VENTURA COUNTY GOVERNMENT CENTER
GENERAL SERVICES AGENCY
GROUNDS DEPARTMENT
WATER CONSERVATION STRATEGY
AUGUST 07, 2014

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Facilities Manager

Contents

GENERAL SERVICES AGENCY

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GENERAL SERVICES AGENCY GROUNDS DEPARTMENT

WATER CONSERVATION STRATEGY

INTRODUCTION

The purpose of the Drought Contingency and Water Conservation Plans is to conserve water in drought and no drought conditions in the most responsible manner possible to include leveraging technology, taking advantage of the latest scientific methods, and using best management practices. This plan is separated into two parts. Part one entails the short term responses to the present drought condition. Part two entails the long term strategy for continuous reduction of water consumption; specifically, it contains a combination of strategies for reducing the volume of water withdrawn from the water well, for reducing the loss of water, for maintaining or improving the efficiency in the use of water by leveraging technology and for preventing the pollution of water.

Implemented: August 7, 2014

CONSIDERATIONS

As this plan was developed, it took into account the below concerns:

Public Health and Safety, and Environmental

- Increased fire hazard – lower moisture content in the plant tissue creates a greater fire hazard. Trees and shrubs within 100 feet of structures or within 20 feet of roads with less than 50% viable moisture content will be considered combustible vegetation and will be removed by our vendor. Additionally, other vegetation outside these areas may need removal including deadwood from trees.
- Poor air quality- the dead shrubs and more exposed earth will create dust.
- Soil preservation – healthy turf, shrubs, trees, and plants increase soil stability through its deep and expansive root structure which reduces land degradation and erosion from wind and water. Soil health and stability are greatly reduced in the absence of root systems and organic

matter from grass and other vegetation. This will result in acres of dead vegetation (grass, trees, and shrubs).

- Healthy storm water – landscape acts as a large percolating system to prevent residue from the environment that is harmful to aquatic life from entering the storm water system. It is a natural filter which takes up dust, pollutants, and particulate matter from the air and water. The feature will be lost if the landscape dies.
- Climate change – trees, shrubs and grass act as a carbon sink, taking up CO2 from the atmosphere, thereby contributing positively in managing global change. This process will no longer manifest itself.
- Cooling effects – grass, shrubs, and trees cool the air, and healthy vegetation have the same cooling effect as air conditioning. About ½ the heat energy directed to a grassy area is eliminated by evapotranspiration. Non-vegetative surfaces do not have the same cooling effect, and in some cases actually create a mini' heat-island' effect, increasing the ground-level temperature.
- Noise reduction – grass, trees, shrubs, and plants significantly reduce noise pollution by absorbing sound within its surfaces.
- Chemical usage – the presence of pests (living organisms such as tree pests, plant pests, and weeds) will increase and require aggressive management. If aggressive chemical treatment is not used, pests will be allowed to flourish.

Infrastructure

- Well – Shutting down the well may cause hydro-static pressure build-up; valves will freeze and seals will crack. They will need to be repaired or replaced. The well pump will have to be moth-balled in order to reduce corrosion, erosion, and sticking of gears.
- 10,000 sprinkler heads and 600 valves – seals will dry out, and we will need to replace the entire insert.

Plant Health

- Stress and slow decline of trees. They can live 2 – 3 years without surface watering.
- Increase in pests, as plants and trees will become more susceptible to disease and infestation.

Aesthetics:

- Detrimental aesthetics – brown grass/shrubs are unattractive to the public eye.

- With the exception of fuel modification zones (20 feet from access roads and 100 feet from structures), all dead and dying vegetation will remain, which will significantly detract from the overall appearance of County properties.

DESCRIPTION OF THE IRRIGATION METHOD, SYSTEM AND EQUIPMENT

The Government Center property irrigation is controlled by the Toro Sentinel irrigation control system. The headend computer system, located in the Service Building, works in tandem with a weather station to preclude irrigation during favorable weather conditions.

During normal operation the grounds use water that is pumped from the reservoir discussed above. Water is pumped using a variable speed pump. The variable pump is used because of its efficiency and energy savings. Water is distributed through six inch diameter PVC main line. All lateral lines are PVC pipe and ranges from ½" to 2" inches in diameter. All main and lateral lines are buried. Electrically activated solenoid valves, located in the valve boxes, are controlled by control panels. The panels communicate with the Sentinel control system, which engages each zone per the dictated schedule below:

County Property Current Watering Schedules (Changes in May)

Frequency: 2 x per week Nov. – April and 3 x per week May – Oct.

Controllers (1, 2, 3)	(SUN., THURS.)	Start: 8:45 PM
Controllers (4, 5, 6, 8, 11,)	(MON., FRI.)	Start: 8:45 PM
Controllers (7, 9, 10)	(TUES., SAT.)	Start: 1:00 AM

All sprinkler heads and drip lines are water consumption efficient. The Sentinel Control System communicates to each zone throughout the property. Their activation is staggered so that pressure is maintained throughout the entire system. The irrigation system is not designed to water all zones at once.

Each zone has electronic flow sensors which are controlled by the Sentinel panels. The software allows for real-time and continuous water consumption data access.

TYPE OF VEGETATION (MAJORITY) IRRIGATED

Types of Plant		Growing Season
Kikuyu Grass	Pennisetum Clandestinum	May-October
Indian Hawthorn	Raphiolepis	Mar – Oct
English Ivy	Hedera Helix	Mar – Oct

Shiny Xylosma	Xylosma Congestum	Mar – Oct
Lilly of the Nile	Agapanthus Africanus	Mar – Oct
Day Lilly	Hemerocallis Hybrid	Mar – Oct
Myers Asparagus Fern	Asparagus Denisflorus 'Meyeri'	Mar – Oct
Bougainvillea 'San Diego Red'		Mar – Oct
Japanese Boxwood	Buxus Microphylla Japonica	Mar – Oct
Pride of Madeira	Echium Fastuosum	Mar – Oct
Heavenly Bamboo	Nandina Domestica	Mar – Oct
Flax	Phorium	Apr – June

DESCRIPTION OF SOIL TYPE

According to soil samples analyzed by FGL on 9/13/13, the soil type at the Government Center ranges from a silt-loam to a clay-loam and the pH is alkaline. The soil is high in sulfates, and sodium, and in some samples high in boron and chloride that can be detrimental to plant health. The soil is low in the primary nutrients nitrate nitrogen and phosphorus indicating fertilizer supplements may be needed for plant health. Soil salinity is high which can be detrimental to plant health requiring more water be delivered to achieve similar results as compared to normal salinity soils. In drought conditions the salinity problem increases. A summary of the soil type can be found below.

Soil Type:	Silt-Loam to Clay Loam
Soil pH:	7.83 (Alkaline)
Primary Nutrients:	Low in Nitrate Nitrogen, Phosphorus
Secondary Nutrients:	High in Sulfate & Sodium
Micro Nutrients:	High in Boron & Chloride (in one sample)
Soil Salinity:	High

WATER QUALITY

The water quality of the Government Center well is non-potable. The Sulfate, Nitrate and TDS levels are beyond the acceptable limits for human consumption. The acceptable limits can be found at: http://water.epa.gov/drink/contaminants/#List .

Our TDS level is 2120. The EPA limit is less than 500. For specifics see figure 1-2. The complete water quality report and water system profile can be found in appendix 1 and 2.

February 7, 2014 Lab ID :SP 1401126-001
County of Ventura Description : GC Well

Drinking Water Interpretation

Summary: Your water has a failure for one or more items on this sample report. Please see the table below to determine which items failed. Following the table is a brief explanation describing the significance of the failure and whether treatment may be required.

CONSTITUENT	RESULT	UNITS	MCL	MCL LESS OR EQUAL	MCL EXCEED
Inorganic - Primary					
Aluminum	ND	ug/L	1000	Pass	
Antimony	ND	ug/L	6	Pass	
Arsenic	ND	ug/L	10	Pass	
Barium	13.5	ug/L	1000	Pass	
Beryllium	ND	ug/L	4	Pass	
Cadmium	0.3	ug/L	5	Pass	
Chromium	2	ug/L	50	Pass	
Fluoride	0.2	mg/L	2	Pass	
Mercury	ND	ug/L	2	Pass	
Nickel	ND	ug/L	100	Pass	
Nitrate	43.0	mg/L	45	Pass	
Nitrate + Nitrite as N	9.7	mg/L	10	Pass	
Nitrite as N	ND	mg/L	1	Pass	
Selenium	12	ug/L	50	Pass	
Thallium	ND	ug/L	2	Pass	
Inorganic - Secondary					
Aluminum	ND	ug/L	200	Pass	
Chloride	83	mg/L	500	Pass	
Copper	ND	ug/L	1000	Pass	
Iron	50	ug/L	300	Pass	
Manganese	ND	ug/L	50	Pass	
MBAS (foaming agents)	Negative	mg/L	0.5	Pass	
Silver	ND	ug/L	100	Pass	
Specific Conductance	2640	umhos/cm	1600		Fail
Sulfate	1140	mg/L	500		Fail
Total Dissolved Solids	2070	mg/L	1000		Fail
Other					
Copper	ND	ug/L	1300**	Pass	

ND=Non-Detected. ** Federal Action Level Title 22, Section 64672.3

Figure 1-2

PART I

DROUGHT CONTINGENCY PLAN (DCP)

Temporary Recurring Response Plan

PURPOSE: To reduce water use incrementally to meet Government imposed mandates, while preserving public health and safety and mitigating plant health stress and decline.

BACKGROUND

Governor Jerry Brown declared a statewide drought emergency on January 17, 2014 calling on every Californian to reduce their water usage by 20%. Lake Casitas is currently less than 60% of capacity. Without further significant additional rainfall this year, it is expected to decline to 50% of capacity, a critical point at which the Casitas Municipal Water District will implement more severe conservation measures and actions currently under consideration.

As state and local mandates for further reduced water use move closer to reality, it is incumbent upon the County to proactively and responsibly prepare for these eventualities with a DCP to conserve water, while mitigating the harsh impact of these actions, and while preserving public health and safety in maintaining the Government Center grounds.

