776.25 | 775.75 | 774.9 | 777.5 | 777 | 776.8 | 775.7 | 771.8 | 766.1 | 760.6 | 752.2 |
| 7 | 779.3 | 776.25 | 775.75 | 774.9 | 777.55 | 777 | 776.7 | 775.5 | 771.6 | 765.85 | 760.25 | 751.95 |
| 8 | 779.25 | 776.2 | 775.7 | 774.85 | 777.55 | 777 | 776.6 | 775.35 | 771.4 | 765.6 | 759.95 | 751.75 |
| 9 | 779.1 | 776.15 | 775.7 | 774.85 | 777.55 | 776.95 | 776.5 | 775.2 | 771.2 | 765.45 | 759.6 | 751.5 |
| 10 | 778.95 | 776.1 | 775.65 | 774.8 | 777.5 | 776.9 | 776.4 | 775.15 | 771.05 | 765.35 | 759.3 | 751.35 |
| 11 | 778.9 | 776.05 | 775.65 | 774.8 | 777.5 | 776.85 | 776.4 | 775.05 | 770.85 | 765.25 | 759 | 751.15 |
| 12 | 778.95 | 776.05 | 775.6 | 774.7 | 777.5 | 776.8 | 776.35 | 775.05 | 770.7 | 765.1 | 758.65 | 750.85 |
| 13 | 778.95 | 776.1 | 775.6 | 774.65 | 777.45 | 776.75 | 776.6 | 774.95 | 770.45 | 764.95 | 758.35 | 750.6 |
| 14 | 778.9 | 776.1 | 775.55 | 774.65 | 777.45 | 776.7 | 777.3 | 774.8 | 770.2 | 764.8 | 758 | 750.35 |
| 15 | 778.9 | 776.05 | 775.5 | 774.6 | 777.45 | 776.65 | 777.4 | 774.7 | 770.1 | 764.7 | 757.7 | 750.1 |
| 16 | 778.85 | 776.05 | 775.5 | 774.55 | 777.4 | 776.65 | 777.5 | 774.6 | 769.85 | 764.55 | 757.4 | 749.9 |
| 17 | 778.75 | 775.95 | 775.45 | 774.55 | 777.4 | 776.75 | 777.55 | 774.5 | 769.7 | 764.4 | 757.05 | 749.85 |
| 18 | 778.65 | 775.95 | 775.45 | 774.5 | 777.4 | 777.4 | 777.55 | 774.4 | 769.6 | 764.25 | 756.7 | 749.85 |
| 19 | 778.55 | 775.9 | 775.4 | 774.5 | 777.4 | 777.6 | 777.5 | 774.3 | 769.5 | 764.1 | 756.4 | 749.8 |
| 20 | 778.35 | 775.95 | 775.4 | 774.45 | 777.35 | 777.55 | 777.5 | 774.2 | 769.4 | 764 | 756.2 | 749.7 |
| 21 | 778.15 | 776.05 | 775.35 | 775.1 | 777.3 | 777.55 | 777.4 | 774.15 | 769.2 | 763.9 | 755.95 | 749.5 |
| 22 | 778 | 776.1 | 775.3 | 775.6 | 777.25 | 777.45 | 777.3 | 774.05 | 769.05 | 763.75 | 755.7 | 749.25 |
| 23 | 777.85 | 776.1 | 775.3 | 776.3 | 777.25 | 777.35 | 777.25 | 773.95 | 768.8 | 763.5 | 755.45 | 749 |
| 24 | 777.55 | 776.1 | 775.25 | 777.3 | 777.2 | 777.3 | 777.2 | 773.85 | 768.5 | 763.3 | 755.2 | 748.8 |
| 25 | 777.45 | 776.05 | 775.2 | 777.45 | 777.2 | 777.25 | 777.1 | 773.75 | 768.25 | 763.15 | 754.95 | 748.55 |
| 26 | 777.35 | 776.05 | 775.2 | 777.55 | 777.15 | 777.2 | 777 | 773.55 | 768 | 763 | 754.7 | 748.3 |
| 27 | 777.2 | 776 | 775.15 | 777.55 | 777.15 | 777.2 | 776.9 | 773.45 | 767.75 | 762.85 | 754.4 | 748.05 |
| 28 | 777.05 | 776 | 775.15 | 777.55 | 777.15 | 777.1 | 776.8 | 773.35 | 767.5 | 762.6 | 754.15 | 747.85 |
| 29 | 776.9 | 775.95 | 775.15 | 777.6 | 777.1 | 777.2 | 776.65 | 773.2 | 767.25 | 762.4 | 753.9 | 747.65 |
| 30 | 776.75 | 775.95 | 775.1 | 777.65 | | 777.15 | 776.55 | 773.05 | 767.05 | 762.15 | 753.65 | 747.5 |
| 31 | 776.6 | | 775.1 | 777.65 | | 777.1 | | 772.9 | | 761.9 | 753.4 | |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2013

**Month**

| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 747.35 | 743.15 | 742.6 | 757.1 | 758.5 | 758.25 | 757.65 | 756.5 | 754.2 | 752.55 | 749.05 | 744.75 |
| 2 | 747.3 | 743.1 | 743.4 | 757.2 | 758.5 | 758.2 | 757.65 | 756.5 | 754.15 | 752.55 | 749 | 744.65 |
| 3 | 747.25 | 743.05 | 746.75 | 757.2 | 758.5 | 758.2 | 757.6 | 756.45 | 754.15 | 752.55 | 748.95 | 744.15 |
| 4 | 747.2 | 743 | 747.15 | 757.25 | 758.55 | 758.15 | 757.55 | 756.35 | 754.1 | 752.4 | 748.75 | 743.95 |
| 5 | 747.15 | 742.95 | 747.3 | 757.25 | 758.55 | 758.15 | 757.55 | 756.15 | 754.1 | 752.2 | 748.55 | 743.75 |
| 6 | 747.1 | 742.95 | 747.4 | 757.35 | 758.6 | 758.1 | 757.55 | 756 | 754 | 751.95 | 748.25 | 743.65 |
| 7 | 746.9 | 742.9 | 747.45 | 757.65 | 758.55 | 758.15 | 757.45 | 755.9 | 754 | 751.7 | 748 | 743.25 |
| 8 | 746.75 | 742.8 | 747.5 | 757.75 | 758.55 | 758.2 | 757.45 | 755.8 | 753.95 | 751.55 | 747.75 | 742.95 |
| 9 | 746.45 | 742.75 | 747.5 | 757.85 | 758.55 | 758.2 | 757.45 | 755.7 | 753.9 | 751.45 | 747.45 | 742.75 |
| 10 | 746.15 | 742.75 | 747.5 | 757.95 | 758.55 | 758.2 | 757.4 | 755.6 | 753.85 | 751.4 | 747.15 | 742.45 |
| 11 | 746 | 742.7 | 747.5 | 757.95 | 758.5 | 758.15 | 757.4 | 755.5 | 753.8 | 751.4 | 746.85 | 742.05 |
| 12 | 745.75 | 742.65 | 747.5 | 758 | 758.45 | 758.15 | 757.4 | 755.4 | 753.75 | 751.15 | 746.6 | 741.85 |
| 13 | 745.5 | 742.6 | 747.5 | 758.05 | 758.45 | 758.15 | 757.3 | 755.3 | 753.7 | 750.9 | 746.35 | 741.55 |
| 14 | 745.3 | 742.55 | 747.5 | 758.1 | 758.45 | 758.1 | 757.3 | 755.2 | 753.6 | 750.65 | 746.25 | 741.25 |
| 15 | 745.1 | 742.5 | 747.45 | 758.15 | 758.4 | 758.1 | 757.25 | 755.15 | 753.5 | 750.35 | 746.2 | 741.05 |
| 16 | 744.85 | 742.45 | 747.45 | 758.2 | 758.45 | 758.05 | 757.25 | 755.1 | 753.45 | 750.1 | 746.2 | 740.75 |
| 17 | 744.65 | 742.45 | 747.4 | 758.3 | 758.4 | 758.05 | 757.15 | 755 | 753.4 | 750.05 | 746.15 | 740.45 |
| 18 | 744.4 | 742.45 | 747.55 | 758.3 | 758.4 | 758 | 757.05 | 755 | 753.35 | 750 | 746.05 | 740.25 |
| 19 | 744.15 | 742.4 | 747.6 | 758.3 | 758.4 | 757.95 | 757.05 | 754.95 | 753.3 | 749.95 | 746 | 739.95 |
| 20 | 743.95 | 742.4 | 747.6 | 758.3 | 758.45 | 757.95 | 757 | 754.95 | 753.25 | 749.85 | 745.9 | 739.75 |
| 21 | 743.8 | 742.35 | 747.65 | 758.35 | 758.4 | 757.95 | 757 | 754.85 | 753.2 | 749.8 | 745.85 | 739.4 |
| 22 | 743.65 | 742.3 | 747.85 | 758.35 | 758.35 | 757.9 | 756.95 | 754.8 | 753.15 | 749.75 | 745.85 | 739.15 |
| 23 | 743.6 | 742.25 | 748.95 | 758.35 | 758.35 | 757.9 | 756.95 | 754.75 | 753.1 | 749.7 | 745.75 | 738.9 |
| 24 | 743.55 | 742.15 | 753.7 | 758.4 | 758.35 | 757.9 | 756.9 | 754.65 | 753 | 749.65 | 745.65 | 738.55 |
| 25 | 743.55 | 742.1 | 754.4 | 758.45 | 758.35 | 757.85 | 756.85 | 754.6 | 752.95 | 749.55 | 745.6 | 738.35 |
| 26 | 743.55 | 742.05 | 755.05 | 758.5 | 758.3 | 757.8 | 756.75 | 754.55 | 752.9 | 749.45 | 745.5 | 738.05 |
| 27 | 743.5 | 742 | 755.45 | 758.55 | 758.25 | 757.8 | 756.7 | 754.5 | 752.9 | 749.4 | 745.35 | 737.7 |
| 28 | 743.45 | 742 | 755.85 | 758.6 | 758.25 | 757.75 | 756.65 | 754.45 | 752.8 | 749.35 | 745.2 | 737.45 |
| 29 | 743.35 | 741.95 | 756 | 758.55 | | 757.75 | 756.55 | 754.4 | 752.7 | 749.25 | 745.2 | 737.15 |
| 30 | 743.25 | 742.05 | 756.25 | 758.55 | | 757.7 | 756.55 | 754.35 | 752.6 | 749.2 | 745.15 | 736.95 |
| 31 | 743.2 | | 756.45 | 758.55 | | 757.7 | | 754.25 | | 749.15 | 744.95 | |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2014

**Month**

| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 736.65 | 731.3 | 729.35 | 727.65 | 725.9 | 725.7 | 726.75 | 725.85 | 723.35 | 721.8 | 720.35 | 718.8 |
| 2 | 736.3 | 731.25 | 729.3 | 727.6 | 725.85 | 726.6 | 726.8 | 725.8 | 723.25 | 721.8 | 720.3 | 718.75 |
| 3 | 736.1 | 731.15 | 729.25 | 727.55 | 725.8 | 727.3 | 726.9 | 725.75 | 723.2 | 721.75 | 720.25 | 718.7 |
| 4 | 735.85 | 731.1 | 729.2 | 727.5 | 725.8 | 727.55 | 727 | 725.7 | 723.1 | 721.7 | 720.2 | 718.65 |
| 5 | 735.55 | 731.05 | 729.15 | 727.45 | 725.7 | 727.65 | 727 | 725.65 | 723.05 | 721.65 | 720.15 | 718.65 |
| 6 | 735.35 | 730.95 | 729.15 | 727.4 | 725.65 | 727.7 | 727 | 725.6 | 723 | 721.6 | 720.1 | 718.6 |
| 7 | 735.05 | 730.9 | 729.1 | 727.35 | 725.6 | 727.7 | 727 | 725.5 | 722.95 | 721.55 | 720.05 | 718.55 |
| 8 | 734.75 | 730.85 | 729.05 | 727.3 | 725.55 | 727.7 | 726.95 | 725.4 | 722.9 | 721.5 | 720 | 718.5 |
| 9 | 734.35 | 730.75 | 729 | 727.25 | 725.5 | 727.7 | 726.95 | 725.3 | 722.8 | 721.45 | 719.9 | 718.45 |
| 10 | 734.05 | 730.65 | 728.95 | 727.2 | 725.45 | 727.7 | 726.9 | 725.2 | 722.75 | 721.35 | 719.85 | 718.4 |
| 11 | 733.75 | 730.6 | 728.9 | 727.15 | 725.4 | 727.65 | 726.9 | 725.1 | 722.7 | 721.3 | 719.8 | 718.35 |
| 12 | 733.45 | 730.55 | 728.85 | 727.05 | 725.35 | 727.6 | 726.85 | 725 | 722.65 | 721.25 | 719.75 | 718.3 |
| 13 | 733.15 | 730.45 | 728.8 | 727 | 725.3 | 727.55 | 726.8 | 724.95 | 722.6 | 721.2 | 719.7 | 718.25 |
| 14 | 732.95 | 730.4 | 728.7 | 726.95 | 725.25 | 727.5 | 726.75 | 724.9 | 722.55 | 721.15 | 719.65 | 718.2 |
| 15 | 732.7 | 730.35 | 728.65 | 726.9 | 725.2 | 727.5 | 726.7 | 724.8 | 722.5 | 721.1 | 719.6 | 718.15 |
| 16 | 732.4 | 730.3 | 728.6 | 726.85 | 725.15 | 727.45 | 726.65 | 724.7 | 722.45 | 721.05 | 719.55 | 718.1 |
| 17 | 732.2 | 730.2 | 728.55 | 726.75 | 725.1 | 727.4 | 726.6 | 724.6 | 722.4 | 721 | 719.5 | 718.05 |
| 18 | 732.05 | 730.15 | 728.45 | 726.7 | 725 | 727.35 | 726.55 | 724.55 | 722.35 | 720.95 | 719.45 | 718 |
| 19 | 732 | 730.1 | 728.4 | 726.65 | 724.95 | 727.3 | 726.5 | 724.5 | 722.3 | 720.9 | 719.4 | 717.95 |
| 20 | 731.95 | 730 | 728.35 | 726.6 | 724.9 | 727.3 | 726.45 | 724.4 | 722.3 | 720.85 | 719.35 | 717.95 |
| 21 | 731.9 | 729.95 | 728.3 | 726.55 | 724.85 | 727.2 | 726.4 | 724.3 | 722.25 | 720.8 | 719.3 | 717.9 |
| 22 | 731.85 | 729.9 | 728.25 | 726.5 | 724.8 | 727.15 | 726.35 | 724.2 | 722.2 | 720.8 | 719.25 | 717.85 |
| 23 | 731.8 | 729.85 | 728.2 | 726.45 | 724.75 | 727.1 | 726.3 | 724.1 | 722.15 | 720.75 | 719.2 | 717.8 |
| 24 | 731.7 | 729.8 | 728.15 | 726.4 | 724.7 | 727.05 | 726.25 | 724 | 722.1 | 720.7 | 719.15 | 717.75 |
| 25 | 731.65 | 729.7 | 728.1 | 726.3 | 724.6 | 727 | 726.15 | 723.9 | 722.05 | 720.65 | 719.1 | 717.7 |
| 26 | 731.6 | 729.6 | 728.05 | 726.25 | 724.55 | 727 | 726.1 | 723.85 | 722 | 720.65 | 719.05 | 717.65 |
| 27 | 731.55 | 729.55 | 728 | 726.2 | 724.6 | 726.95 | 726.05 | 723.8 | 721.95 | 720.6 | 719 | 717.6 |
| 28 | 731.5 | 729.5 | 727.95 | 726.15 | 724.7 | 726.9 | 726 | 723.7 | 721.9 | 720.55 | 718.95 | 717.55 |
| 29 | 731.45 | 729.45 | 727.9 | 726.1 | | 726.85 | 725.95 | 723.6 | 721.9 | 720.5 | 718.95 | 717.55 |
| 30 | 731.45 | 729.4 | 727.85 | 726 | | 726.8 | 725.9 | 723.5 | 721.85 | 720.45 | 718.9 | 717.5 |
| 31 | 731.4 | | 727.75 | 725.95 | | 726.8 | | 723.45 | | 720.4 | 718.85 | |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2015

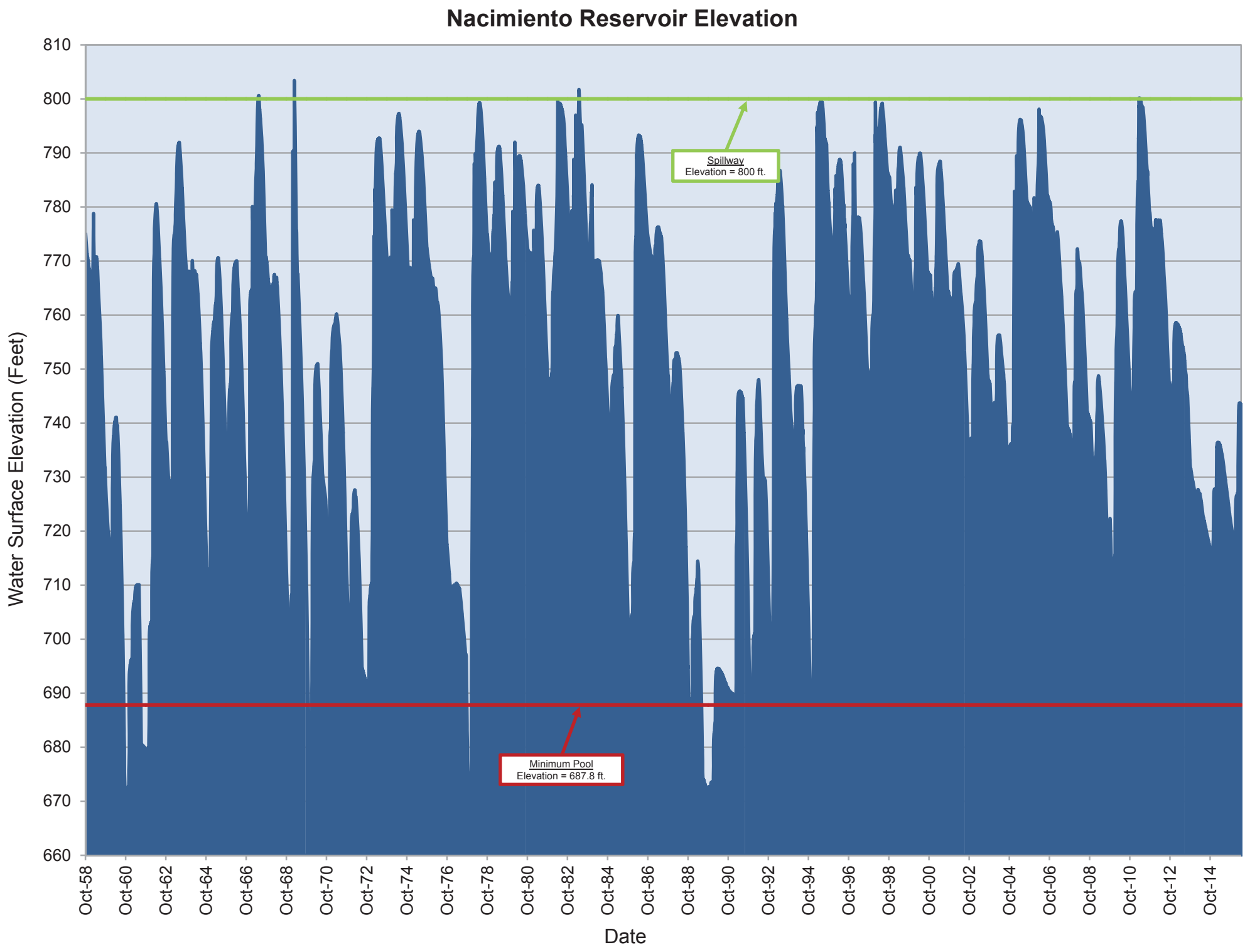
**Month**

| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 717.4 | 715.95 | 714.9 | 727.75 | 727.7 | 736.4 | 736.2 | 735.1 | 733.5 | 731 | 728.6 | 726.1 |
| 2 | 717.35 | 716 | 715 | 727.75 | 727.7 | 736.4 | 736.15 | 735.1 | 733.4 | 730.9 | 728.5 | 726 |
| 3 | 717.3 | 715.95 | 715 | 727.75 | 727.7 | 736.4 | 736.1 | 735.05 | 733.3 | 730.85 | 728.45 | 725.9 |
| 4 | 717.25 | 715.9 | 715.1 | 727.75 | 727.7 | 736.45 | 736.1 | 735 | 733.25 | 730.8 | 728.35 | 725.8 |
| 5 | 717.2 | 715.85 | 715.8 | 727.75 | 727.7 | 736.45 | 736.05 | 734.95 | 733.2 | 730.75 | 728.25 | 725.75 |
| 6 | 717.15 | 715.85 | 717.3 | 727.8 | 727.65 | 736.45 | 736 | 734.9 | 733.1 | 730.65 | 728.2 | 725.7 |
| 7 | 717.15 | 715.8 | 717.9 | 727.8 | 729.5 | 736.45 | 736.05 | 734.85 | 733 | 730.55 | 728.1 | 725.6 |
| 8 | 717.1 | 715.7 | 718 | 727.8 | 730.4 | 736.45 | 736.05 | 734.8 | 732.9 | 730.5 | 728 | 725.5 |
| 9 | 717.05 | 715.65 | 718.05 | 727.8 | 734.1 | 736.45 | 736 | 734.75 | 732.85 | 730.4 | 727.95 | 725.4 |
| 10 | 716.95 | 715.55 | 718.1 | 727.8 | 734.9 | 736.45 | 736 | 734.7 | 732.8 | 730.3 | 727.9 | 725.3 |
| 11 | 716.9 | 715.5 | 718.8 | 727.8 | 735.1 | 736.45 | 735.95 | 734.6 | 732.7 | 730.2 | 727.8 | 725.25 |
| 12 | 716.85 | 715.5 | 719.5 | 727.8 | 735.55 | 736.4 | 735.9 | 734.55 | 732.65 | 730.1 | 727.7 | 725.2 |
| 13 | 716.8 | 715.45 | 721.5 | 727.8 | 735.5 | 736.4 | 735.9 | 734.5 | 732.55 | 730 | 727.65 | 725.1 |
| 14 | 716.75 | 715.45 | 721.9 | 727.8 | 735.7 | 736.4 | 735.9 | 734.45 | 732.5 | 729.9 | 727.55 | 725 |
| 15 | 716.7 | 715.4 | 722 | 727.8 | 735.8 | 736.4 | 735.85 | 734.4 | 732.4 | 729.8 | 727.45 | 724.95 |
| 16 | 716.7 | 715.35 | 723 | 727.8 | 735.9 | 736.4 | 735.8 | 734.35 | 732.3 | 729.7 | 727.4 | 724.85 |
| 17 | 716.65 | 715.35 | 724.55 | 727.8 | 735.95 | 736.4 | 735.7 | 734.3 | 732.25 | 729.6 | 727.35 | 724.75 |
| 18 | 716.6 | 715.3 | 725.7 | 727.8 | 736 | 736.4 | 735.7 | 734.25 | 732.15 | 729.5 | 727.25 | 724.65 |
| 19 | 716.55 | 715.3 | 726.2 | 727.8 | 736.1 | 736.4 | 735.65 | 734.2 | 732.05 | 729.5 | 727.15 | 724.55 |
| 20 | 716.5 | 715.3 | 726.7 | 727.8 | 736.15 | 736.4 | 735.6 | 734.15 | 732 | 729.55 | 727.05 | 724.45 |
| 21 | 716.45 | 715.25 | 726.9 | 727.8 | 736.2 | 736.4 | 735.55 | 734.1 | 731.9 | 729.5 | 727 | 724.4 |
| 22 | 716.4 | 715.2 | 727 | 727.75 | 736.2 | 736.4 | 735.5 | 734.1 | 731.8 | 729.4 | 726.9 | 724.3 |
| 23 | 716.35 | 715.15 | 727.2 | 727.75 | 736.25 | 736.35 | 735.5 | 734.05 | 731.7 | 729.3 | 726.8 | 724.2 |
| 24 | 716.3 | 715.1 | 727.3 | 727.75 | 736.3 | 736.3 | 735.45 | 734 | 731.65 | 729.25 | 726.75 | 724.1 |
| 25 | 716.25 | 715.1 | 727.4 | 727.7 | 736.3 | 736.3 | 735.4 | 733.95 | 731.55 | 729.15 | 726.65 | 724 |
| 26 | 716.2 | 715.05 | 727.5 | 727.7 | 736.3 | 736.3 | 735.35 | 733.9 | 731.45 | 729.05 | 726.55 | 723.95 |
| 27 | 716.15 | 715.05 | 727.55 | 727.7 | 736.35 | 736.3 | 735.3 | 733.85 | 731.35 | 729 | 726.5 | 723.9 |
| 28 | 716.05 | 715 | 727.6 | 727.7 | 736.35 | 736.3 | 735.25 | 733.8 | 731.25 | 728.9 | 726.4 | 723.8 |
| 29 | 716 | 714.95 | 727.65 | 727.7 | | 736.25 | 735.2 | 733.7 | 731.15 | 728.8 | 726.35 | 723.7 |
| 30 | 715.95 | 714.95 | 727.7 | 727.7 | | 736.2 | 735.2 | 733.65 | 731.1 | 728.75 | 726.3 | 723.6 |
| 31 | 715.9 | | 727.7 | 727.7 | | 736.2 | | 733.55 | | 728.7 | 726.2 | |

## Monterey County Water Resources Agency
## Daily Water Surface Elevation (ft. msl) for Nacimiento Reservoir
### Water Year 2016

**Month**

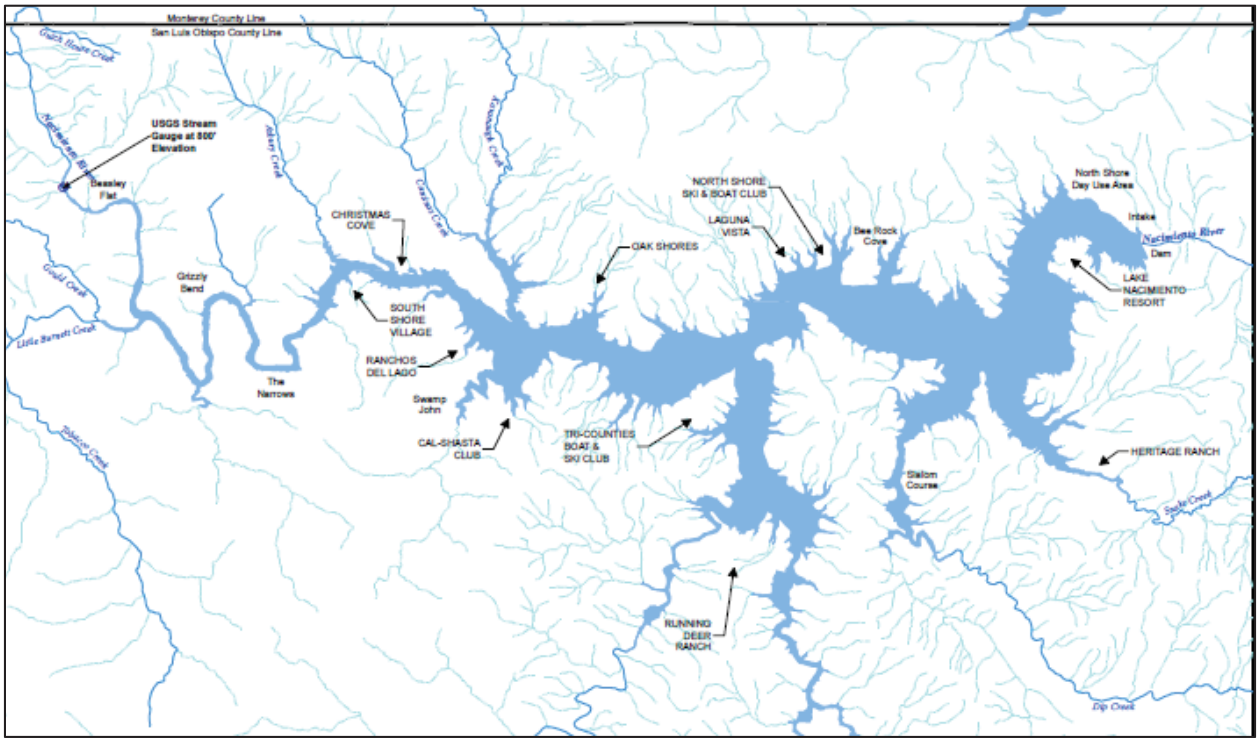
| Date | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 723.5 | 721.2 | 719.15 | 716.95 | 726.3 | 726.95 | 743.7 | | | | | |
| 2 | 723.45 | 721.15 | 719.05 | 716.85 | 726.4 | 726.95 | 743.7 | | | | | |
| 3 | 723.35 | 721.1 | 718.95 | 716.75 | 726.45 | 726.95 | 743.7 | | | | | |
| 4 | 723.25 | 721 | 718.85 | 716.65 | 726.5 | 726.9 | 743.7 | | | | | |
| 5 | 723.15 | 720.95 | 718.75 | 716.55 | 726.5 | 728 | 743.7 | | | | | |
| 6 | 723.1 | 720.9 | 718.7 | 716.8 | 726.5 | 731.95 | 743.7 | | | | | |
| 7 | 723 | 720.85 | 718.65 | 717.4 | 726.5 | 733.4 | 743.7 | | | | | |
| 8 | 722.9 | 720.75 | 718.6 | 717.85 | 726.5 | 735.6 | 743.7 | | | | | |
| 9 | 722.85 | 720.7 | 718.5 | 718.1 | 726.55 | 736.4 | 743.7 | | | | | |
| 10 | 722.8 | 720.65 | 718.45 | 718.1 | 726.55 | 736.8 | 743.7 | | | | | |
| 11 | 722.7 | 720.6 | 718.4 | 718.1 | 726.6 | 737.1 | 743.7 | | | | | |
| 12 | 722.6 | 720.5 | 718.3 | 718.15 | 726.6 | 737.9 | 743.7 | | | | | |
| 13 | 722.55 | 720.4 | 718.25 | 718.15 | 726.55 | 738.4 | 743.7 | | | | | |
| 14 | 722.5 | 720.35 | 718.2 | 718.15 | 726.5 | 739.9 | 743.7 | | | | | |
| 15 | 722.45 | 720.3 | 718.1 | 718.15 | 726.45 | 741.2 | 743.65 | | | | | |
| 16 | 722.4 | 720.2 | 718.05 | 718.15 | 726.45 | 741.9 | 743.6 | | | | | |
| 17 | 722.3 | 720.1 | 718 | 718.2 | 726.45 | 742.3 | 743.6 | | | | | |
| 18 | 722.2 | 720.05 | 717.95 | 718.2 | 726.5 | 742.6 | 743.55 | | | | | |
| 19 | 722.15 | 720 | 717.85 | 718.2 | 726.8 | 742.9 | 743.5 | | | | | |
| 20 | 722.1 | 719.9 | 717.8 | 723.3 | 726.85 | 743 | 743.5 | | | | | |
| 21 | 722.05 | 719.85 | 717.7 | 724.1 | 726.9 | 743.15 | 743.5 | | | | | |
| 22 | 721.95 | 719.8 | 717.6 | 724.45 | 726.95 | 743.3 | 743.45 | | | | | |
| 23 | 721.9 | 719.7 | 717.55 | 725 | 726.95 | 743.35 | 743.45 | | | | | |
| 24 | 721.8 | 719.65 | 717.45 | 725.3 | 727 | 743.45 | 743.4 | | | | | |
| 25 | 721.7 | 719.6 | 717.35 | 725.6 | 727 | 743.5 | 743.4 | | | | | |
| 26 | 721.65 | 719.5 | 717.3 | 725.75 | 727 | 743.55 | 743.3 | | | | | |
| 27 | 721.6 | 719.4 | 717.25 | 725.9 | 727 | 743.6 | 743.3 | | | | | |
| 28 | 721.55 | 719.35 | 717.2 | 725.95 | 726.95 | 743.65 | 743.25 | | | | | |
| 29 | 721.45 | 719.3 | 717.1 | 726 | 726.95 | 743.65 | 743.2 | | | | | |
| 30 | 721.35 | 719.25 | 717.05 | 726.05 | | 743.7 | 743.2 | | | | | |
| 31 | 721.25 | | 717 | 726.2 | | 743.7 | | | | | | |


Nacimiento Reservoir Elevation
Water Surface Elevation (Feet)
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
Spillway
Elevation = 800 ft.
Minimum Pool
Elevation = 687.8 ft.
Oct-58
Oct-60
Oct-62
Oct-64
Oct-66
Oct-68
Oct-70
Oct-72
Oct-74
Oct-76
Oct-78
Oct-80
Oct-82
Oct-84
Oct-86
Oct-88
Oct-90
Oct-92
Oct-94
Oct-96
Oct-98
Oct-00
Oct-02
Oct-04
Oct-06
Oct-08
Oct-10
Oct-12
Oct-14
Date

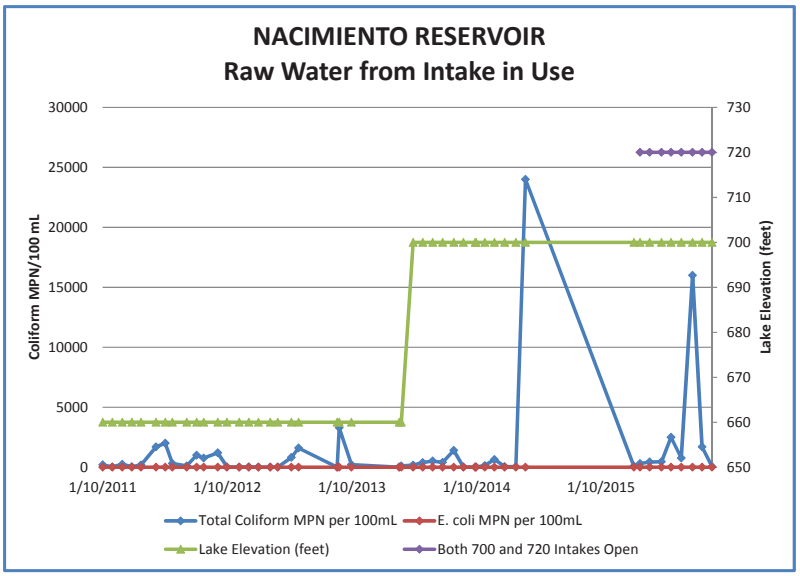
APPENDIX B

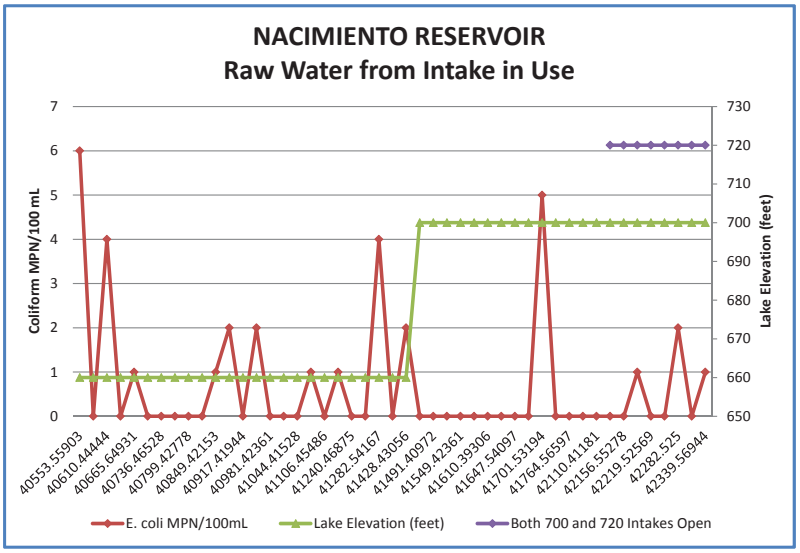
# BACTERIOLOGICAL DATA

# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



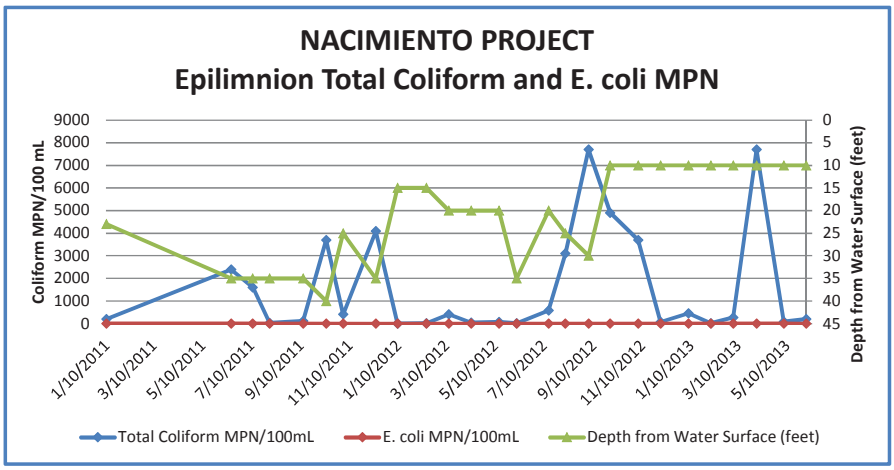
| NACIMIENTO RESERVOIR - RAW (Intake in Use) | | | | | |
|---|---|---|---|---|---|
| Collected Date | Total Coliform MPN per 100mL | E. coli MPN per 100mL | Lake Elevation (feet) | Crypto-sporidium (Oocysts/L | Giardia (Cysts/L) |
| 1/10/2011 | 200 | 6 | 660 | — | — |
| 2/7/2011 | 31 | <1 | 660 | — | — |
| 3/8/2011 | 250 | 4 | 660 | — | — |
| 4/5/2011 | 46 | <1 | 660 | — | — |
| 5/2/2011 | 190 | 1 | 660 | — | — |
| 6/15/2011 | 1700 | <1 | 660 | — | — |
| 7/12/2011 | 2000 | <1 | 660 | — | — |
| 8/2/2011 | 310 | <1 | 660 | — | — |
| 9/13/2011 | 110 | <1 | 660 | — | — |
| 10/12/2011 | 1000 | <1 | 660 | — | — |
| 11/2/2011 | 770 | 1 | 660 | — | — |
| 12/13/2011 | 1200 | 2 | 660 | — | — |
| 1/9/2012 | 35 | <1 | 660 | — | — |
| 2/14/2012 | 21 | 2 | 660 | — | — |
| 3/13/2012 | 35 | <1 | 660 | — | — |
| 4/10/2012 | 16 | <1 | 660 | — | — |
| 5/15/2012 | 14 | <1 | 660 | — | — |
| 6/6/2012 | 13 | 1 | 660 | — | — |
| 7/16/2012 | 820 | <1 | 660 | — | — |
| 8/6/2012 | 1600 | 1 | 660 | — | — |
| 11/27/2012 | 5 | <1 | 660 | — | — |
| 12/3/2012 | 3300 | <1 | 660 | — | — |
| 1/8/2013 | 220 | 4 | 660 | — | — |
| 5/28/2013 | 12 | <1 | 660 | — | — |
| 6/3/2013 | 110 | 2 | 660 | — | — |
| 7/8/2013 | 180 | <1 | 700 | — | — |
| 8/5/2013 | 390 | <1 | 700 | — | — |
| 9/3/2013 | 520 | <1 | 700 | — | — |
| 10/2/2013 | 410 | <1 | 700 | — | — |
| 11/4/2013 | 1400 | <1 | 700 | — | — |
| 12/2/2013 | 26 | <1 | 700 | — | — |
| 1/6/2014 | 17 | <1 | 700 | ND | ND |
| 1/8/2014 | 26 | <1 | 700 | — | — |
| 2/3/2014 | 140 | <1 | 700 | ND | ND |
| 3/3/2014 | 650 | 5 | 700 | ND | ND |
| 4/2/2014 | 61 | <1 | 700 | ND | ND |
| 5/5/2014 | 43 | <1 | 700 | ND | ND |
| 6/2/2014 | 24000 | <1 | 700 | ND | ND |
| 4/16/2015 | 93 | < 1 | 700 | | |
| 5/4/2015 | 310 | < 1 | 700 & 720 | ND | ND |
| 6/1/2015 | 440 | < 1 | 700 &720 | ND | ND |
| 7/6/2015 | 460 | 1 | 700 &720 | ND | ND |
| 8/3/2015 | 2500 | < 1 | 700 &720 | ND | ND |
| 9/2/2015 | 770 | <1 | 700 &720 | ND | ND |
| 10/5/2015 | 16000 | 2 | 700 &720 | ND | ND |
| 11/2/2015 | 1700 | <1 | 700 &720 | ND | ND |
| 12/1/2015 | 56 | 1 | 700 &720 | ND | ND |
| Minimum | 5 | <1 | 660 | ND | ND |
| Maximum | 24000 | 5 | 700 &720 | ND | ND |
| Average | 29 | <1 | 680 | ND | ND |
| Count | 47 | 47 | 47 | 14 | 14 |

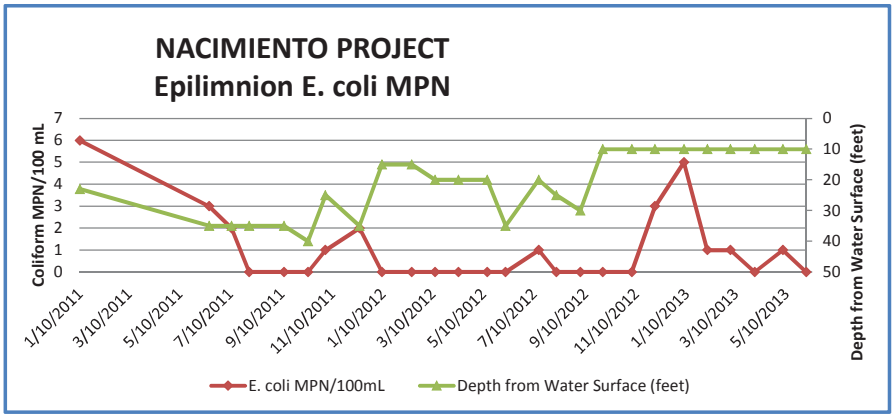


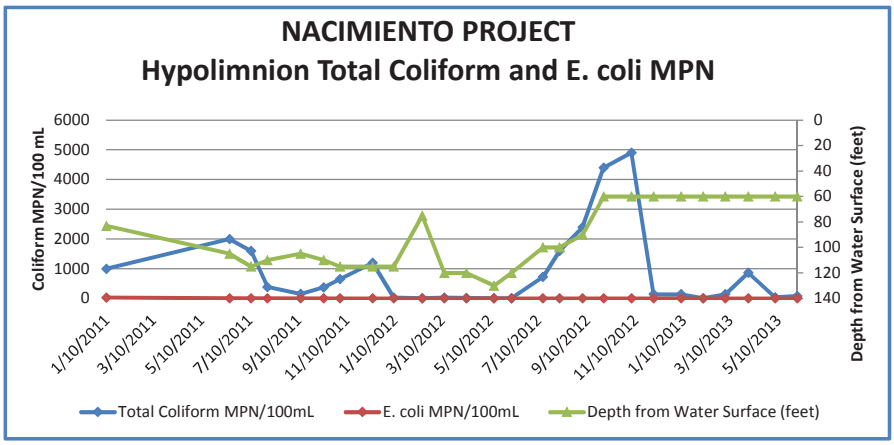

ND = Not Detected

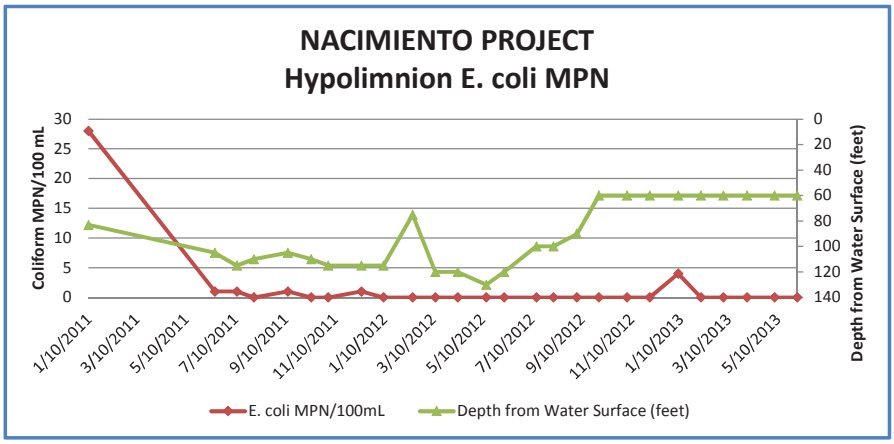
| NACIMIENTO PROJECT - EPILIMNION | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 1/10/2011 | 200 | 6 | 23 |
| 6/15/2011 | 2400 | 3 | 35 |
| 7/12/2011 | 1600 | 2 | 35 |
| 8/2/2011 | 31 | <1 | 35 |
| 9/13/2011 | 120 | <1 | 35 |
| 10/12/2011 | 3700 | <1 | 40 |
| 11/2/2011 | 410 | 1 | 25 |
| 12/13/2011 | 4100 | 2 | 35 |
| 1/9/2012 | 7 | <1 | 15 |
| 2/14/2012 | 15 | <1 | 15 |
| 3/13/2012 | 410 | <1 | 20 |
| 4/10/2012 | 49 | <1 | 20 |
| 5/15/2012 | 79 | <1 | 20 |
| 6/6/2012 | 14 | <1 | 35 |
| 7/16/2012 | 580 | 1 | 20 |
| 8/6/2012 | 3100 | <1 | 25 |
| 9/4/2012 | 7700 | <1 | 30 |
| 10/1/2012 | 4900 | <1 | 10 |
| 11/5/2012 | 3700 | <1 | 10 |
| 12/3/2012 | 77 | 3 | 10 |
| 1/7/2013 | 460 | 5 | 10 |
| 2/4/2013 | 19 | 1 | 10 |
| 3/4/2013 | 280 | 1 | 10 |
| 4/2/2013 | 7700 | <1 | 10 |
| 5/6/2013 | 91 | 1 | 10 |
| 6/3/2013 | 200 | <1 | 10 |
| Minimum | 7 | <1 | 10 |
| Maximum | 7700 | 6 | 40 |
| Median | 345 | <1 | 20 |
| Average | 1600 | 1 | 21 |
| Count | 26 | 26 | 26 |



