



Malibu Civic Center Wastewater Treatment Facility

Fourth Quarter 2016 Groundwater + Surface Water Monitoring Report



Rincon Consultants Inc.
January 2017

Submitted to:

City of Malibu
23825 Stuart Ranch Road
Malibu, CA 90401



Rincon Consultants, Inc.

180 North Ashwood Avenue
Ventura, California 93003

805 644 4455

FAX 644 4240

info@rinconconsultants.com
www.rinconconsultants.com

January 26, 2017
Project 15-01587

Craig George
Environmental Sustainability Department Director
Building Official
City of Malibu
23825 Stuart Ranch Road
Malibu, CA 90401

Subject: Fourth Quarter 2016 Baseline Groundwater and Surface Water Monitoring Report, Malibu Civic Center Wastewater Treatment Facility - City of Malibu, California

Dear Mr. George:

Rincon Consultants, Inc. has prepared the Fourth Quarter 2016 Baseline Groundwater and Surface Water Monitoring Report for the Malibu Civic Center Wastewater Treatment Facility located in Malibu, California. The objective of the study is to develop baseline groundwater and surface water quality conditions prior to the operation of the Wastewater Treatment Facility. Once the Wastewater Treatment Facility is operating, the baseline water quality conditions will be used to identify any potential impacts as a result of land disposal of treated wastewater via injection and landscape irrigation or percolation on the receiving water aquifers, Santa Monica Bay, Malibu Creek, and Malibu Lagoon.

Please contact us with any questions you may have regarding the results of the Fourth Quarter 2016 Baseline Groundwater and Surface Water Monitoring Report.

Sincerely,
RINCON CONSULTANTS, INC.

A handwritten signature in blue ink, appearing to read "Peter Shellenbarger".

Peter Shellenbarger, MESM
Environmental Scientist

A handwritten signature in blue ink, appearing to read "Walt Hamann".
Walt Hamann, PG, CHG, CEG, QSD/P
Vice President

Torin Snyder, CHG, QSD/P
Senior Hydrogeologist

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."

Executed on the 27 day of JANUARY at MALIBU
2017



Signature

ESD DIRECTOR Title



TABLE OF CONTENTS

1.0	Introduction	1
2.0	Background	1
3.0	Geologic and Hydrogeologic Setting	3
3.1	Hydrology	3
3.2	Geology.....	3
3.3	Hydrogeology.....	3
4.0	Activities Completed During the Fourth Quarter of 2016	4
5.0	Groundwater Elevations and Gradients.....	4
5.1	Shallow Zone	4
5.2	Deep Zone	4
5.3	Winter Canyon	5
6.0	Water Quality Sampling and Analysis	5
6.1	Surface Water Sampling Methodology	5
6.2	Surface Water Analytical Laboratory Analysis.....	5
6.2.1	Total Coliform.....	5
6.2.2	Fecal Coliform.....	6
6.2.3	Nitrogen.....	6
6.2.4	Total Phosphorous	7
6.2.5	Analytical Laboratory QA/QC.....	7
7.0	Scheduled Activities for the First Quarter of 2017	8
8.0	Summary of Monitoring Activities.....	8
10.0	Limitations	9
11.0	References	10

Tables

- Table 1 - Groundwater Elevations
- Table 2 - Surface Water Analysis Matrix
- Table 3 - Surface Water Analytical Results

Figures

- Figure 1 - Vicinity Map
- Figure 2 - Site Map
- Figure 3 - Shallow Groundwater Elevations October 2016
- Figure 4 - Shallow Groundwater Elevations November 2016



Figure 5 - Shallow Groundwater Elevations December 2016
Figure 6 - The Nitrogen Cycle

Appendices

Appendix A - Groundwater and Surface Water Field Sheets
Appendix B - Laboratory Analytical Reports



1.0 INTRODUCTION

This report presents the results of the Fourth Quarter 2016 Baseline Groundwater and Surface Water Monitoring event for the Malibu Civic Center Wastewater Treatment Facility located in the City of Malibu, California (Figure 1). The objective of the work program is to implement and manage a basin-wide groundwater and surface water monitoring and reporting program. The monitoring program has been designed to identify potential impacts as a result of land disposal of treated wastewater via injection and landscape irrigation or percolation on the receiving water quality of the local groundwater aquifers, Santa Monica Bay, Malibu Creek, and Malibu Lagoon.

This report was prepared by Rincon Consultants, Inc. (Rincon) and presents the geologic and hydrogeologic setting, groundwater elevations and gradient, surface water sampling methodologies, water quality data results, and our conclusions.

2.0 BACKGROUND

On-site wastewater disposal systems (OWDS) have allegedly contributed to the non-point source pollution of Malibu Creek and Lagoon located in the Civic Center Area of the City of Malibu. As a result of regulatory actions taken by the Los Angeles Regional Water Quality Control Board (LARWQCB) and the State Water Resources Control Board (SWRCB) to prohibit discharges from OWDS in the Civic Center area, the City of Malibu has designed and begun constructing a new wastewater treatment facility.

To establish baseline groundwater and surface water quality conditions prior to operation and discharge of treated wastewater, the LARWQCB requires basin-wide, baseline groundwater and surface water monitoring. The water quality monitoring program is driven by several factors:

- Timelines established through regulatory action
- Proposed programs to fulfill anticipated future regulatory requirements associated with the development of the Civic Center Wastewater Treatment Facility (CCWTF)
- The distribution of Title 22 Recycled Water in the Prohibition area
- Protection of the Malibu Valley Groundwater Basin, Malibu Creek, Malibu Lagoon, and the near shore environment of Santa Monica Bay.

At this time, the basin-wide monitoring program consists of five water quality monitoring tasks that occur in the Civic Center area of the City of Malibu. All five monitoring tasks have been designed to build upon one another to provide a comprehensive basin-wide groundwater and surface water monitoring program. Below is a general description of each task and a discussion of key objectives.

– *Task I – Baseline Groundwater and Surface Water Quality Monitoring of the Civic Center Area*

The baseline groundwater and surface water quality monitoring task involves monitoring groundwater in nine shallow and deep groundwater wells and monitoring surface water quality at ten locations. The objective of this task's monitoring is to develop baseline, ambient shallow and deep groundwater and surface water conditions prior to the implementation of the CCWTF, as required by the Monitoring and Reporting Program (MRP) No. CI 10042 issued by the LARWQCB (LARWQCB 2015).



– *Task II – Long-Term Monitoring of Groundwater and Surface Water Quality Monitoring of the Civic Center Area*

The long-term groundwater and surface water quality monitoring task involves monitoring groundwater in nine shallow and deep groundwater wells and monitoring surface water quality at ten locations. The objective of long-term monitoring is to identify impacts that land disposal of recycled water, via injection and landscape irrigation or percolation, will have on the water quality of the receiving groundwater aquifers, Santa Monica Bay, Malibu Creek, and Malibu Lagoon. The nine groundwater monitoring wells and ten surface water sampling locations identified in Task II will be sampled on a quarterly basis once CCWTF operations commence. This sampling is required by the MRP No. CI 10042 issued by the LARWQCB (LARWQCB 2015).