The DCP adopts measures that will dramatically cut water consumption in order to conserve water supplies. Water uses regulated or prohibited under the DCP are considered to be non-essential, and continuation of such uses during times of water shortage or other emergency water-supply conditions are deemed to constitute a waste of water.

The DCP is separate from the Water Conservation Plan (Part II). The drought restrictions are considered temporary inconveniences, while conservation methods will be permanent.

STAGES AND RESPONSES

STAGE 1: Water Use Restrictions for Reducing Demand

- Limit the irrigation of landscaped areas to once per week. However, irrigation of landscaped areas is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted of the new plantings (for up to 60 days). The grass will show signs of stress and show some browning;

however, the shrubs and trees within the common watering zone shall show little to no sign of stress.

- When possible, irrigation will not be conducted between the hours of 10:00 am and 6 PM to minimize evaporative losses. Furthermore, during periods of high wind, rain, or other climatic conditions not favorable to optimal irrigation, the system will be shut down.
- Minimize or discontinue water use for non-essential purposes.

STAGE 2: Moderate Water Shortage Condition

The County will do the following during Stage 2:

- Increase repair crew and vendors support to allow for a quicker response time for irrigation heads and water-line leak repair.
- Increase monitoring of water use and implement a more aggressive water watch as part of Grounds Division employees' campus rounds.
- Use of water to wash machinery, equipment or trailer is prohibited except to insure proper operation of machinery and equipment. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Grounds vehicle washing is allowed at any time on the immediate premises at the fleet car wash.
- The following uses of water are defined as non-essential and will discontinue:
    - Wash-down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas.
    - Use of water for dust control.

STAGE 3: Severe Water Shortage Condition

All requirements of Stage 2 shall remain in effect during Stage 3 except as modified below:

- Eliminate the flushing of irrigation system unless required for repairs.
- Irrigation of landscaped areas shall be limited to once every other week. However, irrigation of trees is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted for new plantings (for up to 60 days).

STAGE 4: Critical Water Shortage Condition

Irrigation of landscaped areas is prohibited:

- Turf will be mowed to the lowest level. Mow turf re-growth as needed until lawn has fully died or gone dormant.
- Pruning will be discontinued except as needed to preserve public safety.
- Employees will monitor and inspect property for proper fire clearance and hazards.

Grounds crew and vendors shall remove dead shrubs, trim and remove trees based on reports of periodic inspections.

STAGE 5: Emergency Water Shortage Condition

Requirement for termination – The emergency water shortage condition may be rescinded when the Director of GSA, or designee, deems appropriate.

- Use of water to wash any grounds vehicle, machinery, equipment, and trailers is prohibited.[1]

[1] Texas Water Conservation Drought Stages, Feb. 2004 and Region C Water Planning Group, May 2005

PART II

WATER CONSERVATION PLAN (WCP)

Long Term Plan

PURPOSE: The purpose of this plan is to provide a long term strategy that will permanently reduce water waste and consumption. The WCP execution spans five years. It provides the most economical and efficient methods possible to provide permanent long term water savings.

DEVELOPMENT REQUIREMENTS IN 1978 VS 2014

In 1978, lawn was commonly used because of cost and no water restrictions. In 1977 the City of Ventura issued a resolution #77-72 stating guidelines for irrigation water management, but no development standards were offered or there were no penalties.

In 1978 a common formula was used to determine the water use for a given landscape design. This formula's sole purpose was to determine what water capacity was needed to irrigate a given site in a given time frame.

In 1983, the City of Ventura adopted a landscape and irrigation guideline, still not an ordinance; simply guidelines and recommendations for development, but with no penalties for non-compliance.

In 1992, the City of Ventura adopted the State Water Efficiency Landscape Ordinance (AB 325). At this time, actual mandates were established for landscaping water use.

In that same year the County of Ventura adopted and published The Landscape Design Criteria. This document replaced the 1988 version of the same. The newer 1992 version included the AB 325 state ordinance which set standards for water conservation that were required.

In 1993 AB 325 was replaced with AB 1881. This new bill increased the water restrictions and added text that allowed the municipality the ability to fine users that did not comply with the ordinance. AB 1881 further restricted water use by requiring a more restrictive 'ET' adjustment factor. The new ordinance also included the following factors:

- Provisions to minimize landscape irrigation overspray and runoff
- A landscape water budget component
- Provisions for appropriate use and groupings of plants
- Provisions for use of automatic irrigation systems and irrigation schedules based on climate conditions
- Provisions for onsite soil assessment and soil management plans
- Encourage the capture and retention of storm water onsite

- Encourage the use of recycled water
- Encourage use of economic incentives to promote the efficient use of water
- Educate water users on the efficient use of water and the benefits
- Address regional differences, including fire prevention needs
- Exempt landscape that is part of a registered historical site
- Provisions for landscape maintenance practices that foster long-term landscape water conservation
- Promote benefits of consistent local ordinances

In comparing 1978 to 2014, the following items were noted. These items were added to plan check requirements AB 1881:

- A water ordinance was established that mandated a maximum water use per site.
- Plant materials were selected per the WUCALS rating. The selections need to be an average of 'medium' to pass the water use rating.
- Soil management and testing requirements were added to most plan checks.
- MS 4 requires the retention or detention of storm water on site.
- Automatic irrigation controllers became MANDATORY with a component that calculates water needs. I.E. 'Smart Controllers'.
- Plant materials were required to be grouped into like hydro-zones.
- Each hydro-zone was required to be irrigated separately.
- Reduced water use was to minimizing over spray onto walks, pavement, etc.
- Reduce water by performing water audits.

Calculations of water use from average daily use formula used in 1977:

$$\frac{\text{ET rate in inches per day X sq. ft of site X 0.623}}{.85}$$

This allowed a total water use per year of 30,079,285 gallons per year.

Maximum applied water allocation from AB 1881 is 14,151,131 gallons per year.

Total one year (December 2013 to January 2014) actual use 24,401,660 gallons per your

• Average Daily Use Formula from 1977 – 30,079,285

• Current AB 1881 Use – 14,151, 131

• The difference between 1978 standards and actual daily use is 5,677,625 gallons per year

• The difference between AB 1881 and today is 10,250,529 gallons per year.

In conclusion, comparing water calculations used in 1977/78 vs actual use today, the County is using 5,677,625 gallons per year more than projected by 1977/78 standards. Using the AB 1881 formula, the County is currently using 10,250,000 per year. To meet current development standards, 10,250,529 gallons of water needs to be trimmed from your water budget.[2]

The following actions taken and the strategy presented will facilitate the accomplishment of this goal.

ACTIONS TAKEN

Since 2005 the General Services Agency has added conservation measures to ensure the most efficient use of the well water at the Government Center. The Government Center has approximately 23.2 acres of sustainable grass and landscape combined. The grass covers over 8.65 acres of land. Our program is green because our landscape is drought resistant, hardy and well established. We leverage technology and the latest techniques to keep our plants and grass healthy while placing great effort on respecting and preserving our environment. A summary of the water conservation methods to date can be found below:

Reducing the Requirement

Plants were analyzed by species for their ability to thrive in Southern California climate. Less suitable plants were/are being replaced with plants that are more drought resistance. We further developed a policy of using drought resistant planting for new installations and maintenance. Synthetic turf, synthetic and organic mulch, gravel and other geo-textiles were used to cover open ground to contain moisture into the soil and reduce weeding. Figure 2-1 below and the following drawing and photographs, summarize the changes made.

[2] JORDAN, GILBERT & BAIN Landscape Architects, Inc. 3350 Loma Vista Road Ventura, CA 93003 phone (805) 642-3641 fax (805) 642-9614.

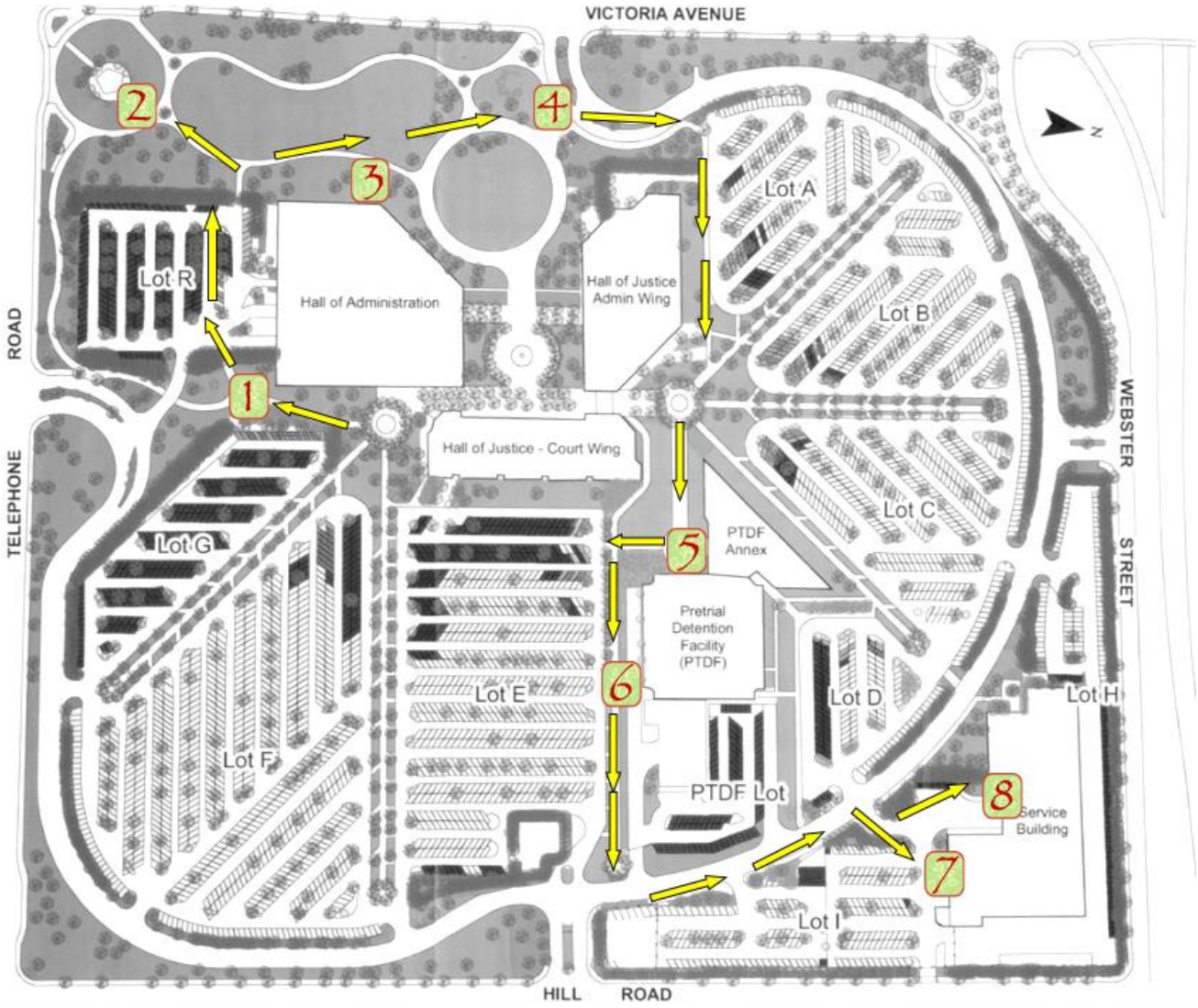
VICTORIA AVENUE
TELEPHONE ROAD
WEBSTER STREET
HILL ROAD
Hall of Administration
Hall of Justice Admin Wing
Hall of Justice - Court Wing
PTDF Annex
Pretrial Detention Facility (PTDF)
PTDF Lot
Service Building
Lot A
Lot B
Lot C
Lot D
Lot E
Lot F
Lot G
Lot H
Lot I
Lot R
1
2
3
4
5
6
7
8
N