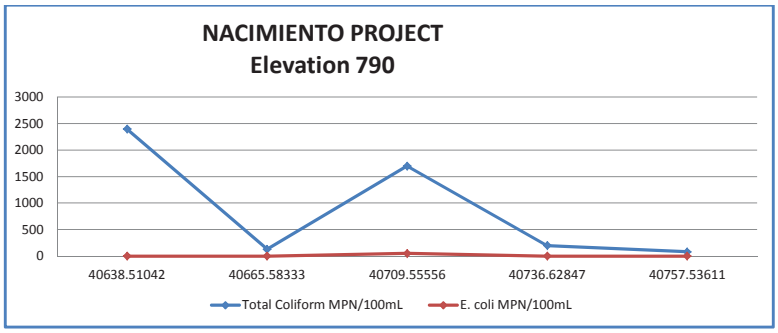



| NACIMIENTO PROJECT - HYPOLIMNION | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 1/10/2011 | 1000 | 28 | 83 |
| 6/15/2011 | 2000 | 1 | 105 |
| 7/12/2011 | 1600 | 1 | 115 |
| 8/2/2011 | 380 | <1 | 110 |
| 9/13/2011 | 150 | 1 | 105 |
| 10/12/2011 | 370 | <1 | 110 |
| 11/2/2011 | 650 | <1 | 115 |
| 12/13/2011 | 1200 | 1 | 115 |
| 1/9/2012 | 28 | <1 | 115 |
| 2/14/2012 | 4 | <1 | 75 |
| 3/13/2012 | 23 | <1 | 120 |
| 4/10/2012 | 13 | <1 | 120 |
| 5/15/2012 | 6 | <1 | 130 |
| 6/6/2012 | 9 | <1 | 120 |
| 7/16/2012 | 730 | <1 | 100 |
| 8/6/2012 | 1600 | <1 | 100 |
| 9/4/2012 | 2400 | <1 | 90 |
| 10/1/2012 | 4400 | <1 | 60 |
| 11/5/2012 | 4900 | <1 | 60 |
| 12/3/2012 | 140 | <1 | 60 |
| 1/7/2013 | 140 | 4 | 60 |
| 2/4/2013 | 7 | <1 | 60 |
| 3/4/2013 | 140 | <1 | 60 |
| 4/2/2013 | 870 | <1 | 60 |
| 5/6/2013 | 35 | <1 | 60 |
| 6/3/2013 | 79 | <1 | 60 |
| Minimum | 4 | 1 | 60 |
| Maximum | 4900 | 28 | 130 |
| Median | 260 | 1 | 100 |
| Average | 880 | 6 | 91 |
| Count | 26 | 6 | 26 |

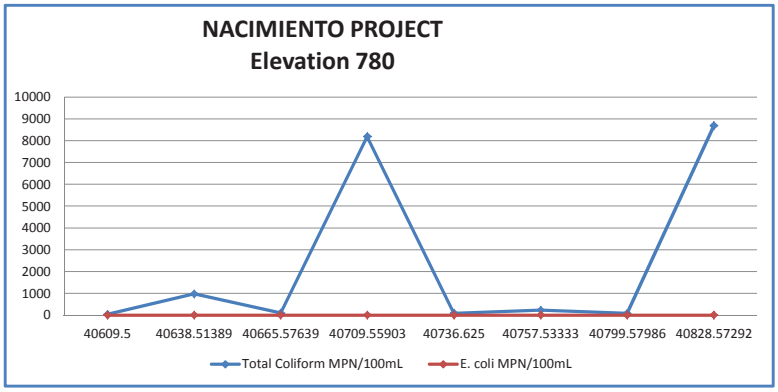


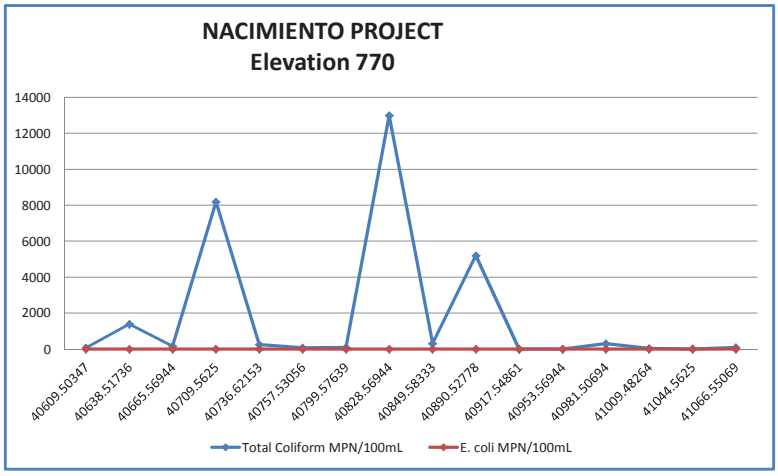
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 790 | 4/5/2011 | 2400 | <1 | 10 |
| Elevation 790 | 5/2/2011 | 130 | 2 | 10 |
| Elevation 790 | 6/15/2011 | 1700 | 54 | 10 |
| Elevation 790 | 7/12/2011 | 200 | <1 | 5 |
| Elevation 790 | 8/2/2011 | 82 | <1 | 2 |
| | Minimum | 82 | <1 | 2 |
| | Maximum | 2400 | 54 | 10 |
| | Median | 200 | <1 | 10 |
| | Average | 902 | 11 | 7 |
| | Count | 5 | 5 | 5 |



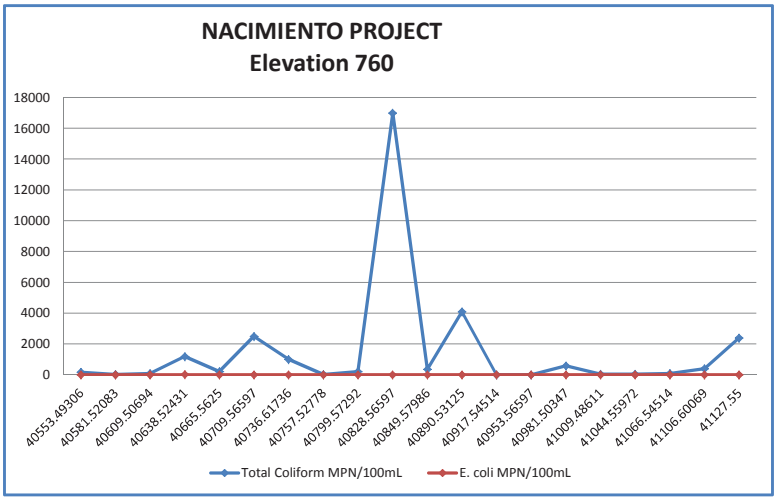

| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 780 | 3/7/2011 | 38 | <1 | 3 |
| Elevation 780 | 4/5/2011 | 980 | 1 | 20 |
| Elevation 780 | 5/2/2011 | 99 | <1 | 20 |
| Elevation 780 | 6/15/2011 | 8200 | 1 | 20 |
| Elevation 780 | 7/12/2011 | 88 | <1 | 15 |
| Elevation 780 | 8/2/2011 | 230 | <1 | 10 |
| Elevation 780 | 9/13/2011 | 78 | <1 | 5 |
| Elevation 780 | 10/12/2011 | 8700 | <1 | 2 |
| | Minimum | 38 | <1 | 2 |
| | Maximum | 8700 | 1 | 20 |
| | Median | 165 | <1 | 12.5 |
| | Average | 2302 | <1 | 10 |
| | Count | 8 | 8 | 8 |



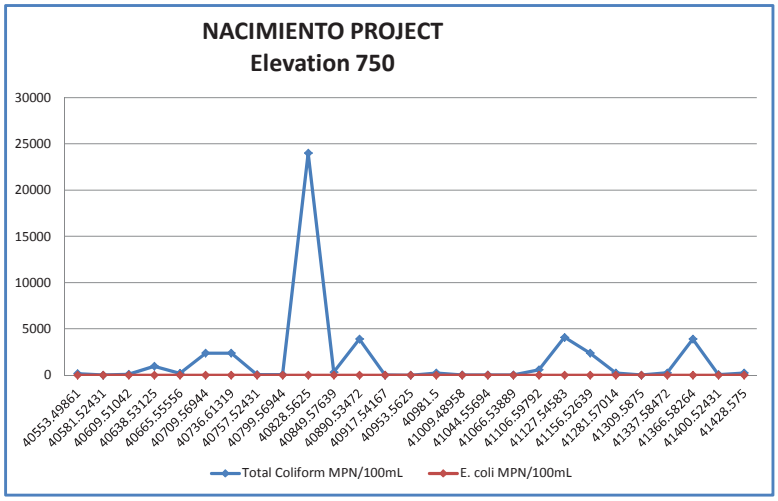

| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 770 | 4/5/2011 | 1400 | 2 | 30 |
| Elevation 770 | 5/2/2011 | 170 | <1 | 30 |
| Elevation 770 | 6/15/2011 | 8200 | <1 | 30 |
| Elevation 770 | 7/12/2011 | 250 | <1 | 25 |
| Elevation 770 | 8/2/2011 | 79 | <1 | 20 |
| Elevation 770 | 9/13/2011 | 91 | 2 | 15 |
| Elevation 770 | 10/12/2011 | 13000 | <1 | 10 |
| Elevation 770 | 11/2/2011 | 310 | <1 | 5 |
| Elevation 770 | 12/13/2011 | 5200 | 1 | 5 |
| Elevation 770 | 1/9/2012 | 9 | <1 | 5 |
| Elevation 770 | 2/14/2012 | 10 | <1 | 5 |
| Elevation 770 | 3/13/2012 | 310 | <1 | 10 |
| Elevation 770 | 4/10/2012 | 41 | <1 | 10 |
| Elevation 770 | 5/15/2012 | 13 | <1 | 5 |
| Elevation 770 | 6/6/2012 | 96 | 2 | 2 |
| | Minimum | 9 | <1 | 2 |
| | Maximum | 13000 | 2 | 30 |
| | Median | 170 | <1 | 10 |
| | Average | 1945 | <1 | 14 |
| | Count | 15 | 15 | 15 |



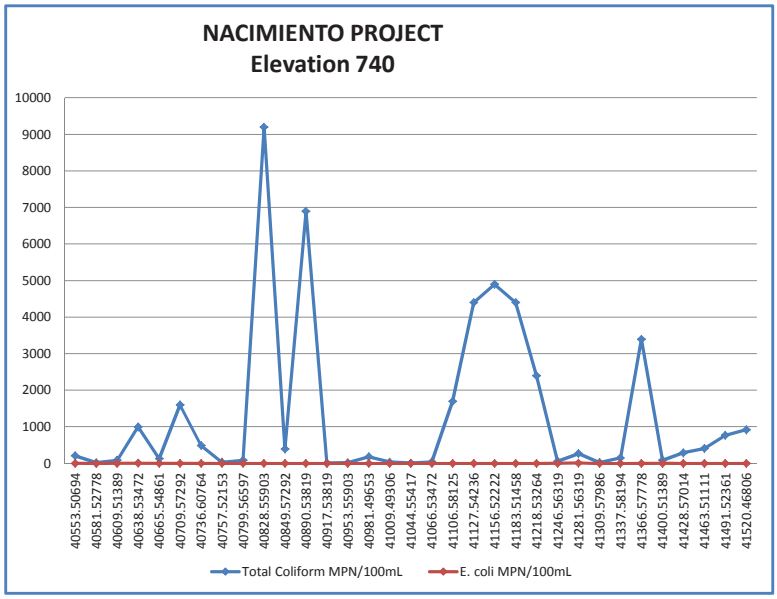
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 760 | 1/10/2011 | 180 | 5 | 3 |
| Elevation 760 | 2/7/2011 | 18 | 1 | 4 |
| Elevation 760 | 3/7/2011 | 93 | 1 | 23 |
| Elevation 760 | 4/5/2011 | 1200 | 35 | 40 |
| Elevation 760 | 5/2/2011 | 210 | 1 | 40 |
| Elevation 760 | 6/15/2011 | 2500 | <1 | 40 |
| Elevation 760 | 7/12/2011 | 1000 | <1 | 35 |
| Elevation 760 | 8/2/2011 | 36 | <1 | 30 |
| Elevation 760 | 9/13/2011 | 210 | <1 | 25 |
| Elevation 760 | 10/12/2011 | 17000 | 1 | 20 |
| Elevation 760 | 11/2/2011 | 370 | 1 | 15 |
| Elevation 760 | 12/13/2011 | 4100 | <1 | 15 |
| Elevation 760 | 1/9/2012 | 11 | 1 | 15 |
| Elevation 760 | 2/14/2012 | 12 | <1 | 15 |
| Elevation 760 | 3/13/2012 | 580 | 1 | 20 |
| Elevation 760 | 4/10/2012 | 57 | <1 | 20 |
| Elevation 760 | 5/15/2012 | 58 | <1 | 15 |
| Elevation 760 | 6/6/2012 | 96 | 2 | 10 |
| Elevation 760 | 7/16/2012 | 410 | 1 | 5 |
| Elevation 760 | 8/6/2012 | 2400 | <1 | 2 |
| | Minimum | 11 | <1 | 2 |
| | Maximum | 17000 | 35 | 40 |
| | Median | 210 | 1 | 17.5 |
| | Average | 1527 | 3 | 20 |
| | Count | 20 | 20 | 20 |



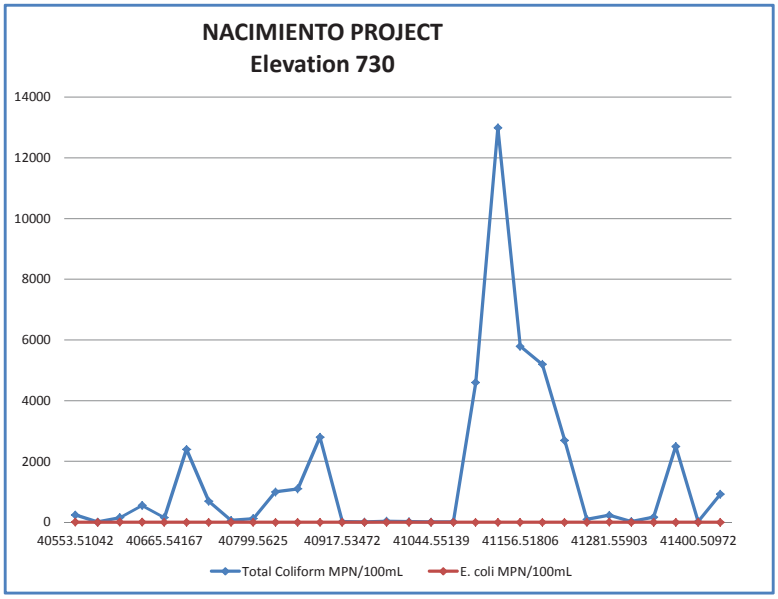

| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 750 | 1/10/2011 | 180 | 7 | 13 |
| Elevation 750 | 2/7/2011 | 16 | 1 | 14 |
| Elevation 750 | 3/7/2011 | 96 | 4 | 33 |
| Elevation 750 | 4/5/2011 | 980 | 4 | 50 |
| Elevation 750 | 5/2/2011 | 210 | <1 | 50 |
| Elevation 750 | 6/15/2011 | 2400 | <1 | 50 |
| Elevation 750 | 7/12/2011 | 2400 | 1 | 45 |
| Elevation 750 | 8/2/2011 | 72 | 1 | 40 |
| Elevation 750 | 9/13/2011 | 80 | <1 | 35 |
| Elevation 750 | 10/12/2011 | 24000 | <1 | 30 |
| Elevation 750 | 11/2/2011 | 330 | 2 | 25 |
| Elevation 750 | 12/13/2011 | 3900 | 1 | 25 |
| Elevation 750 | 1/9/2012 | 15 | <1 | 25 |
| Elevation 750 | 2/14/2012 | 4 | <1 | 25 |
| Elevation 750 | 3/13/2012 | 230 | <1 | 30 |
| Elevation 750 | 4/10/2012 | 48 | <1 | 30 |
| Elevation 750 | 5/15/2012 | 35 | <1 | 25 |
| Elevation 750 | 6/6/2012 | 40 | <1 | 20 |
| Elevation 750 | 7/16/2012 | 580 | <1 | 15 |
| Elevation 750 | 8/6/2012 | 4100 | <1 | 10 |
| Elevation 750 | 9/4/2012 | 2400 | <1 | 2 |
| Elevation 750 | 1/7/2013 | 250 | 3 | 5 |
| Elevation 750 | 2/4/2013 | 17 | <1 | 10 |
| Elevation 750 | 3/4/2013 | 260 | <1 | 10 |
| Elevation 750 | 4/2/2013 | 3900 | <1 | 10 |
| Elevation 750 | 5/6/2013 | 68 | <1 | 5 |
| Elevation 750 | 6/3/2013 | 250 | <1 | 5 |
| | Minimum | 4 | <1 | 2 |
| | Maximum | 24000 | 7 | 50 |
| | Median | 230 | 2 | 25 |
| | Average | 1736 | 1 | 24 |
| | Count | 27 | 27 | 27 |



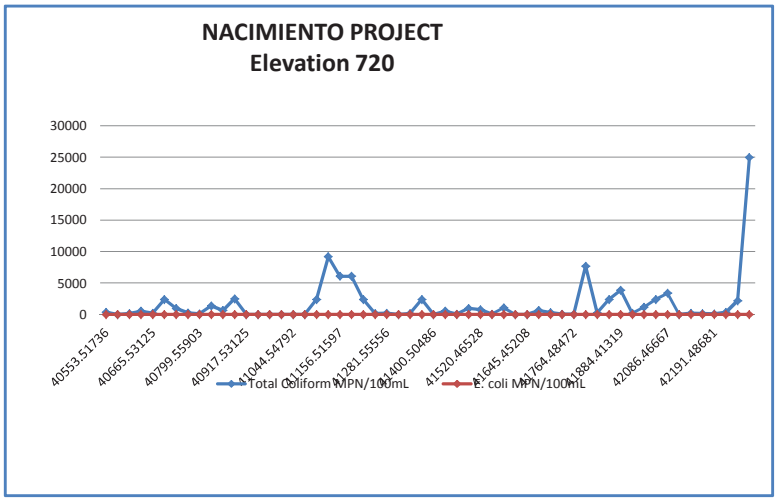
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 740 | 1/10/2011 | 210 | 3 | 23 |
| Elevation 740 | 2/7/2011 | 18 | <1 | 24 |
| Elevation 740 | 3/7/2011 | 83 | 3 | 43 |
| Elevation 740 | 4/5/2011 | 1000 | 5 | 60 |
| Elevation 740 | 5/2/2011 | 130 | 1 | 60 |
| Elevation 740 | 6/15/2011 | 1600 | <1 | 60 |
| Elevation 740 | 7/12/2011 | 490 | 1 | 55 |
| Elevation 740 | 8/2/2011 | 31 | <1 | 50 |
| Elevation 740 | 9/13/2011 | 86 | <1 | 45 |
| Elevation 740 | 10/12/2011 | 9200 | <1 | 40 |
| Elevation 740 | 11/2/2011 | 390 | <1 | 35 |
| Elevation 740 | 12/13/2011 | 6900 | <1 | 35 |
| Elevation 740 | 1/9/2012 | 11 | <1 | 35 |
| Elevation 740 | 2/14/2012 | 20 | <1 | 35 |
| Elevation 740 | 3/13/2012 | 180 | <1 | 40 |
| Elevation 740 | 4/10/2012 | 36 | <1 | 40 |
| Elevation 740 | 5/15/2012 | 10 | <1 | 35 |
| Elevation 740 | 6/6/2012 | 40 | <1 | 30 |
| Elevation 740 | 7/16/2012 | 1700 | <1 | 25 |
| Elevation 740 | 8/6/2012 | 4400 | <1 | 20 |
| Elevation 740 | 9/4/2012 | 4900 | <1 | 10 |
| Elevation 740 | 10/1/2012 | 4400 | <1 | 5 |
| Elevation 740 | 11/5/2012 | 2400 | <1 | 2 |
| Elevation 740 | 12/3/2012 | 57 | 2 | 2 |
| Elevation 740 | 1/7/2013 | 270 | 11 | 15 |
| Elevation 740 | 2/4/2013 | 23 | <1 | 20 |
| Elevation 740 | 3/4/2013 | 150 | <1 | 20 |
| Elevation 740 | 4/2/2013 | 3400 | <1 | 20 |
| Elevation 740 | 5/6/2013 | 83 | 1 | 15 |
| Elevation 740 | 6/3/2013 | 290 | <1 | 15 |
| Elevation 740 | 7/8/2013 | 410 | <1 | 15 |
| Elevation 740 | 8/5/2013 | 770 | <1 | 10 |
| Elevation 740 | 9/3/2013 | 920 | <1 | 5 |
| | Minimum | 10 | <1 | 2 |
| | Maximum | 9200 | 11 | 60 |
| | Median | 270 | <1 | 25 |
| | Average | 1352 | 1 | 29 |
| | Count | 33 | 33 | 33 |



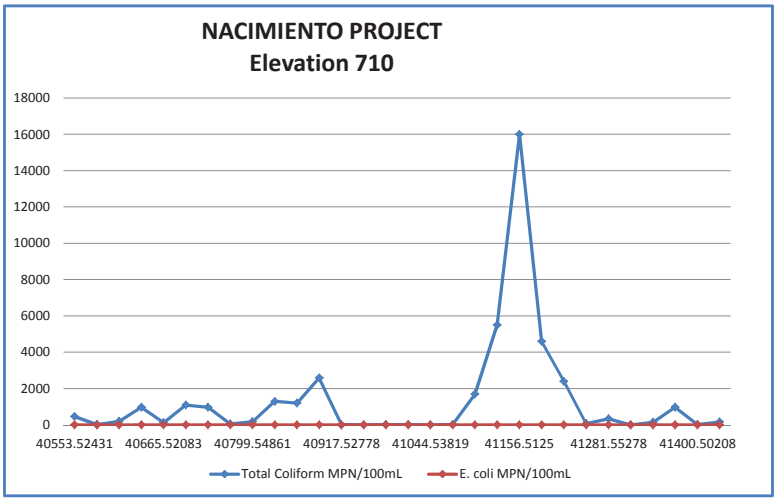
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 730 | 1/10/2011 | 240 | 5 | 33 |
| Elevation 730 | 2/7/2011 | 12 | <1 | 34 |
| Elevation 730 | 3/7/2011 | 150 | 4 | 53 |
| Elevation 730 | 4/5/2011 | 550 | 2 | 70 |
| Elevation 730 | 5/2/2011 | 150 | <1 | 70 |
| Elevation 730 | 6/15/2011 | 2400 | <1 | 70 |
| Elevation 730 | 7/12/2011 | 690 | <1 | 65 |
| Elevation 730 | 8/2/2011 | 59 | <1 | 60 |
| Elevation 730 | 9/13/2011 | 120 | <1 | 55 |
| Elevation 730 | 10/12/2011 | 1000 | <1 | 50 |
| Elevation 730 | 11/2/2011 | 1100 | <1 | 45 |
| Elevation 730 | 12/13/2011 | 2800 | <1 | 45 |
| Elevation 730 | 1/9/2012 | 21 | <1 | 45 |
| Elevation 730 | 2/14/2012 | 7 | <1 | 45 |
| Elevation 730 | 3/13/2012 | 37 | <1 | 50 |
| Elevation 730 | 4/10/2012 | 20 | <1 | 50 |
| Elevation 730 | 5/15/2012 | 9 | <1 | 45 |
| Elevation 730 | 6/6/2012 | 15 | <1 | 40 |
| Elevation 730 | 7/16/2012 | 4600 | <1 | 35 |
| Elevation 730 | 8/6/2012 | 13000 | <1 | 30 |
| Elevation 730 | 9/4/2012 | 5800 | <1 | 20 |
| Elevation 730 | 10/1/2012 | 5200 | <1 | 15 |
| Elevation 730 | 11/5/2012 | 2700 | 1 | 10 |
| Elevation 730 | 12/3/2012 | 96 | 1 | 10 |
| Elevation 730 | 1/7/2013 | 230 | 4 | 25 |
| Elevation 730 | 2/4/2013 | 24 | <1 | 30 |
| Elevation 730 | 3/4/2013 | 170 | <1 | 30 |
| Elevation 730 | 4/2/2013 | 2400 | <1 | 30 |
| Elevation 730 | 5/6/2013 | 17 | <1 | 25 |
| Elevation 730 | 6/3/2013 | 920 | <1 | 25 |
| | Minimum | 7 | <1 | 10 |
| | Maximum | 13000 | 5 | 70 |
| | Median | 200 | <1 | 42.5 |
| | Average | 1485 | <1 | 40 |
| | Count | 30 | 30 | 30 |



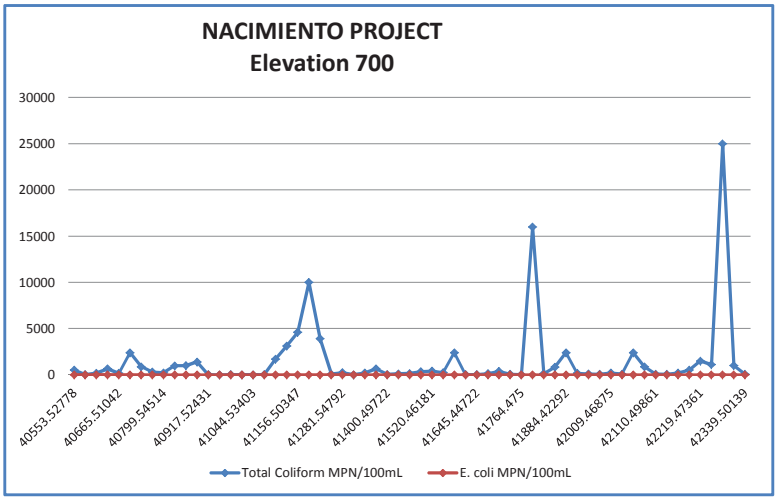
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 720 | 1/10/2011 | 390 | 11 | 43 |
| Elevation 720 | 2/7/2011 | 14 | <1 | 44 |
| Elevation 720 | 3/7/2011 | 180 | 7 | 63 |
| Elevation 720 | 4/5/2011 | 550 | <1 | 80 |
| Elevation 720 | 5/2/2011 | 210 | <1 | 80 |
| Elevation 720 | 6/15/2011 | 2400 | <1 | 80 |
| Elevation 720 | 7/12/2011 | 980 | <1 | 75 |
| Elevation 720 | 8/2/2011 | 280 | <1 | 70 |
| Elevation 720 | 9/13/2011 | 130 | <1 | 65 |
| Elevation 720 | 10/12/2011 | 1400 | 1 | 60 |
| Elevation 720 | 11/2/2011 | 650 | 1 | 55 |
| Elevation 720 | 12/13/2011 | 2500 | 1 | 55 |
| Elevation 720 | 1/9/2012 | 17 | 1 | 55 |
| Elevation 720 | 2/14/2012 | 2 | <1 | 55 |
| Elevation 720 | 3/13/2012 | 31 | <1 | 60 |
| Elevation 720 | 4/10/2012 | 21 | 1 | 60 |
| Elevation 720 | 5/15/2012 | 10 | <1 | 55 |
| Elevation 720 | 6/6/2012 | 6 | <1 | 50 |
| Elevation 720 | 7/16/2012 | 2400 | <1 | 45 |
| Elevation 720 | 8/6/2012 | 9200 | <1 | 40 |
| Elevation 720 | 9/4/2012 | 6100 | <1 | 30 |
| Elevation 720 | 10/1/2012 | 6100 | <1 | 25 |
| Elevation 720 | 11/5/2012 | 2400 | 1 | 20 |
| Elevation 720 | 12/3/2012 | 160 | 4 | 20 |
| Elevation 720 | 1/7/2013 | 220 | 3 | 35 |
| Elevation 720 | 2/4/2013 | 11 | <1 | 40 |
| Elevation 720 | 3/4/2013 | 160 | <1 | 40 |
| Elevation 720 | 4/2/2013 | 2400 | <1 | 40 |
| Elevation 720 | 5/6/2013 | 15 | <1 | 35 |
| Elevation 720 | 6/3/2013 | 550 | <1 | 35 |
| Elevation 720 | 7/7/2013 | 79 | <1 | 35 |
| Elevation 720 | 8/5/2013 | 1000 | <1 | 30 |
| Elevation 720 | 9/3/2013 | 770 | <1 | 25 |
| Elevation 720 | 10/2/2013 | 79 | 1 | 15 |
| Elevation 720 | 11/4/2013 | 1100 | <1 | 15 |
| Elevation 720 | 12/2/2013 | 23 | <1 | 10 |
| Elevation 720 | 1/6/2014 | 10 | <1 | 10 |
| Elevation 720 | 2/3/2014 | 650 | <1 | 10 |
| Elevation 720 | 3/3/2014 | 310 | 2 | 10 |
| Elevation 720 | 4/2/2014 | 86 | <1 | 10 |
| Elevation 720 | 5/5/2014 | 62 | <1 | 5 |
| Elevation 720 | 6/2/2014 | 7700 | <1 | 2 |
| Elevation 720 | 7/8/2014 | 250 | 1 | 5 |
| Elevation 720 | 8/4/2014 | 2400 | <1 | 2 |
| Elevation 720 | 9/2/2014 | 3900 | <1 | 2 |
| Elevation 720 | 1/5/2015 | 200 | 3 | 10 |
| Elevation 720 | 2/3/2015 | 1200 | <1 | 10 |
| Elevation 720 | 3/3/2015 | 2400 | <1 | 20 |
| Elevation 720 | 3/23/2015 | 3400 | <1 | 20 |
| Elevation 720 | 4/16/2015 | 35 | <1 | 15 |
| Elevation 720 | 5/4/2015 | 220 | <1 | 15 |
| Elevation 720 | 6/1/2015 | 170 | <1 | 15 |
| Elevation 720 | 7/6/2015 | 120 | <1 | 10 |
| Elevation 720 | 8/3/2015 | 360 | <1 | 10 |
| Elevation 720 | 9/2/2015 | 2200 | <1 | 5 |
| Elevation 720 | 10/5/2015 | >24000 | <1 | 5 |
| Elevation 720 | 11/4/2015 | 1100 | 1 | 2 |
| | Minimum | 2 | <1 | 2 |
| | Maximum | >24000 | 11 | 80 |
| | Median | 310 | <1 | 30 |
| | Average | 1640 | <1 | 32 |
| | Count | 57 | 57 | 57 |



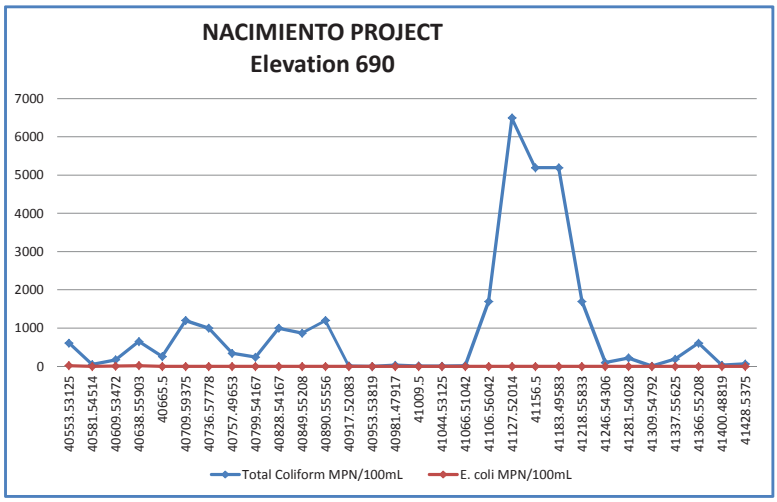
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 710 | 1/10/2011 | 460 | 11 | 53 |
| Elevation 710 | 2/7/2011 | 20 | <1 | 54 |
| Elevation 710 | 3/7/2011 | 200 | 5 | 73 |
| Elevation 710 | 4/5/2011 | 980 | 1 | 90 |
| Elevation 710 | 5/2/2011 | 130 | 1 | 90 |
| Elevation 710 | 6/15/2011 | 1100 | 1 | 90 |
| Elevation 710 | 7/12/2011 | 980 | <1 | 85 |
| Elevation 710 | 8/2/2011 | 55 | <1 | 80 |
| Elevation 710 | 9/13/2011 | 180 | 1 | 75 |
| Elevation 710 | 10/12/2011 | 1300 | <1 | 70 |
| Elevation 710 | 11/2/2011 | 1200 | 1 | 65 |
| Elevation 710 | 12/13/2011 | 2600 | <1 | 65 |
| Elevation 710 | 1/9/2012 | 13 | <1 | 65 |
| Elevation 710 | 2/14/2012 | 3 | <1 | 65 |
| Elevation 710 | 3/13/2012 | 23 | 1 | 70 |
| Elevation 710 | 4/10/2012 | 25 | <1 | 70 |
| Elevation 710 | 5/15/2012 | 12 | 1 | 65 |
| Elevation 710 | 6/6/2012 | 19 | 1 | 60 |
| Elevation 710 | 7/16/2012 | 1700 | <1 | 55 |
| Elevation 710 | 8/6/2012 | 5500 | <1 | 50 |
| Elevation 710 | 9/4/2012 | 16000 | <1 | 40 |
| Elevation 710 | 10/1/2012 | 4600 | <1 | 35 |
| Elevation 710 | 11/5/2012 | 2400 | <1 | 30 |
| Elevation 710 | 12/3/2012 | 78 | 3 | 30 |
| Elevation 710 | 1/7/2013 | 340 | 6 | 45 |
| Elevation 710 | 2/4/2013 | 11 | 1 | 50 |
| Elevation 710 | 3/4/2013 | 150 | <1 | 50 |
| Elevation 710 | 4/2/2013 | 980 | <1 | 50 |
| Elevation 710 | 5/6/2013 | 27 | <1 | 45 |
| Elevation 710 | 6/3/2013 | 170 | <1 | 45 |
| | Minimum | 3 | <1 | 30 |
| | Maximum | 16000 | 11 | 90 |
| | Median | 190 | <1 | 62.5 |
| | Average | 1375 | 1 | 60 |
| | Count | 30 | 30 | 30 |



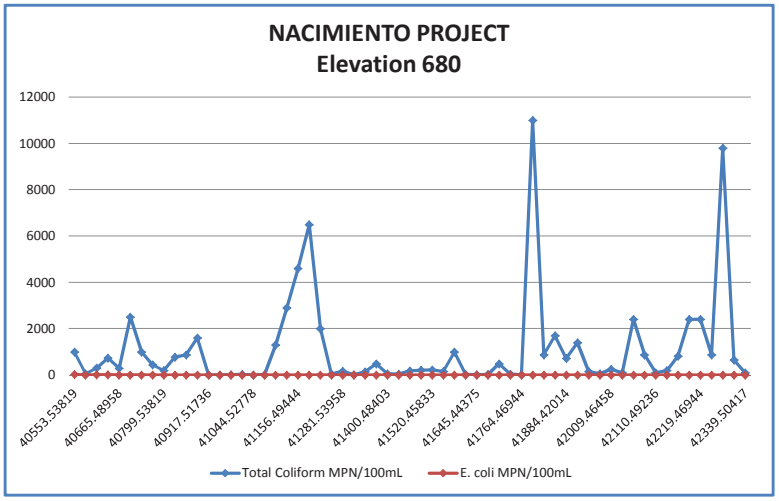
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 700 | 1/10/2011 | 520 | 6 | 63 |
| Elevation 700 | 2/7/2011 | 29 | <1 | 64 |
| Elevation 700 | 3/7/2011 | 180 | 7 | 83 |
| Elevation 700 | 4/5/2011 | 650 | 2 | 100 |
| Elevation 700 | 5/2/2011 | 160 | <1 | 100 |
| Elevation 700 | 6/15/2011 | 2400 | 3 | 100 |
| Elevation 700 | 7/12/2011 | 870 | <1 | 95 |
| Elevation 700 | 8/2/2011 | 310 | <1 | 90 |
| Elevation 700 | 9/13/2011 | 220 | <1 | 85 |
| Elevation 700 | 10/12/2011 | 980 | 1 | 80 |
| Elevation 700 | 11/2/2011 | 1000 | <1 | 75 |
| Elevation 700 | 12/13/2011 | 1400 | <1 | 75 |
| Elevation 700 | 1/9/2012 | 17 | <1 | 75 |
| Elevation 700 | 2/14/2012 | 2 | <1 | 75 |
| Elevation 700 | 3/13/2012 | 25 | <1 | 80 |
| Elevation 700 | 4/10/2012 | 10 | <1 | 80 |
| Elevation 700 | 5/15/2012 | 5 | <1 | 75 |
| Elevation 700 | 6/6/2012 | 24 | <1 | 70 |
| Elevation 700 | 7/16/2012 | 1700 | <1 | 65 |
| Elevation 700 | 8/6/2012 | 3100 | <1 | 60 |
| Elevation 700 | 9/4/2012 | 4600 | <1 | 50 |
| Elevation 700 | 10/1/2012 | 10000 | <1 | 45 |
| Elevation 700 | 11/5/2012 | 3900 | <1 | 40 |
| Elevation 700 | 12/3/2012 | 75 | <1 | 40 |
| Elevation 700 | 1/7/2013 | 240 | 5 | 55 |
| Elevation 700 | 2/4/2013 | 11 | <1 | 60 |
| Elevation 700 | 3/4/2013 | 200 | <1 | 60 |
| Elevation 700 | 4/2/2013 | 650 | <1 | 60 |
| Elevation 700 | 5/6/2013 | 39 | <1 | 55 |
| Elevation 700 | 6/3/2013 | 110 | <1 | 55 |
| Elevation 700 | 7/8/2013 | 150 | 1 | 55 |
| Elevation 700 | 8/5/2013 | 340 | <1 | 50 |
| Elevation 700 | 9/3/2013 | 410 | <1 | 45 |
| Elevation 700 | 10/2/2013 | 240 | <1 | 35 |
| Elevation 700 | 11/4/2013 | 2400 | <1 | 35 |
| Elevation 700 | 12/2/2013 | 19 | <1 | 30 |
| Elevation 700 | 1/6/2014 | 19 | <1 | 30 |
| Elevation 700 | 2/3/2014 | 120 | <1 | 30 |
| Elevation 700 | 3/3/2014 | 380 | <1 | 30 |
| Elevation 700 | 4/2/2014 | 65 | <1 | 30 |
| Elevation 700 | 5/5/2014 | 18 | <1 | 25 |
| Elevation 700 | 6/2/2014 | 16000 | <1 | 20 |
| Elevation 700 | 7/8/2014 | 130 | <1 | 25 |
| Elevation 700 | 8/4/2014 | 820 | <1 | 20 |
| Elevation 700 | 9/2/2014 | 2400 | <1 | 20 |
| Elevation 700 | 10/1/2014 | 160 | <1 | 20 |
| Elevation 700 | 11/3/2014 | 99 | 1 | 20 |
| Elevation 700 | 12/1/2014 | 56 | 1 | 15 |
| Elevation 700 | 1/5/2015 | 200 | 2 | 30 |
| Elevation 700 | 2/2/2015 | 73 | <1 | 30 |
| Elevation 700 | 3/3/2015 | 2400 | <1 | 40 |
| Elevation 700 | 3/23/2015 | 870 | <1 | 40 |
| Elevation 700 | 4/16/2015 | 82 | <1 | 35 |
| Elevation 700 | 5/4/2015 | 59 | <1 | 35 |
| Elevation 700 | 6/1/2015 | 210 | <1 | 35 |
| Elevation 700 | 7/6/2015 | 520 | <1 | 30 |
| Elevation 700 | 8/3/2015 | 1500 | 2 | 30 |
| Elevation 700 | 9/2/2015 | 1100 | <1 | 25 |
| Elevation 700 | 10/5/2015 | >24000 | <1 | 25 |
| Elevation 700 | 11/4/2015 | 1000 | 2 | 20 |
| Elevation 700 | 12/1/2015 | 80 | 1 | 20 |
| | Minimum | 2 | <1 | 15 |
| | Maximum | >24000 | 7 | 100 |
| | Median | 220 | <1 | 45 |
| | Average | 1481 | 1 | 50 |
| | Count | 57 | 57 | 57 |



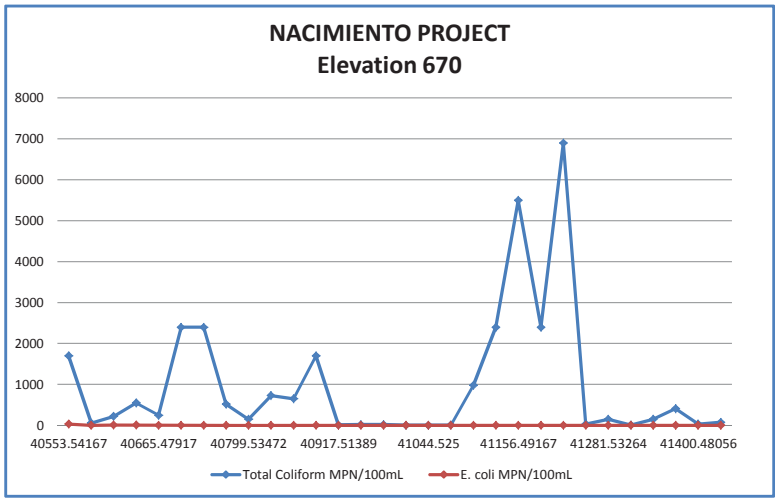
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 690 | 1/10/2011 | 610 | 19 | 73 |
| Elevation 690 | 2/7/2011 | 51 | <1 | 74 |
| Elevation 690 | 3/7/2011 | 170 | 7 | 93 |
| Elevation 690 | 4/5/2011 | 650 | 19 | 110 |
| Elevation 690 | 5/2/2011 | 260 | 2 | 110 |
| Elevation 690 | 6/15/2011 | 1200 | 1 | 110 |
| Elevation 690 | 7/12/2011 | 1000 | <1 | 105 |
| Elevation 690 | 8/2/2011 | 340 | <1 | 100 |
| Elevation 690 | 9/13/2011 | 240 | 1 | 95 |
| Elevation 690 | 10/12/2011 | 1000 | <1 | 90 |
| Elevation 690 | 11/2/2011 | 870 | <1 | 85 |
| Elevation 690 | 12/13/2011 | 1200 | <1 | 85 |
| Elevation 690 | 1/9/2012 | 12 | <1 | 85 |
| Elevation 690 | 2/14/2012 | 2 | <1 | 85 |
| Elevation 690 | 3/13/2012 | 33 | <1 | 90 |
| Elevation 690 | 4/10/2012 | 12 | <1 | 90 |
| Elevation 690 | 5/15/2012 | 5 | <1 | 85 |
| Elevation 690 | 6/6/2012 | 19 | <1 | 80 |
| Elevation 690 | 7/16/2012 | 1700 | <1 | 75 |
| Elevation 690 | 8/6/2012 | 6500 | <1 | 70 |
| Elevation 690 | 9/4/2012 | 5200 | <1 | 60 |
| Elevation 690 | 10/1/2012 | 5200 | <1 | 55 |
| Elevation 690 | 11/5/2012 | 1700 | <1 | 50 |
| Elevation 690 | 12/3/2012 | 100 | 2 | 50 |
| Elevation 690 | 1/7/2013 | 220 | 2 | 65 |
| Elevation 690 | 2/4/2013 | 8 | <1 | 70 |
| Elevation 690 | 3/4/2013 | 190 | <1 | 70 |
| Elevation 690 | 4/2/2013 | 610 | 1 | 70 |
| Elevation 690 | 5/6/2013 | 31 | <1 | 65 |
| Elevation 690 | 6/3/2013 | 68 | <1 | 65 |
| | Minimum | 2 | <1 | 50 |
| | Maximum | 6500 | 19 | 110 |
| | Median | 250 | <1 | 82.5 |
| | Average | 973 | 2 | 80 |
| | Count | 30 | 30 | 30 |



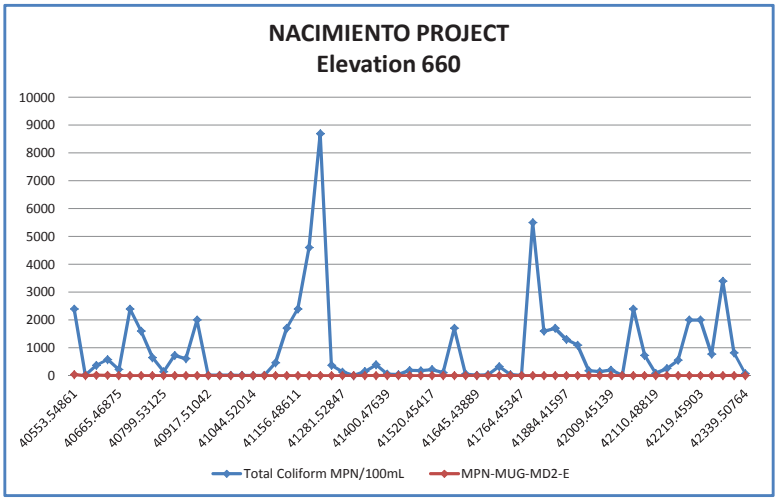
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 680 | 1/10/2011 | 1000 | 32 | 83 |
| Elevation 680 | 2/7/2011 | 53 | <1 | 84 |
| Elevation 680 | 3/7/2011 | 310 | 16 | 103 |
| Elevation 680 | 4/5/2011 | 730 | 20 | 120 |
| Elevation 680 | 5/2/2011 | 290 | 1 | 120 |
| Elevation 680 | 6/15/2011 | 2500 | <1 | 120 |
| Elevation 680 | 7/12/2011 | 1000 | <1 | 115 |
| Elevation 680 | 8/2/2011 | 440 | <1 | 110 |
| Elevation 680 | 9/13/2011 | 190 | <1 | 105 |
| Elevation 680 | 10/12/2011 | 770 | <1 | 100 |
| Elevation 680 | 11/2/2011 | 870 | <1 | 95 |
| Elevation 680 | 12/13/2011 | 1600 | 2 | 95 |
| Elevation 680 | 1/9/2012 | 16 | <1 | 95 |
| Elevation 680 | 2/14/2012 | 7 | 1 | 95 |
| Elevation 680 | 3/13/2012 | 20 | <1 | 100 |
| Elevation 680 | 4/10/2012 | 27 | <1 | 100 |
| Elevation 680 | 5/15/2012 | 6 | <1 | 95 |
| Elevation 680 | 6/6/2012 | 13 | 1 | 90 |
| Elevation 680 | 7/16/2012 | 1300 | <1 | 85 |
| Elevation 680 | 8/6/2012 | 2900 | <1 | 80 |
| Elevation 680 | 9/4/2012 | 4600 | <1 | 70 |
| Elevation 680 | 10/1/2012 | 6500 | <1 | 65 |
| Elevation 680 | 11/5/2012 | 2000 | <1 | 60 |
| Elevation 680 | 12/3/2012 | 44 | <1 | 60 |
| Elevation 680 | 1/7/2013 | 170 | 6 | 75 |
| Elevation 680 | 2/4/2013 | 10 | <1 | 80 |
| Elevation 680 | 3/4/2013 | 140 | <1 | 80 |
| Elevation 680 | 4/2/2013 | 490 | <1 | 80 |
| Elevation 680 | 5/6/2013 | 57 | <1 | 75 |
| Elevation 680 | 6/3/2013 | 46 | <1 | 75 |
| Elevation 680 | 7/8/2013 | 180 | <1 | 75 |
| Elevation 680 | 8/5/2013 | 210 | 1 | 70 |
| Elevation 680 | 9/3/2013 | 220 | <1 | 65 |
| Elevation 680 | 10/2/2013 | 150 | 1 | 55 |
| Elevation 680 | 11/4/2013 | 1000 | <1 | 55 |
| Elevation 680 | 12/2/2013 | 26 | <1 | 50 |
| Elevation 680 | 1/6/2014 | 16 | <1 | 50 |
| Elevation 680 | 2/3/2014 | 30 | <1 | 50 |
| Elevation 680 | 3/3/2014 | 490 | <1 | 50 |
| Elevation 680 | 4/2/2014 | 38 | 3 | 50 |
| Elevation 680 | 5/5/2014 | 17 | <1 | 45 |
| Elevation 680 | 6/2/2014 | 11000 | <1 | 40 |
| Elevation 680 | 7/8/2014 | 870 | <1 | 45 |
| Elevation 680 | 8/4/2014 | 1700 | <1 | 40 |
| Elevation 680 | 9/2/2014 | 720 | 1 | 40 |
| Elevation 680 | 10/1/2014 | 1400 | <1 | 40 |
| Elevation 680 | 11/3/2014 | 160 | 2 | 40 |
| Elevation 680 | 12/1/2014 | 61 | 2 | 35 |
| Elevation 680 | 1/5/2015 | 250 | 5 | 50 |
| Elevation 680 | 2/2/2015 | 96 | <1 | 50 |
| Elevation 680 | 3/3/2015 | 2400 | 1 | 60 |
| Elevation 680 | 3/23/2015 | 870 | 1 | 60 |
| Elevation 680 | 4/16/2015 | 96 | 1 | 55 |
| Elevation 680 | 5/4/2015 | 190 | <1 | 55 |
| Elevation 680 | 6/1/2015 | 816 | <1 | 55 |
| Elevation 680 | 7/6/2015 | 2400 | <1 | 50 |
| Elevation 680 | 8/3/2015 | 2400 | 1 | 50 |
| Elevation 680 | 9/2/2015 | 870 | 2 | 45 |
| Elevation 680 | 10/5/2015 | 9800 | 1 | 45 |
| Elevation 680 | 11/4/2015 | 650 | <1 | 40 |
| Elevation 680 | 12/1/2015 | 96 | <1 | 40 |
| | Minimum | 6 | <1 | 35 |
| | Maximum | 11000 | 32 | 120 |
| | Median | 290 | 1 | 80 |
| | Average | 1104 | <1 | 70 |
| | Count | 61 | 61 | 61 |