– *Task III – Salt and Nutrient Management Plan Monitoring Program*

The Salt and Nutrient Management Plan (SNMP) monitoring program branches off from the baseline and long-term groundwater and surface water monitoring programs described above (Tasks I and II). Task III involves performing semi-annual groundwater monitoring at 16 groundwater monitoring wells (mix of shallow and deep) located in the Civic Center area of the City and in a small area in the unincorporated portion of Los Angeles County. The objective of the SNMP is to monitor potential impacts that recycled water, introduced through irrigation and injection, will have on the Malibu Groundwater Basin. The SNMP will also provide data to assess the various phases of the CCWTF implementation during the time that the collection system and treatment plant connections increase, and as OWDS-related discharges cease (RMC Water 2015a).

– *Task IV – Memorandum of Understanding Compliance Monitoring*

Compliance with the Memorandum of Understanding (MOU) the City has with the LARWQCB corresponds with baseline and long term groundwater and surface water monitoring programs described in Tasks I through III above. Task IV involves performing semi-annual monitoring at 14 groundwater wells located in the City's Civic Center area. The objective of the MOU is to monitor for potential impacts to the Shallow Alluvium as a result of CCTWF implementation (LARWQCB 2014).

– *Task V – Civic Center Groundwater Elevation Monitoring Program*

The groundwater elevation monitoring program has been designed to appraise the groundwater elevations in the Malibu Groundwater Basin and in Winter Canyon. The objective of this task is to provide a better understanding of the groundwater elevation conditions in the Civic Center Area, including elevation trends related to precipitation, tidal, and lagoon influences (LARWQCB 2015).



3.0 GEOLOGIC AND HYDROGEOLOGIC SETTING

3.1 HYDROLOGY

The project lies in the Los Angeles hydrologic region, as defined by the LARWQCB. The Los Angeles hydrologic region encompasses all coastal drainages flowing to the Pacific Ocean between Rincon Point and the eastern Los Angeles County line. The study area covers two watersheds: the Malibu Creek and Winter Canyon Creek watersheds. The majority of the study area addressed in this report is located within the 109-square-mile Malibu Creek watershed, which is the second largest watershed draining to the Santa Monica Bay. The Malibu Creek watershed contains mostly undeveloped mountain areas, large-acreage residential properties, and many natural stream reaches (Los Angeles RWQCB 2011). Malibu Lagoon is located at the terminus of the Malibu Creek watershed. Malibu Lagoon is a brackish estuary of approximately 13 acres, however is one of only two remaining coastal marshes in Los Angeles County.

3.2 GEOLOGY

The study area is located within the Santa Monica Mountains in the northwestern corner of the Los Angeles basin. The study area lies at the juncture of the Peninsular Ranges geomorphic province, consisting of a northwest-oriented structural grain, and the Transverse Ranges geomorphic province, which features a predominantly east-west-oriented structural grain.

The 45-mile-long Santa Monica Mountains range is part of the southernmost portion of the western Transverse Ranges province. It forms an east-west range of low mountains along the southern California Coast from the Oxnard Plain to Los Angeles. The Santa Monica Mountain range is characterized by long, south draining canyons on its south flank and short, north draining canyons on its north flank. The Malibu Canyon and Winter Canyon are two significant canyons within the study area that drain to the south.

3.3 HYDROGEOLOGY

The Malibu Valley Groundwater Basin (DWR groundwater basin no. 4-22) is a small alluvial basin, approximately 613 acres in size. The groundwater basin is bounded by the Pacific Ocean on the south, and by the Santa Monica Mountains, composed of non-water-bearing Tertiary age rocks to the north, east, and west.

Water bearing geologic formations in the Malibu Valley Groundwater Basin are comprised of Holocene alluvium, consisting of clays, silts, sands, and gravels, overlying impermeable bedrock. The unconsolidated alluvium in the Civic Center area by Malibu Creek and other small drainages is estimated to range in thickness from a thin layer near the valley walls to around 175 feet in the central part of the main body of the alluvium. The alluvium can be subdivided into three categories or zones: 1) a shallow zone of permeable alluvial sediments, 2) underlain by a sequence of fine-grained estuarine deposits, and 3) and underlying coarse-grained stratum commonly referred to as the "Civic Center Gravels" (GeoSoils 1989, Leighton 1994, ECI 200, Ambrose and Orme 2000, Fugro West, Inc. 2005, Geosyntec Consultants 2007). Depth to groundwater in the alluvium is typically 5 to 13 feet below grade and is deeper in the upland canyon areas.



4.0 ACTIVITIES COMPLETED DURING THE FOURTH QUARTER OF 2016

The following activities were completed during the Fourth Quarter of 2016:

- Rincon measured depth to water in groundwater monitoring wells on October 21, 2016, November 18, 2016, and December 19, 2016.
- Rincon collected and analyzed surface water samples for WDR/MRP compliance (Task I).

5.0 GROUNDWATER ELEVATIONS AND GRADIENTS

Rincon measured the depth to water in 46 groundwater monitoring wells using an electronic water level indicator on October 21, 2016, November 18, 2016, and December 19, 2016 (Table 1 and Appendix A). Of the 46 groundwater monitoring wells, seven of the wells do not have elevation data for the top of well casing. Therefore, groundwater elevations could not be calculated in these seven groundwater wells. MCWP-MW10 was not accessible December 19, 2016 due to State Parks maintenance taking place in the area. MCWP-MW05 was not accessible during the Fourth Quarter of 2016 due to conveyance lines and pump station installation for the CCWTF.

5.1 SHALLOW ZONE

The groundwater elevations ranged from 1.31 feet above mean sea level (amsl) in groundwater monitoring well CCPE to 17.86 feet amsl in groundwater monitoring well EC-RC-MW01 (Table 1). Groundwater elevations fluctuated during the Fourth Quarter of 2016 when comparing monthly groundwater elevations between October and December 2016. Groundwater elevation decreased a maximum of 6.02 feet amsl in groundwater monitoring well CCPE and increased a maximum 2.01 feet amsl in groundwater monitoring well MBCMW-7. Groundwater elevations decreased a minimum of 0.03 feet amsl in groundwater monitoring wells MBCMW-8. Groundwater elevations increased a minimum of 0.03 feet amsl in groundwater monitoring wells MCWP-MW07S. The predominant direction of groundwater flow ranged from southeast to south, towards the coastline. Elevation data and flow direction are depicted in Figures 3 through 5.

The shallow groundwater gradient was 0.0037 feet/foot, 0.0022 feet/foot, and 0.0035 feet/foot (calculated using groundwater monitoring wells SMBRP-9, SMBRP-12, and SMBRP-2) during the October, November, and December monitoring events, respectively.

5.2 DEEP ZONE

The groundwater elevations ranged from 4.40 feet amsl in groundwater monitoring well MCWP-MW07D to 10.62 feet amsl in groundwater monitoring well MCWP-MW09 (Table 1). Groundwater elevation decreased a maximum of 0.71 feet amsl in groundwater monitoring well MCWP-MW03 and increased a maximum 1.3 feet amsl in groundwater monitoring well MCWP-MW03 when comparing monthly groundwater elevations between October and December 2016.



5.3 WINTER CANYON

The groundwater elevations ranged from 9.64 feet amsl in groundwater monitoring well SMBRP-11 to 50.72 feet amsl in groundwater monitoring well LAMW-5S (Table 1). Groundwater elevation decreased a maximum of 0.24 feet amsl in groundwater monitoring well SMBRP-11 and increased a maximum 1.08 feet amsl in groundwater monitoring well LAMW-5S when comparing monthly groundwater elevations between October and December 2016.