Figure 2-1

Marty Robinson Walkway
Site 1

Veterans Memorial
Site 2

Veterans Memorial

Veterans Memorial

Hand in Hand Wedding Site
Site 3

Native Plant Demonstration Site
Site 4

Pre Trial Detention Facility South Entrance
Site 5

PTDF Cement Wall
Site 6

PTDF Cement Wall

Service Building - Grounds Division
Succulent Garden
Site 7

Service Building Native Garden
Site 8

Service Building Native Garden

Reducing Waste

The watering scheme and patterns were assessed. The frequency and duration of watering were changed to reduce waste due to over watering. Subsequently, the sprinkler head patterns were evaluated and heads adjusted or replaced to avoid over spraying during flushing as the heads pop-up withstand redirecting winds, and excessive evaporation loss.

Leveraging Technology

Technology was leveraged by replacing the irrigation control system with a more robust wireless automated system with a centrally located data processing unit. As aforementioned, the system's name is the Toro Sentinel Irrigation System. It is software based, which makes relevant data available real time for more precise measurement. The system includes a robust, wireless automated system which allows monitoring and alarms for leaks. In addition to the head in unit, hand held controls are provided to the landscape crew for in the field controlling of the system. The new valves are low voltage energy efficient. Electronic flow sensors were also added. This facilitated better monitoring of leaks, data storage and trending, and created opportunities to take advantage of atmospheric conditions. Capitalizing on this effort, the following was accomplished:

- Created new zones which allowed different schedules by area and changed watering scheme from one global schedule to multiple schedules based upon the variant plant water requirement within particular zones.

- Installed 3 weather stations (JJC, Gonzales Road, and Service Building) which receive CIMIS data and reads atmospheric conditions that communicate with the irrigation system to water, based on soil moisture measurements. The weather stations take weather information such as solar, energy, temperature, humidity, and wind velocity and converts this information into evapotranspiration (ET) to measure and apply watering needs. Water is conserved because the station shuts down automatically during rain events. The weather station makes daily changes in the amount of applied water thus minimizing the potential for human error. ET assures that the plants are receiving the right amount of water at the right time – this makes for healthier plants that can resist pests and diseases thus minimizing the need for pesticide applications. Healthier plants make for a better looking campus.
- Replaced well pump with a variable speed high efficient 50 hp motor.

Leak Detection, Repair, and Water-loss Control

A routine to identify leaks by the landscape division employees was put in place. It concludes the following:

- Sprinkler heads, piping, and well pump are inspected daily.
- Automated irrigation control system data file is reviewed daily in an effort to identify any abnormal spikes in water use, which could indicate leaks in the irrigation system.
- Leak detection equipment is used on occasion if a below-ground leak is suspected.
- Leaks are repaired as soon as possible.

Budget/Cost/Savings:

ONE-TIME COST	
Planting	0 (in conjunction with routine maintenance)
Mulch and Geo-textiles	$ 28,000.00
Irrigation Controls and Meters	$175,000.00
Weather Stations	$ 5,000.00
Total One Time Cost:	$180,000.00
RECURRING ANNUAL WATER SAVINGS	
Water Savings	68,785,738 = 211.1 acre - feet

Annual Savings (Well operations & manual data management)	$2856

Results: A summary of results and chronology of events can be found in the below chart.

YEAR	WATER CONSUMPTION/GALLONS			EVENTS
	Actual	**CIMIS**	**Variance**	
2005	285.48 calculated	----	----	Replanting on-going application of geo-textile and synthetic landscaping.
2006	142.79	57.38	85.36	Changed watering schedule. Irrigation system upgraded and head end unit installed.
2007	**----**	----	**----**	Refitted irrigation heads and areas rezoned.
2008	----	----	----	Installed water flow sensors (last qtr)
2009	41.36	54.31	12.95	Installed weather station at Government Center
2010	47.51	58.88	11.37	Replaced well pump
2011	47.88	58.95	11.07	Add three sites (last qtr)
2012	40.85	58.92	18.07	
2013	74.38	83.27	14.64	Jan 2014 drought declaration. Installed 2 weather stations at the JJC and Gonzales Road.

THE STRATEGY

Processes and Treatments

- Irrigation Control System Modification: Provide the Security Control Center (SCC) with access to the system via the network. This will allow the SCC to monitor and track the amount of water being applied through the system and respond to any water usage alarms after-hours. The approximate cost is $5,000.
- Water-Conserving Irrigation Equipment: Convert the conventional spray and rotor irrigation system to bubbler/steam bubbler system in planter beds near HOA and HOJ front entrances. This irrigation method saves water by slowly applying water directly to the soil surface, eliminating runoff,

overspray and evaporation loss typical of conventional systems; while avoiding maintenance problems associated with drip irrigation. This will reduce watering in those areas by 60%. See figure 2.2 for locations identified.

Cost of installation is $1.03 per square foot for 4,450 feet^2 = 0.10 acre. The total cost is $4,583. This will save 1.6 acre-feet of water annually.

- Pollution Prevention and Abatement Goals: GSA is committed to maintaining water quality. Potential threats to water quality include pesticides, herbicides, and fertilizers. Chemical use and runoff are reduced due to the following methods:
  - Integrated Pest Management (IPM) approach to controlling pests. This approach includes use of biological and organic pest control agents, bio textile and mechanical removal methods.
  - Careful limiting of irrigation water application rates.
  - Avoiding application of pesticides, herbicides and fertilizers when rain is anticipated.
- Soil Treatment: Inoculate existing trees and shrubs with Mycorrhiza. The cost to purchase and apply the Mycorrhiza is $25,737.26. This fungus forms a symbiotic relationship with roots of most plant species thereby increasing absorptive capacity for water and mineral nutrients imparting greater drought tolerance. This will reduce watering by 1.6 acre - feet.

Priority	Project [3]	Water Savings [4]		Irrigation Area Reduced		Acre-feet per acre savings	Installation Cost	Annual Maintenance Costs	Installation year
		Cubic feet	Acre-feet	Square Feet	Acres				
1	Lot A thru G walkways: Remo ve ground cover and install gravel.	171,976	3.95	99,000	2.27	1.74	$93,000	$13,400	2015-2016
1	Modify irrigation lines for the finger trees						$35,000		2015-2016
2	Hill Street: Remove turf, and place membrane, cover with soil.	262,100	6.02	75,316	1.73	3.48	$150,000	$15,214	2016/2017

[3] For land locations see figure 2.2
[4] Conversion factor is 3.5 inches / month

3	Victoria Bank: Let it go wild (re-wild).	240,468	5.52	69,100	1.59	3.48	$0	$0	2018
4	Kidney: Remove grass. Plant tree and plants.	366,792	8.42	105,400	2.42	3.48	$225,000	$22,325	2018
5	Center Circle: Remove grass and replace with hardscape, drought resistant plants and synthetic turf.	78,850	1.81	22,658	0.52	3.48	$299,869	($14,150)	2019/2020
Total		1,292,73	29.68	371,474	8.53	17	$767,869	$9,989	

Landscape Improvements

The following paragraphs are summarized in the above chart for convenience and ease of understanding.

1. Lot A thru G Walkways: Remove ground kikuyu grass and apply synthetic mulch in the beds between parking lots A through G. The strategy of mulching has one of the greatest impacts on water conservation and is easily incorporated into existing landscapes. This effort alone will reduce the irrigated landscape by 99,000 ft^2 = 2.27 acres. This will save 7.9 acre-feet of water per year. The cost for the labor is $33,060 and the cost for materials is $66,000. The total cost is $93,060.
   Leaves from the trees within the walkways will require routine removal. The area shall be weed free for the first three years. The membrane may require replacement at that point. The annual savings will be $13,400.
2. Hill Street: Remove Kikuyu in the areas surrounding the Government Center off of Hill Street and Telephone Road and replace with weed control membrane and cover with soil and ice plant seed. There will be no artificial watering after the area plants and trees have been established. This will reduce the irrigated landscape by approximately 75,316 ft^2 = 1.73 acres and cost $150,632 to install. Watering will be reduced by 6.02 acre-feet per year. There will be extra weeding and herbicide treatment required. The additional maintenance cost per year will be $15.214.
3. Victoria Bank: Discontinue watering the landscape and allow it to re-wild, which is to revert back to its original state. Moderate trimming hedging will be performed to maintain road and sidewalk boundaries. This will reduce the landscape by 69,100 ft^2 = 1.6 acre. There is no cost for this effort.

Watering will be reduced by 5.52 acre-feet per year. Pruning and trimming of the bank will still be required. Therefore, there is no true savings with regards to maintenance within this effort.