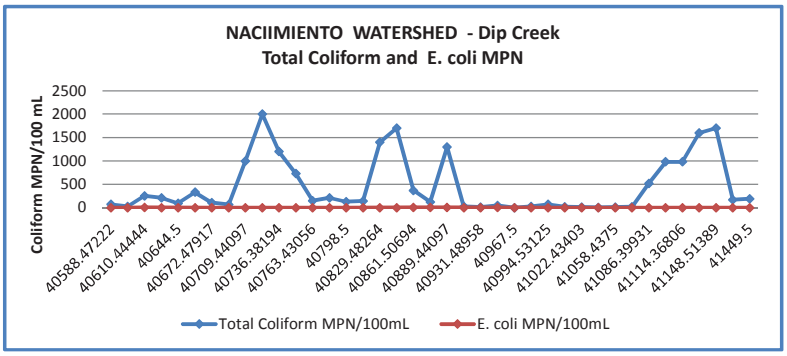
| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 670 | 1/10/2011 | 1700 | 34 | 93 |
| Elevation 670 | 2/7/2011 | 56 | 2 | 94 |
| Elevation 670 | 3/7/2011 | 220 | 9 | 113 |
| Elevation 670 | 4/5/2011 | 550 | 12 | 130 |
| Elevation 670 | 5/2/2011 | 250 | 1 | 130 |
| Elevation 670 | 6/15/2011 | 2400 | <1 | 130 |
| Elevation 670 | 7/12/2011 | 2400 | <1 | 125 |
| Elevation 670 | 8/2/2011 | 520 | <1 | 120 |
| Elevation 670 | 9/13/2011 | 150 | <1 | 115 |
| Elevation 670 | 10/12/2011 | 730 | 1 | 110 |
| Elevation 670 | 11/2/2011 | 650 | <1 | 105 |
| Elevation 670 | 12/13/2011 | 1700 | <1 | 105 |
| Elevation 670 | 1/9/2012 | 14 | <1 | 105 |
| Elevation 670 | 2/14/2012 | 23 | <1 | 105 |
| Elevation 670 | 3/13/2012 | 23 | <1 | 110 |
| Elevation 670 | 4/10/2012 | 6 | <1 | 110 |
| Elevation 670 | 5/15/2012 | 7 | <1 | 105 |
| Elevation 670 | 6/6/2012 | 12 | <1 | 100 |
| Elevation 670 | 7/16/2012 | 980 | <1 | 95 |
| Elevation 670 | 8/6/2012 | 2400 | <1 | 90 |
| Elevation 670 | 9/4/2012 | 5500 | 1 | 80 |
| Elevation 670 | 10/1/2012 | 2400 | <1 | 75 |
| Elevation 670 | 11/5/2012 | 6900 | 2 | 70 |
| Elevation 670 | 12/3/2012 | 36 | <1 | 70 |
| Elevation 670 | 1/7/2013 | 150 | 4 | 85 |
| Elevation 670 | 2/4/2013 | 10 | <1 | 90 |
| Elevation 670 | 3/4/2013 | 150 | <1 | 90 |
| Elevation 670 | 4/2/2013 | 410 | <1 | 90 |
| Elevation 670 | 5/6/2013 | 35 | <1 | 85 |
| Elevation 670 | 6/3/2013 | 78 | <1 | 85 |
| | Minimum | 6 | <1 | 70 |
| | Maximum | 6900 | 34 | 130 |
| | Median | 235 | 0 | 102 |
| | Average | 1015 | 2 | 100 |
| | Count | 30 | 30 | 30 |

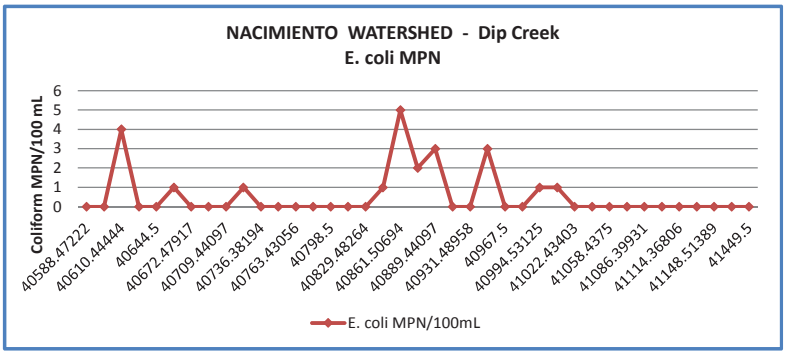


| NACIMIENTO PROJECT | Collected Date | Total Coliform MPN/100 mL | E. coli MPN/100 mL | Depth from Water Surface (feet) |
|---|---|---|---|---|
| Elevation 660 | 1/10/2011 | 2400 | 41 | 103 |
| Elevation 660 | 2/7/2011 | 24 | <1 | 104 |
| Elevation 660 | 3/7/2011 | 370 | 16 | 123 |
| Elevation 660 | 4/5/2011 | 580 | 13 | 140 |
| Elevation 660 | 5/2/2011 | 220 | 1 | 140 |
| Elevation 660 | 6/15/2011 | 2400 | 1 | 140 |
| Elevation 660 | 7/12/2011 | 1600 | <1 | 135 |
| Elevation 660 | 8/2/2011 | 650 | <1 | 130 |
| Elevation 660 | 9/13/2011 | 140 | <1 | 125 |
| Elevation 660 | 10/12/2011 | 730 | <1 | 120 |
| Elevation 660 | 11/2/2011 | 610 | <1 | 115 |
| Elevation 660 | 12/13/2011 | 2000 | 2 | 115 |
| Elevation 660 | 1/9/2012 | 15 | 1 | 115 |
| Elevation 660 | 2/14/2012 | 16 | 1 | 115 |
| Elevation 660 | 3/13/2012 | 14 | <1 | 120 |
| Elevation 660 | 4/10/2012 | 10 | <1 | 120 |
| Elevation 660 | 5/15/2012 | 5 | <1 | 115 |
| Elevation 660 | 6/6/2012 | 11 | <1 | 110 |
| Elevation 660 | 7/16/2012 | 460 | <1 | 105 |
| Elevation 660 | 8/6/2012 | 1700 | <1 | 100 |
| Elevation 660 | 9/4/2012 | 2400 | <1 | 90 |
| Elevation 660 | 10/1/2012 | 4600 | 1 | 85 |
| Elevation 660 | 11/5/2012 | 8700 | 1 | 80 |
| Elevation 660 | 12/3/2012 | 370 | 1 | 80 |
| Elevation 660 | 1/7/2013 | 130 | 1 | 95 |
| Elevation 660 | 2/4/2013 | 6 | <1 | 100 |
| Elevation 660 | 3/4/2013 | 150 | <1 | 100 |
| Elevation 660 | 4/2/2013 | 390 | 1 | 100 |
| Elevation 660 | 5/6/2013 | 56 | 2 | 95 |
| Elevation 660 | 6/3/2013 | 37 | <1 | 95 |
| Elevation 660 | 7/8/2013 | 190 | <1 | 95 |
| Elevation 660 | 8/5/2013 | 180 | <1 | 90 |
| Elevation 660 | 9/3/2013 | 220 | <1 | 85 |
| Elevation 660 | 10/2/2013 | 110 | 1 | 75 |
| Elevation 660 | 11/4/2013 | 1700 | <1 | 75 |
| Elevation 660 | 12/2/2013 | 55 | <1 | 70 |
| Elevation 660 | 1/6/2014 | 16 | 2 | 70 |
| Elevation 660 | 2/3/2014 | 35 | <1 | 70 |
| Elevation 660 | 3/3/2014 | 330 | <1 | 70 |
| Elevation 660 | 4/2/2014 | 37 | <1 | 70 |
| Elevation 660 | 5/5/2014 | 10 | <1 | 65 |
| Elevation 660 | 6/2/2014 | 5500 | <1 | 60 |
| Elevation 660 | 7/8/2014 | 1600 | 1 | 65 |
| Elevation 660 | 8/4/2014 | 1700 | 1 | 60 |
| Elevation 660 | 9/2/2014 | 1300 | 1 | 60 |
| Elevation 660 | 10/1/2014 | 1100 | 2 | 60 |
| Elevation 660 | 11/3/2014 | 180 | 1 | 60 |
| Elevation 660 | 12/1/2014 | 140 | 2 | 55 |
| Elevation 660 | 1/5/2015 | 200 | 8 | 70 |
| Elevation 660 | 2/2/2015 | 8.4 | <1 | 70 |
| Elevation 660 | 3/3/2015 | 2400 | <1 | 80 |
| Elevation 660 | 3/23/2015 | 730 | <1 | 80 |
| Elevation 660 | 4/16/2015 | 83 | <1 | 75 |
| Elevation 660 | 5/4/2015 | 250 | <1 | 75 |
| Elevation 660 | 6/1/2015 | 550 | <1 | 75 |
| Elevation 660 | 7/6/2015 | 2000 | 1 | 70 |
| Elevation 660 | 8/3/2015 | 2000 | 1 | 70 |
| Elevation 660 | 9/2/2015 | 770 | 1 | 65 |
| Elevation 660 | 10/5/2015 | 3400 | 1 | 65 |
| Elevation 660 | 11/4/2015 | 820 | 3.1 | 60 |
| Elevation 660 | 12/1/2015 | 74 | <1 | 60 |
| | Minimum | 5 | <1 | 55 |
| | Maximum | 8700 | 41 | 140 |
| | mEDIAN | 330 | <1 | 85 |
| | Average | 959 | <1 | 90 |
| | Count | 61 | 61 | 61 |

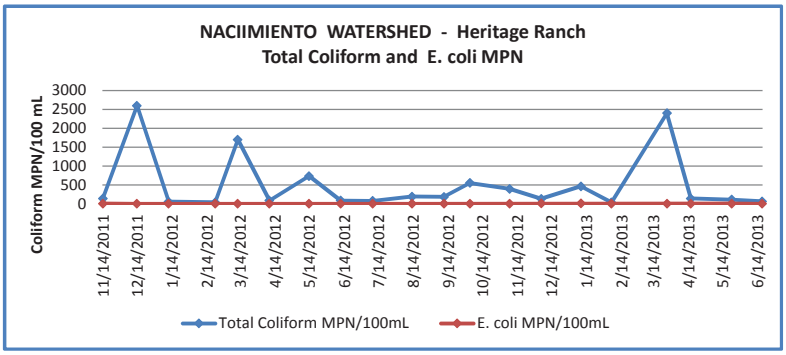


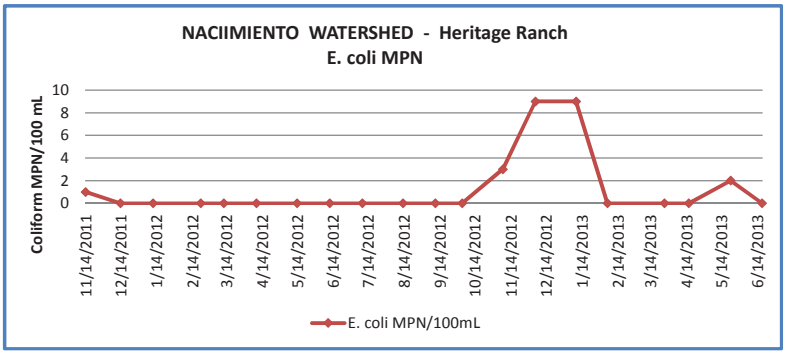
| NACIMIENTO WATERSHED - Dip Creek | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 11/14/2011 | 210 | <1 | 5 |
| 12/14/2011 | 2400 | <1 | 5 |
| 1/11/2012 | 19 | <1 | 5 |
| 2/21/2012 | 7 | <1 | 5 |
| 3/12/2012 | 210 | <1 | 5 |
| 4/9/2012 | 30 | <1 | 5 |
| 5/14/2012 | 62 | <1 | 5 |
| 6/11/2012 | 210 | <1 | 5 |
| 7/9/2012 | 580 | <1 | 10 |
| 8/13/2012 | 490 | < 1 | 5 |
| 9/10/2012 | 370 | 1 | 5 |
| 10/3/2012 | 770 | <1 | 10 |
| 11/7/2012 | 210 | <1 | 10 |
| 12/5/2012 | 58 | 12 | 10 |
| 1/9/2013 | 200 | 9 | 10 |
| 2/5/2013 | 33 | 1 | 10 |
| 3/26/2013 | 550 | 1 | 10 |
| 4/16/2013 | 300 | <1 | 10 |
| 5/21/2013 | 58 | <1 | 10 |
| 6/18/2013 | 160 | <1 | 10 |
| Minimum | 7 | <1 | 5 |
| Maximum | 2400 | 12 | 10 |
| Median | 210 | <1 | 7.5 |
| Average | 350 | 1 | 8 |
| Count | 20 | 20 | 20 |



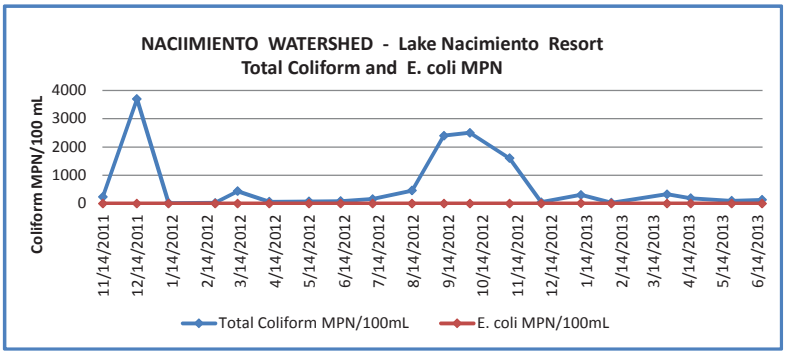



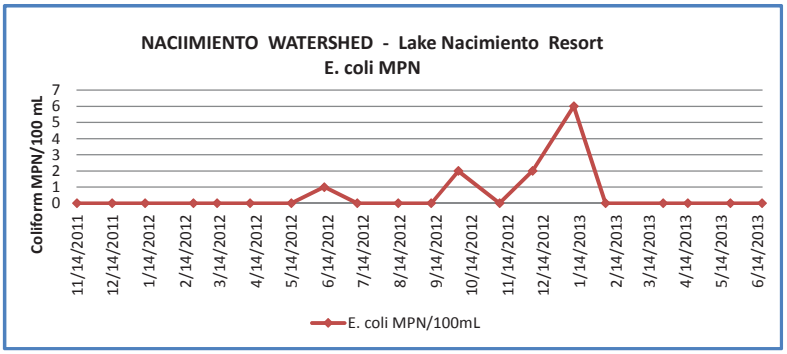

| NACIMIENTO WATERSHED - Heritage Ranch | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 11/14/2011 | 140 | 1 | 5 |
| 12/14/2011 | 2600 | <1 | 5 |
| 1/11/2012 | 52 | <1 | 5 |
| 2/21/2012 | 35 | <1 | 5 |
| 3/12/2012 | 1700 | <1 | 5 |
| 4/9/2012 | 84 | <1 | 5 |
| 5/14/2012 | 730 | <1 | 5 |
| 6/11/2012 | 84 | <1 | 5 |
| 7/9/2012 | 75 | <1 | 52 |
| 8/13/2012 | 190 | < 1 | 5 |
| 9/10/2012 | 180 | <1 | 5 |
| 10/3/2012 | 550 | <1 | 10 |
| 11/7/2012 | 390 | 3 | 10 |
| 12/5/2012 | 130 | 9 | 10 |
| 1/9/2013 | 460 | 9 | 10 |
| 2/5/2013 | 34 | <1 | 10 |
| 3/26/2013 | 2400 | <1 | 10 |
| 4/16/2013 | 140 | <1 | 10 |
| 5/22/2013 | 110 | 2 | 10 |
| 6/18/2013 | 60 | <1 | 10 |
| Minimum | 34 | <1 | 5 |
| Maximum | 2600 | 9 | 52 |
| Median | 140 | <1 | 7.5 |
| Average | 510 | 1 | 10 |
| Count | 20 | 20 | 20 |



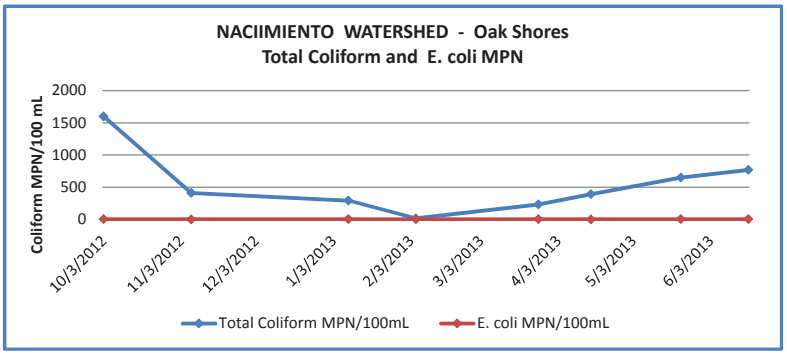



| NACIMIENTO WATERSHED - Lake Nacimiento Resort | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 11/14/2011 | 240 | <1 | 5 |
| 12/14/2011 | 3700 | <1 | 5 |
| 1/11/2012 | 16 | <1 | 5 |
| 2/21/2012 | 25 | <1 | 5 |
| 3/12/2012 | 440 | <1 | 5 |
| 4/9/2012 | 65 | <1 | 5 |
| 5/14/2012 | 75 | <1 | 5 |
| 6/11/2012 | 84 | 1 | 5 |
| 7/9/2012 | 160 | <1 | 8 |
| 8/13/2012 | 460 | < 1 | 5 |
| 9/10/2012 | 2400 | <1 | 5 |
| 10/3/2012 | 2500 | 2 | 10 |
| 11/7/2012 | 1600 | <1 | 10 |
| 12/5/2012 | 46 | 2 | 10 |
| 1/9/2013 | 310 | 6 | 10 |
| 2/5/2013 | 28 | <1 | 10 |
| 3/26/2013 | 330 | <1 | 10 |
| 4/16/2013 | 190 | <1 | 10 |
| 5/22/2013 | 100 | <1 | 10 |
| 6/18/2013 | 130 | <1 | 10 |
| Minimum | 16 | <1 | 5 |
| Maximum | 3700 | 6 | 10 |
| Median | 175 | <1 | 6.5 |
| Average | 640 | 1 | 7 |
| Count | 20 | 20 | 20 |



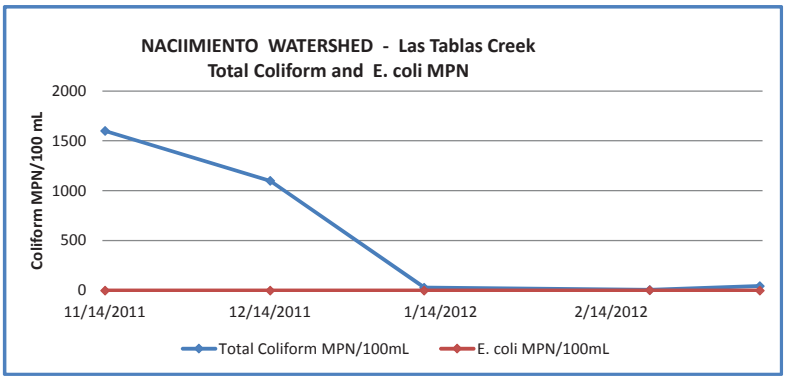




| NACIMIENTO WATERSHED - Oak Shores | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 5/14/2012 | 21 | 1 | 5 |
| 6/11/2012 | 74 | <1 | 36.5 |
| 7/9/2012 | 440 | <1 | 23 |
| 8/13/2012 | 340 | 3 | 5 |
| 9/10/2012 | 1200 | 1 | 5 |
| 10/3/2012 | 580 | <1 | 10 |
| 11/7/2012 | 59 | <1 | 10 |
| 12/5/2012 | 250 | 45 | 10 |
| 1/9/2013 | 340 | 4 | 10 |
| 2/5/2013 | 16 | <1 | 10 |
| 3/26/2013 | 110 | 1 | 10 |
| 4/16/2013 | 50 | <1 | 10 |
| 5/22/2013 | 340 | <1 | 10 |
| 6/18/2013 | 110 | <1 | 5 |
| Minimum | 16 | <1 | 5 |
| Maximum | 1200 | 45 | 36.5 |
| Median | 180 | <1 | 10 |
| Average | 280 | 4 | 11 |
| Count | 14 | 14 | 14 |



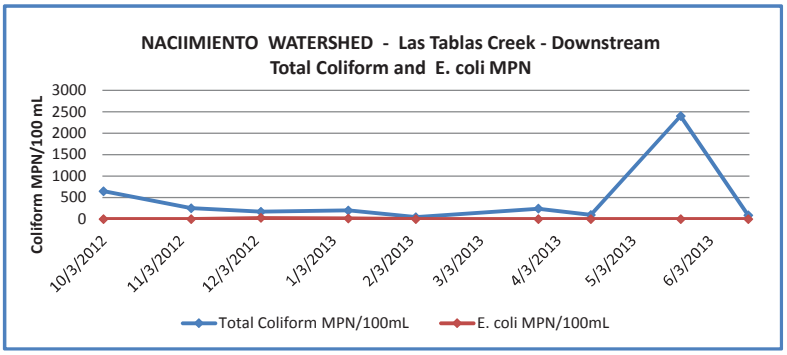
NACIMIENTO WATERSHED - Las Tablas Creek

| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
|---|---|---|---|
| 11/14/2011 | 1600 | <1 | 5 |
| 12/14/2011 | 1100 | <1 | 5 |
| 1/11/2012 | 28 | <1 | 5 |
| 2/21/2012 | 5 | 1 | 5 |
| 3/12/2012 | 43 | <1 | 5 |
| Minimum | 5 | <1 | 5 |
| Maximum | 1600 | 1 | 5 |
| Median | 43 | <1 | 5 |
| Average | 560 | 2 | 5 |
| Count | 5 | 5 | 5 |



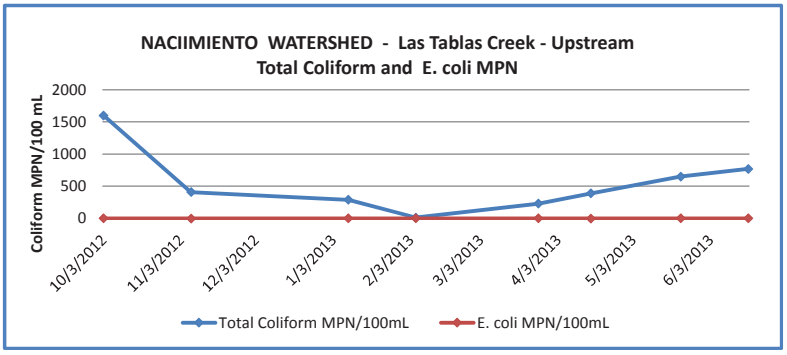

NACIMIENTO WATERSHED - Las Tablas Creek - Downstream

| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
|---|---|---|---|
| 10/3/2012 | 650 | <1 | 10 |
| 11/7/2012 | 250 | <1 | 10 |
| 12/5/2012 | 170 | 26 | 10 |
| 1/9/2013 | 200 | 10 | 10 |
| 2/5/2013 | 44 | 1 | 10 |
| 3/26/2013 | 240 | <1 | 10 |
| 4/16/2013 | 93 | <1 | 10 |
| 5/22/2013 | 2400 | 1 | 10 |
| 6/18/2013 | 86 | <1 | 10 |
| Minimum | 44 | <1 | 10 |
| Maximum | 2400 | 26 | 10 |
| Median | 200 | <1 | 10 |
| Average | 460 | 4 | 10 |
| Count | 9 | 9 | 9 |

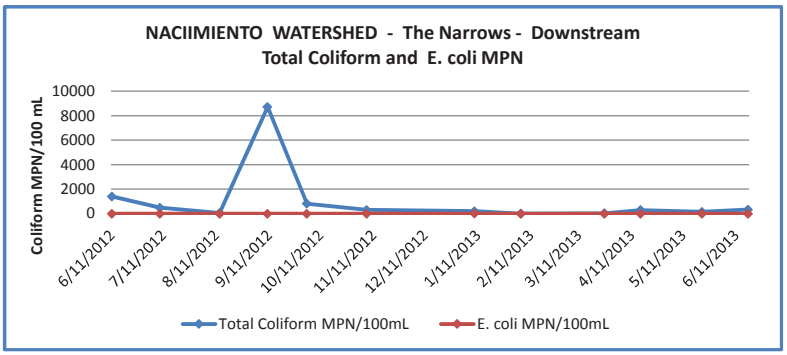



NACIMIENTO WATERSHED - Las Tablas Creek - Upstream

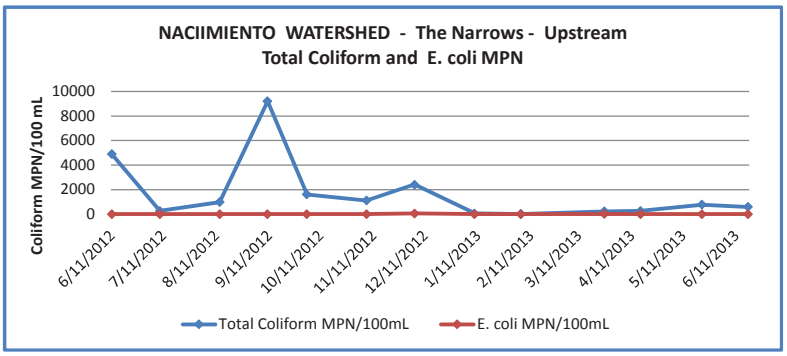
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
|---|---|---|---|
| 10/3/2012 | 1600 | 1 | 10 |
| 11/7/2012 | 410 | <1 | 10 |
| 1/9/2013 | 290 | 3 | 10 |
| 2/5/2013 | 14 | 1 | 10 |
| 3/26/2013 | 230 | 1 | 10 |
| 4/16/2013 | 390 | <1 | 10 |
| 5/22/2013 | 650 | 1 | 10 |
| 6/18/2013 | 770 | 1 | 10 |
| Minimum | 14 | <1 | 10 |
| Maximum | 1600 | 3 | 10 |
| Median | 400 | 1 | 10 |
| Average | 540 | 1 | 10 |
| Count | 8 | 8 | 8 |



| NACIMIENTO WATERSHED - The Narrows - Downstream | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 6/11/2012 | 1400 | <1 | 5 |
| 7/9/2012 | 490 | <1 | 42 |
| 8/13/2012 | 64 | < 1 | 5 |
| 9/10/2012 | 8700 | <1 | 5 |
| 10/3/2012 | 820 | <1 | 10 |
| 11/7/2012 | 310 | <1 | 10 |
| 1/9/2013 | 200 | 2 | 10 |
| 2/5/2013 | 11 | <1 | 10 |
| 3/26/2013 | 32 | <1 | 10 |
| 4/16/2013 | 290 | 1 | 10 |
| 5/22/2013 | 150 | <1 | 10 |
| 6/18/2013 | 340 | <1 | 10 |
| Minimum | 11 | <1 | 5 |
| Maximum | 8700 | 2 | 42 |
| Median | 300 | <1 | 10 |
| Average | 1100 | <1 | 11 |
| Count | 12 | 12 | 12 |

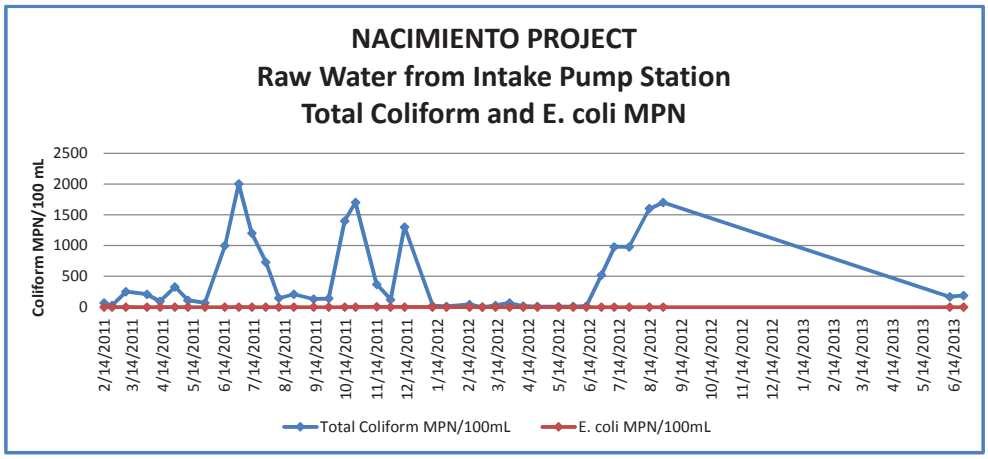


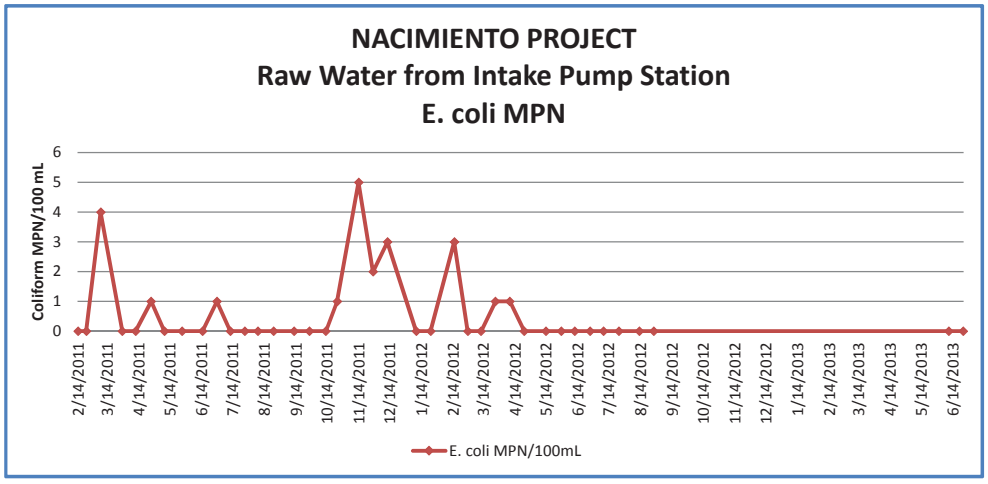

| NACIMIENTO WATERSHED - The Narrows - Upstream | | | |
|---|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL | Depth from Water Surface (feet) |
| 6/11/2012 | 4900 | <1 | 5 |
| 7/9/2012 | 260 | <1 | 19 |
| 8/13/2012 | 980 | < 1 | 5 |
| 9/10/2012 | 9200 | <1 | 5 |
| 10/3/2012 | 1600 | <1 | 10 |
| 11/7/2012 | 1100 | 1 | 10 |
| 12/5/2012 | 2400 | 51 | 10 |
| 1/9/2013 | 50 | 1 | 10 |
| 2/5/2013 | 11 | <1 | 10 |
| 3/26/2013 | 210 | 4 | 10 |
| 4/16/2013 | 260 | 1 | 10 |
| 5/22/2013 | 770 | 1 | 10 |
| 6/18/2013 | 580 | <1 | 5 |
| Minimum | 11 | <1 | 5 |
| Maximum | 9200 | 51 | 19 |
| Median | 770 | <1 | 10 |
| Average | 1700 | 5 | 9 |
| Count | 13 | 13 | 13 |



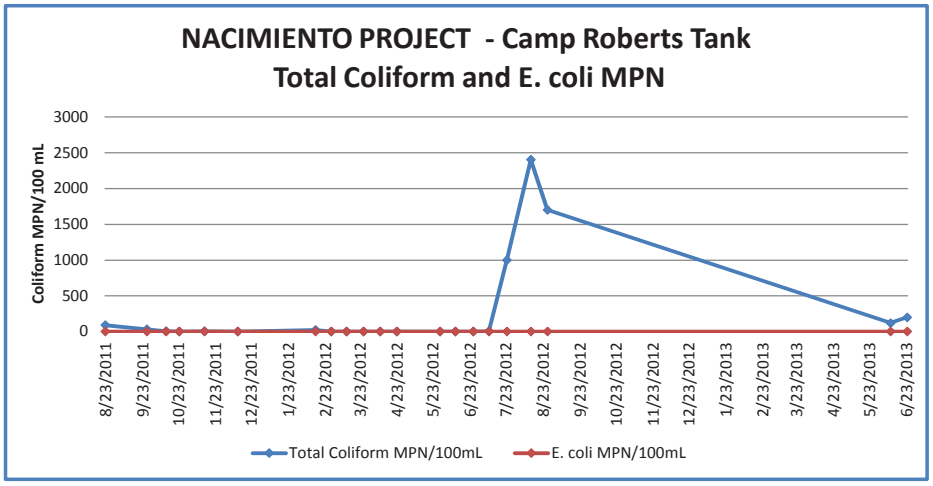
NACIMIENTO PROJECT - RAW WATER from INTAKE PUMP STATION

| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
|---|---|---|
| 2/14/2011 | 70 | <1 |
| 2/22/2011 | 26 | <1 |
| 3/8/2011 | 250 | 4 |
| 3/29/2011 | 210 | <1 |
| 4/11/2011 | 96 | <1 |
| 4/26/2011 | 330 | 1 |
| 5/9/2011 | 110 | <1 |
| 5/26/2011 | 69 | <1 |
| 6/15/2011 | 1000 | <1 |
| 6/29/2011 | 2000 | 1 |
| 7/12/2011 | 1200 | <1 |
| 7/26/2011 | 730 | <1 |
| 8/8/2011 | 150 | <1 |
| 8/23/2011 | 210 | <1 |
| 9/12/2011 | 130 | <1 |
| 9/27/2011 | 140 | <1 |
| 10/13/2011 | 1400 | <1 |
| 10/24/2011 | 1700 | 1 |
| 11/14/2011 | 370 | 5 |
| 11/28/2011 | 120 | 2 |
| 12/12/2011 | 1300 | 3 |
| 1/9/2012 | 24 | <1 |
| 1/23/2012 | 14 | <1 |
| 2/15/2012 | 45 | 3 |
| 2/28/2012 | 1 | <1 |
| 3/12/2012 | 26 | < 1 |
| 3/26/2012 | 70 | 1 |
| 4/9/2012 | 19 | 1 |
| 4/23/2012 | 10 | <1 |
| 5/14/2012 | 8 | <1 |
| 5/29/2012 | 10 | <1 |
| 6/11/2012 | 19 | <1 |
| 6/26/2012 | 520 | <1 |
| 7/9/2012 | 980 | <1 |
| 7/24/2012 | 980 | <1 |
| 8/13/2012 | 1600 | < 1 |
| 8/27/2012 | 1700 | <1 |
| 6/10/2013 | 170 | <1 |
| 6/24/2013 | 190 | <1 |
| Minimum | 1 | <1 |
| Maximum | 2000 | 5 |
| Median | 150 | 1.5 |
| Average | 461 | 1 |
| Count | 39 | 10 |

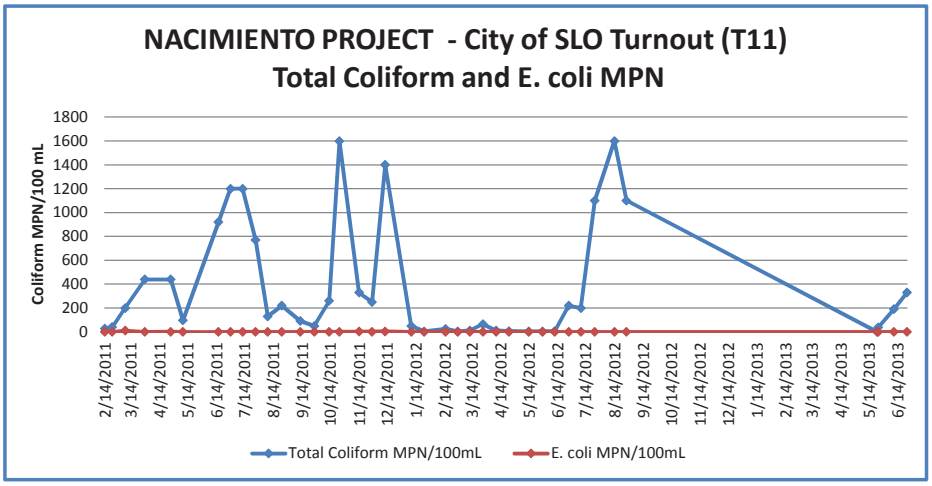


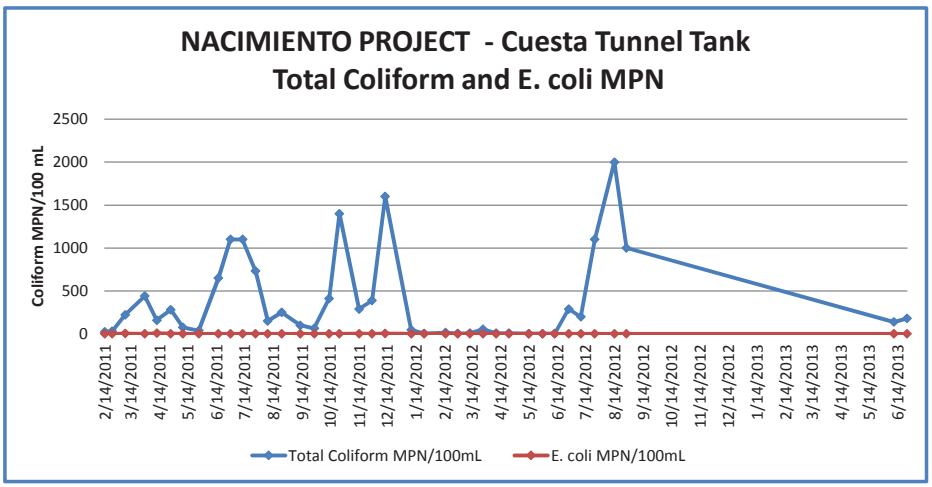
| NACIMIENTO PROJECT - Camp Roberts Tank | | |
|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
| 8/23/2011 | 91 | <1 |
| 9/27/2011 | 31 | <1 |
| 10/13/2011 | 6 | <1 |
| 10/24/2011 | 2 | <1 |
| 11/14/2011 | 7 | <1 |
| 12/12/2011 | 3 | <1 |
| 2/15/2012 | 24 | 2 |
| 2/28/2012 | <1 | <1 |
| 3/12/2012 | 1 | < 1 |
| 3/26/2012 | <1 | <1 |
| 4/9/2012 | <1 | <1 |
| 4/23/2012 | <1 | <1 |
| 5/29/2012 | <1 | <1 |
| 6/11/2012 | <1 | <1 |
| 6/26/2012 | <1 | <1 |
| 7/9/2012 | 6 | <1 |
| 7/24/2012 | 1000 | <1 |
| 8/13/2012 | 2400 | < 1 |
| 8/27/2012 | 1700 | <1 |
| 6/10/2013 | 120 | <1 |
| 6/24/2013 | 200 | <1 |
| Minimum | <1 | <1 |
| Maximum | 2400 | 2 |
| Median | 6 | <1 |
| Average | 266 | <1 |
| Count | 21 | 21 |



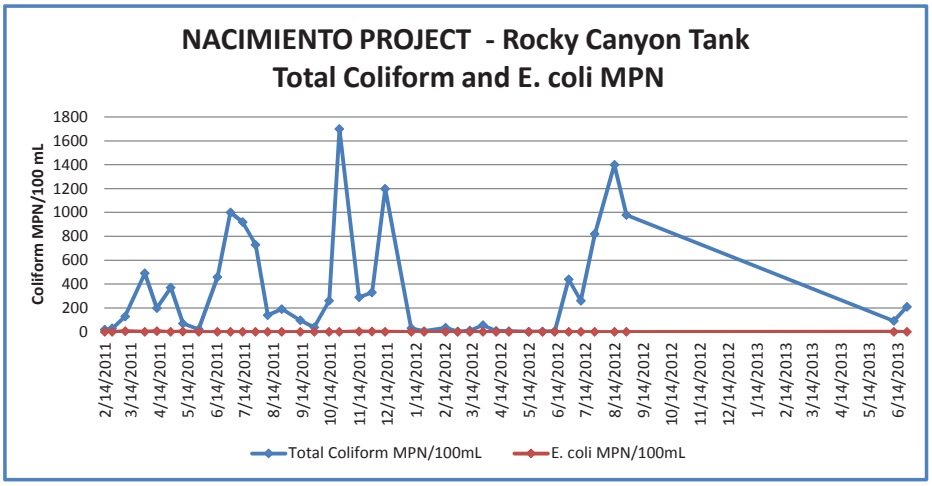
| NACIMIENTO PROJECT - City of SLO Turnout (T11) | | |
|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
| 2/14/2011 | 28 | <1 |
| 2/22/2011 | 40 | <1 |
| 3/8/2011 | 200 | 10 |
| 3/29/2011 | 440 | <1 |
| 4/26/2011 | 440 | 1 |
| 5/9/2011 | 96 | <1 |
| 6/16/2011 | 920 | <1 |
| 6/29/2011 | 1200 | <1 |
| 7/12/2011 | 1200 | 1 |
| 7/26/2011 | 770 | <1 |
| 8/8/2011 | 130 | <1 |
| 8/23/2011 | 220 | <1 |
| 9/12/2011 | 91 | <1 |
| 9/27/2011 | 50 | <1 |
| 10/13/2011 | 260 | 1 |
| 10/24/2011 | 1600 | <1 |
| 11/14/2011 | 330 | 3 |
| 11/28/2011 | 250 | 1 |
| 12/12/2011 | 1400 | 4 |
| 1/9/2012 | 50 | <1 |
| 1/23/2012 | 3 | <1 |
| 2/15/2012 | 25 | 1 |
| 2/28/2012 | 3 | <1 |
| 3/12/2012 | 12 | < 1 |
| 3/26/2012 | 65 | 1 |
| 4/9/2012 | 11 | <1 |
| 4/23/2012 | 6 | <1 |
| 5/14/2012 | 3 | <1 |
| 5/29/2012 | 4 | 1 |
| 6/11/2012 | 6 | <1 |
| 6/26/2012 | 220 | <1 |
| 7/9/2012 | 200 | <1 |
| 7/24/2012 | 1100 | <1 |
| 8/14/2012 | 1600 | < 1 |
| 8/27/2012 | 1100 | <1 |
| 5/23/2013 | <1 | <1 |
| 5/24/2013 | 37 | <1 |
| 6/10/2013 | 190 | <1 |
| 6/24/2013 | 330 | <1 |
| Minimum | <1 | <1 |
| Maximum | 1600 | 10 |
| Median | 190 | <1 |
| Average | 375 | 1 |
| Count | 39 | 39 |