6.0 WATER QUALITY SAMPLING AND ANALYSIS

6.1 SURFACE WATER SAMPLING METHODOLOGY

On December 20, 2016 a total of ten surface water samples were collected. Six surface water samples were collected from the Malibu Lagoon and Creek and four ocean water samples were collected from the near shore area along Malibu Road. Surface water samples from nearshore were collected from each location at a depth of approximately 3-6 inches (ankle deep). Surface water samples from Malibu Lagoon and Creek were collected from each location at a depth of approximately twelve inches below the surface of the water. All surface water samples were collected up-current of the sampling person's body to minimize the potential for contaminating the surface water sample with bacteria that may originate from field personnel. Surface water samples were collected in a field sampling container and then transferred into preserved and non-preserved containers supplied by Fruit Growers Laboratory, Inc. (FGL) located in Santa Paula, California. The containers were capped, labeled, placed in Ziploc bags, and stored on ice in a cooler pending delivery to FGL. The surface water samples were analyzed for total and fecal coliform, total dissolved solids (TDS), phosphorous, nitrate (as nitrogen), nitrite (as nitrogen), ammonia, organic nitrogen, and total Kjeldahl nitrogen (TKN). All surface water monitoring locations and corresponding laboratory analysis are shown in the Surface Water Analysis Matrix (Table 2).

6.2 SURFACE WATER ANALYTICAL LABORATORY ANALYSIS

The surface water samples collected during the Fourth Quarter 2016 sampling event were analyzed by FGL. The laboratory analytical results for the Fourth Quarter monitoring event included the constituents listed in Table 3. Laboratory reports are included as Appendix B of this report.

6.2.1 Total Coliform

During the Fourth Quarter 2016 monitoring event, total coliform concentrations in the near shore surface water ranged from less than 1.8 Most Probable Number per 100 milliliters (MPN/100 mL) at N-002 to 79 MPN/100 mL at N-003 with an average concentration of 45.3 MPN/100 mL. Total coliform concentrations in the surface water of Malibu Lagoon and Creek ranged from 130 MPN/100 mL at L-006 to >1600 MPN/100 mL at L-001 and L-002 with an average concentration of 310 MPN/100 mL.



6.2.2 Fecal Coliform

During the Fourth Quarter 2016 monitoring event fecal coliform concentrations in the near shore surface water ranged from less than 1.8 MPN/100 mL at N-002 and N-004 to 79 MPN/100 mL at N-003 with an average concentration of 64.0 MPN/100 mL. Fecal coliform concentrations in the Malibu Lagoon and Creek surface water ranged from 14 MPN/100 mL at L-006 to 240 MPN/100 mL at L-002 with an average concentration of 77 MPN/100 mL.

6.2.3 Nitrogen

6.2.3.1 Nitrate as Nitrogen.

Nitrate as nitrogen concentrations in all surface water samples collected at the near shore sampling locations were less than or equal to 0.1 milligrams per liter (mg/L), the analytical practical quantification limit (reporting limit).

Nitrate as nitrogen concentrations in surface water samples collected at Malibu Lagoon and Creek sampling locations ranged from 0.3 milligrams per liter (mg/L) at L-006 to 3.2 mg/L at L-001.

6.2.3.2 Other Forms of Nitrogen

All nitrite as nitrogen concentrations in surface water samples collected at the near shore and Malibu Lagoon and Creek sampling locations were not detected above the reporting limit of 0.1 mg/L.

Ammonia (NH_3^+) is the primary form of nitrogen in OWDS effluent, and it is converted to nitrate during the leaching process through the vadose zone (Figure 6). All ammonia concentrations in surface water samples collected at the near shore and the Malibu Lagoon and Creek sampling locations during the Fourth Quarter 2016 monitoring event were not detected above the reporting limit of 0.2 mg/L.

TKN concentrations in surface water samples collected at the near shore and Malibu Creek and Lagoon sampling locations during the Fourth Quarter 2016 monitoring event were not detected above the reporting limit of 0.5 mg/L.

Organic nitrogen concentrations in surface water samples collected at the near shore and Malibu Creek and Lagoon sampling locations during the Fourth Quarter 2016 monitoring event were not detected above the reporting limit of 0.5 mg/L.



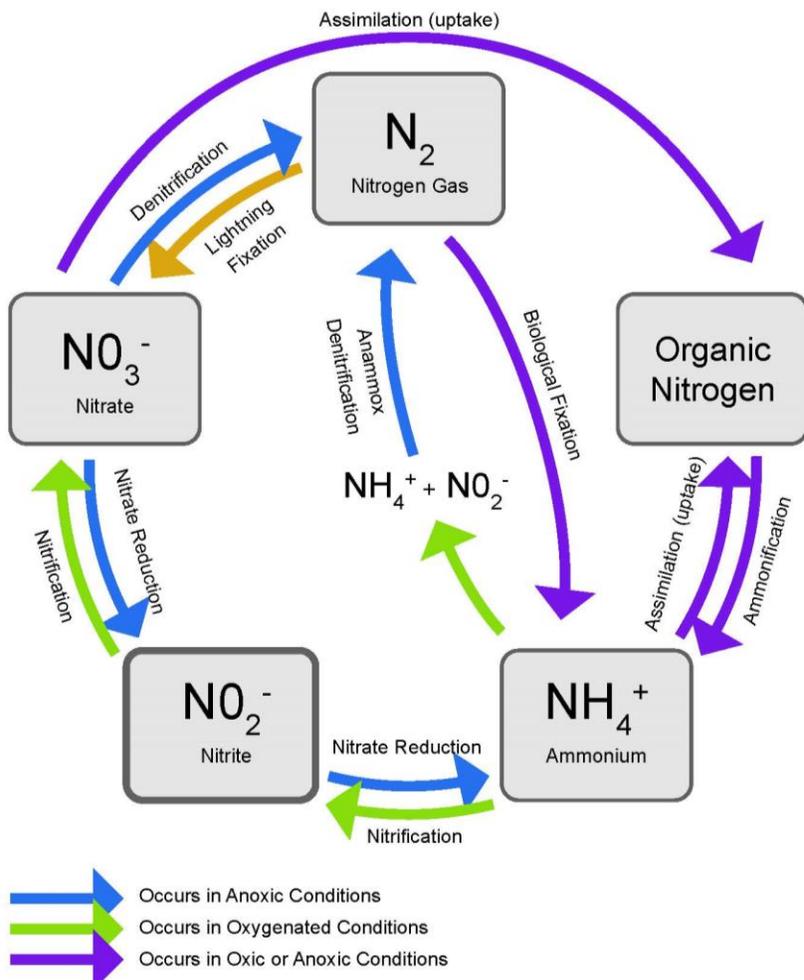


Figure 6. The Nitrogen Cycle

6.2.4 Total Phosphorus

Total phosphorus concentrations detected in surface water samples collected at the near shore sampling locations during the Fourth Quarter 2016 sampling event ranged from 1.010 mg/L at sampling location N-001 to 1.350 mg/L at sampling location N-002 with an average concentration of 1.240 mg/L. Total phosphorus concentrations detected in surface water samples collected at Malibu Lagoon and Creek during the Fourth Quarter 2016 sampling event ranged from 0.287 mg/L at L-006 to 0.984 mg/L at L-003 with an average concentration of 0.754 mg/L.

6.2.5 Analytical Laboratory QA/QC

FGL performed QA/QC measures including the recovery of surrogates. FGL followed all QA procedures per method requirements. Any exceedances are indicated in the Case Narrative of the analytical laboratory report. The DQF column of the analytical reports also has the QC flags; definitions for the QC flags are below the analytical tables.