4. Kidney: Plant a mini forest around the perimeter of the kidney. The Kikuyu grass will be removed and replaced with more drought resistant plants and trees shown in the design and listed in APPENDIX (3). As landscape matures the watering will be discontinued. It will take approximately six (6) months. The irrigation landscape is reduced by 105,400 ft^2 = 2.42 acres. The water saved will be 8.42 acre-feet per year. The project cost is approximately $225,000. The design for this drawing can be found in appendix 3. In spite of the savings from the lack mowing required, the weeding and herbicide treatment will increase. The annual cost will be $22,325.

Figure 2-2

5. Center Circle: Remove the turf at the circle and replace with a plaza. See Figure 2-3 for details. The turf will be synthetic in type. The landscape will be a waterless demonstration garden. This will

reduce the landscape by 22,658 ft2 = 0.52 acre and reduce irrigation by 1.81 acre-feet per year. The cost of installation of stamped concrete is approximately $271,896 ($12/ft2). The landscape and posts cost is $10,000. The arms will cost $18,000. The total cost is $299,869. There will be no maintenance required in this area. The annual savings for this effort will be $14,150.

Figure 2-3

APPENDICES

(1) Fruit Growers Laboratory Water Analysis
(2) Water System Profile Report
(3) Landscape design for the kidney

APPENDIX 1

ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

February 5, 2014

County of Ventura
Attn: Scott Flammer
Landscape Department
800 S. Victoria Avenue
Ventura, CA 93009

SP 1401126:1 **Coliform Bacteria Analysis**
Customer ID : 2023045

System Number : N/A
Project Name : Potable Well Test

Analytical Results

ID	Sample Description	Total	Fecal	E. Coli	Units	Method	Prep	Footnote
1	GC Well	**<1.0 Absent**	---	**<1.0 Absent**	MPN/100ml	SM 9223B	Quanti Tray	

N/R Not Required MPN Most Probable Number A/P Absence/Presence

The samples listed above were Acceptable for both Total and Fecal Coliform

Sample Handling Information

ID	Sample Number	System Number	Sample Type/Reason	Sampler	Employed By	Sampled
1	SP 1401126-001	N/A	Source-Other	Scott Flammer	Not Available	2014-02-03 08:15

Field Analysis/QA Information

ID	Sample Description	Cl Total/Free	Units	Analysis Started	Analysis Completed	Contact	Contacted
1	GC Well	---/---	mg/l	2014-02-03 12:25 LM	2014-02-04 14:37 LM	N/R	

Analyses were performed at the FGL Santa Paula Laboratory using Standard Methods 20th edition. If you have any questions regarding your results, please call.

Prepared By: SMH

Reviewed and Approved By **Raquel R. Harvey** Digitally signed by Raquel R. Harvey Title: Tech Director Microbiology Date: 2014-02-07

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ATTACHMENT (1)

February 7, 2014 Lab ID :SP 1401126-001
County of Ventura Description : GC Well

Drinking Water Interpretation

Summary: Your water has a failure for one or more items on this sample report. Please see the table below to determine which items failed. Following the table is a brief explanation describing the significance of the failure and whether treatment may be required.

CONSTITUENT	RESULT	UNITS	MCL	MCL LESS OR EQUAL	MCL EXCEED
Inorganic - Primary					
Aluminum	ND	ug/L	1000	Pass	
Antimony	ND	ug/L	6	Pass	
Arsenic	ND	ug/L	10	Pass	
Barium	13.5	ug/L	1000	Pass	
Beryllium	ND	ug/L	4	Pass	
Cadmium	0.3	ug/L	5	Pass	
Chromium	2	ug/L	50	Pass	
Fluoride	0.2	mg/L	2	Pass	
Mercury	ND	ug/L	2	Pass	
Nickel	ND	ug/L	100	Pass	
Nitrate	43.0	mg/L	45	Pass	
Nitrate + Nitrite as N	9.7	mg/L	10	Pass	
Nitrite as N	ND	mg/L	1	Pass	
Selenium	12	ug/L	50	Pass	
Thallium	ND	ug/L	2	Pass	
Inorganic - Secondary					
Aluminum	ND	ug/L	200	Pass	
Chloride	83	mg/L	500	Pass	
Copper	ND	ug/L	1000	Pass	
Iron	50	ug/L	300	Pass	
Manganese	ND	ug/L	50	Pass	
MBAS (foaming agents)	Negative	mg/L	0.5	Pass	
Silver	ND	ug/L	100	Pass	
Specific Conductance	2640	umhos/cm	1600		Fail
Sulfate	1140	mg/L	500		Fail
Total Dissolved Solids	2070	mg/L	1000		Fail
Other					
Copper	ND	ug/L	1300**	Pass	

ND=Non-Detected. ** Federal Action Level Title 22, Section 64672.3

February 7, 2014
County of Ventura

Lab ID :SP 1401126-001
Description : GC Well

Drinking Water Interpretation

MCL: **The maximum level at which a constituent may be present and be considered acceptable for potability or aesthetics.**

Primary: **Items listed as primary are regulated because of health concerns. If there is a failure for a primary constituent treatment is normally required.**

Secondary: **Items listed as secondary are regulated because they may adversely affect the taste, odor or appearance of drinking water. They are not directly health related. If there is a failure for a secondary constituent on a small public water system it is best to consult your regulator to determine if treatment is required. A secondary constituent failure for a private water system does not require treatment. However, the owner may wish to treat the water in order to improve the quality.**

Treatment: **If your water requires treatment we suggest that you contact a qualified water treatment company. They are normally listed in the yellow pages under the following topics:**

Water Purification & Filtration Equipment
Water Softening & Conditioning Equipment
Water Treatment Equipment

February 6, 2014

County of Ventura
Attn: Scott Flammer
Landscape Department
800 S. Victoria Avenue
Ventura, CA 93009

Lab ID : SP 1401126
Customer : 2-23045

Laboratory Report

Introduction: This report package contains total of 10 pages divided into 3 sections:

Case Narrative	(3 pages)	: An overview of the work performed at FGL.
Sample Results	(2 pages)	: Results for each sample submitted.
Quality Control	(5 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
GC Well	02/03/2014	02/03/2014	SP 1401126-001	GW

Sampling and Receipt Information: The sample was received, prepared and analyzed within the method specified holding except those as listed in the table below. The holding time for Fluoride, pH are listed as immediate. Logistically this is very difficult to obtain. FGL policy is to analyze all samples requiring Fluoride, pH on the same day of receipt at the laboratory. If this presents any problem please call.

Lab ID	Analyte/Method	Required Holding Time	Actual Holding Time
SP 1401126-001	pH	15	1890 Minutes

All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

200.7	02/03/2014:201584 All analysis quality controls are within established criteria.
	02/03/2014:201215 All preparation quality controls are within established criteria, except: The following note applies to Potassium: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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Inorganic - Metals QC

200.8	02/03/2014:201605 All analysis quality controls are within established criteria.
	02/05/2014:201705 All analysis quality controls are within established criteria.
	02/03/2014:201211 All preparation quality controls are within established criteria, except: The following note applies to Arsenic, Nickel, Selenium: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery. The following note applies to Silver, Nickel: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.
245.1	02/04/2014:201659 All analysis quality controls are within established criteria.
	02/04/2014:201245 All preparation quality controls are within established criteria.

Inorganic - Wet Chemistry QC

2320B	02/05/2014:201756 All analysis quality controls are within established criteria.
	02/05/2014:201280 All preparation quality controls are within established criteria.
2510B	02/04/2014:201630 All analysis quality controls are within established criteria.
	02/04/2014:201263 All preparation quality controls are within established criteria.
2540CE	02/04/2014:201248 All preparation quality controls are within established criteria.
300.0	02/04/2014:201747 All analysis quality controls are within established criteria.
	02/04/2014:201308 All preparation quality controls are within established criteria.
4500-H B	02/04/2014:201268 All preparation quality controls are within established criteria.
4500HB	02/04/2014:201639 All analysis quality controls are within established criteria.
5540C	02/04/2014:201780 All analysis quality controls are within established criteria.
	02/04/2014:201381 All preparation quality controls are within established criteria.

February 6, 2014 Lab ID : SP 1401126
County of Ventura Customer : 2-23045

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S. Title: Laboratory Director Date: 2014-02-06

February 6, 2014

Lab ID : SP 1401126-001
Customer ID : 2-23045

County of Ventura
Attn: Scott Flammer
Landscape Department
800 S. Victoria Avenue
Ventura, CA 93009
Description : GC Well
Project : Potable Well Test

Sampled On : February 3, 2014-08:15
Sampled By : Scott Flammer
Received On : February 3, 2014-09:15
Matrix : Ground Water

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
General Mineral[P-TS]								
Total Hardness as CaCO3	885	--	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Calcium	216	1	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Magnesium	84	1	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Potassium	9	1	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Sodium	294	1	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Total Cations	30.7	--	meq/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Boron	0.7	0.1	mg/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Copper	ND	10	ug/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Iron	50	50	ug/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Manganese	ND	10	ug/L		200.7	02/03/14:201215	200.7	02/03/14:201584
Zinc	ND	20	ug/L		200.7	02/03/14:201215	200.7	02/03/14:201584
SAR	4.3	--	--		200.7	02/03/14:201215	200.7	02/03/14:201584
Total Alkalinity (as CaCO3)	70	10	mg/L		2320B	02/05/14:201280	2320B	02/05/14:201756
Hydroxide as OH	ND	10	mg/L		2320B	02/05/14:201280	2320B	02/05/14:201756
Carbonate as CO3	ND	10	mg/L		2320B	02/05/14:201280	2320B	02/05/14:201756
Bicarbonate as HCO3	90	10	mg/L		2320B	02/05/14:201280	2320B	02/05/14:201756
Sulfate	1140	20*	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Chloride	83	1	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Nitrate	43.0	0.4	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Nitrite as N	ND	--	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Nitrate + Nitrite as N	9.7	0.1	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Fluoride	0.2	0.1	mg/L		300.0	02/04/14:201308	300.0	02/04/14:201747
Total Anions	28.3	--	meq/L		2320B	02/05/14:201280	2320B	02/05/14:201756
pH	7.6	--	units		4500-H B	02/04/14:201268	4500HB	02/04/14:201639
Specific Conductance	2640	1	umhos/cm		2510B	02/04/14:201263	2510B	02/04/14:201630
Total Dissolved Solids	2070	20	mg/L		2540CE	02/04/14:201248	2540C	02/05/14:201591
MBAS Screen	Negative	0.1	mg/L		5540C	02/04/14:201381	5540C	02/04/14:201780
Aggressiveness Index	12.2	--	--		4500-H B	02/04/14:201268	4500HB	02/04/14:201639
Langelier Index (20°C)	0.2	--	--		4500-H B	02/04/14:201268	4500HB	02/04/14:201639
Metals, Total[P-TS]								
Aluminum	ND	10	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Antimony	ND	1	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Arsenic	ND	2	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Barium	13.5	0.2	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Beryllium	ND	1	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605

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February 6, 2014
Description : GC Well

Lab ID : SP 1401126-001
Customer ID : 2-23045

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Metals, Total[P:T5]								
Cadmium	0.3	0.2	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Chromium	2	1	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Lead	ND	0.5	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Mercury	ND	0.02	ug/L		245.1	02/04/14:201245	245.1	02/04/14:201659
Nickel	ND	1	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Selenium	12	1	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Silver	ND	1	ug/L		200.8	02/03/14:201211	200.8	02/05/14:201705
Thallium	ND	0.2	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605
Vanadium	3	2	ug/L		200.8	02/03/14:201211	200.8	02/03/14:201605

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 ‡Surrogate. * PQL adjusted for dilution.