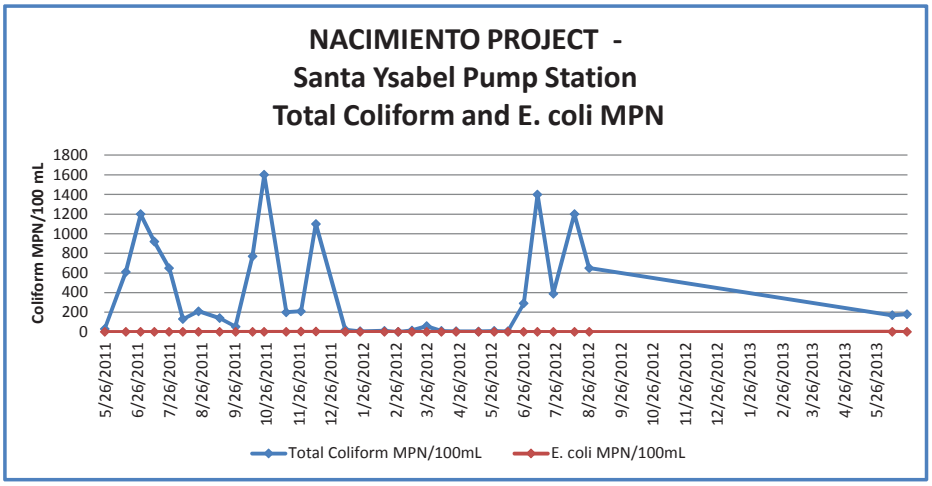
| NACIMIENTO PROJECT - Cuesta Tunnel Tank | | |
|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
| 2/14/2011 | 26 | <1 |
| 2/22/2011 | 31 | <1 |
| 3/8/2011 | 220 | 4 |
| 3/29/2011 | 440 | <1 |
| 4/11/2011 | 160 | 8 |
| 4/26/2011 | 280 | 3 |
| 5/9/2011 | 77 | <1 |
| 5/26/2011 | 39 | 1 |
| 6/16/2011 | 650 | <1 |
| 6/29/2011 | 1100 | 1 |
| 7/12/2011 | 1100 | <1 |
| 7/26/2011 | 730 | <1 |
| 8/8/2011 | 150 | <1 |
| 8/23/2011 | 250 | <1 |
| 9/12/2011 | 100 | <1 |
| 9/27/2011 | 66 | <1 |
| 10/13/2011 | 410 | <1 |
| 10/24/2011 | 1400 | <1 |
| 11/14/2011 | 290 | 3 |
| 11/28/2011 | 390 | 2 |
| 12/12/2011 | 1600 | 5 |
| 1/9/2012 | 46 | 1 |
| 1/23/2012 | 5 | 1 |
| 2/15/2012 | 16 | <1 |
| 2/28/2012 | 5 | <1 |
| 3/12/2012 | 10 | 1 |
| 3/26/2012 | 53 | <1 |
| 4/9/2012 | 10 | <1 |
| 4/23/2012 | 10 | <1 |
| 5/14/2012 | 3 | <1 |
| 5/29/2012 | 3 | <1 |
| 6/11/2012 | 4 | <1 |
| 6/26/2012 | 290 | <1 |
| 7/9/2012 | 200 | <1 |
| 7/24/2012 | 1100 | <1 |
| 8/14/2012 | 2000 | < 1 |
| 8/27/2012 | 1000 | <1 |
| 6/10/2013 | 140 | <1 |
| 6/24/2013 | 180 | <1 |
| Minimum | 3 | <1 |
| Maximum | 2000 | 8 |
| Median | 160 | <1 |
| Average | 374 | 1 |
| Count | 39 | 39 |



| NACIMIENTO PROJECT - Rocky Canyon Tank | | |
|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
| 2/14/2011 | 20 | <1 |
| 2/22/2011 | 29 | <1 |
| 3/8/2011 | 130 | 7 |
| 3/29/2011 | 490 | 1 |
| 4/11/2011 | 200 | 7 |
| 4/26/2011 | 370 | <1 |
| 5/9/2011 | 71 | 3 |
| 5/26/2011 | 23 | <1 |
| 6/15/2011 | 460 | <1 |
| 6/29/2011 | 1000 | <1 |
| 7/12/2011 | 920 | <1 |
| 7/26/2011 | 730 | <1 |
| 8/8/2011 | 140 | <1 |
| 8/23/2011 | 190 | <1 |
| 9/12/2011 | 96 | <1 |
| 9/27/2011 | 38 | <1 |
| 10/13/2011 | 260 | <1 |
| 10/24/2011 | 1700 | <1 |
| 11/14/2011 | 290 | 3 |
| 11/28/2011 | 330 | 2 |
| 12/12/2011 | 1200 | 1 |
| 1/9/2012 | 29 | <1 |
| 1/23/2012 | 6 | <1 |
| 2/15/2012 | 34 | <1 |
| 2/28/2012 | 2 | <1 |
| 3/12/2012 | 12 | 1 |
| 3/26/2012 | 56 | <1 |
| 4/9/2012 | 9 | <1 |
| 4/23/2012 | 7 | <1 |
| 5/14/2012 | 1 | <1 |
| 5/29/2012 | 4 | <1 |
| 6/11/2012 | 6 | <1 |
| 6/26/2012 | 440 | <1 |
| 7/9/2012 | 260 | <1 |
| 7/24/2012 | 820 | <1 |
| 8/14/2012 | 1400 | < 1 |
| 8/27/2012 | 980 | <1 |
| 6/10/2013 | 91 | 1 |
| 6/24/2013 | 210 | <1 |
| Minimum | 1 | <1 |
| Maximum | 1700 | 7 |
| Median | 140 | <1 |
| Average | 335 | 1 |
| Count | 39 | 39 |



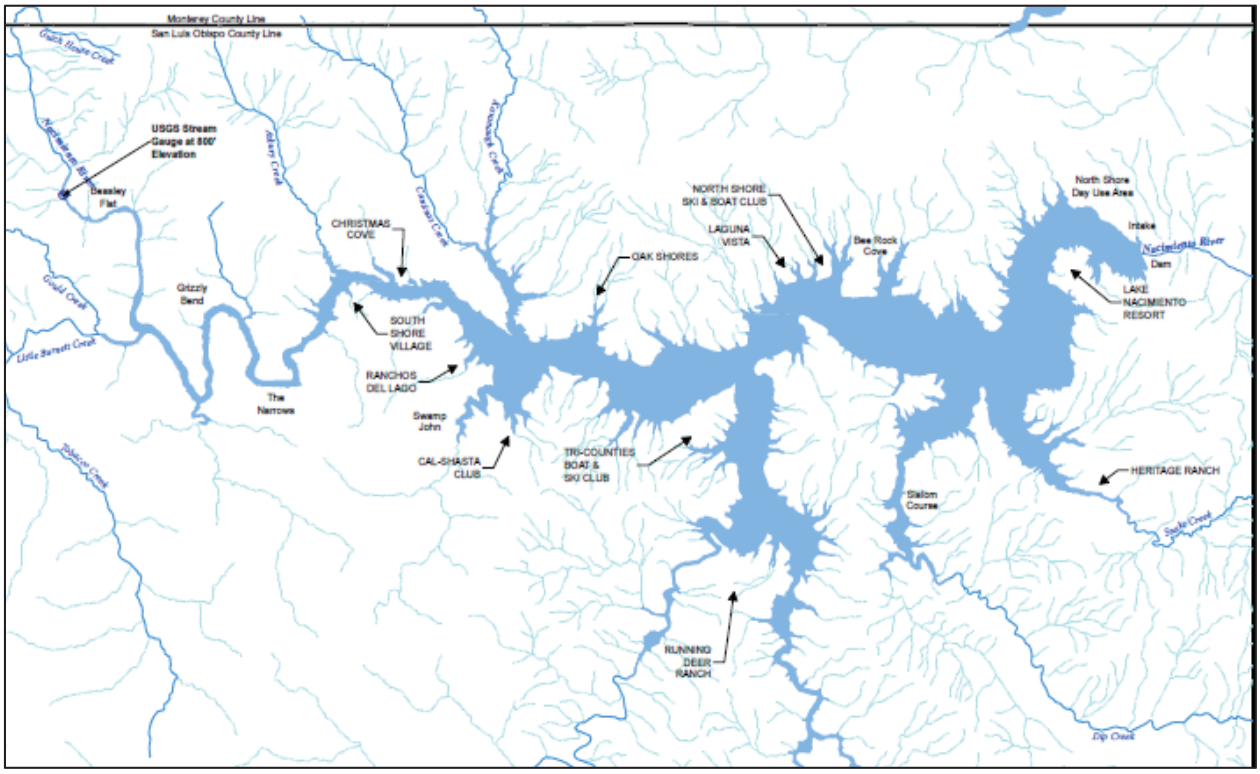
| NACIMIENTO PROJECT - Santa Ysabel Pump Station | | |
|---|---|---|
| Collected Date | Total Coliform MPN/100mL | E. coli MPN/100mL |
| 5/26/2011 | 31 | <1 |
| 6/15/2011 | 610 | <1 |
| 6/29/2011 | 1200 | 1 |
| 7/12/2011 | 920 | <1 |
| 7/26/2011 | 650 | 2 |
| 8/8/2011 | 130 | 1 |
| 8/23/2011 | 210 | <1 |
| 9/12/2011 | 140 | <1 |
| 9/27/2011 | 54 | <1 |
| 10/13/2011 | 770 | <1 |
| 10/24/2011 | 1600 | <1 |
| 11/14/2011 | 200 | <1 |
| 11/28/2011 | 210 | 3 |
| 12/12/2011 | 1100 | 3 |
| 1/9/2012 | 21 | 1 |
| 1/23/2012 | 6 | <1 |
| 2/15/2012 | 11 | <1 |
| 2/28/2012 | <1 | <1 |
| 3/12/2012 | 15 | 2 |
| 3/26/2012 | 58 | 1 |
| 4/9/2012 | 10 | <1 |
| 4/23/2012 | 6 | 1 |
| 5/14/2012 | 5 | <1 |
| 5/29/2012 | 10 | <1 |
| 6/11/2012 | 6 | <1 |
| 6/26/2012 | 290 | <1 |
| 7/9/2012 | 1400 | <1 |
| 7/24/2012 | 390 | <1 |
| 8/13/2012 | 1200 | < 1 |
| 8/27/2012 | 650 | <1 |
| 6/10/2013 | 170 | 1 |
| 6/24/2013 | 180 | <1 |
| Minimum | <1 | <1 |
| Maximum | 1600 | 3 |
| Median | 175 | <1 |
| Average | 383 | 1 |
| Count | 32 | 32 |



APPENDIX C

# ALGAE DATA

# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



## Nacimiento Reservoir - Elevation 790': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 4/5/2011 | 210 | 3 | 75 | — | 0 | — | 120 |
| 5/2/2011 | 1100 | 160 | 900 | — | 68 | — | 11 |
| 6/15/2011 | 36 | 36 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 210 | 0 | 170 | — | 32 | — | 11 |
| 8/2/2011 | 460 | 25 | 160 | — | 32 | — | 240 |
| Minimum | 36 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 1100 | 160 | 900 | — | 68 | — | 240 |
| Average | 403 | 45 | 261 | — | 26 | — | 76 |
| Median | 210 | 25 | 160 | — | 32 | — | 11 |
| # of Samples | 5 | 5 | 5 | 0 | 5 | 0 | 5 |

## Nacimiento Reservoir - Elevation 780': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 3/7/2011 | 200 | 0 | 18 | — | 7 | — | 170 |
| 4/5/2011 | 96 | 0 | 21 | — | 21 | — | 54 |
| 5/2/2011 | 1300 | 580 | 670 | — | 36 | — | 21 |
| 6/15/2011 | 120 | 0 | 120 | — | 0 | — | 0 |
| 7/12/2011 | 420 | 0 | 330 | — | 7 | — | 82 |
| 8/2/2011 | 370 | 68 | 110 | — | 50 | — | 140 |
| 9/13/2011 | 530 | 18 | 360 | — | 0 | — | 150 |
| 10/12/2011 | 130 | 14 | 7 | — | 14 | — | 96 |
| Minimum | 96 | 0 | 7 | — | 0 | — | 0 |
| Maximum | 1300 | 580 | 670 | — | 50 | — | 170 |
| Average | 396 | 85 | 205 | — | 17 | — | 89 |
| Median | 285 | 7 | 115 | — | 11 | — | 89 |
| # of Samples | 8 | 8 | 8 | 0 | 8 | 0 | 8 |

## Nacimiento Reservoir - Elevation 770': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 3/7/2011 | 640 | 0 | 82 | — | 25 | — | 530 |
| 4/5/2011 | 43 | 0 | 11 | — | 0 | — | 32 |
| 5/2/2011 | 82 | 0 | 82 | — | 0 | — | 0 |
| 6/15/2011 | 75 | 18 | 57 | — | 0 | — | 0 |
| 7/12/2011 | 260 | 21 | 140 | — | 57 | — | 43 |
| 8/2/2011 | 250 | 29 | 130 | — | 21 | — | 71 |
| 9/13/2011 | 390 | 50 | 230 | — | 0 | — | 110 |
| 10/12/2011 | 180 | 36 | 0 | — | 0 | — | 140 |
| 11/2/2011 | 72 | 0 | 54 | — | 0 | — | 18 |
| 12/13/2011 | 75 | 0 | 36 | — | 0 | — | 39 |
| 1/9/2012 | 7 | 0 | 7 | — | 0 | — | 0 |
| 2/14/2012 | 43 | 0 | 0 | — | 7 | — | 36 |
| 3/13/2012 | 78 | 14 | 0 | — | 0 | — | 64 |
| 4/10/2012 | 82 | 11 | 50 | — | 0 | — | 21 |
| 5/15/2012 | 180 | 0 | 110 | — | 0 | — | 71 |
| 6/6/2012 | 340 | 0 | 310 | — | 0 | — | 32 |
| Minimum | 7 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 640 | 50 | 310 | — | 57 | — | 530 |
| Average | 175 | 11 | 81 | — | 7 | — | 75 |
| Median | 82 | 0 | 56 | — | 0 | — | 38 |
| # of Samples | 16 | 16 | 16 | 0 | 16 | 0 | 16 |

## Nacimiento Reservoir - Elevation 760': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 21 | 0 | 0 | — | 0 | — | 21 |
| 2/7/2011 | 710 | 0 | 0 | — | 0 | — | 710 |
| 3/7/2011 | 190 | 0 | 43 | — | 7 | — | 140 |
| 4/5/2011 | 14 | 0 | 0 | — | 0 | — | 14 |
| 5/2/2011 | 14 | 0 | 14 | — | 0 | — | 0 |
| 6/15/2011 | 190 | 36 | 150 | — | 0 | — | 0 |
| 7/12/2011 | 72 | 0 | 0 | — | 43 | — | 29 |
| 8/2/2011 | 71 | 0 | 18 | — | 7 | — | 46 |
| 9/13/2011 | 400 | 25 | 280 | — | 0 | — | 93 |
| 10/12/2011 | 170 | 32 | 25 | — | 0 | — | 110 |
| 11/2/2011 | 140 | 18 | 75 | — | 0 | — | 43 |
| 12/13/2011 | 61 | 0 | 11 | — | 11 | — | 39 |
| 1/9/2012 | 21 | 0 | 7 | — | 0 | — | 14 |
| 2/14/2012 | 57 | 0 | 0 | — | 0 | — | 57 |
| 3/13/2012 | 83 | 0 | 54 | — | 0 | — | 29 |
| 4/10/2012 | 90 | 0 | 36 | — | 0 | — | 54 |
| 5/15/2012 | 250 | 0 | 140 | — | 0 | — | 110 |
| 6/6/2012 | 250 | 0 | 250 | — | 0 | — | 0 |
| 7/16/2012 | 220 | 0 | 190 | — | 0 | — | 29 |
| 8/6/2012 | 41 | 0 | 26 | — | 0 | — | 15 |
| Minimum | 14 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 710 | 36 | 280 | — | 43 | — | 710 |
| Average | 153 | 6 | 66 | — | 3 | — | 78 |
| Median | 87 | 0 | 26 | — | 0 | — | 34 |
| # of Samples | 20 | 20 | 20 | 0 | 20 | 0 | 20 |

## Nacimiento Reservoir - Elevation 750': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/7/2011 | 330 | 0 | 0 | — | 0 | — | 330 |
| 3/7/2011 | 160 | 0 | 7 | — | 18 | — | 130 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 25 | 0 | 0 | — | 0 | — | 25 |
| 6/15/2011 | 71 | 0 | 71 | — | 0 | — | 0 |
| 7/12/2011 | 82 | 0 | 0 | — | 39 | — | 43 |
| 8/2/2011 | 82 | 0 | 0 | — | 18 | — | 64 |
| 9/13/2011 | 210 | 0 | 150 | — | 0 | — | 61 |
| 10/12/2011 | 100 | 11 | 36 | — | 0 | — | 54 |
| 11/2/2011 | 32 | 11 | 0 | — | 0 | — | 21 |
| 12/13/2011 | 25 | 0 | 11 | — | 0 | — | 14 |
| 1/9/2012 | 46 | 0 | 14 | — | 0 | — | 32 |
| 2/14/2012 | 96 | 0 | 7 | — | 0 | — | 89 |
| 3/13/2012 | 18 | 0 | 0 | — | 0 | — | 18 |
| 4/10/2012 | 110 | 0 | 36 | — | 0 | — | 71 |
| 5/15/2012 | 150 | 0 | 120 | — | 0 | — | 25 |
| 6/6/2012 | 350 | 0 | 320 | — | 0 | — | 29 |
| 7/16/2012 | 160 | 0 | 150 | — | 0 | — | 14 |
| 8/6/2012 | 48 | 0 | 15 | — | 0 | — | 33 |
| 9/4/2012 | 59 | 0 | 0 | — | 0 | — | 59 |
| 1/7/2013 | 62 | 0 | 18 | — | 0 | — | 44 |
| 2/4/2013 | 41 | 0 | 25 | — | 0 | — | 15 |
| 3/4/2013 | 48 | 0 | 15 | — | 0 | — | 33 |
| 4/2/2013 | 130 | 0 | 11 | — | 22 | — | 99 |
| 5/6/2013 | 600 | 0 | 560 | — | 0 | — | 44 |
| 6/3/2013 | 110 | 0 | 0 | — | 0 | — | 110 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 600 | 11 | 560 | — | 39 | — | 330 |
| Average | 116 | 1 | 58 | — | 4 | — | 54 |
| Median | 82 | 0 | 11 | — | 0 | — | 33 |
| # of Samples | 27 | 27 | 27 | 0 | 27 | 0 | 27 |

## Nacimiento Reservoir - Elevation 740': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 120 | 0 | 0 | — | 0 | — | 120 |
| 2/7/2011 | 190 | 0 | 0 | — | 0 | — | 190 |
| 3/7/2011 | 64 | 0 | 14 | — | 0 | — | 50 |
| 4/5/2011 | 4 | 0 | 0 | — | 0 | — | 4 |
| 5/2/2011 | 150 | 0 | 71 | — | 0 | — | 75 |
| 6/15/2011 | 75 | 0 | 75 | — | 0 | — | 0 |
| 7/12/2011 | 160 | 0 | 89 | — | 32 | — | 36 |
| 8/2/2011 | 120 | 0 | 7 | — | 50 | — | 61 |
| 9/13/2011 | 25 | 0 | 7 | — | 0 | — | 18 |
| 10/12/2011 | 68 | 0 | 29 | — | 0 | — | 39 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 53 | 0 | 7 | — | 14 | — | 32 |
| 1/9/2012 | 25 | 0 | 0 | — | 0 | — | 25 |
| 2/14/2012 | 64 | 0 | 7 | — | 0 | — | 57 |
| 3/13/2012 | 47 | 0 | 4 | — | 0 | — | 43 |
| 4/10/2012 | 130 | 0 | 0 | — | 43 | — | 89 |
| 5/15/2012 | 110 | 7 | 61 | — | 0 | — | 37 |
| 6/6/2012 | 230 | 0 | 210 | — | 0 | — | 18 |
| 7/16/2012 | 290 | 0 | 270 | — | 0 | — | 18 |
| 8/6/2012 | 81 | 0 | 33 | — | 0 | — | 48 |
| 9/4/2012 | 73 | 11 | 11 | — | 0 | — | 51 |
| 10/1/2012 | 40 | 0 | 40 | — | 0 | — | 0 |
| 11/5/2012 | 140 | 0 | 18 | — | 0 | — | 120 |
| 12/5/2012 | 390 | 0 | 88 | — | 0 | — | 300 |
| 1/7/2013 | 55 | 7 | 11 | — | 0 | — | 37 |
| 2/4/2013 | 19 | 0 | 15 | — | 0 | — | 4 |
| 3/4/2013 | 300 | 0 | 210 | — | 0 | — | 88 |
| 4/2/2013 | 110 | 0 | 11 | — | 0 | — | 95 |
| 5/6/2013 | 700 | 0 | 600 | — | 0 | — | 99 |
| 6/3/2013 | 270 | 15 | 0 | — | 0 | — | 250 |
| 7/8/2013 | 200 | 0 | 170 | — | 0 | — | 26 |
| 8/5/2013 | 640 | 62 | 81 | — | 0 | — | 500 |
| 9/3/2013 | 400 | 11 | 37 | — | 7 | — | 350 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 700 | 62 | 600 | — | 50 | — | 500 |
| Average | 162 | 3 | 66 | — | 4 | — | 87 |
| Median | 110 | 0 | 15 | — | 0 | — | 48 |
| # of Samples | 33 | 33 | 33 | 0 | 33 | 0 | 33 |

## Nacimiento Reservoir - Elevation 730': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 32 | 0 | 18 | — | 0 | — | 14 |
| 2/7/2011 | 290 | 0 | 0 | — | 0 | — | 290 |
| 3/7/2011 | 120 | 0 | 7 | — | 11 | — | 100 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 160 | 0 | 130 | — | 0 | — | 29 |
| 6/15/2011 | 25 | 0 | 25 | — | 0 | — | 0 |
| 7/12/2011 | 100 | 0 | 0 | — | 57 | — | 43 |
| 8/2/2011 | 50 | 0 | 0 | — | 43 | — | 7 |
| 9/13/2011 | 57 | 0 | 7 | — | 0 | — | 39 |
| 10/12/2011 | 46 | 0 | 46 | — | 0 | — | 0 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 43 | 0 | 7 | — | 0 | — | 36 |
| 1/9/2012 | 18 | 0 | 7 | — | 0 | — | 11 |
| 2/14/2012 | 82 | 0 | 57 | — | 0 | — | 25 |
| 3/13/2012 | 89 | 0 | 0 | — | 0 | — | 89 |
| 4/10/2012 | 130 | 0 | 18 | — | 0 | — | 110 |
| 5/15/2012 | 25 | 0 | 18 | — | 0 | — | 7 |
| 6/6/2012 | 50 | 0 | 36 | — | 0 | — | 14 |
| 7/16/2012 | 120 | 0 | 100 | — | 0 | — | 21 |
| 8/6/2012 | 73 | 0 | 0 | — | 0 | — | 73 |
| 9/4/2012 | 11 | 0 | 0 | — | 0 | — | 11 |
| 10/1/2012 | 200 | 0 | 110 | — | 26 | — | 62 |
| 11/5/2012 | 100 | 11 | 0 | — | 22 | — | 70 |
| 12/5/2012 | 340 | 0 | 88 | — | 0 | — | 250 |
| 1/7/2013 | 37 | 0 | 15 | — | 0 | — | 22 |
| 2/4/2013 | 11 | 0 | 11 | — | 0 | — | 0 |
| 3/4/2013 | 48 | 0 | 0 | — | 0 | — | 48 |
| 4/2/2013 | 260 | 0 | 0 | — | 0 | — | 260 |
| 5/6/2013 | 180 | 0 | 170 | — | 0 | — | 15 |
| 6/3/2013 | 110 | 0 | 0 | — | 0 | — | 110 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 340 | 11 | 170 | — | 57 | — | 290 |
| Average | 94 | 0 | 29 | — | 5 | — | 59 |
| Median | 65 | 0 | 7 | — | 0 | — | 27 |
| # of Samples | 30 | 30 | 30 | 0 | 30 | 0 | 30 |

## Nacimiento Reservoir - Elevation 720': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 11 | 0 | 11 | — | 0 | — | 0 |
| 2/7/2011 | 440 | 0 | 0 | — | 0 | — | 440 |
| 3/7/2011 | 170 | 0 | 7 | — | 11 | — | 150 |
| 4/5/2011 | 4 | 0 | 0 | — | 0 | — | 4 |
| 5/2/2011 | 93 | 0 | 36 | — | 0 | — | 57 |
| 6/15/2011 | 79 | 29 | 50 | — | 0 | — | 0 |
| 7/12/2011 | 83 | 11 | 11 | — | 32 | — | 29 |
| 8/2/2011 | 170 | 0 | 89 | — | 57 | — | 25 |
| 9/13/2011 | 53 | 7 | 21 | — | 0 | — | 25 |
| 10/12/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 54 | 0 | 21 | — | 29 | — | 4 |
| 1/9/2012 | 11 | 0 | 7 | — | 0 | — | 4 |
| 2/14/2012 | 85 | 0 | 46 | — | 0 | — | 39 |
| 3/13/2012 | 67 | 0 | 21 | — | 0 | — | 46 |
| 4/10/2012 | 210 | 0 | 150 | — | 7 | — | 50 |
| 5/15/2012 | 25 | 0 | 0 | — | 0 | — | 25 |
| 6/6/2012 | 50 | 0 | 43 | — | 0 | — | 7 |
| 7/16/2012 | 75 | 0 | 71 | — | 0 | — | 4 |
| 8/6/2012 | 11 | 0 | 0 | — | 0 | — | 11 |
| 9/4/2012 | 29 | 0 | 0 | — | 0 | — | 29 |
| 10/1/2012 | 85 | 0 | 22 | — | 26 | — | 37 |
| 11/5/2012 | 59 | 7 | 26 | — | 0 | — | 26 |
| 12/5/2012 | 410 | 0 | 73 | — | 0 | — | 340 |
| 1/7/2013 | 7 | 0 | 0 | — | 0 | — | 7 |
| 2/4/2013 | 18 | 18 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 33 | 0 | 26 | — | 0 | — | 7 |
| 4/2/2013 | 240 | 0 | 0 | — | 0 | — | 240 |
| 5/6/2013 | 59 | 0 | 37 | — | 0 | — | 22 |
| 6/3/2013 | 22 | 0 | 0 | — | 0 | — | 22 |
| 7/7/2013 | 77 | 0 | 33 | — | 0 | — | 44 |
| 8/5/2013 | 380 | 0 | 81 | — | 0 | — | 300 |
| 9/3/2013 | 350 | 26 | 140 | — | 7 | — | 180 |
| 10/2/2013 | 270 | 7 | 73 | — | 0 | — | 190 |
| 11/4/2013 | 510 | 0 | 84 | — | 0 | — | 430 |
| 12/2/2013 | 570 | 0 | 92 | — | 0 | — | 480 |
| 1/6/2014 | 2400 | 0 | 460 | — | 0 | — | 1900 |
| 2/3/2014 | 210 | 0 | 11 | — | 0 | — | 200 |
| 3/3/2014 | 930 | 1 | 0 | — | 0 | — | 930 |
| 4/2/2014 | 92 | 0 | 0 | — | 0 | — | 92 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 2400 | 29 | 460 | — | 57 | — | 1900 |
| Average | 211 | 3 | 44 | — | 5 | — | 129 |
| Median | 78 | 0 | 21 | — | 0 | — | 29 |
| # of Samples | 40 | 40 | 40 | 0 | 61 | 0 | 61 |

## Nacimiento Reservoir - Elevation 720': Algae Count Data (cells/mL)

| Collected Date | Algae - Total Count (cells/mL) | Blue-greens (cells/mL) | Cryptomonads (cells/mL) | Diatoms (cells/mL) | Dinoflagellates (cells/mL) | Flagellates (cellsr/mL) | Goldens (cells/mL) | Greens (cells/mL) |
|---|---|---|---|---|---|---|---|---|
| 5/5/2014 | 580 | 0 | 0 | 7 | 0 | 0 | 0 | 570 |
| 6/2/2014 | 300 | 0 | 15 | 4 | 0 | 0 | 220 | 66 |
| 7/8/2014 | 14000 | 13000 | 0 | 270 | 11 | 0 | 360 | 310 |
| 8/4/2014 | 1800 | 840 | 0 | 420 | 7 | 0 | 180 | 340 |
| 9/2/2014 | 750 | 44 | 0 | 230 | 7 | 15 | 0 | 460 |
| 1/5/2015 | 270 | 0 | 0 | 7 | 0 | 0 | 0 | 260 |
| 2/3/2015 | 117 | 0 | 0 | 15 | 0 | 0 | 26 | 77 |
| 3/3/2015 | 200 | 0 | 4 | 200 | 0 | 0 | 0 | 0 |
| 3/23/2015 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| 4/16/2015 | 730 | 55 | 18 | 330 | 0 | 4 | 0 | 320 |
| 5/4/2015 | 92 | 0 | 0 | 0 | 0 | 0 | 48 | 44 |
| 6/1/2015 | 170 | 0 | 7 | 0 | 0 | 0 | 160 | 0 |
| 7/6/2015 | 810 | 88 | 7 | 410 | 0 | 0 | 4 | 300 |
| 8/3/2015 | 15000 | 2700 | 0 | 160 | 0 | 15 | 3200 | 9100 |
| 9/2/2015 | 86000 | 79000 | 0 | 1300 | 0 | 90 | 480 | 4700 |
| 10/5/2015 | 900 | 480 | 0 | 25 | 0 | 0 | 10 | 380 |
| 11/4/2015 | 410 | 0 | 5 | 10 | 0 | 5 | 10 | 380 |
| Minimum | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 86000 | 79000 | 18 | 1300 | 11 | 90 | 3200 | 9100 |
| Average | 7185 | 5659 | 3 | 199 | 1 | 8 | 276 | 1019 |
| Median | 580 | 0 | 0 | 25 | 0 | 0 | 10 | 310 |
| # of Samples | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |

## Nacimiento Reservoir - Elevation 710': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 43 | 0 | 25 | — | 0 | — | 18 |
| 2/7/2011 | 610 | 0 | 0 | — | 0 | — | 610 |
| 3/7/2011 | 140 | 0 | 0 | — | 11 | — | 130 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 14 | 0 | 0 | — | 0 | — | 14 |
| 6/15/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 110 | 0 | 21 | — | 0 | — | 93 |
| 8/2/2011 | 64 | 0 | 7 | — | 11 | — | 46 |
| 9/13/2011 | 25 | 0 | 18 | — | 0 | — | 7 |
| 10/12/2011 | 36 | 0 | 29 | — | 0 | — | 7 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 46 | 0 | 11 | — | 21 | — | 14 |
| 1/9/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/14/2012 | 18 | 0 | 18 | — | 0 | — | 0 |
| 3/13/2012 | 32 | 0 | 18 | — | 0 | — | 14 |
| 4/10/2012 | 32 | 0 | 21 | — | 0 | — | 11 |
| 5/15/2012 | 25 | 0 | 14 | — | 0 | — | 11 |
| 6/6/2012 | 57 | 0 | 39 | — | 0 | — | 18 |
| 7/16/2012 | 75 | 0 | 0 | — | 0 | — | 75 |
| 8/6/2012 | 33 | 0 | 7 | — | 0 | — | 26 |
| 9/4/2012 | 44 | 0 | 0 | — | 0 | — | 44 |
| 10/1/2012 | 170 | 0 | 140 | — | 0 | — | 33 |
| 11/5/2012 | 55 | 0 | 26 | — | 18 | — | 11 |
| 12/5/2012 | 300 | 0 | 55 | — | 0 | — | 240 |
| 1/7/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/4/2013 | 4 | 0 | 4 | — | 0 | — | 0 |
| 3/4/2013 | 81 | 0 | 70 | — | 0 | — | 11 |
| 4/2/2013 | 190 | 0 | 7 | — | 0 | — | 180 |
| 5/6/2013 | 41 | 0 | 26 | — | 0 | — | 15 |
| 6/3/2013 | 81 | 0 | 22 | — | 0 | — | 59 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 610 | 0 | 140 | — | 21 | — | 610 |
| Average | 78 | 0 | 19 | — | 2 | — | 56 |
| Median | 42 | 0 | 13 | — | 0 | — | 14 |
| # of Samples | 30 | 30 | 30 | 0 | 30 | 0 | 30 |

## Nacimiento Reservoir - Elevation 700': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 36 | 0 | 0 | — | 0 | — | 36 |
| 2/7/2011 | 350 | 0 | 0 | — | 0 | — | 350 |
| 3/7/2011 | 18 | 0 | 0 | — | 0 | — | 18 |
| 4/5/2011 | 4 | 0 | 0 | — | 0 | — | 4 |
| 5/2/2011 | 39 | 0 | 0 | — | 0 | — | 39 |
| 6/15/2011 | 96 | 0 | 96 | — | 0 | — | 0 |
| 7/12/2011 | 25 | 0 | 25 | — | 0 | — | 0 |
| 8/2/2011 | 68 | 0 | 0 | — | 32 | — | 36 |
| 9/13/2011 | 14 | 0 | 14 | — | 0 | — | 0 |
| 10/12/2011 | 18 | 0 | 18 | — | 0 | — | 0 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 57 | 0 | 50 | — | 0 | — | 7 |
| 1/9/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/14/2012 | 14 | 0 | 7 | — | 0 | — | 7 |
| 3/13/2012 | 130 | 0 | 4 | — | 0 | — | 125 |
| 4/10/2012 | 36 | 0 | 0 | — | 0 | — | 36 |
| 5/15/2012 | 18 | 7 | 0 | — | 0 | — | 11 |
| 6/6/2012 | 36 | 0 | 29 | — | 0 | — | 7 |
| 7/16/2012 | 21 | 0 | 0 | — | 0 | — | 21 |
| 8/6/2012 | 25 | 0 | 7 | — | 0 | — | 18 |
| 9/4/2012 | 18 | 0 | 7 | — | 0 | — | 11 |
| 10/1/2012 | 160 | 0 | 150 | — | 0 | — | 7 |
| 11/5/2012 | 15 | 0 | 11 | — | 0 | — | 4 |
| 12/5/2012 | 220 | 0 | 15 | — | 0 | — | 200 |
| 1/7/2013 | 66 | 0 | 66 | — | 0 | — | 0 |
| 2/4/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 25 | 0 | 7 | — | 0 | — | 18 |
| 4/2/2013 | 26 | 0 | 0 | — | 0 | — | 26 |
| 5/6/2013 | 22 | 0 | 22 | — | 0 | — | 0 |
| 6/3/2013 | 58 | 0 | 29 | — | 0 | — | 29 |
| 7/8/2013 | 26 | 0 | 0 | — | 0 | — | 26 |
| 8/5/2013 | 55 | 0 | 15 | — | 0 | — | 40 |
| 9/3/2013 | 55 | 0 | 18 | — | 0 | — | 37 |
| 10/2/2013 | 150 | 15 | 29 | — | 0 | — | 110 |
| 11/4/2013 | 260 | 0 | 81 | — | 0 | — | 180 |
| 12/2/2013 | 550 | 0 | 48 | — | 0 | — | 500 |
| 1/6/2014 | 970 | 0 | 190 | — | 0 | — | 780 |
| 2/3/2014 | 880 | 0 | 51 | — | 0 | — | 830 |
| 3/3/2014 | 220 | 0 | 11 | — | 0 | — | 210 |
| 4/2/2014 | 1900 | 0 | 0 | — | 0 | — | 1900 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 1900 | 15 | 190 | — | 32 | — | 1900 |
| Average | 167 | 1 | 25 | — | 1 | — | 141 |
| Median | 36 | 0 | 9 | — | 0 | — | 20 |
| # of Samples | 40 | 40 | 40 | 0 | 40 | 0 | 40 |

## Nacimiento Reservoir - Elevation 700': Algae Count Data (cells/mL)

| Collected Date | Algae - Total Count (cells/mL) | Blue-greens (cells/mL) | Cryptomonads (cells/mL) | Diatoms (cells/mL) | Dinoflagellates (cells/mL) | Flagellates (cellsr/mL) | Goldens (cells/mL) | Greens (cells/mL) |
|---|---|---|---|---|---|---|---|---|
| 5/5/2014 | 440 | 0 | 0 | 0 | 0 | 0 | 0 | 440 |
| 6/2/2014 | 370 | 0 | 4 | 0 | 0 | 0 | 280 | 88 |
| 7/8/2014 | 1300 | 1200 | 0 | 29 | 7 | 0 | 0 | 120 |
| 8/4/2014 | 610 | 29 | 26 | 360 | 0 | 0 | 0 | 200 |
| 9/2/2014 | 1100 | 300 | 4 | 300 | 11 | 18 | 37 | 470 |
| 10/1/2014 | 1700 | 1500 | 0 | 140 | 0 | 0 | 0 | 92 |
| 11/3/2014 | 4800 | 910 | 0 | 73 | 0 | 0 | 0 | 3800 |
| 12/1/2014 | 506 | 0 | 0 | 44 | 0 | 0 | 0 | 462 |
| 1/5/2015 | 240 | 0 | 0 | 4 | 0 | 0 | 0 | 230 |
| 2/2/2015 | 470 | 73 | 0 | 37 | 0 | 0 | 0 | 360 |
| 3/3/2015 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 3/23/2015 | 40 | 0 | 0 | 29 | 0 | 0 | 0 | 11 |
| 4/16/2015 | 84 | 0 | 0 | 73 | 0 | 0 | 0 | 11 |
| 5/4/2015 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 6/1/2015 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| 7/6/2015 | 210 | 37 | 0 | 26 | 0 | 0 | 18 | 130 |
| 8/3/2015 | 1100 | 88 | 4 | 26 | 0 | 0 | 62 | 900 |
| 9/2/2015 | 2300 | 1500 | 0 | 250 | 0 | 22 | 29 | 500 |
| 10/5/2015 | 920 | 580 | 25 | 10 | 0 | 0 | 0 | 300 |
| 11/4/2015 | 920 | 600 | 8 | 20 | 0 | 15 | 30 | 250 |
| 12/1/2015 | 850 | 0 | 0 | 15 | 0 | 0 | 15 | 820 |
| Minimum | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 4800 | 1500 | 26 | 360 | 11 | 22 | 280 | 3800 |
| Average | 856 | 325 | 2 | 68 | 1 | 3 | 22 | 438 |
| Median | 506 | 29 | 0 | 26 | 0 | 0 | 0 | 230 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

## Nacimiento Reservoir - Elevation 690': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 50 | 0 | 0 | — | 0 | — | 50 |
| 2/7/2011 | 240 | 0 | 0 | — | 0 | — | 240 |
| 3/7/2011 | 14 | 0 | 0 | — | 14 | — | 0 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 36 | 0 | 36 | — | 0 | — | 0 |
| 6/15/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 79 | 0 | 11 | — | 39 | — | 29 |
| 8/2/2011 | 120 | 0 | 7 | — | 86 | — | 29 |
| 9/13/2011 | 32 | 18 | 14 | — | 0 | — | 0 |
| 10/12/2011 | 28 | 14 | 14 | — | 0 | — | 0 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 32 | 0 | 0 | — | 0 | — | 32 |
| 1/9/2012 | 21 | 0 | 0 | — | 0 | — | 21 |
| 2/14/2012 | 11 | 0 | 11 | — | 0 | — | 0 |
| 3/13/2012 | 18 | 0 | 0 | — | 0 | — | 18 |
| 4/10/2012 | 46 | 0 | 21 | — | 0 | — | 25 |
| 5/15/2012 | 47 | 11 | 0 | — | 0 | — | 36 |
| 6/6/2012 | 120 | 0 | 68 | — | 7 | — | 43 |
| 7/16/2012 | 11 | 0 | 11 | — | 0 | — | 0 |
| 8/6/2012 | 11 | 0 | 7 | — | 0 | — | 4 |
| 9/4/2012 | 18 | 0 | 0 | — | 0 | — | 18 |
| 10/1/2012 | 110 | 0 | 84 | — | 0 | — | 29 |
| 11/5/2012 | 25 | 7 | 7 | — | 0 | — | 11 |
| 12/5/2012 | 130 | 0 | 37 | — | 0 | — | 88 |
| 1/7/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/4/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 25 | 0 | 7 | — | 0 | — | 18 |
| 4/2/2013 | 40 | 0 | 0 | — | 0 | — | 40 |
| 6/3/2013 | 110 | 0 | 84 | — | 0 | — | 29 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 240 | 18 | 84 | — | 86 | — | 240 |
| Average | 47 | 2 | 14 | — | 5 | — | 26 |
| Median | 28 | 0 | 7 | — | 0 | — | 18 |
| # of Samples | 29 | 29 | 29 | 0 | 29 | 0 | 29 |

## Nacimiento Reservoir - Elevation 680': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 120 | 0 | 0 | — | 0 | — | 120 |
| 2/7/2011 | 82 | 0 | 0 | — | 0 | — | 82 |
| 3/7/2011 | 21 | 0 | 0 | — | 0 | — | 21 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 53 | 0 | 14 | — | 21 | — | 18 |
| 6/15/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 29 | 0 | 0 | — | 29 | — | 0 |
| 8/2/2011 | 61 | 0 | 0 | — | 61 | — | 0 |
| 9/13/2011 | 7 | 0 | 7 | — | 0 | — | 0 |
| 10/12/2011 | 46 | 7 | 32 | — | 0 | — | 7 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 36 | 0 | 0 | — | 0 | — | 36 |
| 1/9/2012 | 18 | 0 | 11 | — | 0 | — | 7 |
| 2/14/2012 | 21 | 0 | 0 | — | 0 | — | 21 |
| 3/13/2012 | 4 | 0 | 0 | — | 0 | — | 4 |
| 4/10/2012 | 39 | 0 | 32 | — | 0 | — | 7 |
| 5/15/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 6/6/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/16/2012 | 39 | 0 | 14 | — | 0 | — | 25 |
| 8/6/2012 | 15 | 0 | 11 | — | 0 | — | 4 |
| 9/4/2012 | 22 | 0 | 0 | — | 0 | — | 22 |
| 10/1/2012 | 55 | 0 | 0 | — | 0 | — | 55 |
| 11/5/2012 | 37 | 0 | 22 | — | 0 | — | 15 |
| 12/5/2012 | 130 | 0 | 33 | — | 0 | — | 92 |
| 1/7/2013 | 22 | 0 | 18 | — | 0 | — | 4 |
| 2/4/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 18 | 0 | 11 | — | 0 | — | 7 |
| 4/2/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/6/2013 | 29 | 0 | 29 | — | 0 | — | 0 |
| 6/3/2013 | 88 | 0 | 88 | — | 0 | — | 0 |
| 7/8/2013 | 110 | 11 | 66 | — | 0 | — | 37 |
| 8/5/2013 | 62 | 0 | 0 | — | 0 | — | 62 |
| 9/3/2013 | 7 | 0 | 7 | — | 0 | — | 0 |
| 10/2/2013 | 40 | 0 | 18 | — | 0 | — | 22 |
| 11/4/2013 | 270 | 0 | 59 | — | 0 | — | 210 |
| 12/2/2013 | 520 | 0 | 110 | — | 0 | — | 410 |
| 1/6/2014 | 980 | 0 | 110 | — | 0 | — | 870 |
| 2/3/2014 | 530 | 0 | 51 | — | 0 | — | 480 |
| 3/3/2014 | 120 | 0 | 40 | — | 0 | — | 77 |
| 4/2/2014 | 69 | 0 | 7 | — | 0 | — | 62 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 980 | 11 | 110 | — | 61 | — | 870 |
| Average | 93 | 0 | 20 | — | 3 | — | 69 |
| Median | 37 | 0 | 7 | — | 0 | — | 11 |
| # of Samples | 40 | 40 | 40 | 0 | 40 | 0 | 40 |

## Nacimiento Reservoir - Elevation 680': Algae Count Data (cells/mL)

| Collected Date | Algae - Total Count (cells/mL) | Blue-greens (cells/mL) | Cryptomonads (cells/mL) | Diatoms (cells/mL) | Dinoflagellates (cells/mL) | Flagellates (cellsr/mL) | Goldens (cells/mL) | Greens (cells/mL) |
|---|---|---|---|---|---|---|---|---|
| 5/5/2014 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| 6/2/2014 | 33 | 0 | 4 | 0 | 0 | 0 | 0 | 29 |
| 7/8/2014 | 73 | 44 | 0 | 7 | 0 | 0 | 0 | 22 |
| 8/4/2014 | 110 | 95 | 0 | 15 | 0 | 0 | 0 | 0 |
| 9/2/2014 | 740 | 0 | 0 | 26 | 0 | 4 | 11 | 700 |
| 10/1/2014 | 1300 | 330 | 0 | 140 | 0 | 18 | 0 | 820 |
| 11/3/2014 | 13000 | 0 | 0 | 37 | 0 | 0 | 0 | 13000 |
| 12/1/2014 | 261 | 0 | 0 | 48 | 0 | 0 | 0 | 213 |
| 1/5/2015 | 300 | 33 | 0 | 0 | 0 | 0 | 0 | 260 |
| 2/2/2015 | 59 | 0 | 0 | 15 | 0 | 0 | 0 | 44 |
| 3/3/2015 | 26 | 0 | 4 | 22 | 0 | 0 | 0 | 0 |
| 3/23/2015 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| 4/16/2015 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 5/4/2015 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| 6/1/2015 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| 7/6/2015 | 26 | 0 | 0 | 0 | 0 | 0 | 15 | 11 |
| 8/3/2015 | 110 | 0 | 0 | 7 | 0 | 0 | 40 | 59 |
| 9/2/2015 | 1000 | 550 | 0 | 18 | 0 | 0 | 0 | 440 |
| 10/5/2015 | 1200 | 0 | 25 | 20 | 0 | 0 | 110 | 1000 |
| 11/4/2015 | 9700 | 2100 | 0 | 42 | 0 | 14 | 0 | 7500 |
| 12/1/2015 | 2100 | 0 | 0 | 42 | 0 | 0 | 14 | 2000 |
| Minimum | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 13000 | 2100 | 25 | 140 | 0 | 18 | 110 | 13000 |
| Average | 1439 | 150 | 2 | 21 | 0 | 2 | 9 | 1250 |
| Median | 110 | 0 | 0 | 15 | 0 | 0 | 0 | 59 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

## Nacimiento Reservoir - Elevation 670': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 82 | 0 | 0 | — | 0 | — | 82 |
| 2/7/2011 | 120 | 0 | 0 | — | 0 | — | 120 |
| 3/7/2011 | 57 | 0 | 18 | — | 0 | — | 39 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 39 | 0 | 39 | — | 0 | — | 0 |
| 6/15/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 72 | 11 | 0 | — | 25 | — | 36 |
| 8/2/2011 | 25 | 0 | 0 | — | 14 | — | 11 |
| 9/13/2011 | 11 | 0 | 0 | — | 0 | — | 11 |
| 10/12/2011 | 14 | 0 | 14 | — | 0 | — | 0 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 7 | 0 | 0 | — | 0 | — | 7 |
| 1/9/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/14/2012 | 39 | 0 | 39 | — | 0 | — | 0 |
| 3/13/2012 | 11 | 0 | 0 | — | 0 | — | 11 |
| 4/10/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/15/2012 | 29 | 0 | 0 | — | 0 | — | 29 |
| 6/6/2012 | 14 | 0 | 14 | — | 0 | — | 0 |
| 7/16/2012 | 43 | 0 | 29 | — | 0 | — | 14 |
| 8/6/2012 | 22 | 0 | 15 | — | 0 | — | 7 |
| 9/4/2012 | 4 | 0 | 0 | — | 0 | — | 4 |
| 10/1/2012 | 73 | 0 | 73 | — | 0 | — | 0 |
| 11/5/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/5/2012 | 58 | 0 | 18 | — | 0 | — | 40 |
| 1/7/2013 | 18 | 0 | 11 | — | 0 | — | 7 |
| 2/4/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 11 | 0 | 0 | — | 0 | — | 11 |
| 4/2/2013 | 29 | 0 | 0 | — | 0 | — | 29 |
| 5/6/2013 | 7 | 0 | 0 | — | 0 | — | 7 |
| 6/3/2013 | 18 | 0 | 18 | — | 0 | — | 0 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 120 | 11 | 73 | — | 25 | — | 120 |
| Average | 27 | 0 | 10 | — | 1 | — | 16 |
| Median | 16 | 0 | 0 | — | 0 | — | 7 |
| # of Samples | 30 | 30 | 30 | 0 | 30 | 0 | 30 |