7.0 SCHEDULED ACTIVITIES FOR THE FIRST QUARTER OF 2017

The following activities will be completed during the First Quarter of 2017:

- Prepare and submit the Fourth Quarter 2016 Groundwater and Surface Water Monitoring Report to the LARWQCB.
- Rincon will collect and analyze surface water samples for MRP compliance (Task I).
- Rincon will collect and analyze groundwater samples for SNMP compliance (Task III).
- Rincon will collect and analyze groundwater samples for MOU compliance (Task IV).
- Rincon will measure depth to water in the groundwater monitoring wells in January, February, and March (Task V).

8.0 SUMMARY OF MONITORING ACTIVITIES

Groundwater elevations fluctuated several feet between October, November, and December groundwater monitoring events. Shallow groundwater generally flows southeast to south, towards the coastline.

During the Fourth Quarter 2016 monitoring event, total coliform concentrations in the near shore surface water ranged from less than 1.8 MPN/100 mL at N-002 to 79 MPN/100 mL at N-003 with an average concentration of 45.3 MPN/100 mL. Total coliform concentrations in the surface water of Malibu Lagoon and Creek ranged from 130 MPN/100 mL at L-006 to >1600 MPN/100 mL at L-001 and L-002 with an average concentration of 310 MPN/100 mL.

During the Fourth Quarter 2016 monitoring event fecal coliform concentrations in the near shore surface water ranged from less than 1.8 MPN/100 mL at N-002 and N-004 to 79 MPN/100 mL at N-003 with an average concentration of 64.0 MPN/100 mL. Fecal coliform concentrations in the Malibu Lagoon and Creek surface water ranged from 14 MPN/100 mL at L-006 to 240 MPN/100 mL at L-002 with an average concentration of 77 MPN/100 mL.

Nitrate as nitrogen concentrations in all surface water samples collected at the near shore sampling locations were less than or equal to 0.1 milligrams per liter (mg/L), the analytical practical quantification limit (reporting limit).

Nitrate as nitrogen concentrations in surface water samples collected at Malibu Lagoon and Creek sampling locations ranged from 0.3 milligrams per liter (mg/L) at L-006 to 3.2 mg/L at L-001.



10.0 LIMITATIONS

This report has been prepared for and is intended for the exclusive use of the City of Malibu. The contents of this report should not be relied upon by any other party without the written consent of Rincon Consultants, Inc.

Our conclusions regarding the site are based on observations of existing site conditions, our interpretation of site usage information, and the results of a limited subsurface sampling and chemical testing program. The concentrations of contaminants measured at any given location may not be representative of conditions at other locations intermediate to the locations sampled. Furthermore, conditions may change at any particular location as a function of time in response to natural conditions, chemical reactions, and other events. Conclusions regarding the condition of the site do not represent a warranty that all areas within the site are similar to those sampled.



11.0 REFERENCES

- Ambrose, Richard F. and Anthony R. Orme. 2000. Lower Malibu Creek and Lagoon Resource Enhancement and Management: Final Report to the California Coastal Conservancy.
- Fugro West, Inc. 2005. A Steady-State Groundwater Flow Model for the Proposed Malibu-Lapaz Ranch Development. Prepared for Sterling Capital.
- GeoSoils. 1989. Response to County of Los Angeles Geologic Review of 18.4 Acre Parcel NW of Cross Creek Road and Civic Center Way. April 17.
- Geosyntec Consultants. 2007. Geotechnical Site Exploration and Interpretation of Subsurface Conditions, Malibu Legacy Park Site, Malibu, California. Report prepared for RMC Water and Environment. July 30.
- Leighton and Associates, Inc. 1994. Report for Geotechnical Studies for Planning Purposes in the Civic Center Area, City of Malibu, California. Volumes I and II.
- Los Angeles Regional Water Quality Control Board. 2011. State of the Watershed, Report on Water Quality, the Santa Monica Bay Watershed Management Area. Second Edition. November.
- Los Angeles Regional Water Quality Control Board. 2014. Memorandum of Understanding Between City of Malibu and the Regional Water Quality Control Board, Los Angeles Region and State Water Resources Control Board Regarding Phased Implementation of Basin Plan Amendment Prohibiting On-Site Wastewater Disposal Systems in the Malibu Civic Center Area.
- Los Angeles Regional Water Quality Control Board. 2015. Waste Discharge Requirements / Water Recycling Requirements for Malibu Civic Center Wastewater Treatment Facility - Phase I & II.
- RMC Water. 2015a. Draft Salt Nutrient and Management Plan Malibu Valley Groundwater Basin.
- RMC Water. 2015b. Draft Groundwater Management Plan Malibu Valley Groundwater Basin.



Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
C-1	8/24/2015	11.47	N/A	-
	9/21/2015		N/A	-
	10/20/2015		N/A	-
	11/16/2015		5.07	6.40
	12/14/2015		4.12	7.35
	1/14/2016		6.65	4.82
	2/16/2016		6.65	4.82
	3/14/2016		6.80	4.67
	4/25/2016		5.72	5.75
	5/16/2016		4.59	6.88
	6/17/2016		4.72	6.75
	7/20/2016		5.32	6.15
	8/20/2016		5.42	6.05
	9/19/2016		5.47	6.00
	10/21/2016		5.64	5.83
	11/18/2016		4.71	6.76
12/19/2016	6.75	4.72		
C-2	8/24/2015	11.19	5.11	6.08
	9/21/2015		4.92	6.27
	10/20/2015		5.18	6.01
	11/16/2015		4.96	6.23
	12/14/2015		3.93	7.26
	1/14/2016		6.44	4.75
	2/16/2016		6.34	4.85
	3/14/2016		6.50	4.69
	4/25/2016		5.54	5.65
	5/16/2016		4.49	6.70
	6/17/2016		4.62	6.57
	7/20/2016		5.16	6.03
	8/20/2016		5.25	5.94
	9/19/2016		5.21	5.98
	10/21/2016		5.46	5.73
	11/18/2016		4.48	6.71
12/19/2016	6.74	4.45		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
CCPE	8/24/2015	12.935	5.76	7.18
	9/21/2015		5.61	7.33
	10/20/2015		5.87	7.07
	11/16/2015		5.79	7.15
	12/14/2015		4.52	8.42
	1/14/2016		7.95	4.99
	2/16/2016		8.27	4.67
	3/14/2016		8.35	4.59
	4/25/2016		7.13	5.81
	5/16/2016		5.72	7.22
	6/17/2016		6.54	6.40
	7/20/2016		6.09	6.85
	8/20/2016		6.43	6.51
	9/19/2016		6.80	6.14
	10/21/2016		6.67	6.27
	11/18/2016		5.61	7.33
12/19/2016	11.63	1.31		
CCPNE	8/24/2015	13.675	6.44	7.24
	9/21/2015		6.27	7.41
	10/20/2015		6.54	7.14
	11/16/2015		6.74	6.94
	12/14/2015		5.28	8.40
	1/14/2016		8.51	5.17
	2/16/2016		8.65	5.03
	3/14/2016		8.65	5.03
	4/25/2016		7.79	5.89
	5/16/2016		6.39	7.29
	6/17/2016		5.83	7.85
	7/20/2016		6.79	6.89
	8/20/2016		7.16	6.52
	9/19/2016		7.52	6.16
	10/21/2016		7.4	6.28
	11/18/2016		6.32	7.36
12/19/2016	8.82	4.86		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
CCPSW	8/24/2015	13.67	6.29	7.38
	9/21/2015		6.09	7.58
	10/20/2015		6.35	7.32
	11/16/2015		6.24	7.43
	12/14/2015		5.27	8.40
	1/14/2016		8.22	5.45
	2/16/2016		8.11	5.56
	3/14/2016		8.05	5.62
	4/25/2016		7.50	6.17
	5/16/2016		6.18	7.49
	6/17/2016		6.26	7.41
	7/20/2016		6.60	7.07
	8/20/2016		6.92	6.75
	9/19/2016		7.28	6.39
	10/21/2016		7.17	6.50
	11/18/2016		6.22	7.45
12/19/2016	8.34	5.33		
CCW-4	8/24/2015	15.765	6.50	9.27
	9/21/2015		6.71	9.06
	10/20/2015		6.90	8.87
	11/16/2015		7.02	8.75
	12/14/2015		7.05	8.72
	1/14/2016		6.19	9.58
	2/16/2016		6.17	9.60
	3/14/2016		5.72	10.05
	4/25/2016		5.28	10.49
	5/16/2016		6.45	9.32
	6/17/2016		6.70	9.07
	7/20/2016		7.07	8.70
	8/20/2016		7.33	8.44
	9/19/2016		7.56	8.21
	10/21/2016		7.68	8.09
	11/18/2016		7.84	7.93
12/19/2016	7.09	8.68		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
GH6-M1	8/24/2015	-	28.92	-
	9/21/2015		29.11	-
	10/20/2015		29.24	-
	11/16/2015		29.32	-
	12/14/2015		29.43	-
	1/14/2016		29.43	-
	2/16/2016		29.56	-
	3/14/2016		29.44	-
	4/25/2016		29.46	-
	5/16/2016		29.35	-
	6/17/2016		29.20	-
	7/20/2016		29.49	-
	8/20/2016		29.58	-
	9/19/2016		29.69	-
	10/21/2016		29.85	-
	11/18/2016		29.95	-
12/19/2016	30.05	-		
GH8-M3	8/24/2015	-	28.37	-
	9/21/2015		28.54	-
	10/20/2015		28.69	-
	11/16/2015		28.75	-
	12/14/2015		28.78	-
	1/14/2016		28.92	-
	2/16/2016		28.96	-
	3/14/2016		28.79	-
	4/25/2016		28.78	-
	5/16/2016		28.63	-
	6/17/2016		28.67	-
	7/20/2016		28.90	-
	8/20/2016		29.08	-
	9/19/2016		29.19	-
	10/21/2016		29.36	-
	11/18/2016		29.36	-
12/19/2016	29.44	-		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
GH9-M4	8/24/2015	-	30.31	-
	9/21/2015		30.54	-
	10/20/2015		30.66	-
	11/16/2015		30.75	-
	12/14/2015		30.86	-
	1/14/2016		34.54	-
	2/16/2016		31.12	-
	3/14/2016		31.07	-
	4/25/2016		34.32	-
	5/16/2016		32.80	-
	6/17/2016		30.56	-
	7/20/2016		30.90	-
	8/20/2016		31.09	-
	9/19/2016		31.18	-
	10/21/2016		31.29	-
	11/18/2016		30.87	-
12/19/2016	31.11	-		
M6-1	8/24/2015	-	6.61	-
	9/21/2015		6.43	-
	10/20/2015		6.72	-
	11/16/2015		6.68	-
	12/14/2015		6.35	-
	1/14/2016		6.63	-
	2/16/2016		7.03	-
	3/14/2016		6.45	-
	4/25/2016		7.15	-
	5/16/2016		6.85	-
	6/17/2016		7.04	-
	7/20/2016		7.34	-
	8/20/2016		7.61	-
	9/19/2016		7.87	-
	10/21/2016		7.83	-
	11/18/2016		7.19	-
12/19/2016	7.26	-		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
M6-2	8/24/2015	-	5.76	-
	9/21/2015		5.75	-
	10/20/2015		6.08	-
	11/16/2015		6.17	-
	12/14/2015		6.12	-
	1/14/2016		4.69	-
	2/16/2016		5.46	-
	3/14/2016		4.27	-
	4/25/2016		5.51	-
	5/16/2016		5.74	-
	6/17/2016		5.94	-
	7/20/2016		6.21	-
	8/20/2016		6.42	-
	9/19/2016		6.61	-
	10/21/2016		6.82	-
	11/18/2016		6.96	-
12/19/2016	5.93	-		
M7-1	8/24/2015	-	8.09	-
	9/21/2015		8.12	-
	10/20/2015		8.40	-
	11/16/2015		8.48	-
	12/14/2015		8.30	-
	1/14/2016		8.04	-
	2/16/2016		8.36	-
	3/14/2016		7.83	-
	4/25/2016		8.46	-
	5/16/2016		8.17	-
	6/17/2016		8.22	-
	7/20/2016		8.54	-
	8/20/2016		8.74	-
	9/19/2016		8.88	-
	10/21/2016		9.01	-
	11/18/2016		8.98	-
12/19/2016	8.68	-		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
M7-2	8/24/2015	-	7.78	-
	9/21/2015		7.91	-
	10/20/2015		8.15	-
	11/16/2015		8.27	-
	12/14/2015		8.28	-
	1/14/2016		7.34	-
	2/16/2016		7.74	-
	3/14/2016		7.03	-
	4/25/2016		7.84	-
	5/16/2016		7.70	-
	6/17/2016		7.77	-
	7/20/2016		8.05	-
	8/20/2016		8.26	-
	9/19/2016		8.42	-
	10/21/2016		8.64	-
	11/18/2016		8.88	-
	12/19/2016		8.21	-
MBCMW-7	8/24/2015	16.635	11.26	5.38
	9/21/2015		10.94	5.70
	10/20/2015		11.09	5.55
	11/16/2015		11.11	5.53
	12/14/2015		10.27	6.37
	1/14/2016		11.39	5.25
	2/16/2016		11.75	4.89
	3/14/2016		11.55	5.09
	4/25/2016		11.44	5.20
	5/16/2016		11.22	5.42
	6/17/2016		11.71	4.93
	7/20/2016		12.12	4.52
	8/20/2016		12.27	4.37
	9/19/2016		12.65	3.99
	10/21/2016		12.32	4.32
	11/18/2016		10.31	6.33
	12/19/2016		11.65	4.99