February 6, 2014
County of Ventura

Lab ID : SP 1401126
Customer : 2-23045

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Boron	200.7	(SP 1401126-001)	MS	mg/L	4.000	99.8 %	75-125	
			MSD	mg/L	4.000	109 %	75-125	
			MSRPD	mg/L	800.4	7.5%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	5.000	98.1 %	90-110	
			CCB	ppm		0.022	0.1	
			CCV	ppm	5.000	97.9 %	90-110	
			CCB	ppm		0.033	0.1	
Calcium	200.7	(SP 1401126-001)	MS	mg/L	12.00	97.6 %	75-125	
			MSD	mg/L	12.00	65.3 %	<¼	
			MSRPD	mg/L	800.4	1.7%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	25.00	100 %	90-110	
			CCB	ppm		0.005	1	
			CCV	ppm	25.00	101 %	90-110	
			CCB	ppm		0.005	1	
Copper	200.7	(SP 1401126-001)	MS	ug/L	800.0	99.8 %	75-125	
			MSD	ug/L	800.0	110 %	75-125	
			MSRPD	ug/L	800.4	10%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	1.000	96.8 %	90-110	
			CCB	ppm		0.00008	0.01	
			CCV	ppm	1.000	97.7 %	90-110	
			CCB	ppm		0.0002	0.01	
Iron	200.7	(SP 1401126-001)	MS	ug/L	4000	99.5 %	75-125	
			MSD	ug/L	4000	110 %	75-125	
			MSRPD	ug/L	800.4	10.0%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	5.000	99.6 %	90-110	
			CCB	ppm		0.0010	0.05	
			CCV	ppm	5.000	100 %	90-110	
			CCB	ppm		0.0002	0.05	
Magnesium	200.7	(SP 1401126-001)	MS	mg/L	12.00	108 %	75-125	
			MSD	mg/L	12.00	95.6 %	75-125	
			MSRPD	mg/L	800.4	1.6%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	25.00	97.6 %	90-110	
			CCB	ppm		0.004	1	
			CCV	ppm	25.00	97.6 %	90-110	
			CCB	ppm		0.003	1	
Manganese	200.7	(SP 1401126-001)	MS	ug/L	800.0	98.5 %	75-125	
			MSD	ug/L	800.0	109 %	75-125	
			MSRPD	ug/L	800.4	10.3%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	1.000	97.6 %	90-110	
			CCB	ppm		0.00004	0.01	
			CCV	ppm	1.000	98.0 %	90-110	
			CCB	ppm		0.00003	0.01	
Potassium	200.7	(SP 1401126-001)	MS	mg/L	12.00	116 %	75-125	
			MSD	mg/L	12.00	126 %	75-125	435
			MSRPD	mg/L	800.4	5.4%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	25.00	102 %	90-110	
			CCB	ppm		-0.06	1	
			CCV	ppm	25.00	101 %	90-110	
			CCB	ppm		-0.06	1	
Sodium	200.7	(SP 1401126-001)	MS	mg/L	12.00	131 %	<¼	
			MSD	mg/L	12.00	62.7 %	<¼	
			MSRPD	mg/L	800.4	2.7%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	25.00	97.3 %	90-110	
			CCB	ppm		0.29	1	
			CCV	ppm	25.00	97.1 %	90-110	

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February 6, 2014
County of Ventura

Lab ID : SP 1401126
Customer : 2-23045

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Sodium	200.7	02/03/14:201584AC	CCB	ppm		0.27	1	
Zinc	200.7		MS	ug/L	800.0	99.0 %	75-125	
		(SP 1401126-001)	MSD	ug/L	800.0	111 %	75-125	
			MSRPD	ug/L	800.4	11.4%	≤20.0	
	200.7	02/03/14:201584AC	CCV	ppm	1.000	99.1 %	90-110	
			CCB	ppm		-0.0012	0.02	
			CCV	ppm	1.000	99.7 %	90-110	
			CCB	ppm		-0.0008	0.02	
Aluminum	200.8		MS	ug/L	5.000	104 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	99.3 %	75-125	
			MSRPD	ug/L	5.000	0.25	≤10	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		-0.1	10	
			CCV	ppb	120.0	102 %	90-110	
			CCB	ppb		-0.2	10	
Antimony	200.8		MS	ug/L	5.000	120 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	118 %	75-125	
			MSRPD	ug/L	5.000	1.5%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	107 %	90-110	
			CCB	ppb		0.49	1	
			CCV	ppb	120.0	108 %	90-110	
			CCB	ppb		0.48	1	
Arsenic	200.8		MS	ug/L	5.000	128 %	75-125	435
		(SP 1401126-001)	MSD	ug/L	5.000	126 %	75-125	435
			MSRPD	ug/L	5.000	0.12	≤2	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	97.3 %	90-110	
			CCB	ppb		0.06	2	
			CCV	ppb	120.0	96.9 %	90-110	
			CCB	ppb		0.05	2	
Barium	200.8		MS	ug/L	5.000	101 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	109 %	75-125	
			MSRPD	ug/L	5.000	2.3%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	103 %	90-110	
			CCB	ppb		0.02	1	
			CCV	ppb	120.0	104 %	90-110	
			CCB	ppb		-0.02	1	
Beryllium	200.8		MS	ug/L	5.000	102 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	100 %	75-125	
			MSRPD	ug/L	5.000	1.3%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	94.3 %	90-110	
			CCB	ppb		-0.001	0.2	
			CCV	ppb	120.0	97.6 %	90-110	
			CCB	ppb		-0.004	0.2	
Cadmium	200.8		MS	ug/L	5.000	106 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	105 %	75-125	
			MSRPD	ug/L	5.000	0.5%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.014	0.2	
			CCV	ppb	120.0	101 %	90-110	
			CCB	ppb		0.01	0.2	
Chromium	200.8		MS	ug/L	5.000	93.0 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	90.5 %	75-125	
			MSRPD	ug/L	5.000	2.1%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	99.2 %	90-110	

February 6, 2014 Lab ID : SP 1401126
County of Ventura Customer : 2-23045

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Chromium	200.8	02/03/14:201605AC	CCB	ppb		0.01	1	
			CCV	ppb	120.0	98.2 %	90-110	
			CCB	ppb		-0.001	1	
Lead	200.8		MS	ug/L	5.000	111 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	108 %	75-125	
			MSRPD	ug/L	5.000	2.4%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.004	0.5	
			CCV	ppb	120.0	100 %	90-110	
			CCB	ppb		0.011	0.5	
Nickel	200.8		MS	ug/L	5.000	323 %	75-125	435
		(SP 1401126-001)	MSD	ug/L	5.000	166 %	75-125	435
			MSRPD	ug/L	5.000	60.7%	≤20	435
	200.8	02/03/14:201605AC	CCV	ppb	120.0	98.9 %	90-110	
			CCB	ppb		-0.002	1	
			CCV	ppb	120.0	97.8 %	90-110	
			CCB	ppb		-0.003	1	
Selenium	200.8		MS	ug/L	5.000	132 %	75-125	435
		(SP 1401126-001)	MSD	ug/L	5.000	130 %	75-125	435
			MSRPD	ug/L	5.000	0.3%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	96.2 %	90-110	
			CCB	ppb		0.08	1	
			CCV	ppb	120.0	97.5 %	90-110	
			CCB	ppb		0.15	1	
Silver	200.8		MS	ug/L	5.000	111 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	86.6 %	75-125	
			MSRPD	ug/L	5.000	1.2	≤1	435
	200.8	02/05/14:201705AC	ICV	ppb	120.0	102 %	90-110	
			ICB	ppb		-0.1	1	
			CCV	ppb	120.0	102 %	90-110	
			CCB	ppb		-0.65	1	
Thallium	200.8		MS	ug/L	5.000	110 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	111 %	75-125	
			MSRPD	ug/L	5.000	0.9%	≤20	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	99.3 %	90-110	
			CCB	ppb		0.011	0.2	
			CCV	ppb	120.0	99.5 %	90-110	
			CCB	ppb		0.018	0.2	
Vanadium	200.8		MS	ug/L	5.000	101 %	75-125	
		(SP 1401126-001)	MSD	ug/L	5.000	100 %	75-125	
			MSRPD	ug/L	5.000	0.065	≤2	
	200.8	02/03/14:201605AC	CCV	ppb	120.0	99.4 %	90-110	
			CCB	ppb		0.00	2	
			CCV	ppb	120.0	98.5 %	90-110	
			CCB	ppb		0.01	2	
Mercury	245.1	02/04/14:201245ac	Blank	ug/L		ND	<0.02	
			LCS	ug/L	0.2000	103 %	85-115	
			MS	ug/L	0.2000	97.6 %	75-125	
		(CC 1480366-001)	MSD	ug/L	0.2000	102 %	75-125	
			MSRPD	ug/L	0.2000	3.8%	≤20	
	245.1	02/04/14:201659AC	CCV	ppt	200.0	96.4 %	90-110	
			CCB	ppt		10.4	20	
			CCV	ppt	200.0	100 %	90-110	
			CCB	ppt		10.3	20	