## Nacimiento Reservoir - Elevation 660': Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 1/10/2011 | 29 | 0 | 0 | — | 0 | — | 29 |
| 2/7/2011 | 210 | 0 | 0 | — | 0 | — | 210 |
| 3/7/2011 | 50 | 0 | 14 | — | 11 | — | 25 |
| 4/5/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/2/2011 | 11 | 0 | 11 | — | 0 | — | 0 |
| 6/15/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 7/12/2011 | 18 | 0 | 0 | — | 0 | — | 0 |
| 8/2/2011 | 78 | 0 | 14 | — | 50 | — | 14 |
| 9/13/2011 | 25 | 0 | 0 | — | 0 | — | 25 |
| 10/12/2011 | 36 | 0 | 7 | — | 0 | — | 29 |
| 11/2/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 12/13/2011 | 40 | 0 | 29 | — | 0 | — | 11 |
| 1/9/2012 | 29 | 0 | 0 | — | 0 | — | 29 |
| 2/14/2012 | 18 | 0 | 11 | — | 7 | — | 7 |
| 3/13/2012 | 25 | 0 | 0 | — | 0 | — | 25 |
| 4/10/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 5/15/2012 | 32 | 7 | 14 | — | 0 | — | 11 |
| 6/6/2012 | 11 | 0 | 0 | — | 11 | — | 0 |
| 7/16/2012 | 130 | 0 | 120 | — | 0 | — | 7 |
| 8/6/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 9/4/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 10/1/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 11/5/2012 | 7 | 0 | 7 | — | 0 | — | 0 |
| 12/5/2012 | 30 | 0 | 15 | — | 0 | — | 15 |
| 1/7/2013 | 47 | 0 | 18 | — | 0 | — | 29 |
| 2/4/2013 | 0 | 0 | 0 | — | 0 | — | 0 |
| 3/4/2013 | 18 | 0 | 0 | — | 0 | — | 18 |
| 4/2/2013 | 15 | 0 | 0 | — | 0 | — | 15 |
| 5/6/2013 | 11 | 0 | 11 | — | 0 | — | 0 |
| 6/3/2013 | 11 | 0 | 11 | — | 0 | — | 0 |
| 7/8/2013 | 7 | 0 | 0 | — | 0 | — | 7 |
| 8/5/2013 | 48 | 0 | 15 | — | 0 | — | 33 |
| 9/3/2013 | 7 | 0 | 7 | — | 0 | — | 0 |
| 10/2/2013 | 11 | 11 | 0 | — | 0 | — | 0 |
| 11/4/2013 | 96 | 0 | 15 | — | 0 | — | 81 |
| 12/2/2013 | 490 | 59 | 62 | — | 0 | — | 370 |
| 1/6/2014 | 940 | 0 | 210 | — | 0 | — | 730 |
| 2/3/2014 | 340 | 0 | 7 | — | 0 | — | 330 |
| 3/3/2014 | 41 | 0 | 15 | — | 0 | — | 26 |
| 4/2/2014 | 120 | 0 | 0 | — | 0 | — | 120 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 940 | 59 | 210 | — | 50 | — | 730 |
| Average | 75 | 2 | 15 | — | 2 | — | 55 |
| Median | 22 | 0 | 4 | — | 0 | — | 11 |
| # of Samples | 40 | 40 | 40 | 0 | 40 | 0 | 40 |

## Nacimiento Reservoir - Elevation 660': Algae Count Data (cells/mL)

| Collected Date | Algae - Total Count (cells/mL) | Blue-greens (cells/mL) | Cryptomonads (cells/mL) | Diatoms (cells/mL) | Dinoflagellates (cells/mL) | Flagellates (cellsr/mL) | Goldens (cells/mL) | Greens (cells/mL) |
|---|---|---|---|---|---|---|---|---|
| 5/5/2014 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| 6/2/2014 | 15 | 0 | 0 | 4 | 0 | 0 | 0 | 11 |
| 7/8/2014 | 29 | 0 | 0 | 4 | 4 | 0 | 0 | 22 |
| 8/4/2014 | 210 | 160 | 0 | 0 | 0 | 4 | 0 | 37 |
| 9/2/2014 | 84 | 0 | 0 | 4 | 0 | 7 | 4 | 70 |
| 10/1/2014 | 40 | 0 | 0 | 37 | 0 | 0 | 0 | 4 |
| 11/3/2014 | 1100 | 430 | 0 | 26 | 0 | 0 | 0 | 610 |
| 12/1/2014 | 139 | 37 | 0 | 4 | 0 | 4 | 0 | 95 |
| 1/5/2015 | 240 | 0 | 0 | 4 | 0 | 0 | 0 | 240 |
| 2/2/2015 | 150 | 0 | 0 | 4 | 0 | 0 | 0 | 147 |
| 3/3/2015 | 15 | 0 | 4 | 0 | 0 | 4 | 0 | 7 |
| 3/23/2015 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 4/16/2015 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| 5/4/2015 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 88 |
| 6/1/2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/6/2015 | 22 | 0 | 0 | 7 | 0 | 0 | 0 | 15 |
| 8/3/2015 | 59 | 37 | 0 | 4 | 0 | 0 | 0 | 18 |
| 9/2/2015 | 560 | 370 | 0 | 0 | 0 | 4 | 22 | 160 |
| 10/5/2015 | 220 | 0 | 76 | 0 | 0 | 0 | 0 | 140 |
| 11/4/2015 | 11 | 0 | 0 | 8 | 0 | 0 | 0 | 3 |
| 12/1/2015 | 2900 | 0 | 0 | 0 | 0 | 14 | 240 | 2600 |
| Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 2900 | 430 | 76 | 37 | 4 | 14 | 240 | 2600 |
| Average | 285 | 49 | 4 | 5 | 0 | 2 | 13 | 208 |
| Median | 59 | 0 | 0 | 4 | 0 | 0 | 0 | 37 |
| # of Samples | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |

## Nacimiento Reservoir Watershed - Dip Creek: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 28 | 14 | 0 | — | 14 | — | 0 |
| 12/14/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 1/11/2012 | 7 | 0 | 0 | — | 0 | — | 7 |
| 2/21/2012 | 18 | 0 | 0 | — | 0 | — | 18 |
| 3/12/2012 | 96 | 0 | 0 | — | 25 | — | 71 |
| 4/9/2012 | 85 | 0 | 39 | — | 0 | — | 46 |
| 5/14/2012 | 170 | 0 | 100 | — | 0 | — | 71 |
| 6/11/2012 | 250 | 0 | 82 | — | 7 | — | 160 |
| 7/9/2012 | 110 | 0 | 100 | — | 0 | — | 11 |
| 8/13/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 9/10/2012 | 37 | 0 | 0 | — | 0 | — | 37 |
| 10/3/2012 | 250 | 22 | 92 | — | 0 | — | 140 |
| 11/7/2012 | 66 | 0 | 0 | — | 0 | — | 66 |
| 12/5/2012 | 410 | 0 | 84 | — | 0 | — | 330 |
| 1/9/2013 | 140 | 0 | 0 | — | 0 | — | 140 |
| 2/5/2013 | 19 | 0 | 15 | — | 0 | — | 4 |
| 3/26/2013 | 360 | 0 | 11 | — | 70 | — | 280 |
| 4/16/2013 | 91 | 0 | 62 | — | 0 | — | 29 |
| 5/21/2013 | 150 | 0 | 120 | — | 0 | — | 26 |
| 6/18/2013 | 110 | 18 | 51 | — | 0 | — | 40 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 410 | 22 | 120 | — | 70 | — | 330 |
| Average | 120 | 3 | 38 | — | 6 | — | 74 |
| Median | 94 | 0 | 13 | — | 0 | — | 39 |
| # of Samples | 20 | 20 | 20 | 0 | 20 | 0 | 20 |

## Nacimiento Reservoir Watershed - Heritage Ranch: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 200 | 57 | 29 | — | 0 | — | 110 |
| 12/14/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 1/11/2012 | 11 | 0 | 11 | — | 0 | — | 0 |
| 2/21/2012 | 32 | 25 | 0 | — | 0 | — | 7 |
| 3/12/2012 | 54 | 0 | 0 | — | 0 | — | 54 |
| 4/9/2012 | 43 | 0 | 36 | — | 0 | — | 7 |
| 5/14/2012 | 93 | 0 | 82 | — | 0 | — | 11 |
| 6/11/2012 | 140 | 0 | 21 | — | 18 | — | 100 |
| 7/9/2012 | 200 | 0 | 180 | — | 0 | — | 18 |
| 8/13/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 9/10/2012 | 80 | 0 | 18 | — | 0 | — | 62 |
| 10/3/2012 | 200 | 48 | 110 | — | 0 | — | 37 |
| 11/7/2012 | 120 | 0 | 37 | — | 0 | — | 84 |
| 12/5/2012 | 470 | 0 | 51 | — | 0 | — | 420 |
| 1/9/2013 | 51 | 0 | 0 | — | 0 | — | 51 |
| 2/5/2013 | 22 | 0 | 11 | — | 0 | — | 11 |
| 3/26/2013 | 610 | 0 | 44 | — | 0 | — | 570 |
| 4/16/2013 | 210 | 0 | 180 | — | 0 | — | 29 |
| 5/22/2013 | 190 | 0 | 180 | — | 0 | — | 11 |
| 6/18/2013 | 120 | 18 | 59 | — | 18 | — | 26 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 610 | 57 | 180 | — | 18 | — | 570 |
| Average | 142 | 7 | 52 | — | 2 | — | 80 |
| Median | 107 | 0 | 33 | — | 0 | — | 28 |
| # of Samples | 20 | 20 | 20 | 0 | 20 | 0 | 20 |

## Nacimiento Reservoir Watershed - Lake Nacimiento Resort: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 100 | 21 | 79 | — | 0 | — | 0 |
| 12/14/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 1/11/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 2/21/2012 | 29 | 0 | 18 | — | 0 | — | 11 |
| 3/12/2012 | 54 | 0 | 0 | — | 0 | — | 54 |
| 4/9/2012 | 46 | 0 | 25 | — | 21 | — | 0 |
| 5/14/2012 | 200 | 0 | 75 | — | 21 | — | 100 |
| 6/11/2012 | 57 | 18 | 0 | — | 0 | — | 39 |
| 7/9/2012 | 170 | 0 | 160 | — | 0 | — | 11 |
| 8/13/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 9/10/2012 | 29 | 0 | 0 | — | 0 | — | 29 |
| 10/3/2012 | 51 | 0 | 0 | — | 0 | — | 51 |
| 11/7/2012 | 120 | 0 | 37 | — | 0 | — | 84 |
| 12/5/2012 | 460 | 0 | 62 | — | 0 | — | 400 |
| 1/9/2013 | 110 | 0 | 0 | — | 0 | — | 110 |
| 2/5/2013 | 110 | 0 | 92 | — | 0 | — | 15 |
| 3/26/2013 | 150 | 0 | 0 | — | 0 | — | 150 |
| 4/16/2013 | 120 | 0 | 99 | — | 26 | — | 0 |
| 5/22/2013 | 440 | 40 | 280 | — | 22 | — | 99 |
| 6/18/2013 | 69 | 40 | 29 | — | 0 | — | 0 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 460 | 40 | 280 | — | 26 | — | 400 |
| Average | 116 | 6 | 48 | — | 5 | — | 58 |
| Median | 85 | 0 | 22 | — | 0 | — | 22 |
| # of Samples | 20 | 20 | 20 | 0 | 20 | 0 | 20 |

## Nacimiento Reservoir Watershed - Las Tablas Creek: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 140 | 71 | 0 | — | 0 | — | 68 |
| 12/14/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 1/11/2012 | 57 | 0 | 43 | — | 0 | — | 14 |
| 2/21/2012 | 11 | 0 | 0 | — | 0 | — | 11 |
| 3/12/2012 | 75 | 0 | 14 | — | 0 | — | 61 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 140 | 71 | 43 | — | 0 | — | 68 |
| Average | 57 | 14 | 11 | — | 0 | — | 31 |
| Median | 57 | 0 | 0 | — | 0 | — | 14 |
| # of Samples | 5 | 5 | 5 | 0 | 5 | 0 | 5 |

## Nacimiento Reservoir Watershed -Las Tablas Creek - Downstream: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 4/9/2012 | 11 | 0 | 0 | — | 0 | — | 11 |
| 5/14/2012 | 250 | 0 | 110 | — | 0 | — | 140 |
| 6/11/2012 | 39 | 0 | 0 | — | 0 | — | 39 |
| 7/9/2012 | 85 | 0 | 71 | — | 0 | — | 14 |
| 8/13/2012 | 4 | 0 | 4 | — | 0 | — | 0 |
| 9/10/2012 | 66 | 22 | 0 | — | 0 | — | 44 |
| 10/3/2012 | 360 | 15 | 11 | — | 0 | — | 330 |
| 11/7/2012 | 380 | 18 | 110 | — | 0 | — | 250 |
| 12/5/2012 | 170 | 0 | 70 | — | 0 | — | 99 |
| 1/9/2013 | 110 | 0 | 0 | — | 0 | — | 110 |
| 2/5/2013 | 110 | 0 | 110 | — | 0 | — | 4 |
| 3/26/2013 | 250 | 0 | 70 | — | 0 | — | 180 |
| 4/16/2013 | 48 | 0 | 48 | — | 0 | — | 0 |
| 5/22/2013 | 160 | 66 | 48 | — | 0 | — | 44 |
| 6/18/2013 | 190 | 48 | 62 | — | 0 | — | 81 |
| Minimum | 4 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 380 | 66 | 110 | — | 0 | — | 330 |
| Average | 149 | 11 | 48 | — | 0 | — | 90 |
| Median | 110 | 0 | 48 | — | 0 | — | 44 |
| # of Samples | 15 | 15 | 15 | 0 | 15 | 0 | 15 |

## Nacimiento Reservoir Watershed -Las Tablas Creek - Upstream: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 4/9/2012 | 130 | 0 | 32 | — | 25 | — | 75 |
| 5/14/2012 | 970 | 0 | 220 | — | 0 | — | 750* |
| 6/11/2012 | 93 | 0 | 39 | — | 0 | — | 54 |
| 7/9/2012 | 480 | 230 | 120 | — | 7 | — | 120 |
| 8/13/2012 | 99 | 15 | 18 | — | 0 | — | 66 |
| 9/10/2012 | 100 | 51 | 29 | — | 0 | — | 22 |
| 10/3/2012 | 40 | 40 | 0 | — | 0 | — | 0 |
| 11/7/2012 | 210 | 11 | 84 | — | 0 | — | 110 |
| 1/9/2013 | 110 | 0 | 15 | — | 0 | — | 99 |
| 2/5/2013 | 77 | 0 | 33 | — | 29 | — | 15 |
| 3/26/2013 | 540 | 11 | 66 | — | 0 | — | 460 |
| 4/16/2013 | 240 | 11 | 150 | — | 0 | — | 81 |
| 5/22/2013 | 180 | 33 | 110 | — | 18 | — | 22 |
| 6/18/2013 | 370 | 110 | 51 | — | 0 | — | 210 |
| Minimum | 40 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 970 | 230 | 220 | — | 29 | — | 460 |
| Average | 260 | 37 | 69 | — | 6 | — | 103 |
| Median | 155 | 11 | 45 | — | 0 | — | 75 |
| # of Samples | 14 | 14 | 14 | 0 | 14 | 0 | 13 |

## Nacimiento Reservoir Watershed -Oak Shores: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 200 | 68 | 11 | — | 0 | — | 120 |
| 12/14/2011 | 25 | 0 | 0 | — | 0 | — | 25 |
| 1/11/2012 | 4 | 0 | 4 | — | 0 | — | 0 |
| 2/21/2012 | 82 | 0 | 25 | — | 0 | — | 57 |
| 3/12/2012 | 110 | 0 | 0 | — | 0 | — | 110 |
| 4/9/2012 | 86 | 0 | 7 | — | 50 | — | 29 |
| 5/14/2012 | 160 | 0 | 96 | — | 0 | — | 64 |
| 6/11/2012 | 100 | 0 | 79 | — | 0 | — | 18 |
| 7/9/2012 | 240 | 18 | 120 | — | 21 | — | 79 |
| 8/13/2012 | 22 | 0 | 11 | — | 0 | — | 11 |
| 9/10/2012 | 570 | 350 | 29 | — | 0 | — | 190 |
| 10/3/2012 | 150 | 37 | 55 | — | 0 | — | 59 |
| 11/7/2012 | 460 | 0 | 170 | — | 26 | — | 260 |
| 12/5/2012 | 52 | 0 | 37 | — | 0 | — | 15 |
| 1/9/2013 | 140 | 0 | 11 | — | 18 | — | 110 |
| 2/5/2013 | 84 | 0 | 29 | — | 26 | — | 29 |
| 3/26/2013 | 320 | 7 | 120 | — | 0 | — | 190 |
| 4/16/2013 | 81 | 0 | 81 | — | 0 | — | 0 |
| 5/22/2013 | 120 | 44 | 37 | — | 0 | — | 37 |
| 6/18/2013 | 1900 | 210 | 0 | — | 29 | — | 1700 |
| Minimum | 4 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 1900 | 350 | 170 | — | 50 | — | 1700 |
| Average | 245 | 37 | 46 | — | 9 | — | 155 |
| Median | 115 | 0 | 29 | — | 0 | — | 58 |
| # of Samples | 20 | 20 | 20 | 0 | 20 | 0 | 20 |

## Nacimiento Reservoir Watershed - The Narrows - Downstream: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 110 | 32 | 0 | — | 14 | — | 64 |
| 12/14/2011 | 100 | 0 | 0 | — | 100 | — | 0 |
| 1/11/2012 | 11 | 0 | 11 | — | 0 | — | 0 |
| 2/21/2012 | 43 | 0 | 0 | — | 0 | — | 43 |
| 3/12/2012 | 150 | 0 | 14 | — | 0 | — | 140 |
| 4/9/2012 | 39 | 0 | 14 | — | 0 | — | 25 |
| 6/11/2012 | 110 | 4 | 86 | — | 0 | — | 18 |
| 7/9/2012 | 170 | 0 | 150 | — | 0 | — | 18 |
| 8/13/2012 | 0 | 0 | 0 | — | 0 | — | 0 |
| 9/10/2012 | 590 | 440 | 18 | — | 11 | — | 120 |
| 10/3/2012 | 120 | 15 | 18 | — | 0 | — | 84 |
| 11/7/2012 | 570 | 11 | 190 | — | 0 | — | 370 |
| 1/9/2013 | 180 | 0 | 0 | — | 29 | — | 150 |
| 2/5/2013 | 150 | 0 | 22 | — | 92 | — | 37 |
| 3/26/2013 | 310 | 66 | 110 | — | 0 | — | 130 |
| 4/16/2013 | 70 | 15 | 40 | — | 0 | — | 15 |
| 5/22/2013 | 210 | 77 | 59 | — | 0 | — | 77 |
| 6/18/2013 | 1100 | 120 | 59 | — | 0 | — | 920 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 1100 | 440 | 190 | — | 100 | — | 920 |
| Average | 224 | 43 | 44 | — | 14 | — | 123 |
| Median | 135 | 2 | 18 | — | 0 | — | 54 |
| # of Samples | 18 | 18 | 18 | 0 | 18 | 0 | 18 |

## Nacimiento Reservoir Watershed - The Narrows - Upstream: Algae Count Data

| Collected Date | Algae - Total Count (number/mL) | Blue-greens (number/mL) | Diatoms (number/mL) | Dinoflagellates (number/mL) | Flagellates (number/mL) | Goldens (number/mL) | Greens (number/mL) |
|---|---|---|---|---|---|---|---|
| 11/14/2011 | 0 | 0 | 0 | — | 0 | — | 0 |
| 1/11/2012 | 61 | 11 | 50 | — | 0 | — | 0 |
| 2/21/2012 | 150 | 0 | 68 | — | 0 | — | 79 |
| 3/12/2012 | 160 | 0 | 39 | — | 14 | — | 110 |
| 4/9/2012 | 86 | 0 | 79 | — | 0 | — | 7 |
| 5/14/2012 | 130 | 29 | 0 | — | 0 | — | 100 |
| 6/11/2012 | 160 | 0 | 120 | — | 0 | — | 36 |
| 7/9/2012 | 930 | 75 | 550 | — | 21 | — | 280 |
| 8/13/2012 | 920 | 37 | 120 | — | 0 | — | 760 |
| 9/10/2012 | 690 | 200 | 37 | — | 22 | — | 430 |
| 10/3/2012 | 460 | 15 | 0 | — | 0 | — | 440 |
| 11/7/2012 | 750 | 29 | 70 | — | 7 | — | 640 |
| 12/5/2012 | 7 | 0 | 7 | — | 0 | — | 0 |
| 1/9/2013 | 130 | 0 | 0 | — | 48 | — | 81 |
| 2/5/2013 | 70 | 0 | 0 | — | 59 | — | 11 |
| 3/26/2013 | 55 | 0 | 26 | — | 0 | — | 29 |
| 4/16/2013 | 140 | 0 | 92 | — | 51 | — | 0 |
| 5/22/2013 | 270 | 66 | 88 | — | 0 | — | 120 |
| 6/18/2013 | 99 | 0 | 81 | — | 0 | — | 66 |
| Minimum | 0 | 0 | 0 | — | 0 | — | 0 |
| Maximum | 930 | 200 | 550 | — | 59 | — | 760 |
| Average | 277 | 24 | 75 | — | 12 | — | 168 |
| Median | 140 | 0 | 50 | — | 0 | — | 79 |
| # of Samples | 19 | 19 | 19 | 0 | 19 | 0 | 19 |

## Table 7: Selected Algal Genera and Water Quality Issues

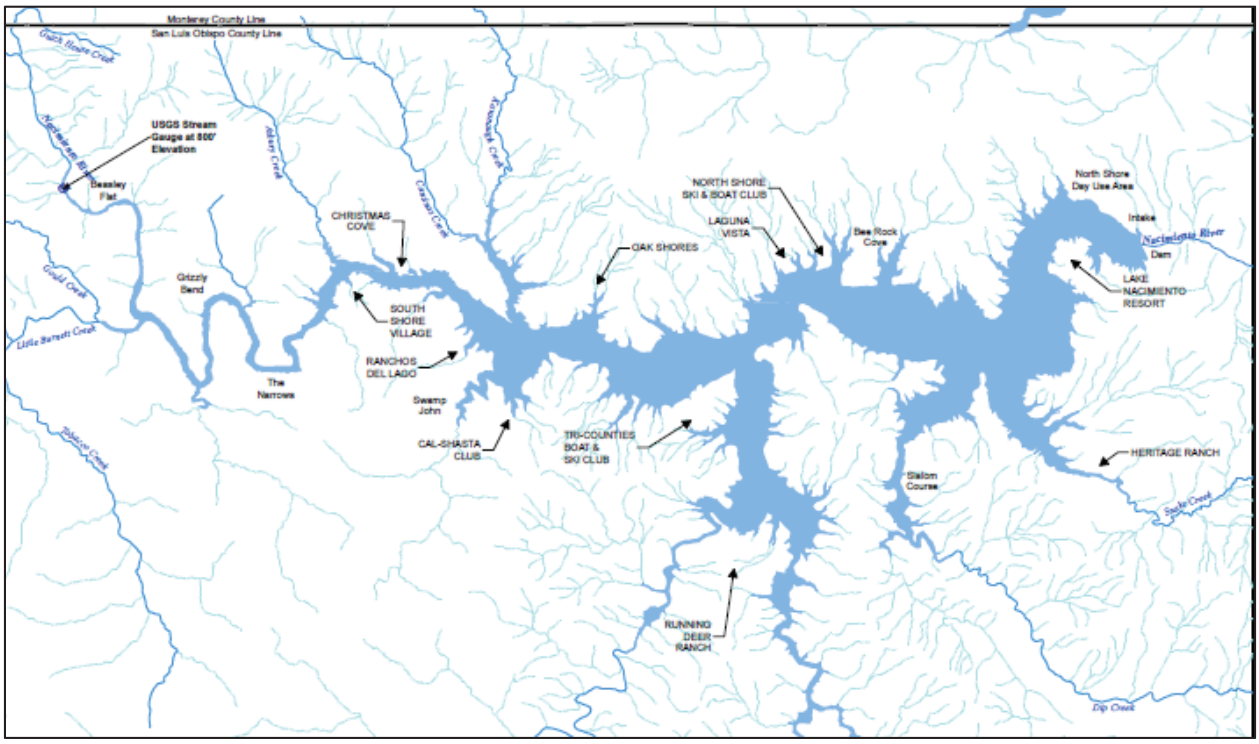
| Genus | Water Quality Issues | | | | |
|---|---|---|---|---|---|
| | Taste & Odor | Filter- & screen clogger | Dermatoxin | Hepatotoxin | Neurotoxin |
| **Blue-Greens (cyanobacteria)** | | | | | |
| *Anabaena* | x | x | x | x | x |
| *Anabaenopsis* | | | x | x | |
| *Aphanizomenon* | x | | x | x | x |
| *Cylindrospermopsis* | | | x | x | x |
| *Lyngbya (Plectonema)* | x | | x | x | x |
| *Microcystis* | | | x | x | x |
| *Oscillatoria* | x | | x | x | x |
| | | | | | |
| **Diatoms** | | | | | |
| *Asterionella* | x | x | | | |
| *Cymbella* | | x | | | |
| *Fragilaria* | | x | | | |
| *Navicula* | | x | | | |
| *Synedra* | x | x | | | |
| *Tabellaria* | x | x | | | |
| | | | | | |
| **Flagellates** | | | | | |
| *Ceratium* | x | | | | |
| | | | | | |
| **Greens** | | | | | |
| *Chlorella* | | x | | | |
| *Dinobryon* | x | x | | | |
| *Pandorina* | x | | | | |
| *Spirogyra* | | x | | | |
| *Staurastrum* | x | | | | |
| *Trachelomonas* | | x | | | |

*Sources:*
*Standard Methods of the Examination of Water and Wastewater, 19th edition*
*www.nalms.org/home/programs/blue-green-algae-initiative/General%20Information.cmsx*

APPENDIX D

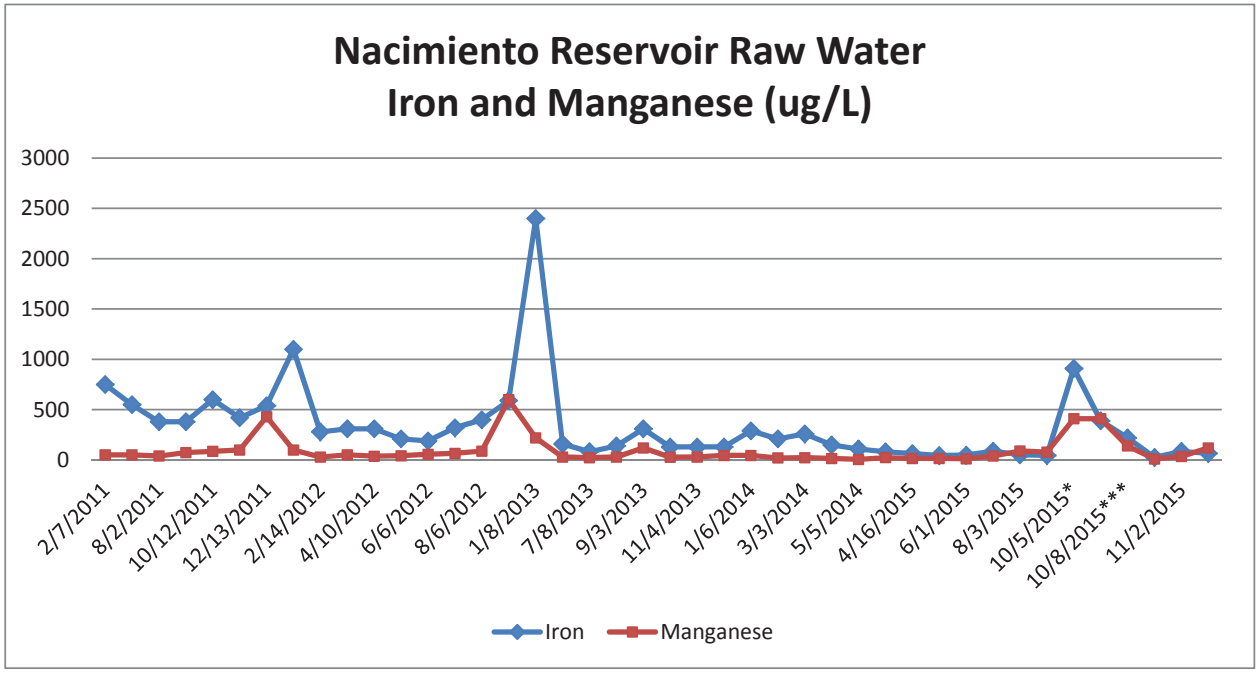
# METALS DATA

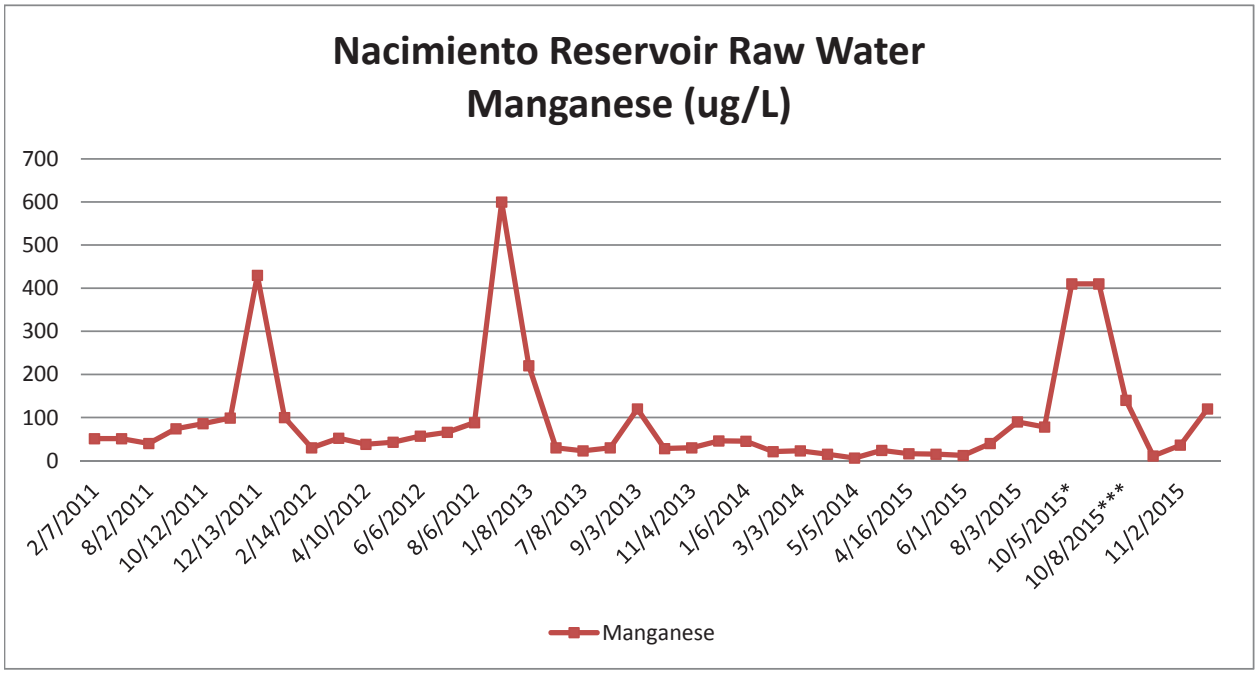
# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 2/7/2011 | 200 | 750 | 51 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 7/12/2011 | —— | 550 | 51 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 8/2/2011 | —— | 380 | 40 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 9/13/2011 | —— | 380 | 74 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/12/2011 | —— | 600 | 86 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 11/2/2011 | —— | 420 | 99 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 12/13/2011 | —— | 540 | 430 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 1/9/2012 | —— | 1100 | 100 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 2/14/2012 | —— | 280 | 30 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 3/13/2012 | —— | 310 | 52 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 4/10/2012 | —— | 310 | 38 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 5/15/2012 | —— | 210 | 43 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 6/6/2012 | —— | 190 | 57 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 7/16/2012 | —— | 320 | 66 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 8/6/2012 | —— | 400 | 88 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 12/3/2012 | —— | 590 | 600 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 1/8/2013 | —— | 2400 | 220 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 6/3/2013 | 71 | 160 | 30 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 7/8/2013 | —— | 83 | 23 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 8/5/2013 | —— | 140 | 30 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 9/3/2013 | —— | 310 | 120 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/2/2013 | —— | 130 | 28 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 11/4/2013 | —— | 130 | 30 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 12/2/2013 | —— | 130 | 46 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 1/6/2014 | —— | 290 | 45 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 2/3/2014 | —— | 210 | 21 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 3/3/2014 | —— | 260 | 23 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 4/2/2014 | —— | 150 | 15 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 5/5/2014 | 24 | 110 | 6 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 6/2/2014 | —— | 82 | 24 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 4/16/2015 | —— | 65 | 16 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 5/4/2015 | 26 | 45 | 15 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 6/1/2015 | —— | 49 | 12 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 7/6/2015 | —— | 89 | 40 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 8/3/2015 | —— | 52 | 90 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 9/2/2015 | —— | 46 | 78 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/5/2015* | —— | 910 | 410 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/8/2015** | —— | 390 | 410 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/8/2015*** | —— | 220 | 140 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 10/13/2015 | —— | 27 | 11 | —— |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 11/2/2015 | —— | 86 | 36 | ND |
| NACIMIENTO RESERVOIR - RAW (Intk in Use) | 12/1/2015 | —— | 66 | 120 | ND |
| | Minimum | 24 | 27 | 6 | ND |
| | Maximum | 200 | 2400 | 600 | ND |
| | Median | 48.5 | 215 | 45.5 | ND |
| | Average | 80 | 332 | 94 | ND |
| | Count | 4 | 42 | 42 | 33 |

*10/05/2015 Analytical results displayed a large increase in iron and manganese.
**10/08/2015 Discovered 680' elevation valve was not completely closed. Sample collected.
***10/08/2015 Sample collected after 680' valve was closed.


Nacimiento Reservoir Raw Water
Iron and Manganese (ug/L)
3000
2500
2000
1500
1000
500
0
2/7/2011
8/2/2011
10/12/2011
12/13/2011
2/14/2012
4/10/2012
6/6/2012
8/6/2012
1/8/2013
7/8/2013
9/3/2013
11/4/2013
1/6/2014
3/3/2014
5/5/2014
4/16/2015
6/1/2015
8/3/2015
10/5/2015*
10/8/2015***
11/2/2015
Iron
Manganese


Nacimiento Reservoir Raw Water
Manganese (ug/L)
700
600
500
400
300
200
100
0
2/7/2011
8/2/2011
10/12/2011
12/13/2011
2/14/2012
4/10/2012
6/6/2012
8/6/2012
1/8/2013
7/8/2013
9/3/2013
11/4/2013
1/6/2014
3/3/2014
5/5/2014
4/16/2015
6/1/2015
8/3/2015
10/5/2015*
10/8/2015***
11/2/2015
Manganese