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MBCMW-8	8/24/2015	16.53	9.11	7.42
	9/21/2015		9.13	7.40
	10/20/2015		9.44	7.09
	11/16/2015		9.58	6.95
	12/14/2015		9.59	6.94
	1/14/2016		8.05	8.48
	2/16/2016		8.66	7.87
	3/14/2016		7.36	9.17
	4/25/2016		8.54	7.99
	5/16/2016		8.89	7.64
	6/17/2016		9.16	7.37
	7/20/2016		9.46	7.07
	8/20/2016		9.73	6.80
	9/19/2016		9.99	6.54
	10/21/2016		10.02	6.51
	11/18/2016		10.11	6.42
12/19/2016	9.61	6.92		
MBCMW-9	8/24/2015	17.71	8.70	9.01
	9/21/2015		8.83	8.88
	10/20/2015		9.00	8.71
	11/16/2015		9.09	8.62
	12/14/2015		9.09	8.62
	1/14/2016		8.30	9.41
	2/16/2016		8.06	9.65
	3/14/2016		7.83	9.88
	4/25/2016		8.21	9.50
	5/16/2016		8.40	9.31
	6/17/2016		8.64	9.07
	7/20/2016		8.78	8.93
	8/20/2016		8.80	8.91
	9/19/2016		8.80	8.91
	10/21/2016		9.29	8.42
	11/18/2016		9.15	8.56
12/19/2016	8.75	8.96		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MBCMW-10	8/24/2015	17.74	8.63	9.11
	9/21/2015		8.20	9.54
	10/20/2015		8.40	9.34
	11/16/2015		8.35	9.39
	12/14/2015		7.34	10.40
	1/14/2016		8.82	8.92
	2/16/2016		9.34	8.40
	3/14/2016		8.97	8.77
	4/25/2016		9.22	8.52
	5/16/2016		8.75	8.99
	6/17/2016		8.58	9.16
	7/20/2016		9.29	8.45
	8/20/2016		9.52	8.22
	9/19/2016		9.85	7.89
	10/21/2016		9.67	8.07
	11/18/2016		8.31	9.43
12/19/2016	8.97	8.77		
MCWP-MW04S	8/24/2015	15.29	7.55	7.74
	9/21/2015		7.67	7.62
	10/20/2015		7.85	7.44
	11/16/2015		7.99	7.30
	12/14/2015		8.06	7.23
	1/14/2016		6.48	8.81
	2/16/2016		7.08	8.21
	3/14/2016		5.92	9.37
	4/25/2016		7.10	8.19
	5/16/2016		7.36	7.93
	6/17/2016		7.64	7.65
	7/20/2016		7.95	7.34
	8/20/2016		8.18	7.11
	9/19/2016		8.35	6.94
	10/21/2016		8.88	6.41
	11/18/2016		8.4	6.89
12/19/2016	8.67	6.62		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW07S	8/24/2015	13.72	6.76	6.96
	9/21/2015		7.13	6.59
	10/20/2015		6.44	7.28
	11/16/2015		6.74	6.98
	12/14/2015		6.56	7.16
	1/14/2016		6.19	7.53
	2/16/2016		6.75	6.97
	3/14/2016		5.85	7.87
	4/25/2016		6.49	7.23
	5/16/2016		6.73	6.99
	6/17/2016		N/A	-
	7/20/2016		6.18	7.54
	8/20/2016		6.25	7.47
	9/19/2016		6.48	7.24
	10/21/2016		6.61	7.11
	11/18/2016		6.7	7.02
	12/19/2016		6.67	7.05
MCWP-MW08	8/24/2015	12.21	7.64	4.57
	9/21/2015		7.42	4.79
	10/20/2015		7.61	4.60
	11/16/2015		7.40	4.81
	12/14/2015		6.62	5.59
	1/14/2016		8.46	3.75
	2/16/2016		8.27	3.94
	3/14/2016		7.96	4.25
	4/25/2016		7.83	4.38
	5/16/2016		6.87	5.34
	6/17/2016		6.97	5.24
	7/20/2016		7.76	4.45
	8/20/2016		7.77	4.44
	9/19/2016		7.74	4.47
	10/21/2016		8	4.21
	11/18/2016		7.27	4.94
	12/19/2016		8.57	3.64

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW10	8/24/2015	11.11	5.70	5.41
	9/21/2015		5.55	5.56
	10/20/2015		5.81	5.30
	11/16/2015		5.74	5.37
	12/14/2015		4.59	6.52
	1/14/2016		8.09	3.02
	2/16/2016		7.98	3.13
	3/14/2016		8.04	3.07
	4/25/2016		7.07	4.04
	5/16/2016		5.63	5.48
	6/17/2016		5.73	5.38
	7/20/2016		6.02	5.09
	8/20/2016		6.34	4.77
	9/19/2016		6.70	4.41
	10/21/2016		6.61	4.50
	11/18/2016		5.57	5.54
	12/19/2016		N/A	-
P-4	8/24/2015	12.155	4.58	7.58
	9/21/2015		4.47	7.69
	10/20/2015		4.71	7.45
	11/16/2015		4.65	7.51
	12/14/2015		3.52	8.64
	1/14/2016		6.93	5.23
	2/16/2016		6.88	5.28
	3/14/2016		6.92	5.24
	4/25/2016		6.00	6.16
	5/16/2016		4.57	7.59
	6/17/2016		4.68	7.48
	7/20/2016		4.95	7.21
	8/20/2016		5.27	6.89
	9/19/2016		5.63	6.53
	10/21/2016		5.55	6.61
	11/18/2016		4.51	7.65
	12/19/2016		7.17	4.99