February 6, 2014
County of Ventura

Lab ID : SP 1401126
Customer : 2-23045

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Alkalinity (as CaCO3)	2320B	(CH 1470832-001)	Dup	mg/L		0.1%	3.42	
	2320B	02/05/14:201756AMB	CCV	mg/L	234.9	94.4 %	90-110	
			CCV	mg/L	234.9	94.8 %	90-110	
Bicarbonate	2320B	(CH 1470832-001)	Dup	mg/L		0.1%	4.78	
Carbonate	2320B	(CH 1470832-001)	Dup	mg/L		0.0	10	
Hydroxide	2320B	(CH 1470832-001)	Dup	mg/L		0.0	10	
Conductivity	2510B	02/04/14:201630JMG	ICB	umhos/cm		0.07	1	
			ICV	umhos/cm	998.0	104 %	95-105	
			CCV	umhos/cm	998.0	104 %	95-105	
E. C.	2510B	02/04/14:201263jmg	Blank	umhos/cm		ND	<1	
		(CC 1480366-001)	Dup	umhos/cm		0.06%	10	
Solids, Total Dissolved	2540CE	02/04/14:201248CTL	Blank	mg/L		ND	<20	
			LCS	mg/L	998.4	102 %	90-110	
		(VI 1440303-001)	Dup	mg/L		2.4%	10.0	
Chloride	300.0	02/04/14:201308CHL	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	99.9 %	90-110	
			MS	mg/L	500.0	101 %	94-113	
		(VI 1440255-001)	MSD	mg/L	500.0	101 %	94-113	
			MSRPD	mg/L	100.0	0.03%	≤3	
			MS	mg/L	500.0	101 %	94-113	
		(CC 1480356-004)	MSD	mg/L	500.0	101 %	94-113	
			MSRPD	mg/L	100.0	0.5%	≤3	
	300.0	02/04/14:201747CHL	CCV	ppm	25.00	102 %	90-110	
			CCV	ppm	25.00	103 %	90-110	
Fluoride	300.0	02/04/14:201308CHL	Blank	mg/L		ND	<0.1	
			LCS	mg/L	2.500	98.1 %	90-110	
			MS	mg/L	50.00	98.5 %	93-112	
		(VI 1440255-001)	MSD	mg/L	50.00	101 %	93-112	
			MSRPD	mg/L	100.0	2.6%	≤5	
			MS	mg/L	50.00	99.0 %	93-112	
		(CC 1480356-004)	MSD	mg/L	50.00	99.1 %	93-112	
			MSRPD	mg/L	100.0	0.2%	≤5	
	300.0	02/04/14:201747CHL	CCV	ppm	2.500	100 %	90-110	
			CCV	ppm	2.500	100 %	90-110	
Nitrate	300.0	02/04/14:201308CHL	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	98.0 %	90-110	
			MS	mg/L	400.0	101 %	93-113	
		(VI 1440255-001)	MSD	mg/L	400.0	101 %	93-113	
			MSRPD	mg/L	100.0	0.06%	≤4	
			MS	mg/L	400.0	101 %	93-113	
		(CC 1480356-004)	MSD	mg/L	400.0	102 %	93-113	
			MSRPD	mg/L	100.0	0.8%	≤4	
	300.0	02/04/14:201747CHL	CCV	ppm	20.00	101 %	90-110	
			CCV	ppm	20.00	101 %	90-110	
Nitrite	300.0	02/04/14:201308CHL	Blank	mg/L		ND	<0.3	
			LCS	mg/L	15.00	101 %	90-110	
			MS	mg/L	300.0	97.9 %	87-115	
		(VI 1440255-001)	MSD	mg/L	300.0	98.3 %	87-115	
			MSRPD	mg/L	100.0	0.4%	≤9	
			MS	mg/L	300.0	98.6 %	87-115	
		(CC 1480356-004)	MSD	mg/L	300.0	99.5 %	87-115	
			MSRPD	mg/L	100.0	0.9%	≤9	
	300.0	02/04/14:201747CHL	CCV	ppm	15.00	97.5 %	90-110	
			CCV	ppm	15.00	101 %	90-110	

February 6, 2014
County of Ventura

Lab ID : SP 1401126
Customer : 2-23045

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Sulfate	300.0	02/04/14:201308CHL	Blank	mg/L		ND	<2	
			LCS	mg/L	50.00	99.7 %	90-110	
		(VI 1440255-001)	MS	mg/L	1000	101 %	92-113	
			MSD	mg/L	1000	101 %	92-113	
			MSRPD	mg/L	100.0	0.4%	≤4	
		(CC 1480356-004)	MS	mg/L	1000	100 %	92-113	
			MSD	mg/L	1000	102 %	92-113	
			MSRPD	mg/L	100.0	1.5%	≤4	
	300.0	02/04/14:201747CHL	CCV	ppm	50.00	103 %	90-110	
			CCV	ppm	50.00	105 %	90-110	
pH	4500-H B	(CC 1480370-001)	Dup	units		0.1%	4.80	
	4500HB	02/04/14:201639CJJ	CCV	units	8.000	100 %	95-105	
			CCV	units	8.000	101 %	95-105	
MBAS	5540C	02/04/14:201780AMM	CCB	mg/L		0.000	0.1	
			CCV	mg/L	10.00	100 %	99-101	
MBAS Screen	5540C	(SP 1401126-001)	MS	mg/L	10.10	100 %	90-110	
			MSD	mg/L	10.10	100 %	90-110	
			MSRPD	mg/L	10.10	0.0	≤0.1	

Definition

ICV	: Initial Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
ICB	: Initial Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
<¼	: High Sample Background - Spike concentration was less than one forth of the sample concentration.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

Explanation

435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Condition Upon Receipt (Attach to COC)

Sample Receipt at SP:

1. Number of ice chests/packages received: **OTC**
2. Shipper tracking numbers
3. Were samples received in a chilled condition? Temps: **ROI** / **19** / / / /
4. Surface water (SWTR) bact samples: A sample that has a temperature upon reciept of >10C, whether iced or not, should be flagged unless the time since sample collection has been less than two hours.
5. Do the number of bottles received agree with the COC? **Yes** No N/A
6. Verify sample date, time, sampler **Yes** No N/A
7. Were the samples received intact? (i.e. no broken bottles, leaks, etc.) **Yes** No
8. Were sample custody seals intact? Yes No **N/A**

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? **Yes** No
2. Did bottle labels correspond with the client's ID's? **Yes** No
3. Were all bottles requiring sample preservation properly preserved? **Yes** No N/A **FGL**
4. VOAs checked for Headspace? Yes No **N/A**
5. Were all analyses within holding times at time of reciept? Yes **No**
6. Have rush or project due dates been checked and accepted? **Yes** No N/A

Include a copy of the COC for lab delivery. (Bacti. Inorganics and Radio)

Sample Receipt, Login and Verification completed by:

Reviewed and Approved By **Shawn Peck** Digitally signed by Shawn Peck Title: Sample Receiving Date: 02/05/2014-09:38:19

Discrepency Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted: Scott Flammer Phone Number: (805) 207-6687
   Initiated By: srp Date: 2014-02-03
   Problem: **No Field pH Reading**

   Resolution: **Okay to run pH in lab past holding time per Scott Flammer**

2. Person Contacted: Phone Number:
   Initiated By: Date:
   Problem:

   Resolution:

(2023045)
County of Ventura
SP 1401126
SRP-02/05/2014-09:38:19

APPENDIX 2

WATER SYSTEM PROFILE REPORT

The Santa Clara River Valley groundwater basin encompasses the Mound, Santa Paula, Fillmore, and Piru groundwater basins. County (State Well # 02N22W0P01S) draws its water from the Mound Basin aquifer. There are approximately 143 water supply wells in the Mound Basin; 51 are active. They are used for industry, agriculture and human consumption (after treatment). [5] The City of Ventura is one of the users. They withdraw water from two wells located in the Government Center vicinity-adjacent to the Government Center near HWY 126. Victoria Well No. 2 was installed in 1995, and Mound Well No. 1, was installed in 1982 and is considered an inactive well at this time due to maintenance and water quality. The water the city produces is not potable but is sent to the City's water treatment plant where it is filtered and disinfected. Since 2010 the water has experienced quality degradation and projections for reliable supply may be lower. Contributors are the high total dissolved solids, nitrate and sulfur content. In spite of the water quality the aquifer is able to meet its demands.

Historical agricultural and private well uses have typically extracted about 2,000 AFY while the City's average annual extraction for the last ten years has been approximately 4,000 AFY. Therefore the City's current reliable water supply from the Mound Basin is 4,000 AFY. Of the 2,000 AFY. The Government Center County well uses approximately 47 AFY.

(The city wells are drilled to about 1,200 with pump settings averaging 360 feet. The County well produces at approximately 300 feet.)