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| EPILIMNION | 1/10/2011 | 190 | —— | —— | —— |
| EPILIMNION | 2/7/2011 | 120 | 210 | 12 | ND |
| EPILIMNION | 3/7/2011 | 180 | —— | —— | ND |
| EPILIMNION | 4/5/2011 | 130 | —— | —— | ND |
| EPILIMNION | 5/2/2011 | 210 | 250 | 7 | ND |
| EPILIMNION | 6/15/2011 | 120 | —— | —— | ND |
| EPILIMNION | 8/2/2011 | —— | 160 | 7 | —— |
| EPILIMNION | 9/13/2011 | —— | —— | —— | ND |
| EPILIMNION | 10/12/2011 | —— | —— | —— | ND |
| EPILIMNION | 11/2/2011 | —— | 60 | 10 | —— |
| EPILIMNION | 2/14/2012 | —— | 73 | ND | —— |
| EPILIMNION | 5/15/2012 | —— | 41 | ND | —— |
| EPILIMNION | 8/6/2012 | —— | 68 | ND | —— |
| EPILIMNION | 11/5/2012 | —— | 38 | 7 | —— |
| EPILIMNION | 2/4/2013 | —— | 470 | 18 | —— |
| EPILIMNION | 5/6/2013 | —— | 63 | ND | —— |
| EPILIMNION | 8/5/2013 | —— | 58 | 14 | —— |
| EPILIMNION | 11/4/2013 | —— | 80 | 32 | —— |
| EPILIMNION | 2/3/2014 | —— | 180 | 7 | —— |
| EPILIMNION | 5/5/2014 | —— | 110 | ND | —— |
| EPILIMNION | 8/4/2014 | —— | 140 | 15 | —— |
| EPILIMNION | 11/3/2014 | —— | 49 | 31 | —— |
| EPILIMNION | 2/3/2015 | —— | 93 | 22 | —— |
| EPILIMNION | 5/4/2015 | —— | 20 | ND | —— |
| EPILIMNION | 8/3/2015 | —— | 36 | ND | —— |
| EPILIMNION | 11/4/2015 | —— | 50 | 43 | —— |
| | Minimum | 120 | 20 | ND | ND |
| | Maximum | 210 | 470 | 43 | ND |
| | Median | 155 | 70.5 | 7 | ND |
| | Average | 158 | 112 | 12 | ND |
| | Count | 6 | 20 | 20 | 7 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| HYPOLIMNION | 1/10/2011 | 870 | —— | —— | —— |
| HYPOLIMNION | 2/7/2011 | 540 | 880 | 37 | ND |
| HYPOLIMNION | 3/7/2011 | 660 | —— | —— | ND |
| HYPOLIMNION | 4/5/2011 | 620 | —— | —— | ND |
| HYPOLIMNION | 5/2/2011 | 150 | 430 | 13 | ND |
| HYPOLIMNION | 6/15/2011 | 290 | —— | —— | ND |
| HYPOLIMNION | 8/2/2011 | —— | —— | 7 | —— |
| HYPOLIMNION | 9/13/2011 | —— | —— | —— | ND |
| HYPOLIMNION | 10/12/2011 | —— | —— | —— | ND |
| HYPOLIMNION | 11/2/2011 | —— | 340 | 69 | —— |
| HYPOLIMNION | 2/14/2012 | —— | 170 | 10 | —— |
| HYPOLIMNION | 5/15/2012 | —— | 100 | 40 | —— |
| HYPOLIMNION | 8/6/2012 | —— | 380 | 79 | —— |
| HYPOLIMNION | 11/5/2012 | —— | 160 | 28 | —— |
| HYPOLIMNION | 2/4/2013 | —— | 540 | 19 | —— |
| HYPOLIMNION | 5/6/2013 | —— | 130 | 11 | —— |
| HYPOLIMNION | 8/5/2013 | —— | 170 | 50 | —— |
| HYPOLIMNION | 11/4/2013 | —— | 140 | 180 | —— |
| HYPOLIMNION | 2/3/2014 | —— | 440 | 65 | —— |
| HYPOLIMNION | 5/5/2014 | —— | 390 | 59 | —— |
| HYPOLIMNION | 8/4/2014 | —— | 380 | 310 | —— |
| HYPOLIMNION | 11/3/2014 | —— | 450 | 590 | —— |
| HYPOLIMNION | 2/2/2015 | —— | 200 | 280 | —— |
| HYPOLIMNION | 5/4/2015 | —— | 144 | 100 | —— |
| HYPOLIMNION | 8/3/2015 | —— | 450 | 590 | —— |
| HYPOLIMNION | 11/4/2015 | —— | 520 | 520 | —— |
| | Minimum | 150 | 100 | 7 | ND |
| | Maximum | 870 | 880 | 590 | ND |
| | Median | 580 | 380 | 62 | ND |
| | Average | 522 | 338 | 153 | ND |
| | Count | 6 | 20 | 20 | 7 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 790 | 4/5/2011 | 85 | 160 | ND | —— |
| Elevation 790 | 5/2/2011 | 69 | 110 | 6 | —— |
| Elevation 790 | 6/15/2011 | 36 | 64 | ND | —— |
| Elevation 790 | 7/12/2011 | ND | 54 | ND | —— |
| Elevation 790 | 8/2/2011 | ND | 37 | ND | —— |
| | Minimum | ND | 37 | ND | —— |
| | Maximum | 85 | 160 | 6 | —— |
| | Median | 36 | 64 | ND | —— |
| | Average | 38 | 85 | ND | —— |
| | Count | 5 | 5 | 5 | 0 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 780 | 3/7/2011 | 130 | 250 | 6 | —— |
| Elevation 780 | 4/5/2011 | 60 | 210 | ND | —— |
| Elevation 780 | 5/2/2011 | 130 | 110 | ND | —— |
| Elevation 780 | 6/15/2011 | 30 | 61 | ND | —— |
| Elevation 780 | 7/12/2011 | ND | 57 | ND | —— |
| Elevation 780 | 8/2/2011 | ND | 42 | ND | —— |
| Elevation 780 | 9/13/2011 | ND | 44 | 7 | —— |
| Elevation 780 | 10/12/2011 | ND | 48 | 8 | —— |
| | Minimum | ND | 42 | ND | —— |
| | Maximum | 130 | 250 | 8 | —— |
| | Median | 15 | 59 | ND | —— |
| | Average | 44 | 103 | 3 | —— |
| | Count | 8 | 8 | 8 | 0 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 770 | 3/7/2011 | 100 | 270 | 7 | —— |
| Elevation 770 | 4/5/2011 | 150 | 360 | 5 | —— |
| Elevation 770 | 5/2/2011 | 99 | 230 | 6 | —— |
| Elevation 770 | 6/15/2011 | 48 | 110 | 6 | —— |
| Elevation 770 | 7/12/2011 | 23 | 69 | ND | —— |
| Elevation 770 | 8/2/2011 | 21 | 37 | ND | —— |
| Elevation 770 | 9/13/2011 | ND | 43 | 8 | —— |
| Elevation 770 | 10/12/2011 | ND | 34 | 7 | —— |
| Elevation 770 | 11/2/2011 | 20 | 55 | 10 | —— |
| Elevation 770 | 12/13/2011 | 31 | 140 | 16 | —— |
| Elevation 770 | 1/9/2012 | 44 | 310 | 35 | —— |
| Elevation 770 | 2/14/2012 | ND | 69 | ND | —— |
| Elevation 770 | 3/13/2012 | ND | 31 | ND | —— |
| Elevation 770 | 4/10/2012 | ND | 36 | ND | —— |
| Elevation 770 | 5/15/2012 | ND | 39 | ND | —— |
| Elevation 770 | 6/6/2012 | 30 | 57 | ND | —— |
| | Minimum | ND | 31 | ND | —— |
| | Maximum | 150 | 360 | 35 | —— |
| | Median | 22 | 63 | 6 | —— |
| | Average | 35 | 118 | 6 | —— |
| | Count | 16 | 16 | 16 | 0 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 760 | 1/10/2011 | 230 | 510 | 280 | ND |
| Elevation 760 | 2/7/2011 | 61 | 260 | 10 | —— |
| Elevation 760 | 3/7/2011 | 170 | 390 | 11 | —— |
| Elevation 760 | 4/5/2011 | 210 | 470 | 7 | —— |
| Elevation 760 | 5/2/2011 | 220 | 300 | 7 | —— |
| Elevation 760 | 6/15/2011 | 78 | 210 | 8 | —— |
| Elevation 760 | 7/12/2011 | 75 | 170 | 7 | —— |
| Elevation 760 | 8/2/2011 | 50 | 100 | ND | —— |
| Elevation 760 | 9/13/2011 | 22 | 60 | 9 | —— |
| Elevation 760 | 10/12/2011 | ND | 39 | 8 | —— |
| Elevation 760 | 11/2/2011 | ND | 61 | 9 | —— |
| Elevation 760 | 12/13/2011 | 34 | 160 | 18 | —— |
| Elevation 760 | 1/9/2012 | 44 | 320 | 40 | —— |
| Elevation 760 | 2/14/2012 | 22 | 69 | ND | —— |
| Elevation 760 | 3/13/2012 | ND | 39 | ND | —— |
| Elevation 760 | 4/10/2012 | ND | 32 | ND | —— |
| Elevation 760 | 5/15/2012 | ND | 46 | ND | —— |
| Elevation 760 | 6/6/2012 | 22 | 61 | ND | —— |
| Elevation 760 | 7/16/2012 | 21 | 79 | ND | —— |
| Elevation 760 | 8/6/2012 | 32 | 55 | ND | —— |
| | Minimum | ND | 32 | ND | —— |
| | Maximum | 230 | 510 | 280 | —— |
| | Median | 33 | 89.5 | 7 | —— |
| | Average | 65 | 172 | 21 | ND |
| | Count | 20 | 20 | 20 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 750 | 1/10/2011 | 260 | 500 | 220 | ND |
| Elevation 750 | 2/7/2011 | 80 | 350 | 10 | —— |
| Elevation 750 | 3/7/2011 | 220 | 560 | 16 | —— |
| Elevation 750 | 4/5/2011 | 130 | 440 | 7 | —— |
| Elevation 750 | 5/2/2011 | 160 | 340 | 9 | —— |
| Elevation 750 | 6/15/2011 | 160 | 240 | 8 | —— |
| Elevation 750 | 7/12/2011 | 77 | 260 | 7 | —— |
| Elevation 750 | 8/2/2011 | 86 | 140 | 7 | —— |
| Elevation 750 | 9/13/2011 | 21 | 36 | 16 | —— |
| Elevation 750 | 10/12/2011 | ND | 56 | 9 | —— |
| Elevation 750 | 11/2/2011 | ND | 53 | 10 | —— |
| Elevation 750 | 12/13/2011 | 39 | 150 | 18 | —— |
| Elevation 750 | 1/9/2012 | 66 | 340 | 58 | —— |
| Elevation 750 | 2/14/2012 | 21 | 78 | ND | —— |
| Elevation 750 | 3/13/2012 | ND | 54 | ND | —— |
| Elevation 750 | 4/10/2012 | ND | 36 | ND | —— |
| Elevation 750 | 5/15/2012 | ND | 39 | ND | —— |
| Elevation 750 | 6/6/2012 | 26 | 73 | ND | —— |
| Elevation 750 | 7/16/2012 | 35 | 77 | 6 | —— |
| Elevation 750 | 8/6/2012 | 27 | 48 | ND | —— |
| Elevation 750 | 9/4/2012 | 28 | 58 | 6 | —— |
| Elevation 750 | 1/7/2013 | 580 | 700 | 110 | —— |
| Elevation 750 | 2/4/2013 | 250 | 440 | 19 | —— |
| Elevation 750 | 3/4/2013 | 48 | 180 | ND | —— |
| Elevation 750 | 4/2/2013 | ND | 99 | ND | —— |
| Elevation 750 | 5/6/2013 | 25 | 69 | ND | —— |
| Elevation 750 | 6/3/2013 | ND | 43 | ND | —— |
| | Minimum | ND | 36 | ND | —— |
| | Maximum | 580 | 700 | 220 | —— |
| | Median | 35 | 99 | 7 | —— |
| | Average | 87 | 202 | 20 | ND |
| | Count | 27 | 27 | 27 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 740 | 1/10/2011 | 340 | 470 | 240 | ND |
| Elevation 740 | 2/7/2011 | 100 | 370 | 12 | —— |
| Elevation 740 | 3/7/2011 | 210 | 700 | 26 | —— |
| Elevation 740 | 4/5/2011 | 170 | 530 | 9 | —— |
| Elevation 740 | 5/2/2011 | 180 | 290 | 7 | —— |
| Elevation 740 | 6/15/2011 | 130 | 230 | 7 | —— |
| Elevation 740 | 7/12/2011 | 49 | 100 | ND | —— |
| Elevation 740 | 8/2/2011 | 140 | 170 | 7 | —— |
| Elevation 740 | 9/13/2011 | 42 | 110 | 13 | —— |
| Elevation 740 | 10/12/2011 | 37 | 120 | 66 | —— |
| Elevation 740 | 11/2/2011 | 23 | 56 | 13 | —— |
| Elevation 740 | 12/13/2011 | 37 | 150 | 22 | —— |
| Elevation 740 | 1/9/2012 | 64 | 350 | 70 | —— |
| Elevation 740 | 2/14/2012 | 26 | 85 | ND | —— |
| Elevation 740 | 3/13/2012 | 24 | 69 | ND | —— |
| Elevation 740 | 4/10/2012 | 23 | 46 | ND | —— |
| Elevation 740 | 5/15/2012 | ND | 42 | ND | —— |
| Elevation 740 | 6/6/2012 | 25 | 74 | ND | —— |
| Elevation 740 | 7/16/2012 | 29 | 80 | 6 | —— |
| Elevation 740 | 8/6/2012 | 30 | 51 | ND | —— |
| Elevation 740 | 9/4/2012 | 24 | 59 | ND | —— |
| Elevation 740 | 10/1/2012 | ND | 55 | ND | —— |
| Elevation 740 | 11/5/2012 | 27 | 44 | 6 | —— |
| Elevation 740 | 12/3/2012 | ND | 75 | 17 | —— |
| Elevation 740 | 1/7/2013 | 490 | 700 | 110 | —— |
| Elevation 740 | 2/4/2013 | 270 | 480 | 20 | —— |
| Elevation 740 | 3/4/2013 | 54 | 200 | ND | —— |
| Elevation 740 | 4/2/2013 | 21 | 70 | ND | —— |
| Elevation 740 | 5/6/2013 | 40 | 83 | ND | —— |
| Elevation 740 | 6/3/2013 | ND | 40 | ND | —— |
| Elevation 740 | 7/8/2013 | —— | 58 | 8 | —— |
| Elevation 740 | 8/5/2013 | —— | 53 | 13 | —— |
| Elevation 740 | 9/3/2013 | —— | 55 | 11 | —— |
| | Minimum | ND | 40 | ND | —— |
| | Maximum | 490 | 700 | 240 | —— |
| | Median | 37 | 83 | 7 | —— |
| | Average | 87 | 184 | 21 | ND |
| | Count | 30 | 33 | 33 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 730 | 1/10/2011 | 420 | 480 | 230 | ND |
| Elevation 730 | 2/7/2011 | 160 | 420 | 17 | —— |
| Elevation 730 | 3/7/2011 | 880 | 1200 | 37 | —— |
| Elevation 730 | 4/5/2011 | 200 | 750 | 12 | —— |
| Elevation 730 | 5/2/2011 | 390 | 320 | 8 | —— |
| Elevation 730 | 6/15/2011 | 110 | 280 | 10 | —— |
| Elevation 730 | 7/12/2011 | 83 | 290 | 7 | —— |
| Elevation 730 | 8/2/2011 | 88 | 160 | 6 | —— |
| Elevation 730 | 9/13/2011 | 62 | 190 | 10 | —— |
| Elevation 730 | 10/12/2011 | 82 | 160 | 48 | —— |
| Elevation 730 | 11/2/2011 | 45 | 120 | 88 | —— |
| Elevation 730 | 12/13/2011 | 83 | 160 | 37 | —— |
| Elevation 730 | 1/9/2012 | 63 | 410 | 81 | —— |
| Elevation 730 | 2/14/2012 | 41 | 110 | ND | —— |
| Elevation 730 | 3/13/2012 | 31 | 110 | ND | —— |
| Elevation 730 | 4/10/2012 | 26 | 60 | ND | —— |
| Elevation 730 | 5/15/2012 | ND | 42 | ND | —— |
| Elevation 730 | 6/6/2012 | 31 | 59 | 5 | —— |
| Elevation 730 | 7/16/2012 | 23 | 59 | ND | —— |
| Elevation 730 | 8/6/2012 | 49 | 49 | ND | —— |
| Elevation 730 | 9/4/2012 | 27 | 41 | 5 | —— |
| Elevation 730 | 10/1/2012 | ND | 56 | ND | —— |
| Elevation 730 | 11/5/2012 | ND | 48 | 7 | —— |
| Elevation 730 | 12/3/2012 | 29 | 84 | 19 | —— |
| Elevation 730 | 1/7/2013 | 240 | 840 | 110 | —— |
| Elevation 730 | 2/4/2013 | 280 | 490 | 21 | —— |
| Elevation 730 | 3/4/2013 | 73 | 240 | ND | —— |
| Elevation 730 | 4/2/2013 | 25 | 110 | ND | —— |
| Elevation 730 | 5/6/2013 | 25 | 120 | 6 | —— |
| Elevation 730 | 6/3/2013 | 28 | 84 | ND | —— |
| | Minimum | ND | 41 | ND | —— |
| | Maximum | 880 | 1200 | 230 | —— |
| | Median | 55.5 | 140 | 7 | —— |
| | Average | 120 | 251 | 25 | ND |
| | Count | 30 | 30 | 30 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 720 | 1/10/2011 | 300 | 530 | 250 | ND |
| Elevation 720 | 2/7/2011 | 150 | 510 | 19 | —— |
| Elevation 720 | 3/7/2011 | 1100 | 1400 | 50 | —— |
| Elevation 720 | 4/5/2011 | 380 | 900 | 15 | —— |
| Elevation 720 | 5/2/2011 | 490 | 360 | 11 | —— |
| Elevation 720 | 6/15/2011 | 120 | 230 | 9 | —— |
| Elevation 720 | 7/12/2011 | 140 | 300 | 9 | —— |
| Elevation 720 | 8/2/2011 | 23 | 81 | ND | —— |
| Elevation 720 | 9/13/2011 | 50 | 200 | 13 | —— |
| Elevation 720 | 10/12/2011 | 100 | 370 | 18 | —— |
| Elevation 720 | 11/2/2011 | 60 | 120 | 53 | —— |
| Elevation 720 | 12/13/2011 | 64 | 130 | 43 | —— |
| Elevation 720 | 1/9/2012 | 60 | 340 | 48 | —— |
| Elevation 720 | 2/14/2012 | 29 | 120 | 5 | —— |
| Elevation 720 | 3/13/2012 | 40 | 140 | 6 | —— |
| Elevation 720 | 4/10/2012 | 44 | 84 | 7 | —— |
| Elevation 720 | 5/15/2012 | ND | 54 | 6 | —— |
| Elevation 720 | 6/6/2012 | 23 | 49 | ND | —— |
| Elevation 720 | 7/16/2012 | 36 | 67 | 7 | —— |
| Elevation 720 | 8/6/2012 | 36 | 57 | 6 | —— |
| Elevation 720 | 9/4/2012 | 20 | 36 | ND | —— |
| Elevation 720 | 10/1/2012 | ND | 53 | ND | —— |
| Elevation 720 | 11/5/2012 | 22 | 50 | 8 | —— |
| Elevation 720 | 12/3/2012 | 38 | 82 | 20 | —— |
| Elevation 720 | 1/7/2013 | 450 | 810 | 110 | —— |
| Elevation 720 | 2/4/2013 | 110 | 590 | 24 | —— |
| Elevation 720 | 3/4/2013 | 140 | 290 | 6 | —— |
| Elevation 720 | 4/2/2013 | 37 | 130 | 6 | —— |
| Elevation 720 | 5/6/2013 | 140 | 67 | 6 | —— |
| Elevation 720 | 6/3/2013 | 30 | 73 | 6 | —— |
| Elevation 720 | 7/7/2013 | —— | 62 | 17 | —— |
| Elevation 720 | 8/5/2013 | —— | 48 | 13 | —— |
| Elevation 720 | 9/3/2013 | —— | 36 | 10 | —— |
| Elevation 720 | 10/2/2013 | —— | 39 | 9 | —— |
| Elevation 720 | 11/4/2013 | —— | 85 | 32 | —— |
| Elevation 720 | 12/2/2013 | —— | 94 | 49 | —— |
| Elevation 720 | 1/6/2014 | —— | 200 | 32 | —— |
| Elevation 720 | 2/3/2014 | —— | 110 | 8 | —— |
| Elevation 720 | 3/3/2014 | —— | 270 | 17 | —— |
| Elevation 720 | 4/2/2014 | —— | 130 | 9 | —— |
| Elevation 720 | 5/5/2014 | —— | 100 | ND | —— |
| Elevation 720 | 6/2/2014 | —— | 66 | 7 | —— |
| Elevation 720 | 7/8/2014 | —— | 62 | 10 | —— |
| Elevation 720 | 8/4/2014 | —— | 59 | 15 | —— |
| Elevation 720 | 9/2/2014 | —— | 85 | 9 | —— |
| Elevation 720 | 1/5/2015 | —— | 230 | 300 | —— |
| Elevation 720 | 2/3/2015 | —— | 72 | 24 | —— |
| Elevation 720 | 3/3/2015 | —— | 120 | 6 | —— |
| Elevation 720 | 3/23/2015 | —— | 66 | 7 | —— |
| Elevation 720 | 4/16/2015 | —— | 48 | 6 | —— |
| Elevation 720 | 5/4/2015 | —— | 32 | 18 | —— |
| Elevation 720 | 6/1/2015 | —— | 35 | ND | —— |
| Elevation 720 | 7/6/2015 | —— | 55 | ND | —— |
| Elevation 720 | 8/3/2015 | —— | 31 | 6 | —— |
| Elevation 720 | 9/2/2015 | —— | 34 | 7.6 | —— |
| Elevation 720 | 10/5/2015 | —— | 16 | 8.1 | —— |
| Elevation 720 | 11/4/2015 | —— | 32 | 43 | —— |
| | Minimum | ND | 16 | ND | —— |
| | Maximum | 1100 | 1400 | 300 | —— |
| | Median | 55 | 84 | 9 | —— |
| | Average | 141 | 183 | 25 | ND |
| | Count | 30 | 57 | 57 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 710 | 1/10/2011 | 300 | 530 | 120 | ND |
| Elevation 710 | 2/7/2011 | 260 | 590 | 21 | —— |
| Elevation 710 | 3/7/2011 | 500 | 1400 | 60 | —— |
| Elevation 710 | 4/5/2011 | 510 | 950 | 17 | —— |
| Elevation 710 | 5/2/2011 | 120 | 430 | 17 | —— |
| Elevation 710 | 6/15/2011 | 160 | 310 | 12 | —— |
| Elevation 710 | 7/12/2011 | 190 | 360 | 13 | —— |
| Elevation 710 | 8/2/2011 | 63 | 120 | 6 | —— |
| Elevation 710 | 9/13/2011 | 62 | 250 | 16 | —— |
| Elevation 710 | 10/12/2011 | 120 | 310 | 16 | —— |
| Elevation 710 | 11/2/2011 | 160 | 160 | 54 | —— |
| Elevation 710 | 12/13/2011 | 79 | 150 | 50 | —— |
| Elevation 710 | 1/9/2012 | 71 | 420 | 71 | —— |
| Elevation 710 | 2/14/2012 | 46 | 110 | 9 | —— |
| Elevation 710 | 3/13/2012 | 58 | 130 | 6 | —— |
| Elevation 710 | 4/10/2012 | 59 | 110 | 6 | —— |
| Elevation 710 | 5/15/2012 | ND | 66 | 9 | —— |
| Elevation 710 | 6/6/2012 | 24 | 69 | 5 | —— |
| Elevation 710 | 7/16/2012 | 39 | 74 | 10 | —— |
| Elevation 710 | 8/6/2012 | 61 | 88 | 15 | —— |
| Elevation 710 | 9/4/2012 | ND | 52 | 6 | —— |
| Elevation 710 | 10/1/2012 | 24 | 55 | 6 | —— |
| Elevation 710 | 11/5/2012 | 30 | 61 | 9 | —— |
| Elevation 710 | 12/3/2012 | 66 | 94 | 25 | —— |
| Elevation 710 | 1/7/2013 | 530 | 940 | 270 | —— |
| Elevation 710 | 2/4/2013 | 240 | 630 | 26 | —— |
| Elevation 710 | 3/4/2013 | 120 | 380 | 8 | —— |
| Elevation 710 | 4/2/2013 | 56 | 170 | 7 | —— |
| Elevation 710 | 5/6/2013 | 26 | 100 | 6 | —— |
| Elevation 710 | 6/3/2013 | 30 | 82 | 8 | —— |
| | Minimum | ND | 52 | 5 | ND |
| | Maximum | 530 | 1400 | 270 | ND |
| | Median | 64.5 | 155 | 12.5 | ND |
| | Average | 133 | 306 | 30 | ND |
| | Count | 30 | 30 | 30 | 1 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 700 | 1/10/2011 | 580 | 480 | 79 | ND |
| Elevation 700 | 2/7/2011 | 320 | 680 | 22 | ND |
| Elevation 700 | 3/7/2011 | 920 | 1600 | 79 | ND |
| Elevation 700 | 4/5/2011 | 630 | 1000 | 17 | ND |
| Elevation 700 | 5/2/2011 | 340 | 430 | 13 | ND |
| Elevation 700 | 6/15/2011 | 160 | 230 | 8 | ND |
| Elevation 700 | 7/12/2011 | 86 | 370 | 11 | —— |
| Elevation 700 | 8/2/2011 | 110 | 250 | 9 | —— |
| Elevation 700 | 9/13/2011 | 310 | 220 | 12 | —— |
| Elevation 700 | 10/12/2011 | 160 | 420 | 25 | —— |
| Elevation 700 | 11/2/2011 | 100 | 210 | 44 | —— |
| Elevation 700 | 12/13/2011 | 100 | 160 | 48 | —— |
| Elevation 700 | 1/9/2012 | 65 | 460 | 67 | —— |
| Elevation 700 | 2/14/2012 | 68 | 140 | 11 | —— |
| Elevation 700 | 3/13/2012 | 48 | 150 | 8 | —— |
| Elevation 700 | 4/10/2012 | 63 | 140 | 8 | —— |
| Elevation 700 | 5/15/2012 | ND | 71 | 9 | —— |
| Elevation 700 | 6/6/2012 | 22 | 66 | 5 | —— |
| Elevation 700 | 7/16/2012 | 51 | 85 | 10 | —— |
| Elevation 700 | 8/6/2012 | 69 | 180 | 15 | —— |
| Elevation 700 | 9/4/2012 | 22 | 640 | 14 | —— |
| Elevation 700 | 10/1/2012 | 36 | 110 | 19 | —— |
| Elevation 700 | 11/5/2012 | 31 | 68 | 8 | —— |
| Elevation 700 | 12/3/2012 | 60 | 100 | 27 | —— |
| Elevation 700 | 1/7/2013 | 710 | 1100 | 350 | —— |
| Elevation 700 | 2/4/2013 | 220 | 550 | 21 | —— |
| Elevation 700 | 3/4/2013 | 140 | 400 | 12 | —— |
| Elevation 700 | 4/2/2013 | 50 | 230 | 10 | —— |
| Elevation 700 | 5/6/2013 | 60 | 120 | 9 | —— |
| Elevation 700 | 6/3/2013 | 32 | 85 | 8 | —— |
| Elevation 700 | 7/8/2013 | —— | 160 | 28 | —— |
| Elevation 700 | 8/5/2013 | —— | 89 | 28 | —— |
| Elevation 700 | 9/3/2013 | —— | 190 | 110 | —— |
| Elevation 700 | 10/2/2013 | —— | 140 | 12 | —— |
| Elevation 700 | 11/4/2013 | —— | 91 | 29 | —— |
| Elevation 700 | 12/2/2013 | —— | 120 | 60 | —— |
| Elevation 700 | 1/6/2014 | —— | 260 | 42 | —— |
| Elevation 700 | 2/3/2014 | —— | 220 | 21 | —— |
| Elevation 700 | 3/3/2014 | —— | 250 | 19 | —— |
| Elevation 700 | 4/2/2014 | —— | 120 | 17 | —— |
| Elevation 700 | 5/5/2014 | —— | 96 | ND | —— |
| Elevation 700 | 6/2/2014 | —— | 60 | 8 | —— |
| Elevation 700 | 7/8/2014 | —— | 100 | 14 | —— |
| Elevation 700 | 8/4/2014 | —— | 74 | 79 | —— |
| Elevation 700 | 9/2/2014 | —— | 67 | 15 | —— |
| Elevation 700 | 10/1/2014 | —— | 83 | 22 | —— |
| Elevation 700 | 11/3/2014 | —— | 52 | 31 | —— |
| Elevation 700 | 12/1/2014 | —— | 100 | 89 | —— |
| Elevation 700 | 1/5/2015 | —— | 250 | 330 | —— |
| Elevation 700 | 2/2/2015 | —— | 92 | 130 | —— |
| Elevation 700 | 3/3/2015 | —— | 140 | 30 | —— |
| Elevation 700 | 3/23/2015 | —— | 61 | 14 | —— |
| Elevation 700 | 4/16/2015 | —— | 48 | 11 | —— |
| Elevation 700 | 5/4/2015 | —— | 44 | 19 | —— |
| Elevation 700 | 6/1/2015 | —— | 42 | 12 | —— |
| Elevation 700 | 7/6/2015 | —— | 64 | 33 | —— |
| Elevation 700 | 8/3/2015 | —— | 42 | 200 | —— |
| Elevation 700 | 9/2/2015 | —— | 29 | 12 | —— |
| Elevation 700 | 10/5/2015 | —— | 16 | 12 | —— |
| Elevation 700 | 11/4/2015 | —— | 37 | 41 | —— |
| Elevation 700 | 12/1/2015 | —— | 75 | 130 | —— |
| | Minimum | ND | 16 | ND | ND |
| | Maximum | 920 | 1600 | 350 | ND |
| | Median | 78 | 120 | 19 | ND |
| | Average | 185 | 229 | 43 | ND |
| | Count | 30 | 61 | 60 | 6 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 690 | 1/10/2011 | 680 | 660 | 59 | ND |
| Elevation 690 | 2/7/2011 | 580 | 990 | 33 | ND |
| Elevation 690 | 3/7/2011 | 900 | 1600 | 93 | ND |
| Elevation 690 | 4/5/2011 | 640 | 980 | 29 | ND |
| Elevation 690 | 5/2/2011 | 630 | 520 | 23 | ND |
| Elevation 690 | 6/15/2011 | 250 | 330 | 15 | ND |
| Elevation 690 | 7/12/2011 | 99 | 480 | 14 | —— |
| Elevation 690 | 8/2/2011 | 140 | 260 | 10 | —— |
| Elevation 690 | 9/13/2011 | 62 | 250 | 16 | —— |
| Elevation 690 | 10/12/2011 | 120 | 440 | 22 | —— |
| Elevation 690 | 11/2/2011 | 150 | 200 | 21 | —— |
| Elevation 690 | 12/13/2011 | 130 | 200 | 41 | —— |
| Elevation 690 | 1/9/2012 | 110 | 590 | 66 | —— |
| Elevation 690 | 2/14/2012 | 72 | 140 | 12 | —— |
| Elevation 690 | 3/13/2012 | 64 | 180 | 13 | —— |
| Elevation 690 | 4/10/2012 | 85 | 150 | 13 | —— |
| Elevation 690 | 5/15/2012 | 38 | 71 | 10 | —— |
| Elevation 690 | 6/6/2012 | 28 | 69 | ND | —— |
| Elevation 690 | 7/16/2012 | 80 | 150 | 13 | —— |
| Elevation 690 | 8/6/2012 | 78 | 170 | 14 | —— |
| Elevation 690 | 9/4/2012 | 34 | 190 | 16 | —— |
| Elevation 690 | 10/1/2012 | 67 | 280 | 35 | —— |
| Elevation 690 | 11/5/2012 | 52 | 75 | 15 | —— |
| Elevation 690 | 12/3/2012 | 90 | 140 | 43 | —— |
| Elevation 690 | 1/7/2013 | 730 | 1000 | 380 | —— |
| Elevation 690 | 2/4/2013 | 200 | 630 | 28 | —— |
| Elevation 690 | 3/4/2013 | 200 | 480 | 20 | —— |
| Elevation 690 | 4/2/2013 | 76 | 260 | 14 | —— |
| Elevation 690 | 5/6/2013 | 48 | 180 | 14 | —— |
| Elevation 690 | 6/3/2013 | 28 | 110 | 13 | —— |
| | Minimum | 28 | 69 | ND | ND |
| | Maximum | 900 | 1600 | 380 | ND |
| | Median | 94.5 | 255 | 16 | ND |
| | Average | 215 | 393 | 37 | ND |
| | Count | 30 | 30 | 30 | 6 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 680 | 1/10/2011 | 1000 | 820 | 64 | ND |
| Elevation 680 | 2/7/2011 | 940 | 900 | 34 | ND |
| Elevation 680 | 3/7/2011 | 930 | 1500 | 95 | ND |
| Elevation 680 | 4/5/2011 | 560 | 950 | 29 | ND |
| Elevation 680 | 5/2/2011 | 380 | 520 | 23 | ND |
| Elevation 680 | 6/15/2011 | 260 | 380 | 17 | —— |
| Elevation 680 | 7/12/2011 | 160 | 500 | 27 | —— |
| Elevation 680 | 8/2/2011 | 180 | 350 | 15 | —— |
| Elevation 680 | 9/13/2011 | 300 | 340 | 29 | —— |
| Elevation 680 | 10/12/2011 | 190 | 570 | 36 | —— |
| Elevation 680 | 11/2/2011 | 170 | 320 | 51 | —— |
| Elevation 680 | 12/13/2011 | 190 | 370 | 110 | —— |
| Elevation 680 | 1/9/2012 | 96 | 460 | 40 | —— |
| Elevation 680 | 2/14/2012 | 74 | 160 | 13 | —— |
| Elevation 680 | 3/13/2012 | 55 | 230 | 18 | —— |
| Elevation 680 | 4/10/2012 | 100 | 180 | 17 | —— |
| Elevation 680 | 5/15/2012 | 35 | 94 | 16 | —— |
| Elevation 680 | 6/6/2012 | 34 | 100 | 8 | —— |
| Elevation 680 | 7/16/2012 | 100 | 310 | 32 | —— |
| Elevation 680 | 8/6/2012 | 170 | 640 | 45 | —— |
| Elevation 680 | 9/4/2012 | 97 | 560 | 96 | —— |
| Elevation 680 | 10/1/2012 | 100 | 220 | 49 | —— |
| Elevation 680 | 11/5/2012 | 65 | 160 | 30 | —— |
| Elevation 680 | 12/3/2012 | 44 | 140 | 49 | —— |
| Elevation 680 | 1/7/2013 | 320 | 790 | 600 | —— |
| Elevation 680 | 2/4/2013 | 140 | 630 | 28 | —— |
| Elevation 680 | 3/4/2013 | 260 | 440 | 34 | —— |
| Elevation 680 | 4/2/2013 | 89 | 300 | 20 | —— |
| Elevation 680 | 5/6/2013 | 61 | 190 | 16 | —— |
| Elevation 680 | 6/3/2013 | 31 | 110 | 13 | —— |
| Elevation 680 | 7/8/2013 | —— | 71 | 17 | —— |
| Elevation 680 | 8/5/2013 | —— | 94 | 42 | —— |
| Elevation 680 | 9/3/2013 | —— | 190 | 150 | —— |
| Elevation 680 | 10/2/2013 | —— | 500 | 300 | —— |
| Elevation 680 | 11/4/2013 | —— | 240 | 83 | —— |
| Elevation 680 | 12/2/2013 | —— | 190 | 190 | —— |
| Elevation 680 | 1/6/2014 | —— | 360 | 110 | —— |
| Elevation 680 | 2/3/2014 | —— | 370 | 51 | —— |
| Elevation 680 | 3/3/2014 | —— | 200 | 20 | —— |
| Elevation 680 | 4/2/2014 | —— | 380 | 76 | —— |
| Elevation 680 | 5/5/2014 | —— | 350 | 80 | —— |
| Elevation 680 | 6/2/2014 | —— | 120 | 79 | —— |
| Elevation 680 | 7/8/2014 | —— | 290 | 190 | —— |
| Elevation 680 | 8/4/2014 | —— | 1100 | 250 | —— |
| Elevation 680 | 9/2/2014 | —— | 480 | 430 | —— |
| Elevation 680 | 10/1/2014 | —— | 440 | 630 | —— |
| Elevation 680 | 11/3/2014 | —— | 140 | 1700 | —— |
| Elevation 680 | 12/1/2014 | —— | 150 | 150 | —— |
| Elevation 680 | 1/5/2015 | —— | 290 | 290 | —— |
| Elevation 680 | 2/2/2015 | —— | 160 | 150 | —— |
| Elevation 680 | 3/3/2015 | —— | 240 | 48 | —— |
| Elevation 680 | 3/23/2015 | —— | 120 | 97 | —— |
| Elevation 680 | 4/16/2015 | —— | 110 | 60 | —— |
| Elevation 680 | 5/4/2015 | —— | 64 | 120 | —— |
| Elevation 680 | 6/1/2015 | —— | 100 | 55 | —— |
| Elevation 680 | 7/6/2015 | —— | 530 | 210 | —— |
| Elevation 680 | 8/3/2015 | —— | 500 | 370 | —— |
| Elevation 680 | 9/2/2015 | —— | 280 | 250 | —— |
| Elevation 680 | 10/5/2015 | —— | 340 | 370 | —— |
| Elevation 680 | 11/4/2015 | —— | 41 | 440 | —— |
| Elevation 680 | 12/1/2015 | —— | 85 | 130 | —— |
| | Minimum | 31 | 41 | 8 | ND |
| | Maximum | 1000 | 1500 | 1700 | ND |
| | Median | 150 | 300 | 55 | ND |
| | Average | 238 | 357 | 144 | ND |
| | Count | 30 | 61 | 61 | 5 |

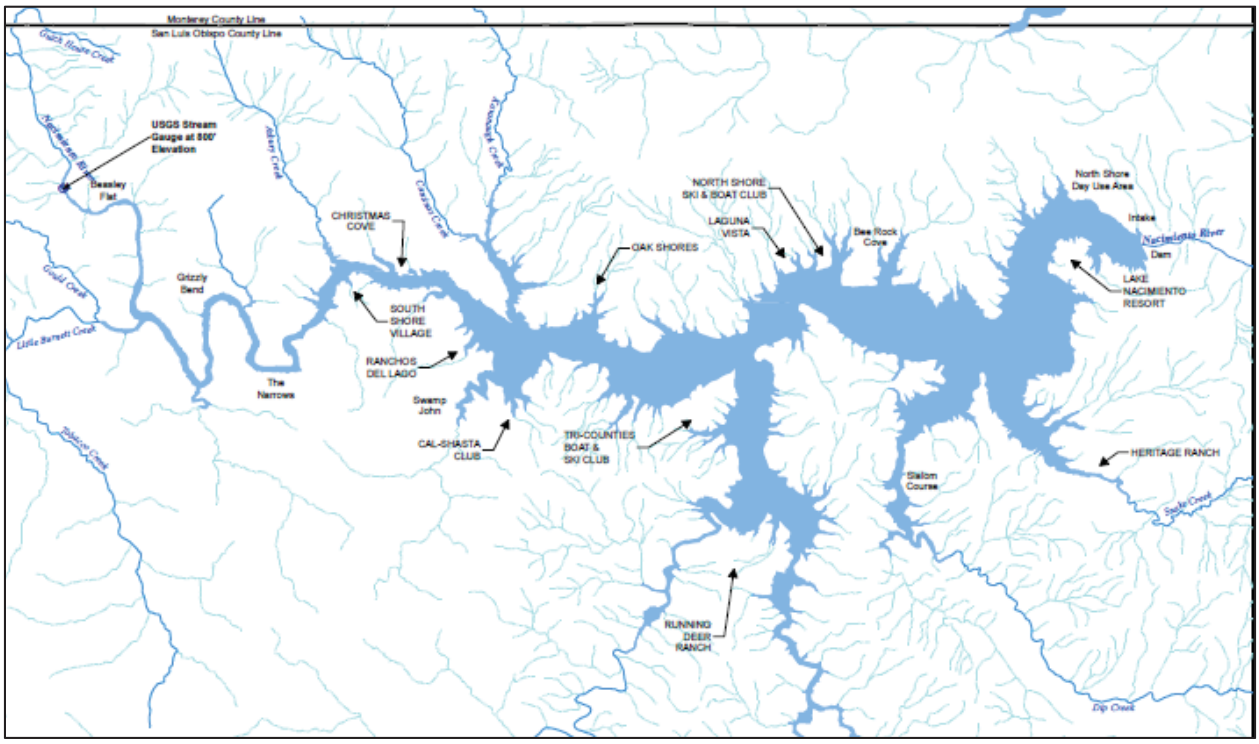
| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 670 | 1/10/2011 | 1000 | 840 | 60 | ND |
| Elevation 670 | 2/7/2011 | 460 | 940 | 50 | ND |
| Elevation 670 | 3/7/2011 | 950 | 1700 | 89 | ND |
| Elevation 670 | 4/5/2011 | 650 | 970 | 32 | ND |
| Elevation 670 | 5/2/2011 | 750 | 470 | 32 | ND |
| Elevation 670 | 6/15/2011 | 240 | 370 | 25 | —— |
| Elevation 670 | 7/12/2011 | 220 | 490 | 23 | —— |
| Elevation 670 | 8/2/2011 | 170 | 360 | 20 | —— |
| Elevation 670 | 9/13/2011 | 78 | 370 | 42 | —— |
| Elevation 670 | 10/12/2011 | 140 | 640 | 51 | —— |
| Elevation 670 | 11/2/2011 | 320 | 380 | 77 | —— |
| Elevation 670 | 12/13/2011 | 150 | 430 | 120 | —— |
| Elevation 670 | 1/9/2012 | 92 | 440 | 93 | —— |
| Elevation 670 | 2/14/2012 | 84 | 220 | 20 | —— |
| Elevation 670 | 3/13/2012 | 110 | 250 | 25 | —— |
| Elevation 670 | 4/10/2012 | 120 | 230 | 18 | —— |
| Elevation 670 | 5/15/2012 | 51 | 110 | 16 | —— |
| Elevation 670 | 6/6/2012 | 57 | 140 | 29 | —— |
| Elevation 670 | 7/16/2012 | 130 | 290 | 52 | —— |
| Elevation 670 | 8/6/2012 | 200 | 390 | 67 | —— |
| Elevation 670 | 9/4/2012 | 64 | 280 | 370 | —— |
| Elevation 670 | 10/1/2012 | 110 | 940 | 500 | —— |
| Elevation 670 | 11/5/2012 | 88 | 1100 | 530 | —— |
| Elevation 670 | 12/3/2012 | 91 | 400 | 72 | —— |
| Elevation 670 | 1/7/2013 | 200 | 770 | 690 | —— |
| Elevation 670 | 2/4/2013 | 330 | 810 | 38 | —— |
| Elevation 670 | 3/4/2013 | 230 | 610 | 27 | —— |
| Elevation 670 | 4/2/2013 | 170 | 340 | 30 | —— |
| Elevation 670 | 5/6/2013 | 91 | 270 | 20 | —— |
| Elevation 670 | 6/3/2013 | 71 | 160 | 34 | —— |
| | Minimum | 51 | 110 | 16 | ND |
| | Maximum | 1000 | 1700 | 690 | ND |
| | Median | 145 | 395 | 40 | ND |
| | Average | 247 | 524 | 108 | ND |
| | Count | 30 | 30 | 30 | 5 |

| NACIMIENTO PROJECT | Collected Date | Aluminum | Iron | Manganese | Mercury |
|---|---|---|---|---|---|
| | | ug/L | ug/L | ug/L | ug/L |
| Elevation 660 | 1/10/2011 | 1100 | 940 | 64 | ND |
| Elevation 660 | 2/7/2011 | 410 | 820 | 38 | ND |
| Elevation 660 | 3/7/2011 | 790 | 1300 | 81 | ND |
| Elevation 660 | 4/5/2011 | 660 | 1000 | 38 | ND |
| Elevation 660 | 5/2/2011 | 810 | 530 | 33 | ND |
| Elevation 660 | 6/15/2011 | 220 | 440 | 120 | ND |
| Elevation 660 | 7/12/2011 | 220 | 590 | 29 | —— |
| Elevation 660 | 8/2/2011 | 300 | 380 | 29 | —— |
| Elevation 660 | 9/13/2011 | 70 | 370 | 52 | —— |
| Elevation 660 | 10/12/2011 | 200 | 590 | 63 | —— |
| Elevation 660 | 11/2/2011 | 180 | 370 | 89 | —— |
| Elevation 660 | 12/13/2011 | 130 | 420 | 280 | —— |
| Elevation 660 | 1/9/2012 | 49 | 340 | 39 | —— |
| Elevation 660 | 2/14/2012 | 130 | 200 | 17 | —— |
| Elevation 660 | 3/13/2012 | 97 | 350 | 47 | —— |
| Elevation 660 | 4/10/2012 | 76 | 250 | 22 | —— |
| Elevation 660 | 5/15/2012 | 53 | 120 | 18 | —— |
| Elevation 660 | 6/6/2012 | 52 | 140 | 36 | —— |
| Elevation 660 | 7/16/2012 | 27 | 100 | ND | —— |
| Elevation 660 | 8/6/2012 | 170 | 340 | 71 | —— |
| Elevation 660 | 9/4/2012 | 52 | 430 | 490 | —— |
| Elevation 660 | 10/1/2012 | 97 | 690 | 600 | —— |
| Elevation 660 | 11/5/2012 | 86 | 830 | 530 | —— |
| Elevation 660 | 12/3/2012 | 73 | 260 | 690 | —— |
| Elevation 660 | 1/7/2013 | 330 | 700 | 860 | —— |
| Elevation 660 | 2/4/2013 | 520 | 870 | 43 | —— |
| Elevation 660 | 3/4/2013 | 380 | 760 | 33 | —— |
| Elevation 660 | 4/2/2013 | 280 | 450 | 28 | —— |
| Elevation 660 | 5/6/2013 | 66 | 300 | 25 | —— |
| Elevation 660 | 6/3/2013 | 40 | 140 | 12 | —— |
| Elevation 660 | 7/8/2013 | —— | 180 | 32 | —— |
| Elevation 660 | 8/5/2013 | —— | 140 | 48 | —— |
| Elevation 660 | 9/3/2013 | —— | 160 | 72 | —— |
| Elevation 660 | 10/2/2013 | —— | 250 | 280 | —— |
| Elevation 660 | 11/4/2013 | —— | 740 | 410 | —— |
| Elevation 660 | 12/2/2013 | —— | 340 | 1600 | —— |
| Elevation 660 | 1/6/2014 | —— | 490 | 84 | —— |
| Elevation 660 | 2/3/2014 | —— | 430 | 75 | —— |
| Elevation 660 | 3/3/2014 | —— | 490 | 33 | —— |
| Elevation 660 | 4/2/2014 | —— | 220 | 56 | —— |
| Elevation 660 | 5/5/2014 | —— | 330 | 72 | —— |
| Elevation 660 | 6/2/2014 | —— | 160 | 35 | —— |
| Elevation 660 | 7/8/2014 | —— | 240 | 170 | —— |
| Elevation 660 | 8/4/2014 | —— | 250 | 320 | —— |
| Elevation 660 | 9/2/2014 | —— | 320 | 470 | —— |
| Elevation 660 | 10/1/2014 | —— | 550 | 500 | —— |
| Elevation 660 | 11/3/2014 | —— | 460 | 600 | —— |
| Elevation 660 | 12/1/2014 | —— | 540 | 2000 | —— |
| Elevation 660 | 1/5/2015 | —— | 220 | 540 | —— |
| Elevation 660 | 2/2/2015 | —— | 190 | 360 | —— |
| Elevation 660 | 3/3/2015 | —— | 200 | 97 | —— |
| Elevation 660 | 3/23/2015 | —— | 85 | 38 | —— |
| Elevation 660 | 4/16/2015 | —— | 120 | 76 | —— |
| Elevation 660 | 5/4/2015 | —— | 160 | 84 | —— |
| Elevation 660 | 6/1/2015 | —— | 110 | 190 | —— |
| Elevation 660 | 7/6/2015 | —— | 200 | 390 | —— |
| Elevation 660 | 8/3/2015 | —— | 290 | 650 | —— |
| Elevation 660 | 9/2/2015 | —— | 380 | 380 | —— |
| Elevation 660 | 10/5/2015 | —— | 490 | 440 | —— |
| Elevation 660 | 11/4/2015 | —— | 490 | 480 | —— |
| Elevation 660 | 12/1/2015 | —— | 86 | 690 | —— |
| | Minimum | 27 | 85 | ND | ND |
| | Maximum | 1100 | 1300 | 2000 | ND |
| | Median | 150 | 340 | 76 | ND |
| | Average | 256 | 399 | 258 | ND |
| | Count | 30 | 61 | 61 | 6 |

APPENDIX E

# PHYSICAL DATA

# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



## Nacimiento Reservoir - Raw Water (Intake in Use): Physical Data

| Collected Date | Odor - Threshold* | Odor - Description | Turbidity* | True Color | Apparent Color | Suspended Solids | Temperature | Intake # |
|---|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C | — |
| MCL | 3.0 | — | 5.0 | — | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — | — |
| Collected Date | Odor | Odor-Type | Turb | True Color | Apparent Color | Sus | Temp | Intake# |
| 5/15/2012 | 1.4 | — | 3.5 | — | 12 | | 11 | 1 |
| 6/3/2013 | 2.0 | Fishy | 3.2 | 8 | 13 | | 10.9 | 1 |
| 1/6/2014 | — | — | 4.7 | — | — | — | 11.6 | 3 |
| 2/3/2014 | — | — | 3.7 | — | — | — | 9.9 | 3 |
| 3/3/2014 | — | — | 3.5 | — | — | — | 12.3 | 3 |
| 4/2/2014 | — | — | 2.1 | — | — | — | 12.3 | 3 |
| 5/5/2014 | — | — | 1.3 | — | — | — | 14.8 | 3 |
| 5/5/2014 | 7.0 | Fishy | 1.0 | — | 5 | — | 14.8 | 3 |
| 6/2/2014 | — | — | 1.2 | — | — | — | 18.9 | 3 |
| 5/4/2015 | — | — | 1.6 | — | 10 | — | 16 | 3 & 4 |
| 5/7/2015 | 2.0 | Fishy | — | — | — | — | 15.2 | 3 & 4 |
| 6/1/2015 | — | — | 1.3 | — | — | — | 17 | 3 & 4 |
| 7/6/2015 | — | — | 2.3 | — | — | — | 19.5 | 3 & 4 |
| 8/3/2015 | — | — | 1.8 | — | — | — | 20.4 | 3 & 4 |
| 9/2/2015 | — | — | 1.5 | — | — | — | 20.1 | 3 & 4 |
| 10/5/2015 | — | — | 1.9 | — | — | — | 12.2 | 3 |
| 11/2/2015 | — | — | 2.1 | — | — | — | 17.9 | 3 & 4 |
| 12/1/2015 | — | — | 2.6 | — | — | | 14.3 | 3 |
| Minimum | 1.4 | — | 1.0 | 8 | 5 | — | 9.9 | — |
| Maximum | 7.0 | — | 4.7 | 8 | 13 | — | 20 | — |
| Average | 3.1 | — | 2.3 | 8 | 10 | — | 15 | — |
| Median | 2.0 | — | 2.1 | 8 | 11 | — | 15 | — |
| # of Samples | 4 | 3 | 17 | 1 | 4 | 0 | 18 | 11 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

## Nacimiento Reservoir - Epilimnion: Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature | Intake # |
|---|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C | — |
| MCL | 3.0 | — | 5.0 | — | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — | — |
| 1/10/2011 | 2.0 | — | 12 | 17 | — | — | 11 | — |
| 2/7/2011 | — | — | 4.5 | — | — | — | 11.1 | — |
| 2/7/2011 | — | — | 4.5 | — | — | — | 11.1 | — |
| 2/7/2011 | — | — | 4.5 | — | — | — | 11.1 | — |
| 2/7/2011 | — | — | 4.5 | — | — | — | 11.1 | — |
| 3/7/2011 | — | — | 5.4 | — | — | — | 10.7 | — |
| 3/7/2011 | — | — | 5.4 | — | — | — | 10.7 | — |
| 3/7/2011 | — | — | 5.4 | — | — | — | 10.7 | — |
| 4/5/2011 | — | — | 2.5 | — | — | — | 12.7 | — |
| 4/5/2011 | — | — | 2.5 | — | — | — | 12.7 | — |
| 4/5/2011 | — | — | 2.5 | — | — | — | 12.7 | — |
| 5/2/2011 | — | — | 4.0 | — | — | — | 13.4 | — |
| 5/2/2011 | — | — | 4.0 | — | — | — | 13.4 | — |
| 5/2/2011 | — | — | 4.0 | — | — | — | 13.4 | — |
| 5/2/2011 | — | — | 4.0 | — | — | — | 13.4 | — |
| 6/15/2011 | — | — | 2.9 | — | — | — | 13.7 | — |
| 6/15/2011 | — | — | 2.9 | — | — | — | 13.7 | — |
| 6/15/2011 | — | — | 2.9 | — | — | — | 13.7 | — |
| 7/12/2011 | — | — | 2.1 | — | — | — | 14.2 | — |
| 7/12/2011 | — | — | 2.1 | — | — | — | 14.2 | — |
| 7/12/2011 | — | — | 2.1 | — | — | — | 14.2 | — |
| 8/2/2011 | — | — | 1.9 | — | — | — | 14.4 | — |
| 8/2/2011 | — | — | 1.9 | — | — | — | 14.4 | — |
| 8/2/2011 | — | — | 1.9 | — | — | — | 14.4 | — |
| 8/2/2011 | — | — | 1.9 | — | — | — | 14.4 | — |
| 9/13/2011 | — | — | 1.8 | — | — | — | 17.8 | — |
| 9/13/2011 | — | — | 1.8 | — | — | — | 17.8 | — |
| 9/13/2011 | — | — | 1.8 | — | — | — | 17.8 | — |
| 8/4/2014 | — | — | 2.9 | — | — | — | 25.5 | — |
| 11/3/2014 | — | — | 2.5 | — | — | — | 18.1 | — |
| 2/3/2015 | — | — | 2.1 | — | — | — | 12.5 | — |
| 5/4/2015 | — | — | 0.49 | — | — | — | 21.4 | — |
| 8/3/2015 | — | — | 1.8 | — | — | — | 25.8 | — |
| 11/4/2015 | — | — | 3.2 | — | — | — | 19 | — |
| Minimum | 2.0 | — | 0.49 | 17 | — | — | 11 | — |
| Maximum | 2.0 | — | 12 | 17 | — | — | 26 | — |
| Average | 2.0 | — | 3.2 | 17 | — | — | 15 | — |
| Median | 2.0 | — | 2.7 | 17 | — | — | 14 | — |
| # of Samples | 1 | 0 | 34 | 1 | 0 | 0 | 34 | 0 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

## Nacimiento Reservoir - Hypolimnion: Physical Data

| Collected Date | Odor - Threshold* | Odor - Description | Turbidity* | True Color | Apparent Color | Suspended Solids | Temperature | Intake # |
|---|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C | — |
| MCL | 3.0 | — | 5.0 | — | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — | — |
| 1/10/2011 | 2.0 | — | 25 | 30 | — | — | 9.9 | — |
| 2/7/2011 | — | — | 13 | — | — | — | 9.9 | — |
| 2/7/2011 | — | — | 13 | — | — | — | 9.9 | — |
| 2/7/2011 | — | — | 13 | — | — | — | 9.9 | — |
| 2/7/2011 | — | — | 13 | — | — | — | 9.9 | — |
| 3/7/2011 | — | — | 21 | — | — | — | 9.5 | — |
| 3/7/2011 | — | — | 21 | — | — | — | 9.5 | — |
| 3/7/2011 | — | — | 21 | — | — | — | 9.5 | — |
| 4/5/2011 | — | — | 16 | — | — | — | 9.7 | — |
| 4/5/2011 | — | — | 16 | — | — | — | 9.7 | — |
| 4/5/2011 | — | — | 16 | — | — | — | 9.7 | — |
| 5/2/2011 | — | — | 10 | — | — | — | 10.1 | — |
| 5/2/2011 | — | — | 10 | — | — | — | 10.1 | — |
| 5/2/2011 | — | — | 10 | — | — | — | 10.1 | — |
| 5/2/2011 | — | — | 10 | — | — | — | 10.1 | — |
| 6/15/2011 | — | — | 7.9 | — | — | — | 10.4 | — |
| 6/15/2011 | — | — | 7.9 | — | — | — | 10.4 | — |
| 6/15/2011 | — | — | 7.9 | — | — | — | 10.4 | — |
| 7/12/2011 | — | — | 7.2 | — | — | — | 10.4 | — |
| 7/12/2011 | — | — | 7.2 | — | — | — | 10.4 | — |
| 7/12/2011 | — | — | 7.2 | — | — | — | 10.4 | — |
| 8/2/2011 | — | — | 6.8 | — | — | — | 10.6 | — |
| 8/2/2011 | — | — | 6.8 | — | — | — | 10.6 | — |
| 8/2/2011 | — | — | 6.8 | — | — | — | 10.6 | — |
| 8/2/2011 | — | — | 6.8 | — | — | — | 10.6 | — |
| 9/13/2011 | — | — | 8.5 | — | — | — | 10.8 | — |
| 9/13/2011 | — | — | 8.5 | — | — | — | 10.8 | — |
| 9/13/2011 | — | — | 8.5 | — | — | — | 10.8 | — |
| 8/4/2014 | — | — | 2.9 | — | — | — | 10.9 | — |
| 11/3/2014 | — | — | 2.6 | — | — | — | 11.5 | — |
| 2/2/2015 | — | — | 5.4 | — | — | — | 11.6 | — |
| 5/4/2015 | — | — | 4.7 | — | — | — | 11.7 | — |
| 8/3/2015 | — | — | 5.7 | — | — | — | 12.3 | — |
| 11/4/2015 | — | — | 2.3 | — | — | — | 12.3 | — |
| Minimum | 2.0 | — | 2.3 | 30 | — | — | 9.5 | — |
| Maximum | 2.0 | — | 25 | 30 | — | — | 12 | — |
| Average | 2.0 | — | 10 | 30 | — | — | 10 | — |
| Median | 2.0 | — | 8.5 | 30 | — | — | 10 | — |
| # of Samples | 1 | 0 | 34 | 1 | 0 | 0 | 34 | 0 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

## Nacimiento Reservoir - Elevation 790': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 4/5/2011 | 4.5 | — | 2.6 | 11 | 14 | ND | 16.2 |
| 5/2/2011 | 3.5 | — | 2.9 | 11 | 13 | 2 | 18.9 |
| 6/15/2011 | 2.5 | — | 1.2 | 7 | 8 | ND | 23.2 |
| 7/12/2011 | 2.0 | — | 1.7 | 5 | 7 | — | 25.7 |
| 8/2/2011 | 1.8 | — | 1.1 | 7 | 7 | — | 25.2 |
| Minimum | 1.8 | — | 1.1 | 5 | 7 | ND | 16 |
| Maximum | 4.5 | — | 2.9 | 11 | 14 | 2 | 26 |
| Average | 2.9 | — | 1.9 | 8 | 10 | ND | 22 |
| Median | 2.5 | — | 1.7 | 7 | 8 | ND | 23 |
| # of Samples | 5 | 0 | 5 | 5 | 5 | 3 | 5 |