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
P-9	8/24/2015	12.165	5.07	7.10
	9/21/2015		4.90	7.27
	10/20/2015		5.18	6.99
	11/16/2015		5.08	7.09
	12/14/2015		3.92	8.25
	1/14/2016		7.49	4.68
	2/16/2016		7.53	4.64
	3/14/2016		7.66	4.51
	4/25/2016		6.49	5.68
	5/16/2016		5.02	7.15
	6/17/2016		5.09	7.08
	7/20/2016		5.34	6.83
	8/20/2016		5.70	6.47
	9/19/2016		6.06	6.11
	10/21/2016		6.01	6.16
	11/18/2016		4.91	7.26
12/19/2016	7.81	4.36		
SMBRP-2	8/24/2015	13.131	6.04	7.09
	9/21/2015		5.91	7.22
	10/20/2015		6.16	6.97
	11/16/2015		6.09	7.04
	12/14/2015		4.84	8.29
	1/14/2016		8.80	4.33
	2/16/2016		8.54	4.59
	3/14/2016		8.58	4.55
	4/25/2016		7.59	5.54
	5/16/2016		6.07	7.06
	6/17/2016		6.14	6.99
	7/20/2016		6.36	6.77
	8/20/2016		6.73	6.40
	9/19/2016		7.11	6.02
	10/21/2016		6.98	6.15
	11/18/2016		5.94	7.19
12/19/2016	8.87	4.26		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
SMBRP-6	8/24/2015	26.875	16.49	10.39
	9/21/2015		15.95	10.93
	10/20/2015		16.66	10.22
	11/16/2015		16.47	10.41
	12/14/2015		14.78	12.10
	1/14/2016		14.68	12.20
	2/16/2016		15.22	11.66
	3/14/2016		14.43	12.45
	4/25/2016		16.60	10.28
	5/16/2016		16.81	10.07
	6/17/2016		17.87	9.01
	7/20/2016		18.52	8.36
	8/20/2016		19.01	7.87
	9/19/2016		19.61	7.27
	10/21/2016		18.13	8.75
	11/18/2016		16.12	10.76
12/19/2016	14.46	12.42		
SMBRP-7B	8/24/2015	18.985	10.69	8.30
	9/21/2015		10.62	8.37
	10/20/2015		10.77	8.22
	11/16/2015		10.78	8.21
	12/14/2015		10.60	8.39
	1/14/2016		10.83	8.16
	2/16/2016		11.08	7.91
	3/14/2016		10.84	8.15
	4/25/2016		11.23	7.76
	5/16/2016		11.04	7.95
	6/17/2016		11.08	7.91
	7/20/2016		11.31	7.68
	8/20/2016		11.54	7.45
	9/19/2016		11.68	7.31
	10/21/2016		11.81	7.18
	11/18/2016		11.49	7.50
12/19/2016	11.33	7.66		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
EC-RC-MW01	8/24/2015	48.69	28.74	19.95
	9/21/2015		29.02	19.67
	10/20/2015		28.76	19.93
	11/16/2015		29.38	19.31
	12/14/2015		29.32	19.37
	1/14/2016		28.93	19.76
	2/16/2016		29.18	19.51
	3/14/2016		28.76	19.93
	4/25/2016		29.40	19.29
	5/16/2016		29.18	19.51
	6/17/2016		29.38	19.31
	7/20/2016		29.73	18.96
	8/20/2016		30.02	18.67
	9/19/2016		30.64	18.05
	10/21/2016		31.02	17.67
	11/18/2016		31.16	17.53
12/19/2016	30.83	17.86		
SMBRP-9	8/24/2015	50.32	38.24	12.08
	9/21/2015		38.46	11.86
	10/20/2015		38.62	11.70
	11/16/2015		N/A	-
	12/14/2015		38.86	11.46
	1/14/2016		38.95	11.37
	2/16/2016		39.03	11.29
	3/14/2016		38.97	11.35
	4/25/2016		38.82	11.50
	5/16/2016		38.82	11.50
	6/17/2016		38.86	11.46
	7/20/2016		39.06	11.26
	8/20/2016		39.17	11.15
	9/19/2016		39.33	10.99
	10/21/2016		39.55	10.77
	11/18/2016		39.67	10.65
12/19/2016	39.79	10.53		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
SMBRP-10C	8/24/2015	16.25	7.37	8.88
	9/21/2015		7.64	8.61
	10/20/2015		7.96	8.29
	11/16/2015		8.16	8.09
	12/14/2015		8.06	8.19
	1/14/2016		6.11	10.14
	2/16/2016		6.57	9.68
	3/14/2016		4.80	11.45
	4/25/2016		6.59	9.66
	5/16/2016		6.86	9.39
	6/17/2016		6.90	9.35
	7/20/2016		7.72	8.53
	8/20/2016		8.12	8.13
	9/19/2016		8.54	7.71
	10/21/2016		8.78	7.47
	11/18/2016		8.89	7.36
12/19/2016	7.95	8.30		
SMBRP-12	8/24/2015	12.615	7.52	5.10
	9/21/2015		6.91	5.71
	10/20/2015		6.72	5.90
	11/16/2015		6.75	5.87
	12/14/2015		6.42	6.20
	1/14/2016		6.95	5.67
	2/16/2016		6.85	5.77
	3/14/2016		6.09	6.53
	4/25/2016		6.76	5.86
	5/16/2016		6.40	6.22
	6/17/2016		5.39	7.23
	7/20/2016		6.05	6.57
	8/20/2016		6.85	5.77
	9/19/2016		6.44	6.18
	10/21/2016		8.09	4.53
	11/18/2016		6.52	6.10
12/19/2016	7.16	5.46		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
SMBRP-13	8/24/2015	13.58	8.32	5.26
	9/21/2015		7.98	5.60
	10/20/2015		8.20	5.38
	11/16/2015		7.87	5.71
	12/14/2015		6.85	6.73
	1/14/2016		8.24	5.34
	2/16/2016		8.00	5.58
	3/14/2016		7.61	5.97
	4/25/2016		7.66	5.92
	5/16/2016		6.92	6.66
	6/17/2016		7.52	6.06
	7/20/2016		8.30	5.28
	8/20/2016		8.03	5.55
	9/19/2016		7.45	6.13
	10/21/2016		8.33	5.25
	11/18/2016		7.14	6.44
12/19/2016	8.34	5.24		
SMBRP-15B	8/24/2015	16.765	dry	-
	9/21/2015		dry	-
	10/20/2015		dry	-
	11/16/2015		dry	-
	12/14/2015		dry	-
	1/14/2016		dry	-
	2/16/2016		dry	-
	3/14/2016		dry	-
	4/25/2016		dry	-
	5/16/2016		dry	-
	6/17/2016		dry	-
	7/20/2016		dry	-
	8/20/2016		dry	-
	9/19/2016		dry	-
	10/21/2016		dry	-
	11/18/2016		dry	-
12/19/2016	dry	-		

Table 1
Groundwater Elevations

Shallow Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
SMBRP-16	8/24/2015	14.5	4.95	9.55
	9/21/2015		4.96	9.54
	10/20/2015		5.34	9.16
	11/16/2015		5.55	8.95
	12/14/2015		5.59	8.91
	1/14/2016		3.79	10.71
	2/16/2016		4.60	9.90
	3/14/2016		5.27	9.23
	4/25/2016		4.65	9.85
	5/16/2016		4.92	9.58
	6/17/2016		5.15	9.35
	7/20/2016		5.49	9.01
	8/20/2016		5.72	8.78
	9/19/2016		5.92	8.58
	10/21/2016		6.18	8.32
	11/18/2016		6.02	8.48
12/19/2016	5.23	9.27		

Notes:

N/A: well not accessible

'-': no data available

TOC: top of well casing

ft bTOC: feet below top of well casing

ft amsl: feet above mean sea level

Table 1
Groundwater Elevations

Deep Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW01	8/24/2015	17.9	10.22	7.68
	9/21/2015		9.71	8.19
	10/20/2015		10.00	7.90
	11/16/2015		9.91	7.99
	12/14/2015		9.23	8.67
	1/14/2016		10.45	7.45
	2/16/2016		11.02	6.88
	3/14/2016		10.53	7.37
	4/25/2016		10.89	7.01
	5/16/2016		10.70	7.20
	6/17/2016		10.75	7.15
	7/20/2016		11.09	6.81
	8/20/2016		11.30	6.6
	9/19/2016		11.13	6.77
	10/21/2016		11.19	6.71
	11/18/2016		9.94	7.96
	12/19/2016		10.56	7.34
MCWP-MW02	8/24/2015	18.06	10.39	7.67
	9/21/2015		9.92	8.14
	10/20/2015		10.25	7.81
	11/16/2015		10.16	7.90
	12/14/2015		9.14	8.92
	1/14/2016		10.68	7.38
	2/16/2016		11.13	6.93
	3/14/2016		10.72	7.34
	4/25/2016		11.08	6.98
	5/16/2016		10.55	7.51
	6/17/2016		10.82	7.24
	7/20/2016		11.10	6.96
	8/20/2016		11.35	6.71
	9/19/2016		11.59	6.47
	10/21/2016		11.41	6.65
	11/18/2016		10.16	7.9
	12/19/2016		10.82	7.24

Table 1
Groundwater Elevations

Deep Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW03	8/24/2015	15.31	7.65	7.66
	9/21/2015		7.52	7.79
	10/20/2015		7.78	7.53
	11/16/2015		7.34	7.97
	12/14/2015		6.75	8.56
	1/14/2016		8.38	6.93
	2/16/2016		8.43	6.88
	3/14/2016		8.05	7.26
	4/25/2016		8.63	6.68
	5/16/2016		8.35	6.96
	6/17/2016		8.50	6.81
	7/20/2016		8.30	7.01
	8/20/2016		8.87	6.44
	9/19/2016		8.23	7.08
	10/21/2016		8.94	6.37
	11/18/2016		7.64	7.67
	12/19/2016		8.09	7.22
	MCWP-MW04D		8/24/2015	15.43
9/21/2015		8.84	6.59	
10/20/2015		9.16	6.27	
11/16/2015		9.13	6.30	
12/14/2015		8.39	7.04	
1/14/2016		9.59	5.84	
2/16/2016		10.24	5.19	
3/14/2016		9.69	5.74	
4/25/2016		10.07	5.36	
5/16/2016		9.83	5.60	
6/17/2016		9.97	5.46	
7/20/2016		10.22	5.21	
8/20/2016		10.33	5.1	
9/19/2016		10.32	5.11	
10/21/2016		10.4	5.03	
11/18/2016		9.12	6.31	
12/19/2016		9.68	5.75	