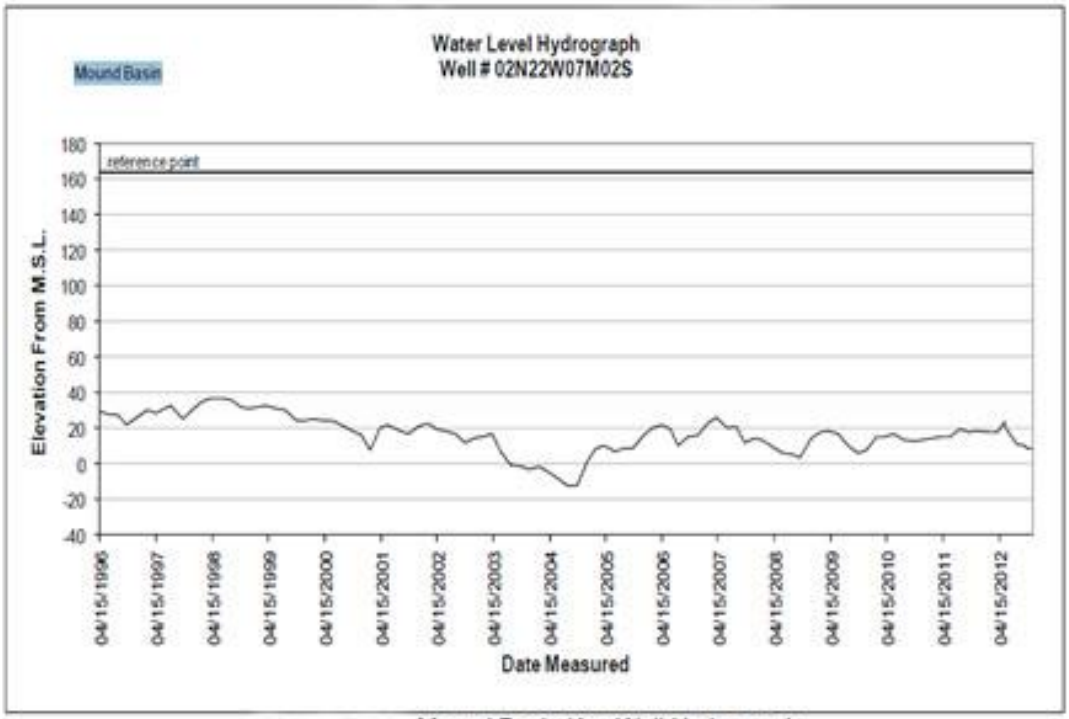
According to Environmental Health, "regarding drought impacts to the aquifer, we expect groundwater levels to lower, but we cannot predict how much. Water quality can change as well during drought."

Mound Subbasin underlies the northern part of the Ventura coastal plain in the western part of the Santa Clara River Valley Groundwater Basin. The subbasin is bounded on the north by the Santa Ynez and Topatopa Mountains and on the south by the Oak Ridge and Saticoy faults. The subbasin is bounded on the northeast by the Santa Paula Subbasin. The subbasin is bounded on the west by the Pacific Ocean. Ground surface elevations range from sea level in the west to about 400 feet above sea level in the east. The Santa Clara River and tributary creeks drain surface water westward into the Pacific Ocean. [6]

The Mound Groundwater Basin has historically provided water for overlying beneficial uses and satisfies agricultural, municipal, and industrial demands. Historical use has been documented to temporarily exceed the yield of the basin and result in water levels that have fallen below sea level and created a threat of seawater intrusion. To abate this threat the City abandoned its historical coastal well facilities

[5] Watershed Protection District, Groundwater Section, Annual Report 2012.
[6] http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/4-4.03.pdf

and located groundwater extraction near the center of the Mound Basin. A report (Fugro, 1997) compiled as part of a 1996 study of the basin indicated that historical data supports a basin yield of at least 8,000 AFY during drought conditions as long as pumpage is reduced during wet years to allow water levels to recover. The 1983 to 1996 average annual production from the Mound Basin was approximately 5,000 AFY (Fugro, 1997). While the resulting water levels in the basin over that time period reportedly ranged from significantly below sea level to a sufficient elevation about sea level to control seawater intrusion, the basin water level trend did not indicate an average production significantly above 5,000 AFY could be sustained without creating adverse conditions. [7]



Mound Basin Key Well Hydrograph.

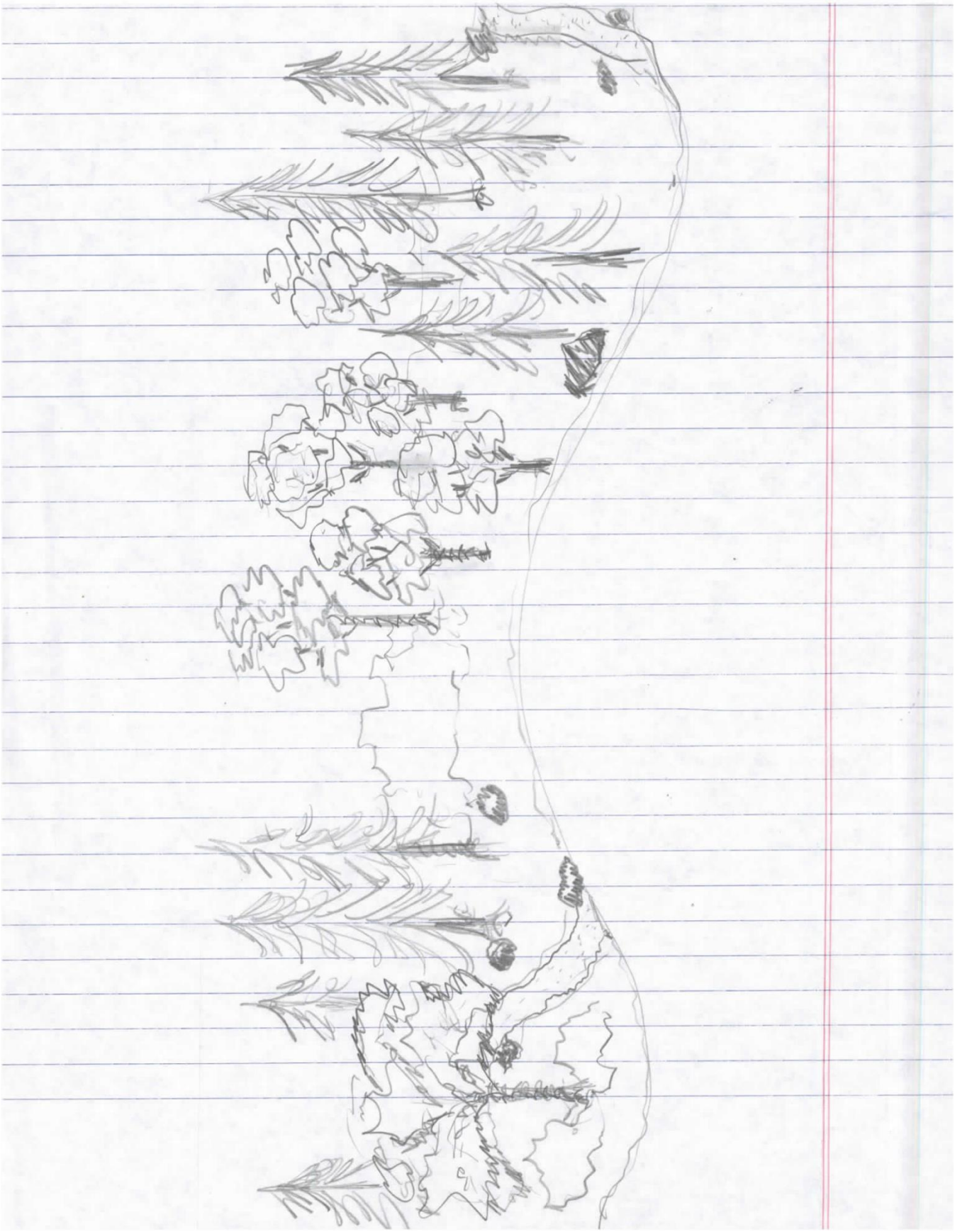
Figure 1-1

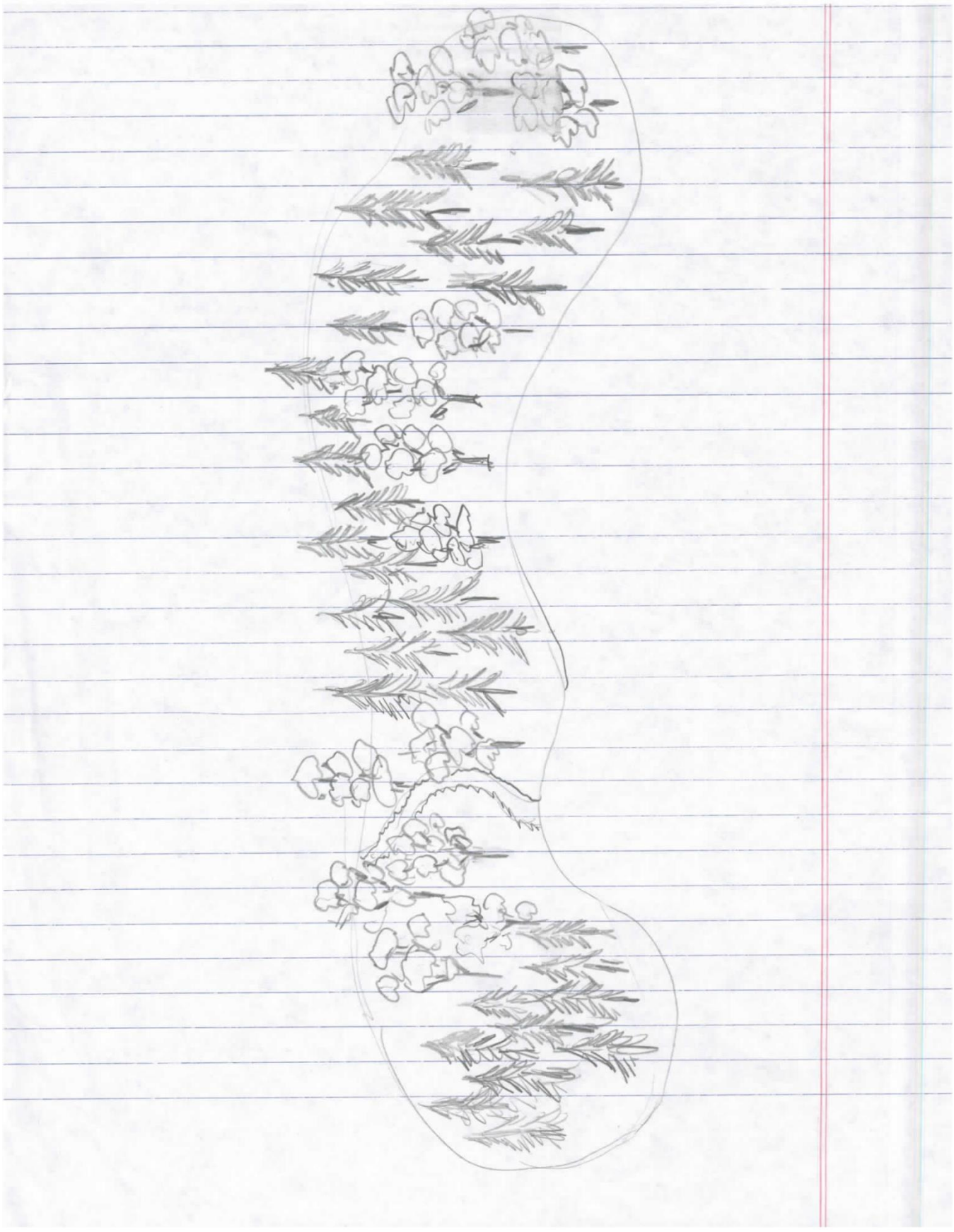
Recharge to the subbasin is provided by percolation of surface flow in the Santa Clara River, Sespe Creek, and minor tributary streams. Some of the surface flow in the Santa Clara River originates as release from Lake Piru and contains natural runoff from precipitation and imported State Water Project water. Subsurface flow from Piru Subbasin, direct percolation of precipitation, and percolation of irrigation waters provide recharge as well.