## Nacimiento Reservoir - Elevation 780': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 3/7/2011 | 3.7 | — | 3.4 | 12 | 16 | 1.5 | 14 |
| 4/5/2011 | 3.5 | — | 3.0 | 12 | 15 | ND | 13 |
| 5/2/2011 | 4.0 | — | 3.1 | 13 | 15 | 2 | 17 |
| 6/15/2011 | 3.3 | — | 0.97 | 7 | 8 | ND | 20 |
| 7/12/2011 | 2.0 | — | 1.4 | 5 | 7 | 1 | 24 |
| 8/2/2011 | 1.8 | — | 1.3 | 6 | 8 | 1 | 25 |
| 9/13/2011 | 2.0 | — | 1.4 | 5 | 7 | 2 | 24 |
| 10/12/2011 | 2.0 | — | 0.75 | 4 | 4 | ND | 22 |
| Minimum | 1.8 | — | 0.75 | 4 | 4 | ND | 13 |
| Maximum | 4.0 | — | 3.4 | 13 | 16 | 2 | 25 |
| Average | 2.8 | — | 1.9 | 8 | 10 | ND | 20 |
| Median | 2.7 | — | 1.4 | 7 | 8 | ND | 21 |
| # of Samples | 8 | 0 | 8 | 8 | 8 | 8 | 8 |

## Nacimiento Reservoir - Elevation 770': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 3/7/2011 | 2.9 | — | 4.1 | 12 | 17 | 2 | 12.4 |
| 4/5/2011 | 3.5 | — | 4.7 | 14 | 19 | ND | 11.7 |
| 5/2/2011 | 2.5 | — | 4.5 | 14 | 18 | 2 | 12.1 |
| 6/15/2011 | 3.0 | — | 2.1 | 12 | 14 | ND | 15.8 |
| 7/12/2011 | 2.0 | — | 1.1 | 7 | 11 | — | 18.6 |
| 8/2/2011 | 2.8 | — | 1.1 | 7 | 9 | — | 23.2 |
| 9/13/2011 | 1.9 | — | 1.1 | 5 | 7 | — | 23.6 |
| 10/12/2011 | 2.0 | — | 0.71 | 5 | 5 | — | 21.1 |
| 11/2/2011 | 1.4 | — | 0.97 | 4 | 7 | — | 19.2 |
| 12/13/2011 | 2.5 | — | 1.6 | 7 | 9 | — | 12.6 |
| 1/9/2012 | 1.2 | — | 2.9 | 8 | 11 | — | 11.2 |
| 2/14/2012 | 1.4 | — | 0.92 | 6 | 6 | — | 12.1 |
| 3/13/2012 | 2.0 | — | 0.52 | 4 | 5 | — | 13.4 |
| 4/10/2012 | 3.5 | — | 0.61 | 9 | 6 | — | 15.7 |
| 5/15/2012 | 1.7 | — | 0.77 | 4 | 5 | — | 22 |
| 6/6/2012 | 10 | — | 1.3 | 4 | 5 | — | 21.7 |
| Minimum | 1.2 | — | 0.52 | 4 | 5 | ND | 11 |
| Maximum | 10 | — | 4.7 | 14 | 19 | 2 | 24 |
| Average | 2.8 | — | 1.8 | 8 | 10 | 1 | 17 |
| Median | 2.3 | — | 1.1 | 7 | 8 | 1 | 16 |
| # of Samples | 16 | 0 | 16 | 16 | 16 | 4 | 16 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 760': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 11 | 16 | — | 4 | 11.1 |
| 2/7/2011 | 3.0 | — | 3.6 | 11 | 16 | ND | 12.6 |
| 3/7/2011 | 2.5 | — | 5.2 | 14 | 20 | 2 | 10.7 |
| 4/5/2011 | 3.5 | — | 7.2 | 16 | 24 | ND | 11.1 |
| 5/2/2011 | 2.5 | — | 6.2 | 16 | 22 | 1 | 11.3 |
| 6/15/2011 | 2.5 | — | 3.3 | 13 | 16 | ND | 12.3 |
| 7/12/2011 | 2.4 | — | 2.0 | 11 | 13 | ND | 14.2 |
| 8/2/2011 | 2.0 | — | 1.4 | 11 | 12 | ND | 16 |
| 9/13/2011 | 2.0 | — | 1.3 | 7 | 8 | 1 | 23.4 |
| 10/12/2011 | 2.0 | — | 0.82 | 5 | 5 | 1 | 20.9 |
| 11/2/2011 | 1.3 | — | 0.95 | 4 | 6 | ND | 19 |
| 12/13/2011 | 7.0 | — | 1.3 | 7 | 8 | ND | 12.4 |
| 1/9/2012 | 1.2 | — | 3.2 | 8 | 11 | ND | 10.8 |
| 2/14/2012 | 1.8 | — | 1.1 | 6 | 7 | ND | 11.8 |
| 3/13/2012 | 2.0 | — | 0.65 | 5 | 5 | ND | 12.6 |
| 4/10/2012 | 3.0 | — | 0.56 | 9 | 6 | ND | 15.4 |
| 5/15/2012 | 1.8 | — | 0.49 | 4 | 5 | ND | 22 |
| 6/6/2012 | 6.0 | — | 1.4 | 4 | 5 | ND | 21.8 |
| 7/16/2012 | 5.5 | — | 1.2 | 3 | 5 | ND | 24.8 |
| 8/6/2012 | 3.0 | — | 1.1 | 3 | 4 | ND | 24.3 |
| Minimum | 1.2 | — | 0.49 | 3 | 4 | ND | 11 |
| Maximum | 7.0 | — | 11 | 16 | 24 | 4 | 25 |
| Average | 2.9 | — | 2.7 | 9 | 10 | ND | 16 |
| Median | 2.5 | — | 1.4 | 8 | 8 | ND | 13 |
| # of Samples | 20 | 0 | 20 | 20 | 19 | 20 | 20 |

## Nacimiento Reservoir - Elevation 750': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 11 | 17 | — | 5 | 11 |
| 2/7/2011 | 3.0 | — | 3.9 | 12 | 16 | ND | 11.3 |
| 3/7/2011 | 2.3 | — | 9.1 | 18 | 27 | 2 | 10.4 |
| 4/5/2011 | 2.0 | — | 6.7 | 16 | 23 | ND | 10.8 |
| 5/2/2011 | 2.0 | — | 6.7 | 17 | 23 | 1 | 10.9 |
| 6/15/2011 | 2.8 | — | 4.2 | 15 | 18 | ND | 11.3 |
| 7/12/2011 | 2.6 | — | 3.1 | 13 | 16 | — | 11.7 |
| 8/2/2011 | 1.6 | — | 2.6 | 14 | 15 | — | 13 |
| 9/13/2011 | 1.5 | — | 1.6 | 11 | 12 | — | 17.8 |
| 10/12/2011 | 3.5 | — | 0.92 | 5 | 5 | — | 20.5 |
| 11/2/2011 | 2.5 | — | 1.1 | 4 | 6 | — | 19 |
| 12/13/2011 | 4.0 | — | 1.4 | 7 | 8 | — | 12.4 |
| 1/9/2012 | 1.1 | — | 3.9 | 8 | 12 | — | 10.7 |
| 2/14/2012 | 2.0 | — | 1.1 | 6 | 7 | — | 11.7 |
| 3/13/2012 | 1.4 | — | 0.66 | 5 | 6 | — | 11 |
| 4/10/2012 | 2.0 | — | 0.65 | 9 | 6 | — | 12.8 |
| 5/15/2012 | 2.0 | — | 0.91 | 5 | 6 | — | 16.7 |
| 6/6/2012 | 6.0 | — | 1.3 | 4 | 5 | — | 21.7 |
| 7/16/2012 | 2.0 | — | 1.6 | 3 | 5 | — | 24.8 |
| 8/6/2012 | 2.8 | — | 1 | 3 | 4 | — | 23.6 |
| 1/7/2013 | 2.0 | Musty | 13 | 13 | 34 | — | 11.4 |
| 2/4/2013 | 3.5 | Other | 8.9 | 11 | 23 | — | 10.3 |
| 3/4/2013 | 10 | Fishy | 1.7 | 8 | 11 | — | 11.9 |
| 4/2/2013 | 1.9 | Other/Grassy | 0.71 | 5 | 6 | — | 17.6 |
| 5/6/2013 | 6.0 | Fishy | 1.3 | 5 | 7 | — | 21.3 |
| 6/3/2013 | 1.9 | Fishy/Grassy | 0.8 | 4 | 6 | — | 22.4 |
| Minimum | 1.1 | — | 0.7 | 3.0 | 4 | ND | 10 |
| Maximum | 10 | — | 13 | 18 | 34 | 5 | 25 |
| Average | 2.9 | — | 3.5 | 9.2 | 12 | 2 | 16 |
| Median | 2.0 | — | 1.6 | 8.0 | 8 | ND | 17 |
| # of Samples | 26 | 6 | 26 | 26 | 25 | 6 | 19 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 740': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 3.0 | — | 10 | 16 | — | 4 | 11 |
| 2/7/2011 | 2.8 | — | 4.5 | 14 | 18 | ND | 11.1 |
| 3/7/2011 | 2.3 | — | 11 | 18 | 30 | 1.2 | 10.1 |
| 4/5/2011 | 2.5 | — | 8.1 | 18 | 26 | ND | 10.5 |
| 5/2/2011 | 2.0 | — | 6.4 | 17 | 23 | ND | 10.7 |
| 6/15/2011 | 2.4 | — | 4.2 | 15 | 18 | ND | 11 |
| 7/12/2011 | 3.5 | — | 2.3 | 10 | 12 | 1 | 11.1 |
| 8/2/2011 | 1.4 | — | 3.1 | 15 | 17 | ND | 11.6 |
| 9/13/2011 | 1.3 | — | 2.5 | 13 | 15 | 1 | 13.2 |
| 10/12/2011 | 2.5 | — | 1.5 | 9 | 11 | 1.8 | 15.4 |
| 11/2/2011 | 1.8 | — | 1.1 | 5 | 7 | ND | 18.9 |
| 12/13/2011 | 4.0 | — | 2.0 | 7 | 10 | ND | 12.4 |
| 1/9/2012 | 1.2 | — | 4.1 | 8 | 12 | ND | 10.7 |
| 2/14/2012 | 1.7 | — | 1.3 | 6 | 7 | 1 | 11.3 |
| 3/13/2012 | 1.2 | — | 1.1 | 5 | 7 | ND | 10.3 |
| 4/10/2012 | 1.9 | — | 0.74 | 10 | 7 | ND | 11.5 |
| 5/15/2012 | 1.8 | — | 0.66 | 5 | 6 | ND | 13.9 |
| 6/6/2012 | 4.0 | — | 1.5 | 5 | 6 | 2 | 18 |
| 7/16/2012 | 2.0 | — | 1.5 | 4 | 6 | 2 | 23.3 |
| 8/6/2012 | 4.5 | — | 1.1 | 3 | 4 | ND | 23.4 |
| 9/4/2012 | 2.7 | — | 1.7 | 2 | 5 | ND | 24 |
| 10/1/2012 | 1.9 | — | 1.5 | 2 | 6 | ND | 23.1 |
| 11/5/2012 | 1.6 | — | 1.4 | 4 | 4 | ND | 19.4 |
| 12/5/2012 | 1.4 | — | 2.1 | 4 | 6 | 2 | 15.4 |
| 1/7/2013 | 2.0 | Musty | 13 | 14 | 35 | 7.2 | 11.5 |
| 2/4/2013 | 2.5 | Fishy | 8.6 | 10 | 23 | 5.6 | 10.1 |
| 3/4/2013 | 3.0 | Fishy | 1.5 | 9 | 11 | ND | 10.9 |
| 4/2/2013 | 1.5 | Other | 0.79 | 6 | 6 | ND | 14.9 |
| 5/6/2013 | 5.5 | Fishy | 1.7 | 5 | 8 | 2.6 | 21.3 |
| 6/3/2013 | 3.0 | Fishy/Grassy | 0.76 | 4 | 6 | ND | 22.1 |
| 7/8/2013 | 4.0 | Musty | 2.1 | — | 7 | 1.9 | 25.7 |
| 8/5/2013 | 4.5 | Fishy/Other | 2.6 | — | 8 | 2.1 | 23.8 |
| 9/3/2013 | 1.7 | Grassy | 2 | — | 7 | 2.2 | 25.4 |
| Minimum | 1.2 | — | 0.66 | 2 | 4 | ND | 10 |
| Maximum | 5.5 | — | 13 | 18 | 35 | 7 | 26 |
| Average | 2.5 | — | 3.3 | 9 | 12 | 1.1 | 16 |
| Median | 2.3 | — | 2.0 | 8 | 8 | ND | 13 |
| # of Samples | 33 | 9 | 33 | 30 | 32 | 33 | 33 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 730': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 9.9 | 16 | — | 4 | 11 |
| 2/7/2011 | 3.5 | — | 5.5 | 12 | 20 | ND | 10.8 |
| 3/7/2011 | 2.5 | — | 16 | 19 | 36 | 4 | 9.7 |
| 4/5/2011 | 2.8 | — | 10 | 20 | 31 | ND | 10.3 |
| 5/2/2011 | 2.0 | — | 7.4 | 17 | 24 | 1 | 10.4 |
| 6/15/2011 | 2.3 | — | 4.9 | 16 | 20 | ND | 10.7 |
| 7/12/2011 | 2.8 | — | 4.2 | 15 | 18 | — | 10.8 |
| 8/2/2011 | 2.0 | — | 3.2 | 15 | 17 | — | 11.1 |
| 9/13/2011 | 2.0 | — | 3.4 | 16 | 18 | — | 11.8 |
| 10/12/2011 | 2.8 | — | 1.5 | 12 | 12 | — | 13.1 |
| 11/2/2011 | 1.6 | — | 1.7 | 10 | 13 | — | 14.6 |
| 12/13/2011 | 4.0 | — | 3.2 | 9 | 13 | — | 12.3 |
| 1/9/2012 | 1.6 | — | 5 | 7 | 12 | — | 10.7 |
| 2/14/2012 | 2.2 | — | 1.7 | 6 | 9 | — | 10.5 |
| 3/13/2012 | 1.4 | — | 1.6 | 6 | 8 | — | 10.2 |
| 4/10/2012 | 2.9 | — | 0.98 | 10 | 8 | — | 10.8 |
| 5/15/2012 | 1.7 | — | 0.81 | 6 | 7 | — | 12 |
| 6/6/2012 | 4.0 | — | 1 | 6 | 6 | — | 13.2 |
| 7/16/2012 | 3.0 | — | 1.1 | 5 | 7 | — | 16.7 |
| 8/6/2012 | 3.0 | — | 1 | 4 | 6 | — | 21.7 |
| 9/4/2012 | 2.7 | — | 1.3 | 2 | 4 | — | 23.8 |
| 10/1/2012 | 2.0 | — | 1.6 | 2 | 7 | — | 22.5 |
| 11/5/2012 | 2.0 | — | 1.5 | 4 | 4 | — | 18.8 |
| 12/5/2012 | 1.9 | — | 2.2 | 4 | 7 | — | — |
| 1/7/2013 | 2.0 | Grassy/Peppery | 14 | 13 | 33 | — | 11.5 |
| 2/4/2013 | 1.6 | Other | 9.1 | 10 | 21 | — | 10.1 |
| 3/4/2013 | 1.2 | Grassy | 2.5 | 10 | 13 | — | 10.2 |
| 4/2/2013 | 1.0 | Fishy | 1 | 7 | 10 | — | 11.2 |
| 5/6/2013 | 4.0 | Fishy/Other | 0.97 | 8 | 9 | — | 12.4 |
| 6/3/2013 | 2.5 | Grassy/Fishy | 1.1 | 6 | 8 | — | 17.8 |
| Minimum | 1.0 | — | 0.81 | 2 | 4 | ND | 9.7 |
| Maximum | 4.0 | — | 16 | 20 | 36 | 4 | 24 |
| Average | 2.4 | — | 4.0 | 10 | 14 | ND | 13 |
| Median | 2.1 | — | 2.0 | 10 | 12 | ND | 11 |
| # of Samples | 30 | 6 | 30 | 30 | 29 | 6 | 29 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 720': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 13 | 17 | — | 6 | 10.8 |
| 2/7/2011 | 2.8 | — | 6.8 | 15 | 24 | 1 | 10.6 |
| 3/7/2011 | 2.5 | — | 20 | 23 | 43 | 4 | 9.5 |
| 4/5/2011 | 3.2 | — | 12 | 22 | 35 | ND | 10.1 |
| 5/2/2011 | 2.5 | — | 7.9 | 18 | 26 | 2 | 10.3 |
| 6/15/2011 | 3.3 | — | 4.8 | 15 | 20 | ND | 10.6 |
| 7/12/2011 | 2.1 | — | 4.4 | 15 | 19 | ND | 10.7 |
| 8/2/2011 | 1.5 | — | 1.2 | 10 | 11 | ND | 11 |
| 9/13/2011 | 1.8 | — | 3.8 | 17 | 19 | 1 | 11.3 |
| 10/12/2011 | 1.7 | — | 2.6 | 14 | 14 | ND | 12 |
| 11/2/2011 | 1.5 | — | 3.4 | 12 | 16 | ND | 12.6 |
| 12/13/2011 | 3.5 | — | 3.2 | 10 | 14 | ND | 12.1 |
| 1/9/2012 | 1.6 | — | 4.6 | 8 | — | 1 | 10.7 |
| 2/14/2012 | 1.4 | — | 2.0 | 6 | 9 | 1 | 10.1 |
| 3/13/2012 | 1.0 | — | 1.9 | 6 | 9 | ND | 10.1 |
| 4/10/2012 | 4.0 | — | 1.3 | 10 | 8 | ND | 10.5 |
| 5/15/2012 | 2.0 | — | 1.0 | 6 | 7 | ND | 11.2 |
| 6/6/2012 | 4.5 | — | 0.83 | 6 | 6 | ND | 11.6 |
| 7/16/2012 | 3.0 | — | 1.2 | 6 | 7 | ND | 13.8 |
| 8/6/2012 | 4.0 | — | 1.2 | 6 | 8 | ND | 16.8 |
| 9/4/2012 | 4.0 | — | 1.3 | 4 | 4 | ND | 23.6 |
| 10/1/2012 | 3.0 | — | 1.5 | 2 | 6 | ND | 22.3 |
| 11/5/2012 | 3.0 | — | 1.7 | 4 | 5 | ND | 18.7 |
| 12/5/2012 | 2.5 | — | 2.1 | 4 | 7 | 2 | 15.4 |
| 1/7/2013 | 3.0 | Grassy/Peppery | 17 | 14 | 35 | 6.7 | 11.4 |
| 2/4/2013 | 1.8 | Other | 10 | 11 | 25 | 5.3 | 10 |
| 3/4/2013 | 3.0 | Other | 3.7 | 10 | 15 | ND | 10.1 |
| 4/2/2013 | 2.0 | Other | 1.8 | 8 | 11 | ND | 10.3 |
| 5/6/2013 | 4.0 | Fishy/Other | 1.1 | 8 | 9 | ND | 10.6 |
| 6/3/2013 | 2.8 | Fishy | 1.4 | 8 | 10 | ND | 12.4 |
| 7/7/2013 | 3.0 | Grassy | 1.5 | — | 9 | 1.5 | 13.1 |
| 8/5/2013 | 5.5 | Grassy/Other | 2.4 | — | 8 | 2.3 | 16.7 |
| 9/3/2013 | 3.0 | Fishy | 1.2 | — | 6 | 1.1 | 22.2 |
| 10/2/2013 | 4.8 | Fishy/Grassy | 1.2 | — | 5 | ND | 20.8 |
| 11/4/2013 | 4.0 | Fishy | 1.9 | — | 7 | 2.1 | 16.8 |
| 12/2/2013 | 5.5 | Fishy | 2.4 | — | 8 | 2.1 | 14 |
| 1/6/2014 | 3.0 | Fishy | 3.8 | 5 | 11 | 4.1 | 9.9 |
| 2/3/2014 | 7.0 | Fishy | 1.0 | — | 6 | 1.3 | 10.5 |
| 3/3/2014 | 4.0 | Fishy | 1.9 | — | 6 | 2.6 | 13.5 |
| 4/2/2014 | 2.8 | Fishy | 0.75 | — | 4 | 1.0 | 16.4 |
| 5/5/2014 | 5.0 | Fishy | 1.9 | — | 4 | ND | 20.7 |
| 6/2/2014 | 2.0 | Fishy | 0.81 | — | 3 | ND | 22.9 |
| 7/8/2014 | 3.0 | Fishy/Grassy | 1.9 | — | 7 | 2.5 | 24.5 |
| 8/4/2014 | 8.5 | Fishy | 2.68 | 4 | 9 | 2.5 | 26.8 |
| 9/2/2014 | 6.5 | Other/Fishy | 2.70 | 4 | 8 | 2.8 | 24.3 |
| 1/5/2015 | 5.5 | Other | 5.16 | 12 | 18 | 3.1 | 11.5 |
| 2/3/2015 | 4.5 | Fishy/Grassy | 2.08 | 10 | 12 | 1.8 | 12.5 |
| 3/3/2015 | 5.5 | Fishy | 2.14 | 13 | 16 | 1.5 | 14.2 |
| 3/23/2015 | 3.0 | Fishy/Musty | 0.67 | 9 | 9 | — | 13.8 |
| 4/16/2015 | 1.5 | Musty/Fishy | 0.92 | 10 | 11 | 1.2 | 17.7 |
| 5/4/2015 | 3.0 | Fishy/Grassy | 0.58 | 8 | 9 | ND | 21.3 |
| 6/1/2015 | 1.4 | Musty/Grassy | 1.23 | 11 | 8 | 1.4 | 22.4 |
| 7/6/2015 | 7.0 | Fishy | 2.39 | 9 | 10 | 2.3 | 26.3 |
| 8/3/2015 | 9.0 | Fishy/Other | 1.75 | 6 | 8 | 1.9 | 25.8 |
| 9/2/2015 | 7.5 | Fishy | 2.76 | 4 | 8 | 2.5 | 25.6 |
| 10/5/2015 | 3.0 | Fishy/Other | 1.2 | 5 | 6 | ND | 22.4 |
| 11/4/2015 | 2.8 | Musty | 2.2 | 5 | 8 | 1.8 | 19.2 |
| Minimum | 1.0 | — | 0.6 | 2 | 3 | ND | 10 |
| Maximum | 9.0 | — | 20 | 23 | 43 | 6.7 | 27 |
| Average | 3.5 | — | 3.3 | 10 | 12 | 1.3 | 15 |
| Median | 3.0 | — | 1.9 | 9 | 9 | 1.0 | 13 |
| # of Samples | 57 | 33 | 57 | 45 | 55 | 56 | 57 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 710': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 14 | 18 | — | 6.0 | 10.6 |
| 2/7/2011 | 2.5 | — | 8.3 | 18 | 28 | 1 | 10.3 |
| 3/7/2011 | 3.8 | — | 24 | 27 | 48 | — | 9.5 |
| 4/5/2011 | 2.8 | — | 14 | 22 | 38 | ND | 10 |
| 5/2/2011 | 4.0 | — | 9.3 | 19 | 29 | ND | 10.2 |
| 6/15/2011 | 3.0 | — | 5.7 | 16 | 22 | ND | 10.5 |
| 7/12/2011 | 2.2 | — | 5.1 | 15 | 20 | — | 10.6 |
| 8/2/2011 | 1.5 | — | 1.9 | 12 | 13 | — | 10.8 |
| 9/13/2011 | 1.0 | — | 5.0 | 16 | 20 | — | 11.1 |
| 10/12/2011 | 1.2 | — | 3.7 | 15 | 16 | — | 11.5 |
| 11/2/2011 | 1.5 | — | 1.8 | 11 | 13 | — | 11.8 |
| 12/13/2011 | 2.8 | — | 3.7 | 10 | 14 | — | 12.1 |
| 1/9/2012 | 1.6 | — | 4.8 | 6 | 11 | — | 10.7 |
| 2/14/2012 | 1.2 | — | 2.7 | 7 | 12 | — | 10 |
| 3/13/2012 | 1.2 | — | 2.1 | 6 | 9 | — | 10.1 |
| 4/10/2012 | 2.7 | — | 1.3 | 11 | 9 | — | 10.4 |
| 5/15/2012 | 1.6 | — | 0.99 | 6 | 7 | — | 10.8 |
| 6/6/2012 | 5.5 | — | 1.2 | 6 | 7 | — | 11.1 |
| 7/16/2012 | 2.0 | — | 1.6 | 6 | 9 | — | 12.5 |
| 8/6/2012 | 2.0 | — | 1.8 | 6 | 9 | — | 14 |
| 9/4/2012 | 3.0 | — | 1.2 | 2 | 6 | — | 19.2 |
| 10/1/2012 | 7.0 | — | 1.4 | 2 | 7 | — | 22.2 |
| 11/5/2012 | 1.8 | — | 1.8 | 4 | 4 | — | 18.7 |
| 12/5/2012 | 2.0 | — | 2.2 | 4 | 7 | — | — |
| 1/7/2013 | 2.0 | Grassy/Earthy | 21 | 15 | 40 | — | 11.4 |
| 2/4/2013 | 2.1 | Other | 12 | 11 | 28 | — | 9.9 |
| 3/4/2013 | 1.5 | Grassy | 4.8 | 11 | 17 | — | 10 |
| 4/2/2013 | 1.0 | Other | 2.6 | 8 | 13 | — | 10 |
| 5/6/2013 | 3.0 | Other | 1.2 | 8 | 10 | — | 10.3 |
| 6/3/2013 | 2.0 | Fishy | 1.4 | 8 | 10 | — | 10.9 |
| Minimum | 1.0 | — | 1.0 | 2 | 4 | ND | 9.5 |
| Maximum | 7.0 | — | 24 | 27 | 48 | 6.0 | 22 |
| Average | 2.4 | — | 5.4 | 11 | 16 | 1.4 | 12 |
| Median | 2.0 | — | 2.7 | 11 | 13 | ND | 11 |
| # of Samples | 30 | 6 | 30 | 30 | 29 | 5 | 29 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 700': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 14 | 19 | — | 6.0 | 10.4 |
| 2/7/2011 | 2.5 | — | 8.5 | 18 | 28 | 1.0 | 10.1 |
| 3/7/2011 | 3.0 | — | 27 | 30 | 54 | 7.6 | 9.4 |
| 4/5/2011 | 2.3 | — | 14 | 23 | 39 | ND | 9.9 |
| 5/2/2011 | 3.5 | — | 9.7 | 19 | 30 | 2.0 | 10.1 |
| 6/15/2011 | 2.3 | — | 4.3 | 15 | 18 | ND | 10.4 |
| 7/12/2011 | 2.1 | — | 5.0 | 15 | 20 | ND | 10.6 |
| 8/2/2011 | 1.1 | — | 4.7 | 16 | 20 | ND | 10.7 |
| 9/13/2011 | 1.1 | — | 4.3 | 16 | 19 | ND | 10.9 |
| 10/12/2011 | 1.4 | — | 4.2 | 15 | 17 | ND | 11.2 |
| 11/2/2011 | 1.6 | — | 4.2 | 14 | 17 | 1.0 | 11.5 |
| 12/13/2011 | 4.0 | — | 4.0 | 13 | 15 | ND | 11.7 |
| 1/9/2012 | 1.6 | — | 4.8 | 6 | 12 | 1.0 | 10.6 |
| 2/14/2012 | 1.5 | — | 3.4 | 7 | 12 | 1.0 | 10 |
| 3/13/2012 | 1.6 | — | 2.4 | 6 | 9 | ND | 10 |
| 4/10/2012 | 1.7 | — | 1.7 | 10 | 9 | ND | 10.3 |
| 5/15/2012 | 1.7 | — | 1.2 | 6 | 8 | ND | 10.6 |
| 6/6/2012 | 5.5 | — | 1.3 | 6 | 7 | ND | 10.9 |
| 7/16/2012 | 3.0 | — | 1.6 | 6 | 9 | ND | 11.8 |
| 8/6/2012 | 2.5 | — | 2.3 | 6 | 10 | ND | 12.5 |
| 9/4/2012 | 1.4 | — | 1.5 | 5 | 7 | ND | 15.9 |
| 10/1/2012 | 1.9 | — | 4.2 | 4 | 11 | ND | 20.2 |
| 11/5/2012 | 1.8 | — | 1.8 | 4 | 5 | ND | 18.6 |
| 12/5/2012 | 1.9 | — | 3.5 | 5 | 13 | 2.0 | 15.3 |
| 1/7/2013 | 1.0 | Fishy | 20 | 17 | 48 | 10 | 11.1 |
| 2/4/2013 | 1.8 | Fishy | 9.1 | 10 | 23 | 3.5 | 9.8 |
| 3/4/2013 | 1.5 | Grassy | 5.5 | 10 | 18 | ND | 9.9 |
| 4/2/2013 | 2.0 | Fishy | 3.2 | 8 | 14 | 1.0 | 9.9 |
| 5/6/2013 | 3.0 | Other | 1.7 | 8 | 11 | ND | 10.2 |
| 6/3/2013 | 1.7 | Musty | 1.2 | 7 | 10 | ND | 10.5 |
| 7/8/2013 | 1.6 | Grassy/Musty | 1.6 | — | 9 | 1.4 | 10.9 |
| 8/5/2013 | 2.5 | Grassy/Musty | 2.5 | 7 | 11 | 1.8 | 11.1 |
| 9/3/2013 | 3.0 | Fishy | 2.2 | — | 11 | 2.1 | 12.5 |
| 10/2/2013 | 8.5 | Fishy/Grassy | 1.3 | — | 5 | 1.1 | 20.7 |
| 11/4/2013 | 4.0 | Fishy | 1.8 | — | 7 | 1.8 | 16.8 |
| 12/2/2013 | 4.0 | Fishy | 2.6 | — | 9 | 2.1 | 14 |
| 1/6/2014 | 3.0 | Fishy | 4.8 | 5 | 13 | 3.8 | 9.7 |
| 2/3/2014 | 7.0 | Fishy | 2.0 | — | 8 | 3.4 | 9.4 |
| 3/3/2014 | 4.0 | Fishy | 4.1 | — | 10 | 2.9 | 11.5 |
| 4/2/2014 | 7.0 | Fishy | 2.1 | — | 8 | 3.0 | 12.1 |
| 5/5/2014 | 5.5 | Fishy/Grassy | 2.0 | — | 5 | ND | 16.3 |
| 6/2/2014 | 2.0 | Fishy | 0.52 | — | 5 | 1.1 | 20.9 |
| 7/8/2014 | 1.0 | Other | 2.0 | — | 7 | 2.1 | 20.7 |
| 8/4/2014 | 12 | Fishy | 2.6 | 4 | 11 | 2.1 | 23 |
| 9/2/2014 | 5.5 | Other/Grassy | 2.0 | 4 | 7 | 2.3 | 23 |
| 10/1/2014 | 4.0 | Other | 2.4 | 4 | 7 | 2.1 | 22 |
| 11/3/2014 | 8.5 | Fishy/Grassy | 2.4 | 4 | 6 | 2.3 | 18.1 |
| 12/1/2014 | 7.0 | Fishy | 3.4 | 4 | 7 | 3.0 | 14.8 |
| 1/5/2015 | 4.0 | Other | 5.3 | 11 | 18 | 3.3 | 11.5 |
| 2/2/2015 | 2.0 | Fishy | 1.9 | 9 | 11 | 1.4 | 11.7 |
| 3/3/2015 | 2.0 | Fishy | 2.4 | 8 | 12 | 2.0 | 11.7 |
| 3/23/2015 | 2.0 | Other | 0.78 | 7 | 8 | — | 11.8 |
| 4/16/2015 | 2.0 | Musty/Fishy | 0.89 | 8 | 9 | ND | 12.6 |
| 5/4/2015 | 3.0 | Fishy/Grassy | 1.0 | 8 | 9 | ND | 13 |
| 6/1/2015 | 1.9 | Grassy | 1.2 | 11 | 9 | 1.1 | 13.9 |
| 7/6/2015 | 3.0 | Fishy | 2.3 | 11 | 13 | 2.5 | 16.5 |
| 8/3/2015 | 3.5 | Fishy/Musty | 1.7 | 9 | 11 | 2.5 | 18.2 |
| 9/2/2015 | 8.5 | Fishy | 1.6 | 5 | 7 | 1.7 | 23.1 |
| 10/5/2015 | 3.0 | Fishy/Other | 1.2 | 5 | 6 | ND | 22.1 |
| 11/4/2015 | 2.0 | Musty/H2S | 2.3 | 5 | 8 | 1.9 | 19 |
| 12/1/2015 | 2.5 | Fishy | 3.2 | 7 | 13 | 2.3 | 13.3 |
| Minimum | 1.0 | — | 0.52 | 4 | 5 | ND | 9 |
| Maximum | 12 | — | 27 | 30 | 54 | 10 | 23 |
| Average | 3.2 | — | 4.0 | 10 | 13 | 1.6 | 14 |
| Median | 2.3 | — | 2.4 | 8 | 11 | ND | 12 |
| # of Samples | 61 | 37 | 61 | 50 | 60 | 60 | 61 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 690': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 17 | 24 | — | 9.0 | 10.1 |
| 2/7/2011 | 2.0 | — | 15 | 24 | 43 | ND | 9.9 |
| 3/7/2011 | 2.8 | — | 28 | 28 | 53 | 8.0 | 9.3 |
| 4/5/2011 | 2.5 | — | 15 | 23 | 42 | ND | 9.8 |
| 5/2/2011 | 2.2 | — | 11 | 20 | 32 | 1.0 | 10 |
| 6/15/2011 | 2.8 | — | 5.7 | 16 | 21 | ND | 10.3 |
| 7/12/2011 | 1.8 | — | 6.3 | 17 | 23 | — | 10.5 |
| 8/2/2011 | 1.2 | — | 5.0 | 17 | 21 | — | 10.7 |
| 9/13/2011 | 1.0 | — | 4.9 | 16 | 20 | — | 10.9 |
| 10/12/2011 | 1.2 | — | 4.6 | 17 | 18 | — | 11.1 |
| 11/2/2011 | 1.6 | — | 4.2 | 14 | 18 | — | 11.3 |
| 12/13/2011 | 1.8 | — | 4.3 | 14 | 16 | — | 11.5 |
| 1/9/2012 | 1.6 | — | 5.6 | 6 | 13 | — | 10.6 |
| 2/14/2012 | 1.6 | — | 3.5 | 7 | 12 | — | 9.9 |
| 3/13/2012 | 1.6 | — | 2.5 | 6 | 10 | — | 10 |
| 4/10/2012 | 1.8 | — | 2.4 | — | 10 | — | 10.2 |
| 5/15/2012 | 1.7 | — | 1.3 | 6 | 8 | — | 10.5 |
| 6/6/2012 | 5.5 | — | 1.2 | 6 | 6 | — | 10.7 |
| 7/16/2012 | 7.0 | — | 2.9 | 7 | 16 | — | 11.4 |
| 8/6/2012 | 2.5 | — | 2.6 | 7 | 11 | — | 12.2 |
| 9/4/2012 | 1.8 | — | 2.8 | 6 | 10 | — | 14.1 |
| 10/1/2012 | 4.0 | — | 4.8 | 5 | 14 | — | 17.1 |
| 11/5/2012 | 1.9 | — | 2.3 | 4 | 7 | — | 18.6 |
| 12/5/2012 | 1.9 | — | 5.7 | 5 | 14 | — | 15 |
| 1/7/2013 | 1.0 | Fishy | 14 | 16 | 46 | — | 10.9 |
| 2/4/2013 | 2.4 | Other/Septic | 14 | 10 | 29 | — | 9.7 |
| 3/4/2013 | 1.0 | Grassy | 6.0 | 10 | 19 | — | 9.8 |
| 4/2/2013 | ND | None | 4.3 | 9 | 16 | — | 9.9 |
| 6/3/2013 | 1.6 | Musty | 1.7 | 7 | 10 | — | 10.3 |
| Minimum | 1.0 | — | 1.2 | 4 | 6 | ND | 9.3 |
| Maximum | 7.0 | — | 28 | 28 | 53 | 9.0 | 19 |
| Average | 2.2 | — | 6.8 | 12 | 20 | 3.2 | 11 |
| Median | 1.8 | — | 4.8 | 10 | 16 | 1.0 | 11 |
| # of Samples | 29 | 5 | 29 | 28 | 28 | ND | 29 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 680': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 24 | 29 | — | 16 | 9.9 |
| 2/7/2011 | 2.3 | — | 15 | 23 | 42 | 2 | 9.9 |
| 3/7/2011 | 2.8 | — | 29 | 28 | 54 | 8 | 9.3 |
| 4/5/2011 | 2.0 | — | 15 | 24 | 42 | 2 | 9.7 |
| 5/2/2011 | 1.8 | — | 11 | 20 | 31 | — | 9.9 |
| 6/15/2011 | 2.3 | — | 6.3 | 16 | 22 | — | 10.2 |
| 7/12/2011 | 2.5 | — | 6.6 | 17 | 23 | 2 | 10.4 |
| 8/2/2011 | 1.2 | — | 6.5 | 18 | 24 | ND | 10.6 |
| 9/13/2011 | 1.1 | — | 6.6 | 18 | 24 | 1 | 10.8 |
| 10/12/2011 | 1.2 | — | 6.0 | 17 | 22 | 1 | 11 |
| 11/2/2011 | 1.6 | — | 6.0 | 16 | 21 | ND | 11.2 |
| 12/13/2011 | 8.5 | — | 7.4 | 15 | 23 | 1 | 11.3 |
| 1/9/2012 | 2.2 | — | 5.8 | 6 | 14 | ND | 10.6 |
| 2/14/2012 | 1.6 | — | 3.9 | 7 | 13 | 2 | 9.9 |
| 3/13/2012 | 1.6 | — | 3.4 | 6 | 12 | 1 | 10 |
| 4/10/2012 | 1.8 | — | 2.4 | 10 | 11 | 2 | 10.2 |
| 5/15/2012 | 1.8 | — | 1.8 | 7 | 9 | ND | 10.4 |
| 6/6/2012 | 4.0 | — | 1.8 | 7 | 8 | ND | 10.5 |
| 7/16/2012 | 4.0 | — | 4.8 | 8 | 6 | 2 | 11.2 |
| 8/6/2012 | 2.2 | — | 7.4 | 9 | 20 | 2 | 11.7 |
| 9/4/2012 | 2.0 | — | 6.7 | 7 | 18 | 4 | 13.1 |
| 10/1/2012 | 2.0 | — | 5.2 | 5 | 16 | 2 | 15.1 |
| 11/5/2012 | 1.6 | — | 3.6 | 6 | 9 | 2 | 18.3 |
| 12/5/2012 | 1.6 | — | 6.0 | 6 | 14 | 2 | 14.9 |
| 1/7/2013 | 1.5 | Earthy | 14 | 14 | 37 | 9.6 | 10.9 |
| 2/4/2013 | 1.3 | Other/Septic | 13 | 10 | 27 | 7.2 | 9.5 |
| 3/4/2013 | 1.4 | Grassy | 7.0 | 10 | 20 | 1.7 | 9.6 |
| 4/2/2013 | 1.0 | other | 4.8 | 9 | 16 | 2.6 | 9.8 |
| 5/6/2013 | 3.0 | Fishy/Other | 2.9 | 8 | 13 | 1.1 | 10 |
| 6/3/2013 | 1.9 | Fishy | 1.9 | 8 | 11 | ND | 10.2 |
| 7/8/2013 | 4.0 | GM | 1.8 | — | 8 | 2.0 | 10.5 |
| 8/5/2013 | 2.0 | Fishy/Other | 2.7 | 7 | 11 | 1.7 | 10.8 |
| 9/3/2013 | 2.2 | Fishy | 2.6 | — | 10 | 1.8 | 11 |
| 10/2/2013 | 7.0 | Fishy/Other | 2.5 | — | 13 | 2.8 | 14.1 |
| 11/4/2013 | 4.0 | Fishy | 3.2 | — | 9 | 2.5 | 16.6 |
| 12/2/2013 | 4.0 | Fishy | 3.5 | — | 11 | 2.1 | 13.8 |
| 1/6/2014 | 4.0 | Fishy | 8.6 | 5 | 19 | 8.0 | 9.6 |
| 2/3/2014 | 7.0 | Fishy | 4.1 | — | 15 | 8.3 | 9.2 |
| 3/3/2014 | 3.0 | Fishy | 2.8 | — | 9 | 2.1 | 9.6 |
| 4/2/2014 | 3.0 | Fishy | 5.7 | — | 14 | 4.5 | 10 |
| 5/5/2014 | 2.0 | Fishy/other | 2.8 | — | 8 | 2.0 | 11.3 |
| 6/2/2014 | 1.9 | Fishy | 2.5 | — | 6 | 2.0 | 12.5 |
| 7/8/2014 | 1.5 | Fishy/Other | 5.8 | 5 | 15 | 6.3 | 13 |
| 8/4/2014 | 100 | H2S | 6.7 | 6 | 21 | 7.8 | 14.7 |
| 9/2/2014 | 4.0 | H2S | 3.6 | 8 | 14 | 3.5 | 15.5 |
| 10/1/2014 | 8.0 | Fishy | 2.9 | 6 | 13 | 2.3 | 16.7 |
| 11/3/2014 | 7.0 | Fishy/Grassy | 4.5 | 5 | 8 | 5.7 | 17.2 |
| 12/1/2014 | 7.0 | Fishy | 4.1 | 5 | 10 | 3.7 | 14.7 |
| 1/5/2015 | 4.0 | Other | 5.3 | 11 | 17 | 3.2 | 11.4 |
| 2/2/2015 | 2.0 | Fishy | 3.7 | 9 | 14 | 1.8 | 11.5 |
| 3/3/2015 | 2.0 | Fishy | 3.3 | 9 | 13 | 1.7 | 11 |
| 3/23/2015 | 2.0 | Fishy/Other | 2.6 | 8 | 11 | — | 11.1 |
| 4/16/2015 | 2.0 | Musty/Fishy | 3.0 | 8 | 13 | 1.9 | 11.7 |
| 5/4/2015 | 2.0 | Fishy | 1.8 | 8 | 10 | 1.0 | 11.9 |
| 6/1/2015 | 1.0 | Grassy/Other | 2.9 | 11 | 11 | 2.2 | 12.2 |
| 7/6/2015 | 4.0 | Fishy | 16 | 13 | 34 | 14 | 12.6 |
| 8/3/2015 | 7.0 | Other | 5.7 | 10 | 20 | 5.2 | 13.1 |
| 9/2/2015 | 7.0 | Fishy/None | 2.5 | 10 | 13 | 3.8 | 14.5 |
| 10/5/2015 | 8.5 | Other/Fishy | 2.2 | 11 | 16 | 2.3 | 15.2 |
| 11/4/2015 | 4.0 | Earthy/H2S | 4.0 | 8 | 18 | 3.8 | 18.4 |
| 12/1/2015 | 3.0 | Fishy | 3.8 | 6 | 9 | 3.1 | 13.2 |
| Minimum | 1.0 | — | 1.8 | 5 | 6 | ND | 9 |
| Maximum | 100 | — | 29 | 29 | 54 | 16 | 18 |
| Average | 4.7 | — | 6.0 | 11 | 17 | 3.2 | 12 |
| Median | 2.2 | — | 4.1 | 9 | 14 | 2.0 | 11 |
| # of Samples | 61 | 37 | 61 | 51 | 60 | 58 | 61 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 670': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.5 | — | 26 | 32 | — | 12 | 9.9 |
| 2/7/2011 | 2.0 | — | 14 | 19 | 39 | 1.0 | 9.8 |
| 3/7/2011 | 2.3 | — | 29 | 29 | 55 | 6.8 | 9.3 |
| 4/5/2011 | 2.0 | — | 15 | 23 | 40 | 1.0 | 9.6 |
| 5/2/2011 | 1.8 | — | 12 | 22 | 33 | 2.0 | 9.8 |
| 6/15/2011 | 2.8 | — | 6.6 | 17 | 23 | ND | 10.1 |
| 7/12/2011 | 2.0 | — | 7.2 | 19 | 24 | — | 10.2 |
| 8/2/2011 | 1.7 | — | 6.8 | 18 | 24 | — | 10.5 |
| 9/13/2011 | 1.0 | — | 7.0 | 18 | 24 | — | 10.8 |
| 10/12/2011 | 1.2 | — | 6.3 | 17 | 22 | — | 10.9 |
| 11/2/2011 | 1.6 | — | 6.8 | 18 | 23 | — | 11.1 |
| 12/13/2011 | 5.0 | — | 8.7 | 16 | 25 | — | 11.2 |
| 1/9/2012 | 2.2 | — | 5.0 | 8 | 15 | — | 10.5 |
| 2/14/2012 | 1.2 | — | 5.6 | 9 | 16 | — | 9.9 |
| 3/13/2012 | 1.3 | — | 4.1 | 6 | 13 | — | 9.9 |
| 4/10/2012 | 1.7 | — | 3.7 | 10 | 12 | — | 10.1 |
| 5/15/2012 | 1.6 | — | 2.4 | 6 | 9 | — | 10.3 |
| 6/6/2012 | 9.0 | — | 2.5 | 7 | 10 | — | 10.4 |
| 7/16/2012 | 4.8 | — | 4.8 | 8 | 17 | — | 10.7 |
| 8/6/2012 | 1.6 | — | 6.5 | 8 | 18 | — | 11.2 |
| 9/4/2012 | 1.8 | — | 6.7 | 8 | 18 | — | 12.5 |
| 10/1/2012 | 2.0 | — | 9.0 | 12 | 28 | — | 13.7 |
| 11/5/2012 | 6.0 | — | 9.2 | 15 | 29 | — | 16.3 |
| 12/5/2012 | 1.6 | — | 7.4 | 6 | 16 | — | — |
| 1/7/2013 | 2.0 | Other | 13 | 13 | 34 | — | 10.8 |
| 2/4/2013 | 1.2 | Other/Septic | 16 | 10 | 34 | — | 9.2 |
| 3/4/2013 | 1.0 | Grassy | 7.9 | 11 | 22 | — | 9.5 |
| 4/2/2013 | 2.0 | Fishy | 5.7 | 9 | 18 | — | 9.6 |
| 5/6/2013 | 3.0 | Musty/Other | 3.2 | 8 | 13 | — | 9.9 |
| 6/3/2013 | 2.0 | Fishy | 2.6 | 8 | 12 | — | 10.1 |
| Minimum | 1.0 | — | 2.4 | 6 | 9 | ND | 9.2 |
| Maximum | 9.0 | — | 29 | 32 | 55 | 12 | 16 |
| Average | 2.4 | — | 8.7 | 14 | 23 | 4 | 11 |
| Median | 2.0 | — | 6.8 | 12 | 22 | 2 | 10 |
| # of Samples | 30 | 6 | 30.0 | 30 | 29 | 6 | 29 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Reservoir - Elevation 660': Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | True Color | Apparent Color | Suspended Solids | Temperature |
|---|---|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU | mg/L | °C |
| Secondary MCL | 3.0 | — | 5.0 | — | — | — | — |
| DLR | 1.0 | — | 0.10 | — | — | — | — |
| 1/10/2011 | 2.0 | — | 30 | 32 | — | 18 | 9.9 |
| 2/7/2011 | 3.3 | — | 12 | 15 | 31 | 4 | 9.7 |
| 3/7/2011 | 2.8 | — | 25 | 26 | 47 | 8.8 | 9.3 |
| 4/5/2011 | 3.0 | — | 15 | 23 | 40 | ND | 9.5 |
| 5/2/2011 | 2.0 | — | 11 | 21 | 32 | 5 | 9.7 |
| 6/15/2011 | 3.5 | — | 8.3 | 17 | 26 | ND | 10 |
| 7/12/2011 | 2.0 | — | 7.2 | 16 | 23 | 1 | 10.1 |
| 8/2/2011 | 1.1 | — | 6.9 | 17 | 24 | ND | 10.4 |
| 9/13/2011 | 1.1 | — | 7.0 | 17 | 24 | 2 | 10.5 |
| 10/12/2011 | 1.2 | — | 6.3 | 16 | 21 | ND | 10.6 |
| 11/2/2011 | 2.0 | — | 7.2 | 15 | 23 | 1 | 10.7 |
| 12/13/2011 | 5.0 | — | 8.7 | 16 | 25 | 2 | 10.9 |
| 1/9/2012 | 1.4 | — | 3.4 | 8 | 12 | ND | 10.4 |
| 2/14/2012 | 2.0 | — | 5.3 | 8 | 15 | 2 | 9.9 |
| 3/13/2012 | 1.4 | — | 5.5 | 7 | 16 | 2 | 9.9 |
| 4/10/2012 | 2.5 | — | 4.3 | 9 | 13 | 2 | 10.1 |
| 5/15/2012 | 1.6 | — | 2.7 | 6 | 10 | ND | 10.3 |
| 6/6/2012 | 5.5 | — | 2.7 | 7 | 9 | 1 | 10.3 |
| 7/16/2012 | 18 | — | 1.4 | 3 | 6 | 1 | 10.6 |
| 8/6/2012 | 2.5 | — | 6.1 | 8 | 18 | 3 | 10.9 |
| 9/4/2012 | 3.0 | — | 5.3 | 7 | 16 | 3 | 11.5 |
| 10/1/2012 | 4.0 | — | 5.5 | 10 | 20 | 4 | 12.2 |
| 11/5/2012 | 2.5 | — | 9.1 | 9 | 23 | 7 | 12.7 |
| 12/5/2012 | 2.9 | — | 8.4 | 7 | 18 | 6 | 14.2 |
| 1/7/2013 | 3.0 | Grassy | 8.1 | 12 | 29 | 7 | 10.8 |
| 2/4/2013 | 2.0 | Other/Septic | 17 | 10 | 30 | 12 | 9.1 |
| 3/4/2013 | 6.5 | Musty | 10 | 11 | 26 | 3.4 | 9.4 |
| 4/2/2013 | 2.0 | Fishy | 5.9 | 9 | 19 | 2.3 | 9.5 |
| 5/6/2013 | 4.8 | Musty/Other | 3.6 | 8 | 14 | ND | 9.8 |
| 6/3/2013 | 3.0 | Fishy | 2.2 | 7 | 11 | ND | 10 |
| 7/8/2013 | 2.5 | Grassy/Musty | 2.1 | — | 9 | 1.1 | 10.2 |
| 8/5/2013 | 3.0 | Other | 2.8 | — | 10 | 1.4 | 10.2 |
| 9/3/2013 | 1.7 | Fishy | 1.9 | — | 9 | 1.1 | 10.2 |
| 10/2/2013 | 4.0 | Grassy/Musty | 3.0 | — | 11 | 2.3 | 10.6 |
| 11/4/2013 | 7.0 | Fishy | 5.1 | — | 19 | 5.9 | 11.1 |
| 12/2/2013 | 7.0 | Musty | 8.8 | — | 21 | 8.5 | 12.5 |
| 1/6/2014 | 4.0 | Fishy | 8.5 | 5 | 20 | 5.4 | 9.5 |
| 2/3/2014 | 7.0 | Fishy | 8.0 | — | 20 | 8.4 | 9.2 |
| 3/3/2014 | 1.0 | Grassy/Other | 4.0 | — | 9 | 2.7 | 9.3 |
| 4/2/2014 | 4.0 | Fishy/Musty | 4.2 | — | 10 | 2.3 | 9.4 |
| 5/5/2014 | 2.0 | Fishy | 3.5 | — | 9 | 1.8 | 9.8 |
| 6/2/2014 | 1.2 | Fishy | 2.0 | — | 7 | 1.7 | 10 |
| 7/8/2014 | 1.5 | Grassy/H2S | 2.4 | — | 8 | 3.2 | 10.5 |
| 8/4/2014 | 8.5 | Musty/Other | 2.9 | 4 | 8 | 2.6 | 10.9 |
| 9/2/2014 | 5.5 | Other/Musty | 2.2 | 5 | 11 | 2.3 | 11.2 |
| 10/1/2014 | 9.0 | Fishy | 1.5 | 6 | 10 | 2.1 | 11.3 |
| 11/3/2014 | 67 | H2S | 2.6 | 7 | 12 | 3.8 | 11.5 |
| 12/1/2014 | 67 | H2S | 5.1 | 6 | 12 | 5.6 | 12.2 |
| 1/5/2015 | 5.5 | Other | 4.9 | 10 | 15 | 2.9 | 11.4 |
| 2/2/2015 | 3.0 | Fishy/Grassy | 5.1 | 10 | 17 | 2.6 | 11.4 |
| 3/3/2015 | 2.0 | Fishy | 4.2 | 10 | 15 | 2.9 | 10.7 |
| 3/23/2015 | 2.0 | Fishy | 2.2 | 8 | 10 | — | 10.9 |
| 4/16/2015 | 2.0 | Musty | 2.9 | 8 | 12 | 1.7 | 11.1 |
| 5/4/2015 | 3.8 | grassy/other | 4.5 | 8 | 15 | 3.3 | 11.4 |
| 6/1/2015 | 2.0 | Grassy/Musty | 7.0 | 11 | 11 | 1.9 | 11.5 |
| 7/6/2015 | 3.0 | Other/Musty | 7.9 | 11 | 14 | 3.4 | 11.6 |
| 8/3/2015 | 7.0 | Other | 4.7 | 9 | 14 | 3.7 | 11.6 |
| 9/2/2015 | 8.5 | Fishy/ Fishy | 2.3 | 9 | 12 | 2.6 | 12 |
| 10/5/2015 | 8.5 | Other/Fishy | 1.2 | 12 | 16 | 2.4 | 11.9 |
| 11/4/2015 | 3.8 | Earthy/H2S | 2.3 | 12 | 18 | 2.6 | 12.3 |
| 12/1/2015 | 3.0 | Fishy | 4.4 | 5 | 9 | 4.1 | 13 |
| Minimum | 1.0 | — | 1.2 | 3 | 6 | ND | 9.1 |
| Maximum | 67 | — | 30 | 32 | 47 | 18 | 14 |
| Average | 5.8 | — | 6.1 | 11 | 17 | 3.2 | 11 |
| Median | 3.0 | — | 5.1 | 9 | 15 | 2.0 | 11 |
| # of Samples | 61 | 37 | 61 | 49 | 60 | 58 | 61 |

*Indicates a Secondary Maximum Contaminant Level
DLR: Detection Limit Required (for the Purposes of Reporting)
MCL: Maximum Contaminant Limit for Drinking Water

## Nacimiento Project - Camp Roberts Tank: Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | Apparent Color | True Color |
|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU |
| Secondary MCL | 3.0 | — | 5.0 | — | — |
| DLR | 1.0 | — | 0.10 | — | — |
| 8/23/2011 | 1.3 | — | 6.6 | — | — |
| 9/27/2011 | 4.0 | — | 7.8 | — | — |
| 10/13/2011 | 3.0 | — | 5.5 | — | — |
| 10/24/2011 | 2.3 | — | 5.2 | — | — |
| 11/14/2011 | 1.7 | — | 5.7 | — | — |
| 12/12/2011 | 1.8 | — | 3.6 | — | — |
| 2/15/2012 | 2.0 | — | 11 | — | — |
| 2/28/2012 | 1.6 | — | 7.0 | — | — |
| 3/12/2012 | 2.8 | — | 2.8 | — | — |
| 3/26/2012 | 1.8 | — | 2.0 | — | — |
| 4/9/2012 | 1.4 | — | 1.2 | — | — |
| 5/29/2012 | 1.7 | — | 0.3 | — | — |
| 6/11/2012 | 2.0 | — | 0.21 | — | — |
| 6/26/2012 | 1.0 | — | 0.13 | — | — |
| 7/9/2012 | 1.8 | — | 0.22 | — | — |
| 7/24/2012 | 1.8 | — | 6.2 | — | — |
| 8/13/2012 | 2.0 | — | 8.7 | — | — |
| 8/27/2012 | 2.0 | — | 5.3 | — | — |
| 6/10/2013 | 1.8 | Earthy/Other | 1.3 | — | — |
| 6/24/2013 | 1.4 | Fishy/Grassy | 1.3 | — | — |
| Minimum | 1.0 | — | 0.13 | — | — |
| Maximum | 4.0 | — | 11 | — | — |
| Average | 2.0 | — | 4.1 | — | — |
| Median | 1.8 | — | 4.4 | — | — |
| # of Samples | 20 | 2 | 20 | 0 | 0 |

## Nacimiento Project - City of SLO Turnout (T11): Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | Apparent Color | True Color |
|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU |
| Secondary MCL | 3.0 | — | 5.0 | — | — |
| DLR | 1.0 | — | 0.10 | — | — |
| 2/14/2011 | 5.5 | — | 13 | 38 | — |
| 2/22/2011 | 6.0 | — | 11 | 35 | 17 |
| 3/8/2011 | 4.5 | — | 25 | 59 | 31 |
| 3/29/2011 | 4.8 | — | 16 | 44 | 24 |
| 4/26/2011 | 3.3 | — | 14 | 38 | 23 |
| 5/9/2011 | 3.5 | — | 10.7 | 33 | 20 |
| 6/16/2011 | 4.5 | — | 8.0 | 27 | 19 |
| 6/29/2011 | 6.0 | — | 7.4 | 26 | 19 |
| 7/12/2011 | 3.0 | — | 7.4 | — | — |
| 7/26/2011 | 7.0 | — | 7.8 | — | — |
| 8/8/2011 | 2.8 | — | 7.3 | — | — |
| 8/23/2011 | 2.0 | — | 7.2 | — | — |
| 9/12/2011 | 5.0 | — | 6.8 | — | — |
| 9/27/2011 | 1.8 | — | 6.3 | — | — |
| 10/13/2011 | 1.8 | — | 6.5 | — | — |
| 10/24/2011 | 2.3 | — | 6.2 | — | — |
| 11/14/2011 | 2.3 | — | 7.5 | — | — |
| 11/28/2011 | 3.0 | — | 8.1 | — | — |
| 12/12/2011 | 2.1 | — | 8.0 | — | — |
| 1/9/2012 | 3.5 | — | 9.7 | — | — |
| 1/23/2012 | 1.8 | — | 5.2 | — | — |
| 2/15/2012 | 1.6 | — | 17 | — | — |
| 2/28/2012 | 1.7 | — | 3.8 | — | — |
| 3/12/2012 | 2.0 | — | 3.7 | — | — |
| 3/26/2012 | 1.4 | — | 3.7 | — | — |
| 4/9/2012 | 3.0 | — | 4.8 | — | — |
| 4/23/2012 | 1.8 | — | 5.1 | — | — |
| 5/14/2012 | 2.8 | — | 3.5 | — | — |
| 5/29/2012 | 1.3 | — | 2.9 | — | — |
| 6/11/2012 | 4.0 | — | 2.8 | — | — |
| 6/26/2012 | 1.5 | — | 3.4 | — | — |
| 7/9/2012 | 3.0 | — | 2.0 | — | — |
| 7/24/2012 | 1.7 | — | 5.2 | — | — |
| 8/14/2012 | 3.5 | — | 5.9 | — | — |
| 8/27/2012 | 1.8 | — | 5.7 | — | — |
| 11/19/2012 | 4.0 | — | — | — | — |
| 5/23/2013 | — | — | 3.41 | — | — |
| 5/24/2013 | — | — | 8.99 | — | — |
| 6/10/2013 | 3.0 | Other | 3.7 | — | — |
| 6/24/2013 | 2.0 | Grassy/Other | 1.8 | — | — |
| 9/25/2014 | 20 | Musty | 0.21 | | |
| Minimum | 1.3 | — | 0.21 | 26 | 17 |
| Maximum | 20 | — | 25 | 59 | 31 |
| Average | 3.5 | — | 7.2 | 38 | 22 |
| Median | 3.0 | — | 6.4 | 37 | 20 |
| # of Samples | 39 | 3 | 40 | 8 | 7 |

## Nacimiento Project - Cuesta Tunnel Tank: Physical Data

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | Apparent Color | True Color |
|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU |
| Secondary MCL | 3.0 | — | 5.0 | — | — |
| DLR | 1.0 | — | 0.10 | — | — |
| 12/24/2012 | 3.0 | Other/Metallic | 3.1 | — | — |
| 1/14/2013 | 4.0 | Fishy | 3.6 | — | — |
| 2/14/2011 | 2.3 | — | 15 | 41 | — |
| 2/14/2011 | — | — | — | — | 17 |
| 2/22/2011 | 2.5 | — | 11 | 34 | — |
| 2/22/2011 | — | — | — | — | — |
| 3/8/2011 | 3.5 | — | 25 | 58 | 31 |
| 3/29/2011 | 2.3 | — | 16 | 43 | 23 |
| 4/11/2011 | 2.0 | — | 15 | 41 | 22 |
| 4/26/2011 | 2.0 | — | 15 | 39 | 23 |
| 5/9/2011 | 2.0 | — | 12.1 | 31 | 20 |
| 5/26/2011 | 4.5 | — | 11 | 29 | 19 |
| 6/16/2011 | 3.3 | — | 12 | 30 | 19 |
| 6/29/2011 | 2.0 | — | 7.7 | 27 | 19 |
| 7/12/2011 | 3.0 | — | 8.2 | — | — |
| 7/26/2011 | 2.5 | — | 11 | — | — |
| 8/8/2011 | 3.0 | — | 7.8 | — | — |
| 8/23/2011 | 1.4 | — | 8.6 | — | — |
| 9/12/2011 | 2.0 | — | 11 | — | — |
| 9/27/2011 | 1.2 | — | 6.5 | — | — |
| 10/13/2011 | 1.3 | — | 7.1 | — | — |
| 10/24/2011 | 2.1 | — | 6.5 | — | — |
| 11/14/2011 | 1.4 | — | 7.9 | — | — |
| 11/28/2011 | 1.3 | — | 9.8 | — | — |
| 12/12/2011 | 1.7 | — | 8.8 | — | — |
| 1/9/2012 | 2.5 | — | 10 | — | — |
| 1/23/2012 | 1.4 | — | 5.9 | — | — |
| 2/15/2012 | 1.4 | — | 18 | — | — |
| 2/28/2012 | 1.4 | — | 4.6 | — | — |
| 3/12/2012 | 1.6 | — | 4.3 | — | — |
| 3/26/2012 | 1.0 | — | 5.3 | — | — |
| 4/9/2012 | 2.0 | — | 8.2 | — | — |
| 4/23/2012 | 1.2 | — | 5.1 | — | — |
| 5/14/2012 | 1.6 | — | 3.7 | — | — |
| 5/29/2012 | 1.4 | — | 5.9 | — | — |
| 6/11/2012 | 2.2 | — | 7.3 | — | — |
| 6/26/2012 | 1.5 | — | 3.4 | — | — |
| 7/9/2012 | 2.4 | — | 2.7 | — | — |
| 7/24/2012 | 1.2 | — | 5.6 | — | — |
| 8/14/2012 | 1.8 | — | 5.1 | — | — |
| 8/27/2012 | 1.8 | — | 6.9 | — | — |
| 6/10/2013 | 1.4 | Other | 8.6 | — | — |
| 6/24/2013 | 1.7 | Other | 8.6 | — | — |
| 9/25/2014 | 3.0 | Other | 0.36 | — | — |
| Minimum | 1.0 | — | 0.36 | 27 | 17 |
| Maximum | 4.5 | — | 25 | 58 | 31 |
| Average | 2.1 | — | 8.6 | 37 | 21 |
| Median | 2.0 | — | 7.9 | 37 | 20 |
| # of Samples | 42 | 3 | 42 | 10 | 9 |

## Nacimiento Project - Intake Pump Station: Physicals

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | Apparent Color | True Color |
|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU |
| Secondary MCL | 3.0 | — | 5.0 | — | — |
| DLR | 1.0 | — | 0.10 | — | — |
| 2/14/2011 | 2.0 | — | 11 | 35 | — |
| 2/14/2011 | — | — | — | — | 19 |
| 2/22/2011 | 2.3 | — | 12 | 34 | — |
| 2/22/2011 | — | — | — | — | — |
| 3/8/2011 | 3.0 | — | 26 | 56 | 31 |
| 3/29/2011 | 3.0 | — | 10 | 39 | 30 |
| 4/11/2011 | 2.5 | — | 14 | 47 | 31 |
| 4/26/2011 | 3.3 | — | 12 | 35 | 24 |
| 5/9/2011 | 3.0 | — | 11 | 31 | 20 |
| 5/26/2011 | 4.5 | — | 9.6 | 28 | 19 |
| 6/15/2011 | 2.3 | — | 8.4 | 27 | 19 |
| 6/29/2011 | 2.0 | — | 7.4 | 26 | 19 |
| 7/12/2011 | 3.0 | — | 8.7 | — | — |
| 7/26/2011 | 3.0 | — | 8.6 | — | — |
| 8/8/2011 | 3.5 | — | 12 | — | — |
| 8/23/2011 | 1.4 | — | 6.8 | — | — |
| 9/12/2011 | 3.0 | — | 8.0 | — | — |
| 9/27/2011 | 1.7 | — | 6.9 | — | — |
| 10/13/2011 | 1.7 | — | 7.5 | — | — |
| 10/24/2011 | 2.8 | — | 7.6 | — | — |
| 11/14/2011 | 1.7 | — | 7.3 | — | — |
| 11/28/2011 | 1.8 | — | 6.6 | — | — |
| 12/12/2011 | 1.6 | — | 11 | — | — |
| 1/9/2012 | 3.5 | — | 17 | — | — |
| 1/23/2012 | 1.8 | — | 4.9 | — | — |
| 2/15/2012 | 1.7 | — | 8.0 | — | — |
| 2/28/2012 | 2.0 | — | 3.4 | — | — |
| 3/12/2012 | 2.7 | — | 4.2 | — | — |
| 3/26/2012 | 2.5 | — | 4.8 | — | — |
| 4/9/2012 | 1.4 | — | 7.1 | — | — |
| 4/23/2012 | 1.5 | — | 4.5 | — | — |
| 5/14/2012 | 2.4 | — | 4.0 | — | — |
| 5/29/2012 | 1.8 | — | 2.5 | — | — |
| 6/11/2012 | 2.5 | — | 2.9 | — | — |
| 6/26/2012 | 1.7 | — | 2.6 | — | — |
| 7/9/2012 | 3.5 | — | 3.9 | — | — |
| 7/24/2012 | 1.8 | — | 5.5 | — | — |
| 8/13/2012 | 1.5 | — | 8.7 | — | — |
| 8/27/2012 | 2.0 | — | 4.9 | — | — |
| 6/10/2013 | 1.0 | Musty | 2.7 | — | — |
| 6/24/2013 | 1.0 | Grassy | 1.3 | — | — |
| Minimum | 1.0 | — | 1.3 | 26 | 19 |
| Maximum | 4.5 | — | 26 | 56 | 31 |
| Average | 2.3 | — | 7.8 | 36 | 24 |
| Median | 2.0 | — | 7.4 | 35 | 20 |
| # of Samples | 39 | 2 | 39 | 10 | 9 |

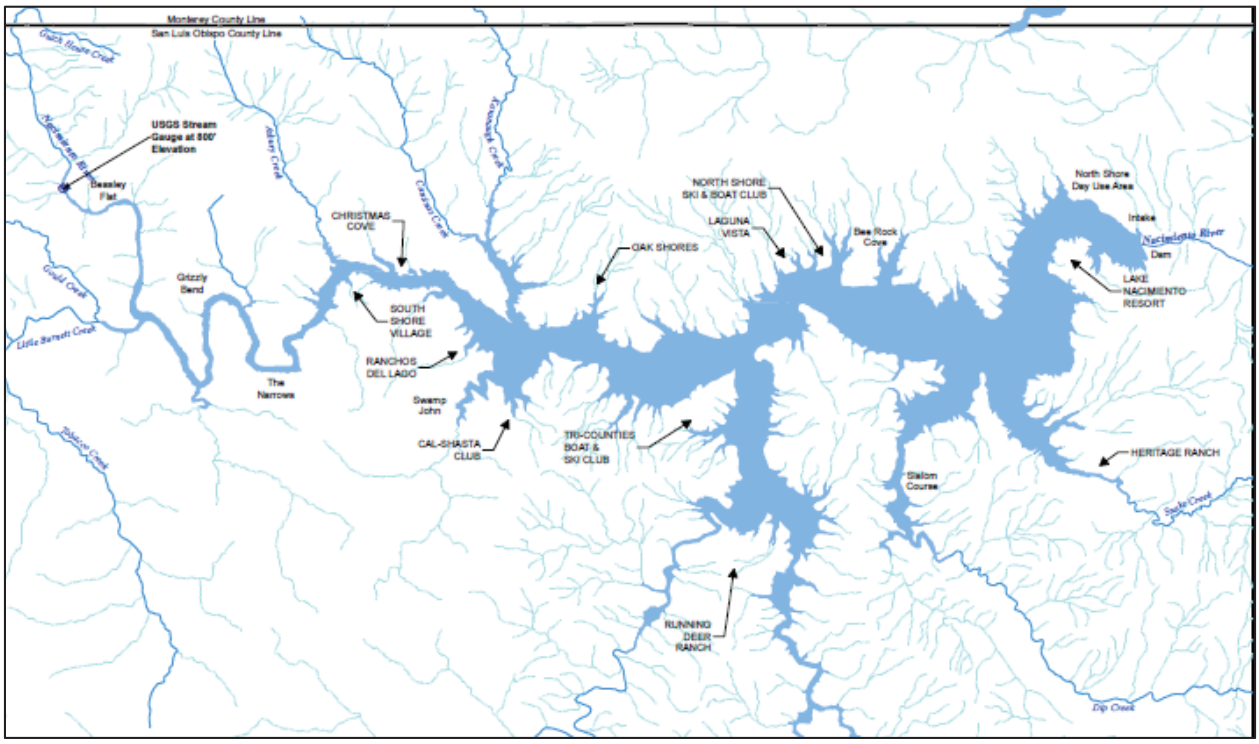
## Nacimiento Project - Rocky Canyon Tank: Physicals

| Collected Date | Odor - Threshold | Odor - Description | Turbidity | Apparent Color | True Color |
|---|---|---|---|---|---|
| (units) | TON | — | NTU | CFU | CFU |
| Secondary MCL | 3.0 | — | 5.0 | — | — |
| DLR | 1.0 | — | 0.10 | — | — |
| 12/24/2012 | 3.5 | Fishy/Grassy | 8.2 | — | — |
| 1/2/2013 | 2.0 | Musty | 2.3 | — | — |
| 1/14/2013 | 5.5 | Musty | 3.3 | — | — |
| 1/28/2013 | 1.6 | Other | 1.5 | — | — |
| 2/14/2011 | 2.3 | — | 14 | 40 | — |
| 2/14/2011 | — | — | — | — | 17 |
| 2/22/2011 | 2.5 | — | 12 | 34 | — |
| 2/22/2011 | — | — | — | — | — |
| 3/8/2011 | 3.3 | — | 26 | 56 | 31 |
| 3/29/2011 | 2.5 | — | 17 | 44 | 23 |
| 4/11/2011 | 2.0 | — | 15 | 39 | 21 |
| 4/26/2011 | 2.3 | — | 14 | 38 | 22 |
| 5/9/2011 | 1.7 | — | 12 | 30 | 19 |
| 5/26/2011 | 4.5 | — | 17 | 36 | 21 |
| 6/15/2011 | 1.9 | — | 13 | 33 | 18 |
| 6/29/2011 | 2.0 | — | 8.2 | 28 | 18 |
| 7/12/2011 | 2.0 | — | 7.8 | — | — |
| 7/26/2011 | 3.0 | — | 10 | — | — |
| 8/8/2011 | 1.8 | — | 8 | — | — |
| 8/23/2011 | 1.4 | — | 8.2 | — | — |
| 9/12/2011 | 2.0 | — | 6.8 | — | — |
| 9/27/2011 | 1.2 | — | 6.8 | — | — |
| 10/13/2011 | 1.1 | — | 6.3 | — | — |
| 10/24/2011 | 1.6 | — | 7.7 | — | — |
| 11/14/2011 | 1.4 | — | 8.6 | — | — |
| 11/28/2011 | 1.6 | — | 8.8 | — | — |
| 12/12/2011 | 1.6 | — | 9.0 | — | — |
| 1/9/2012 | 4.0 | — | 13 | — | — |
| 1/23/2012 | 1.3 | — | 5.9 | — | — |
| 2/15/2012 | 1.3 | — | 23 | — | — |
| 2/28/2012 | 1.0 | — | 4.5 | — | — |
| 3/12/2012 | 1.6 | — | 8.3 | — | — |
| 3/26/2012 | 1.5 | — | 5.2 | — | — |
| 4/9/2012 | 1.4 | — | 4.4 | — | — |
| 4/23/2012 | 1.4 | — | 5.1 | — | — |
| 5/14/2012 | 3.0 | — | 24 | — | — |
| 5/29/2012 | 1.4 | — | 9.2 | — | — |
| 6/11/2012 | 4.0 | — | 3.5 | — | — |
| 6/26/2012 | 1.5 | — | 5.0 | — | — |
| 7/9/2012 | 4.0 | — | 2.5 | — | — |
| 7/24/2012 | 1.6 | — | 8.2 | — | — |
| 8/14/2012 | 2.0 | — | 6.7 | — | — |
| 8/27/2012 | 1.2 | — | 5.4 | — | — |
| 6/10/2013 | 1.0 | Other | 5.2 | — | — |
| 6/24/2013 | 2.0 | Musty/Other | 1.7 | — | — |
| Minimum | 1.0 | — | 1.7 | 28 | 17 |
| Maximum | 4.5 | — | 26 | 56 | 31 |
| Average | 2.0 | — | 9.7 | 38 | 21 |
| Median | 1.7 | — | 8.2 | 37 | 21 |
| # of Samples | 39 | 2 | 39 | 10 | 9 |

APPENDIX F

# GENERAL MINERAL DATA

# Nacimiento Water Project Watershed Sanitary Survey Five Year Update - 2015



## Nacimiento Reservoir - Epilimnion: General Mineral Data

| Collected Date | Depth | Aggressive Index | Langelier Index | Specific Ultraviolet Absorption | Total Alkalinity, Total as CaCO3 | Carbonate Alkalinity as CaCO3 | Bicarbonate Alkalinityas CaCO3 | Hydroxide Alkalinity as CaCO3 | Bromide | Chloride | Fluoride (w/out predistillation) | Nitrite as Nitrogen | Nitrate as Nitrogen | Sulfate | Total Hardness as CaCO3 | Calcium | Magnesium | Sodium | Total Dissolved Solids | Electrical Conductivity | Methylene Blue Active Substances | Temperature | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (units) | feet | — | — | L/mg-M | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | umhos/cm | mg/L | °C | — |
| MCL | — | — | — | — | — | — | — | — | | 500* | 2 | 1 | 10 | 500* | — | — | — | — | 1000* | 1600* | 0.5* | — | — |
| DLR | — | — | — | — | — | — | — | — | 0.01 | — | 0.1 | 0.1 | 0.1 | 0.5 | — | — | — | — | — | 4 | 0.1 | — | — |
| 2/7/2011 | 24 | 11.6 | -0.47 | 3.0 | 110 | ND | 110 | ND | 0.02 | 5.37 | 0.12 | ND | ND | 25.0 | 110 | 26 | 12 | 7.2 | 170 | 260 | ND | 11.1 | 7.77 |
| 5/2/2011 | 25 | 11.5 | -0.52 | 3.4 | 90 | ND | 90 | ND | ND | 4.83 | 0.12 | ND | 0.213 | 22.4 | 100 | 20 | 12 | 6.5 | 150 | 236 | ND | 13.4 | 7.87 |
| 8/2/2011 | 35 | 11.1 | -0.90 | 3.5 | 81 | ND | 81 | ND | 0.02 | 5.37 | 0.07 | ND | ND | 24.0 | 100 | 22 | 11 | 6.7 | 140 | 240 | ND | 14.4 | 7.48 |
| 11/2/2011 | 25 | 12.0 | 0.06 | 2.3 | 110 | ND | 110 | ND | 0.03 | 6.29 | 0.21 | ND | ND | 29.3 | 120 | 29 | 12 | 8.6 | 180 | 270 | ND | 19.0 | 8.06 |
| 2/14/2012 | 15 | 12.0 | -0.13 | 2.3 | 100 | ND | 100 | ND | 0.02 | 5.66 | 0.10 | ND | ND | 28.6 | 120 | 27 | 13 | 8.3 | 180 | 280 | ND | 11.8 | 8.14 |
| 5/15/2012 | 20 | 12.2 | 0.28 | 2.3 | 100 | ND | 100 | ND | 0.03 | 5.62 | 0.11 | ND | ND | 29.7 | 120 | 27 | 13 | 8.7 | 190 | 275 | ND | 19.7 | 8.35 |
| 8/6/2012 | 25 | 12.3 | 0.49 | 1.9 | 110 | 20 | 90 | ND | 0.03 | 6.34 | 0.24 | ND | ND | 41.0 | 130 | 29 | 14 | 9.7 | 170 | 296 | ND | 23.3 | 8.40 |
| 11/5/2012 | 10 | 11.9 | -0.04 | 1.8 | 110 | ND | 110 | ND | 0.02 | 6.26 | ND | ND | ND | 33.7 | 140 | 30 | 15 | 9.7 | 200 | 305 | ND | 18.8 | 8.02 |
| 2/4/2013 | 10 | 11.2 | -0.89 | 2.7 | 100 | ND | 100 | ND | 0.02 | 5.56 | ND | ND | ND | 27.8 | 120 | 26 | 13 | 8.4 | 140 | 270 | ND | 10.3 | 7.42 |
| 5/6/2013 | 10 | 12.2 | 0.34 | 2.5 | 110 | 11 | 95 | ND | 0.03 | 6.00 | ND | ND | ND | 30.7 | 130 | 28 | 15 | 8.6 | 180 | 270 | ND | 21.4 | 8.51 |
| 8/5/2013 | 10 | 12.4 | 0.58 | 1.9 | 118 | 21 | 96 | ND | 0.03 | 6.62 | 0.07 | ND | ND | 33.2 | 141 | 30 | 16 | 8.9 | 190 | 290 | ND | 23.8 | 8.43 |
| 11/4/2013 | 10 | 11.7 | -0.32 | 2.0 | 126 | ND | 126 | ND | 0.03 | 6.96 | 0.11 | ND | ND | 36.0 | 149 | 32 | 17 | 9.6 | 190 | 330 | ND | 16.8 | 7.65 |
| 2/3/2014 | 10 | 11.8 | -0.36 | 1.6 | 125 | ND | 125 | ND | — | 7.10 | 0.10 | ND | ND | 38.3 | 157 | 33 | 18 | 9.7 | 200 | 340 | ND | 10.5 | 7.81 |
| 5/5/2014 | 10 | 12.4 | 0.43 | 1.9 | 130 | 23 | 106 | ND | 0.01 | 7.62 | 0.09 | ND | ND | 40.6 | 153 | 34 | 17 | 9.8 | 230 | 345 | ND | 20.3 | 7.58 |
| 8/4/2014 | 10 | 12.6 | 0.75 | 1.8 | 125 | 17 | 108 | ND | 0.03 | 8.70 | 0.12 | ND | ND | 45.6 | 177 | 38 | 20 | 12 | 220 | 375 | ND | 25.5 | 8.51 |
| 11/3/2014 | 10 | 11.8 | -0.13 | 1.9 | 135 | ND | 135 | ND | ND | 9.00 | ND | ND | ND | 46.0 | 177 | 37 | 20 | 13 | 220 | 380 | ND | 18.1 | 8.09 |
| 2/3/2015 | 10 | 12.1 | 0.07 | 2.6 | 119 | 15 | 104 | ND | 0.03 | 7.82 | 0.16 | ND | ND | 37.5 | 150 | 34 | 16 | 12 | 210 | 340 | ND | 12.5 | 8.66 |
| 5/4/2015 | 10 | 11.9 | 0.02 | 2.5 | 100 | 18 | 82 | ND | 0.03 | 6.60 | 0.18 | ND | ND | 32.6 | 130 | 28 | 16 | 9 | 190 | 290 | ND | 21.4 | 8.38 |
| 8/3/2015 | 10 | 12.3 | 0.48 | 2.1 | 110 | 20 | 90 | ND | 0.02 | 7.14 | 0.11 | ND | ND | 36.3 | 150 | 30 | 20 | 9.9 | 200 | 321 | ND | 25.8 | 8.39 |
| 11/4/2015 | 10 | 11.8 | -0.18 | 2.0 | 120 | ND | 120 | ND | 0.03 | 7.83 | 0.11 | ND | ND | 37.0 | 182 | 35 | 23 | 8.8 | 240 | 340 | ND | 19.0 | 7.66 |
| Minimum | 10 | 11.1 | -0.90 | 1.6 | 81 | ND | 81 | ND | ND | 4.83 | ND | ND | ND | 22 | 100 | 20 | 11 | 6.5 | 140 | 236 | ND | 10.3 | 7.42 |
| Maximum | 35 | 12.6 | 0.75 | 3.5 | 135 | 23 | 135 | ND | 0.03 | 9.00 | 0.24 | ND | 0.213 | 46.0 | 182 | 38 | 23 | 13 | 240 | 380 | ND | 25.8 | 8.66 |
| Average | 15 | 11.9 | -0.02 | 2.3 | 111 | 7 | 104 | ND | ND | 6.63 | 0.1 | ND | ND | 33.8 | 138 | 30 | 16 | 9.3 | 189.5 | 303 | ND | 17.8 | 8.06 |
| Median | 10 | 12.0 | -0.01 | 2.2 | 110 | ND | 102 | ND | ND | 6.47 | 0.1 | ND | ND | 33.5 | 135 | 30 | 16 | 9.0 | 190 | 293 | ND | 18.9 | 8.08 |
| # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

## Nacimiento Reservoir - Hypolimnion: General Mineral Data

| Collected Date | Depth | Aggressive Index | Langelier Index | Specific Ultraviolet Absorption | Total Alkalinity, Total as CaCO3 | Carbonate Alkalinity as CaCO3 | Bicarbonate Alkalinityas CaCO3 | Hydroxide Alkalinity as CaCO3 | Bromide | Chloride | Fluoride (w/out predistillation) | Nitrite as Nitrogen | Nitrate as Nitrogen | Sulfate | Total Hardness as CaCO3 | Calcium | Magnesium | Sodium | Total Dissolved Solids | Electrical Conductivity | Methylene Blue Active Substances | Temperature | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (units) | feet | — | — | L/mg-M | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | umhos/cm | mg/L | °C | — |
| MCL | — | — | — | — | — | — | — | — | | 500* | 2 | 1 | 10 | 500* | — | — | — | — | 1000* | 1600* | 0.5* | — | — |
| DLR | — | — | — | — | — | — | — | — | 0.01 | — | 0.1 | 0.1 | 0.1 | 0.5 | — | — | — | — | — | 4 | 0.1 | — | — |
| 2/7/2011 | 84 | 11.4 | -0.79 | 3.9 | 85 | ND | 85 | ND | ND | 4.22 | 0.11 | ND | 0.200 | 20.6 | 94 | 23 | 8.9 | 5.8 | 140 | 220 | ND | 9.9 | 7.67 |
| 5/2/2011 | 100 | 11.3 | -0.85 | 4.0 | 82 | ND | 82 | ND | ND | 4.77 | 0.12 | ND | 0.271 | 23.0 | 96 | 20 | 11 | 6.4 | 140 | 230 | ND | 10.1 | 7.66 |
| 8/2/2011 | 110 | 11.5 | -0.70 | 3.4 | 80 | ND | 80 | ND | 0.02 | 4.86 | 0.06 | ND | ND | 24.5 | 99 | 21 | 11 | 6.8 | 140 | 230 | ND | 10.6 | 7.83 |
| 11/2/2011 | 115 | 10.9 | -1.17 | 3.3 | 87 | ND | 87 | ND | 0.02 | 5.16 | 0.19 | ND | 0.300 | 28.0 | 100 | 23 | 11 | 7.0 | 170 | 240 | ND | 10.7 | 7.25 |
| 2/14/2012 | 75 | 11.6 | -0.55 | 2.5 | 100 | ND | 100 | ND | 0.02 | 5.63 | 0.10 | ND | 0.135 | 28.4 | 120 | 27 | 13 | 7.6 | 180 | 280 | ND | 10.0 | 7.74 |
| 5/15/2012 | 130 | 11.4 | -0.71 | 2.6 | 99 | ND | 99 | ND | 0.02 | 5.47 | 0.10 | ND | 0.224 | 29.5 | 120 | 26 | 13 | 8.6 | 190 | 274 | ND | 10.3 | 7.60 |
| 8/6/2012 | 100 | 11.3 | -0.85 | 2.7 | 100 | ND | 100 | ND | 0.02 | 5.85 | 0.21 | ND | 0.289 | 29.3 | 120 | 27 | 14 | 8.9 | 160 | 275 | ND | 10.9 | 7.44 |
| 11/5/2012 | 60 | 11.5 | -0.52 | 2.1 | 110 | ND | 110 | ND | 0.02 | 5.91 | ND | ND | ND | 31.4 | 130 | 30 | 14 | 9.0 | 200 | 293 | ND | 18.3 | 7.54 |
| 2/4/2013 | 60 | 11.2 | -0.94 | 2.5 | 100 | ND | 100 | ND | 0.02 | 5.66 | ND | ND | 0.053 | 28.8 | 120 | 26 | 14 | 8.8 | 160 | 280.0 | ND | 9.8 | 7.39 |
| 5/6/2013 | 60 | 11.2 | -0.93 | 3.0 | 100 | ND | 100 | ND | 0.03 | 5.75 | ND | ND | 0.077 | 29.4 | 120 | 27 | 14 | 7.9 | 190 | 270 | ND | 10.1 | 7.90 |
| 8/5/2013 | 60 | 11.8 | -0.87 | 2.7 | 108 | ND | 108 | ND | 0.03 | 5.80 | 0.05 | ND | 0.103 | 29.2 | 138 | 27 | 17 | 7.5 | 170 | 270 | ND | 11.0 | 7.94 |
| 11/4/2013 | 60 | 11.0 | -1.00 | 2.3 | 126 | ND | 126 | ND | 0.03 | 6.59 | 0.09 | ND | ND | 31.7 | 144 | 32 | 16 | 9.0 | 200 | 320 | ND | 16.3 | 7.03 |
| 2/3/2014 | 60 | 11.8 | -0.42 | 1.6 | 124 | ND | 124 | ND | — | 7.10 | 0.10 | ND | ND | 38.4 | 163 | 34 | 19 | 9.6 | 210 | 340 | ND | 9.2 | 7.76 |
| 5/5/2014 | 60 | 11.1 | -1.08 | 1.9 | 127 | ND | 127 | ND | 0.01 | 7.21 | 0.09 | ND | 0.192 | 39.1 | 154 | 33.4 | 17 | 9.7 | 240 | 348 | ND | 10.0 | 7.55 |
| 8/4/2014 | 60 | 11.4 | -0.75 | 2.0 | 120 | ND | 120 | ND | 0.03 | 7.20 | 0.11 | ND | ND | 38.0 | 159 | 34 | 18 | 10 | 200 | 347 | ND | 10.9 | 7.42 |
| 11/3/2014 | 60 | 11.1 | -1.08 | 2.4 | 132 | ND | 132 | ND | 0.01 | 7.40 | ND | ND | ND | 36.2 | 163 | 36 | 18 | 11 | 210 | 350 | ND | 11.5 | 7.41 |
| 2/2/2015 | 60 | 10.9 | -1.15 | 2.7 | 114 | ND | 114 | ND | 0.02 | 7.50 | 0.15 | ND | 0.306 | 35.7 | 150 | 32 | 16 | 11 | 190 | 340 | ND | 11.6 | 7.56 |
| 5/4/2015 | 60 | 11.0 | -1.18 | 2.4 | 110 | ND | 110 | ND | 0.03 | 7.70 | 0.19 | ND | 0.292 | 37.3 | 140 | 31 | 16 | 10 | 210 | 320 | ND | 11.7 | 7.45 |
| 8/3/2015 | 60 | 11.4 | -0.77 | 2.7 | 110 | ND | 110 | ND | 0.02 | 9.25 | 0.11 | ND | ND | 34.9 | 150 | 30 | 20 | 10 | 200 | 328 | ND | 12.3 | 7.44 |
| 11/4/2015 | 60 | 11.2 | -0.89 | 2.7 | 120 | ND | 120 | ND | 0.03 | 7.68 | 0.09 | ND | ND | 31.0 | 169 | 34 | 20 | 8.1 | 230 | 330 | ND | 12.3 | 7.44 |
| Minimum | 60 | 10.9 | -1.18 | 1.6 | 80 | ND | 80 | ND | ND | 4.22 | ND | ND | ND | 21 | 94 | 20 | 9 | 5.8 | 140 | 220 | ND | 9.2 | 7.03 |
| Maximum | 130 | 11.8 | -0.42 | 4 | 132 | 0 | 132 | ND | 0.03 | 9.25 | 0.24 | ND | 0.306 | 39.1 | 169 | 36 | 20 | 11 | 240 | 350 | ND | 18.3 | 7.94 |
| Average | 75 | 11.3 | -0.86 | 2.7 | 107 | 7 | 107 | ND | ND | 6.34 | 0.1 | ND | ND | 31.2 | 132 | 29 | 15 | 8.6 | 186.5 | 294 | ND | 11.4 | 7.55 |
| Median | 60 | 11.3 | -0.86 | 2.7 | 109 | ND | 109 | ND | ND | 5.88 | 0.1 | ND | ND | 30.3 | 134 | 29 | 15 | 8.9 | 190 | 287 | ND | 10.8 | 7.55 |
| # of Samples | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level

## Nacimiento Reservoir - Raw Water (Intake in Use): General Mineral Data

| Collected Date | Depth | Aggressive Index | Langelier Index | Specific Ultraviolet Absorption | Total Alkalinity, Total as CaCO3 | Carbonate Alkalinity as CaCO3 | Bicarbonate Alkalinityas CaCO3 | Hydroxide Alkalinity as CaCO3 | Bromide | Chloride | Fluoride (w/out predistillation) | Nitrite as Nitrogen | Nitrate as Nitrogen | Sulfate | Total Hardness as CaCO3 | Calcium | Magnesium | Sodium | Total Dissolved Solids | Electrical Conductivity | Methylene Blue Active Substances | Temperature | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (units) | feet | — | — | L/mg-M | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | umhos/cm | mg/L | °C | — |
| MCL | — | — | — | — | — | — | — | — | | 500* | 2 | 1 | 10 | 500* | — | — | — | — | 1000* | 1600* | 0.5* | — | — |
| DLR | — | — | — | — | — | — | — | — | 0.01 | — | 0.1 | 0.1 | 0.1 | 0.5 | — | — | — | — | — | 4 | 0.1 | — | — |
| 2/7/2011 | 104 | 11.6 | -0.60 | — | 96 | ND | 96 | ND | — | 4.76 | 0.13 | ND | 0.204 | 23.3 | 110 | 25 | 11 | 6.8 | 150 | 250 | ND | 9.7 | 7.77 |
| 5/15/2012 | 115 | 11.9 | -0.19 | — | 100 | ND | 100 | ND | — | 5.52 | 0.10 | ND | 0.217 | 29.0 | 120 | 27 | 13 | 8.6 | 180 | 274 | ND | 11.0 | 8.08 |
| 6/3/2013 | 95 | 11.3 | -0.85 | — | 110 | ND | 110 | ND | — | 5.73 | ND | ND | 0.228 | 29.0 | 130 | 27 | 15 | 8.2 | 190 | 274 | ND | 10.9 | 7.40 |
| 5/5/2014 | 45 | 11.7 | -0.35 | — | 125 | ND | 125 | ND | — | 7.39 | 0.09 | ND | 0 | 39.4 | 152 | 23 | 17 | 9.6 | 210 | 340 | ND | 14.8 | 7.84 |
| 5/4/2015 | 15/35 | 11.5 | -0.54 | — | 110 | ND | 110 | ND | — | 7.10 | 0.18 | ND | 0.133 | 35.0 | 140 | 31 | 16 | 9.7 | 200 | 310 | ND | 16.0 | 7.75 |
| Minimum | 20 | 10.9 | -1.18 | 1.6 | 20 | ND | 20 | ND | ND | 4.22 | ND | ND | ND | 1 | 20 | 20 | 9 | 5.8 | 20 | 4 | ND | 9.2 | 7.03 |
| Maximum | 130 | 20 | 20 | 20 | 132 | 20 | 132 | ND | 19 | 20.00 | 0.24 | ND | 20 | 39.4 | 169 | 36 | 20 | 20 | 240 | 350 | ND | 20 | #### |
| Average | 72 | 11.9 | 0.61 | 4.4 | 105 | 7 | 105 | ND | ND | 7.71 | 0.1 | ND | ND | 29.5 | 132 | 29 | 16 | 9.8 | 183.1 | 268 | ND | 12.8 | 8.41 |
| Median | 60 | 11.3 | -0.85 | 2.7 | 110 | ND | 110 | ND | ND | 7.39 | 0.1 | ND | ND | 31.1 | 140 | 29 | 16 | 9.6 | 190 | 302 | ND | 11.6 | 7.55 |
| # of Samples | 14 | 15 | 15 | 10 | 15 | 20 | 15 | 20 | 19 | 15 | 20 | 20 | 20 | 16 | 15 | 15 | 15 | 15 | 15 | 16 | 20 | 15 | 15 |

MCL: Maximum Contaminant Limit for Drinking Water
DLR: Detection Limit Required (for the Purposes of Reporting)
*Indicates a Secondary Maximum Contaminant Level