[7] Comprehensive Water Resources Report, 2013, prepared for City of Ventura Water, June 2013, pg 1-1 and 4-4

APPENDIX 3

The following designs were created by Scott Flammer, GSA Grounds Supervisor

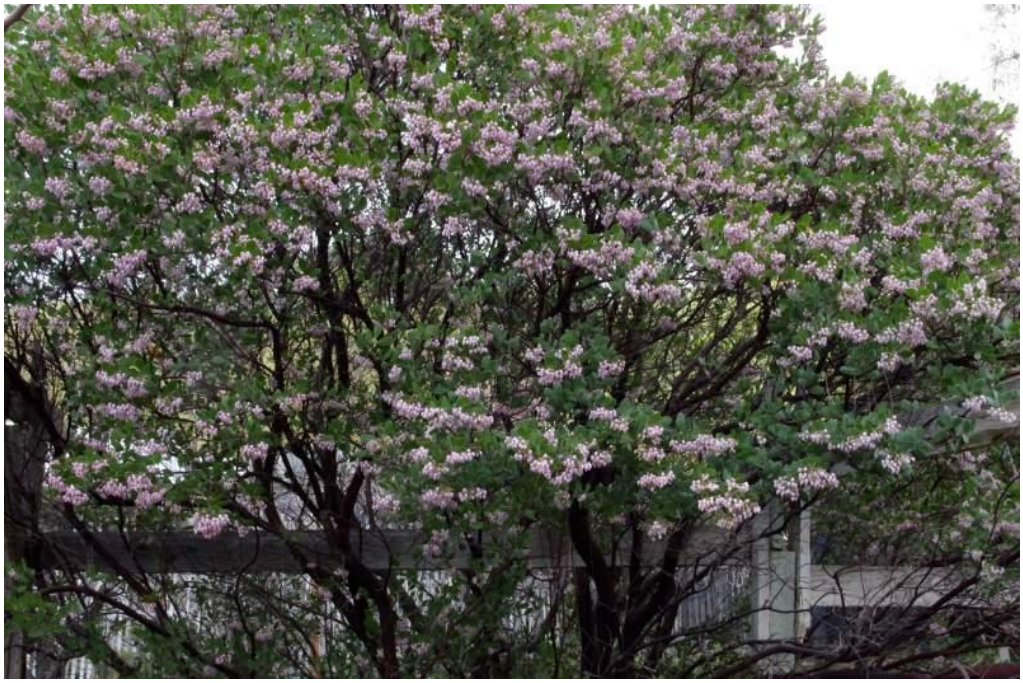




PLANT/TREE NAME	PROS	CONS
Manzanita (Arctostaphylos uva ursi)	Attractive flowers and fruit. Makes an excellent ground cover. Salt tolerant.	Slow growing. Must have an acidic soil.
California Lilac (Ceanothus spp.)	Can be used in sand or decomposed granite. Extremely drought tolerant.	Does not tolerate much water. Needs good drainage.
Pride of Madeira (Echium fastuosum)	Does best with poor, sand soil and just a little water.	
Gooseberry (Ribes sanguineum)	Easy to grow and tolerant of any conditions.	The currant fragrance of the foliage and wood is a feature of the plant. May not want it used near walking paths.
Sugar Bush (Rhus ovate)	Likes the sun and little or no water once it is established. Drought tolerant.	This plant is slow to grow.
Sage (Salvia spp.)	Adaptable. Well suited to dry conditions. Not prone to pests or disease.	Does not tolerate the shade or excessive water.
Society Garlic (Tulbaghia violacea)	Does best in full sun and sandy soil. Does not require much water during the winter or resting period. Established plants can survive extended droughts if they have to.	Requires frequent watering during the growing season, less frequently during flowering. Requires well drained soil. Too much watering can cause this plant to rot.
Trailing Lantana (Lantana sellowiana)	Has its best form and blooms prolifically in full sun, but tolerates light shade as well.	Water established plants weekly in the summer, but monitor watering carefully in the late summer. Trailing Lantana needs less water when humidity levels are high. Leaves may yellow between the veins when Trailing Lantana is overwatered.
Barberry (Berberis thunbergii atropurpurea)	Low maintenance, drought tolerant, slope / erosion control.	The species is banned from cultivation in some places, so check local control restrictions before planting.
Blue Eyed Grass (Sisyrinchium bellum)	Prefers sun to partial shade.	Requires well-drained but moist soil.
Mexican Feather Grass (Stipa tenuissima)	It's one of the good guys in the landscape because it's easy to grow, drought-tolerant and pest-free – a real low-maintenance gem subsisting on natural rainfall and not requiring pesticide sprays or fertilizers. Does best in full sun.	The grass may go dormant in dry sites in summer and begin growing again when temperatures cool and rains return in the fall.
Indian Hawthorn (Raphiolepsis indica)	This shrub is an excellent choice for the urban landscape. It can tolerate heat, drought, pollution, salt and humidity. Drought tolerant after it has become established.	Require well drained soil.

Common Yarrow (Achillea millefolium)	Does best in full sun. Plants do well in average garden soils and tolerate poor soils as long as drainage is good. Plants also tolerate hot, humid summers and drought.	Plant stems are weak and lodge easily. If grown ornamentally, plants can develop into a tangled mass of stems and foliage by mid to late summer if not cut back. May spread somewhat aggressively.
Creeping Rosemary (Rosmarinus officinalus Prostratus)	This plant is drought tolerant once it is established. It has a pleasant odor and continues to look good even in the winter. Edible.	Must have a well-drained soil and does not do well in excessive amounts of humidity. Plant may fail in heavy clay soil.
Rock Cotoneaster (Cotoneaster horizontalis Lowfast)	These plants are tough and adaptable and once established they require little care.	Grow rock cotoneaster in moist but well-drained, loamy soil. Although they are drought-tolerant shrubs once established, it's best not to abuse their "tolerance." Cotoneaster plants will profit from a touch of afternoon shade, even though they are considered plants for full-sun.
Toyon Heteromeles arbutofolia	California native, drought tolerant.	Subject to fire blight.
Island Bush Snapdragon Galvezia speciosa	California Native, drought tolerant, showy flowers, attracts hummingbirds.	
Trees		
California Sycamore Platanus racemosa	California native, tolerates heat, wind. Smooth, graceful branches. 5 – 36" dbh	Subject to antheracnose, roots can uplift pavement.
Coast Live Oak Quercus agrifolia	California native, drought tolerant and is picturesque. 13-36" dbh	Susceptible to sudden oak death.
Alleppo Pine Pinus halepensis	Thrives in heat, wind and poor soil, drought tolerant. 15 – 24" dbh	Susceptible to bark beetle when stressed.
California Bay Umbellularia californica	California native, tolerates aridity and will grow in deep shade. 3 – 24" dbh	Susceptible to aphids, scale and sooty mold.
Strawberry Tree Arbutus unedo	Thrives in wide variety of climates and soils, wind. Attractive bark, flowers, fruit and attracts birds. 3 - 24" dbh	Fruit can be messy.

Holly Leaf Cherry Prunus ilicifolia	Can take extreme drought and is resistant to oak root fungus. Native to California. 13 – 24” dbh	Fruit can cause stains.
Western Redbud Cercis occidentalis	Native to California, resists oak root fungus and is drought tolerant. 15 – 15” dbh	Blooms best where there are cold winters.
Flannel Bush Fremontodendron californicum	California native, drought tolerant and outstanding bloom. 15 – 15” dbh	Seed capsules can irritate the skin.



MANZANITA – ARCTOSTAPHLOS UVA URSI

CALIFORNIA LILAC – CEANOTHUS SPP.

PRIDE OF MADEIRA – ECHIUM FASTUOSUM

GOOSEBERRY – RIBES SANGUINEUM

SUGAR BUSH – RHUS OVATE

SAGE – SALVIA SPP.

MYOPORUM – MYOPORUM PARVIFOLIUM

TAM JUNIPER – JUNIPERUS SABINA TAMARISCIFOLIA

RED APPLE – APTENIA CORDIFOLIA

SOCIETY GARLIC – TULBAGHIA VIOLACEA

TRAILING LANTANA – LANTANA SELLOWIANA

BARBERRY – BERBERIS THUNBERGII ATROPURPUREA

BLUE EYED GRASS – SISYRINCHIUM BELLUM

MEXICAN FEATHER GRASS – STIPA TENUISSIMA

INDIAN HAWTHORN – RAPHIOLEPIS INDICA

COMMON YARROW – ACHILLEA MILLEFOLIUM

CREEPING ROSEMARY – ROSMARINUS OFFICINALUS PROSTRATUS

ROCK COTONEASTER – COTONEASTER HORIZONTALIS LOWFAST

Toyon – Heteromeles arbutofolia

Island Bush Snapdragon – Galvezia speciosa

California Sycamore – Platanus racemosa

Coast Live Oak – Quercus agrifolia

Alleppo Pine – Pinus halepensis

California Bay – Umbellularia californica

Strawberry Tree – Arbutus unedo

Holly Leaf Cherry – Prunus ilicifolia

Western Redbud – Cercis occidentalis

Flannel Bush – Fremontodendron californicum