Table 1
Groundwater Elevations

Deep Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW05	8/24/2015	13.92	7.62	6.30
	9/21/2015		7.30	6.62
	10/20/2015		7.47	6.45
	11/16/2015		7.42	6.50
	12/14/2015		6.39	7.53
	1/14/2016		7.82	6.10
	2/16/2016		8.37	5.55
	3/14/2016		7.96	5.96
	4/25/2016		8.27	5.65
	5/16/2016		7.78	6.14
	6/17/2016		8.05	5.87
	7/20/2016		8.41	5.51
	8/20/2016		8.69	5.23
	9/19/2016		8.98	4.94
	10/21/2016		N/A	-
	11/18/2016		N/A	-
	12/19/2016		N/A	-
MCWP-MW06	8/24/2015	16.05	9.87	6.18
	9/21/2015		9.40	6.65
	10/20/2015		9.71	6.34
	11/16/2015		9.61	6.44
	12/14/2015		8.64	7.41
	1/14/2016		10.12	5.93
	2/16/2016		10.58	5.47
	3/14/2016		10.14	5.91
	4/25/2016		10.49	5.56
	5/16/2016		10.06	5.99
	6/17/2016		10.27	5.78
	7/20/2016		10.60	5.45
	8/20/2016		10.86	5.19
	9/19/2016		11.07	4.98
	10/21/2016		10.9	5.15
	11/18/2016		9.62	6.43
	12/19/2016		10.2	5.85

Table 1
Groundwater Elevations

Deep Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
MCWP-MW07D	8/24/2015	13.21	7.51	5.70
	9/21/2015		7.44	5.77
	10/20/2015		7.67	5.54
	11/16/2015		7.27	5.94
	12/14/2015		6.59	6.62
	1/14/2016		8.32	4.89
	2/16/2016		8.32	4.89
	3/14/2016		7.92	5.29
	4/25/2016		8.47	4.74
	5/16/2016		8.26	4.95
	6/17/2016		8.45	4.76
	7/20/2016		8.18	5.03
	8/20/2016		8.77	4.44
	9/19/2016		8.12	5.09
	10/21/2016		8.81	4.4
	11/18/2016		7.54	5.67
	12/19/2016		7.99	5.22
MCWP-MW09	8/24/2015	16.3	5.69	10.61
	9/21/2015		5.42	10.88
	10/20/2015		5.68	10.62
	11/16/2015		5.50	10.80
	12/14/2015		4.75	11.55
	1/14/2016		6.37	9.93
	2/16/2016		6.42	9.88
	3/14/2016		6.04	10.26
	4/25/2016		6.38	9.92
	5/16/2016		5.85	10.45
	6/17/2016		5.96	10.34
	7/20/2016		6.44	9.86
	8/20/2016		6.54	9.76
	9/19/2016		6.26	10.04
	10/21/2016		6.71	9.59
	11/18/2016		5.68	10.62
	12/19/2016		6.31	9.99

Notes:

N/A: well not accessible

'-': no data available

TOC: top of well casing

ft bTOC: feet below top of well casing

ft amsl: feet above mean sea level

Table 1
Groundwater Elevations

Winter Canyon Groundwater Monitoring Wells				
Well ID	Date	TOC Elevation (ft amsl)	Depth to Water (ft bTOC)	Groundwater Elevation
LAMW-5S	8/24/2015	104.55	53.71	50.84
	9/21/2015		53.30	51.25
	10/20/2015		53.74	50.81
	11/16/2015		53.90	50.65
	12/14/2015		53.54	51.01
	1/14/2016		54.02	50.53
	2/16/2016		53.69	50.86
	3/14/2016		53.92	50.63
	4/25/2016		53.88	50.67
	5/16/2016		53.98	50.57
	6/17/2016		53.97	50.58
	7/20/2016		54.23	50.32
	8/20/2016		54.42	50.13
	9/19/2016		54.77	49.78
	10/21/2016		55	49.55
	11/18/2016		54.91	49.64
	12/19/2016		53.83	50.72
SMBRP-11	8/24/2015	18.35	8.88	9.47
	9/21/2015		8.70	9.65
	10/20/2015		8.36	9.99
	11/16/2015		8.64	9.71
	12/14/2015		8.35	10.00
	1/14/2016		8.00	10.35
	2/16/2016		8.30	10.05
	3/14/2016		7.89	10.46
	4/25/2016		8.63	9.72
	5/16/2016		8.62	9.73
	6/17/2016		8.39	9.96
	7/20/2016		8.00	10.35
	8/20/2016		8.44	9.91
	9/19/2016		8.56	9.79
	10/21/2016		8.71	9.64
	11/18/2016		8.47	9.88
	12/19/2016		8.71	9.64

Notes:

N/A: well not accessible

'-': no data available

TOC: top of well casing

ft bTOC: feet below top of well casing

ft amsl: feet above mean sea level

Table 2
Baseline Surface Water Analysis Matrix
Fourth Quarter 2016

Surface Water	Location									
	N-001	N-002	N-003	N-004	L-001	L-002	L-003	L-004	L-005	L-006
<i>Laboratory Analysis</i>										
Total and Fecal Coliform	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nitrate as Nitrogen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nitrite as Nitrogen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ammonia Nitrogen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organic Nitrogen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kjeldahl Nitrogen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total Phosphorous	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes:

- ✓ : Laboratory analysis completed
- : Sampling & analysis not required

Table 3
Surface Water Quality Analytical Results

Location	Monitoring Depth	Well ID	Sample Date	Coliform Bacteria Analysis (MPN/100mL)		Inorganic Analysis (mg/L)					
				Total	Fecal	Nitrate Nitrogen	Nitrite Nitrogen	Nitrogen, Organic	Ammonia Nitrogen	Kjeldahl Nitrogen	Phosphorous, Total
Near Shore	Ankle Depth	N-001	9/25/2015	70	46	<0.1	<0.1	<0.5	<0.2	<0.5	1.760
			12/1/2015	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	0.775
			3/18/2016	<1.8	<1.8	0.1	<0.1	0.937	<0.2	0.937	0.400
			6/16/2016	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	0.658
			9/23/2016	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.970
			12/20/2016	49	49	0.1	<0.1	<0.5	<0.2	<0.5	1.010
		N-002	9/25/2015	13	13	<0.1	<0.1	<0.5	<0.2	<0.5	1.480
			12/1/2015	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.380
			3/18/2016	<1.8	<1.8	0.1	<0.1	<0.5	<0.2	<0.5	1.420
			6/16/2016	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.030
			9/23/2016	240	6.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.300
			12/20/2016	<1.8	<1.8	0.1	<0.1	<0.5	<0.2	<0.5	1.350
		N-003	9/25/2015	11	4	<0.1	<0.1	<0.5	<0.2	<0.5	0.347
			12/1/2015	14	14	<0.1	<0.1	<0.5	<0.2	<0.5	1.460
			3/18/2016	13	<1.8	0.1	<0.1	0.865	<0.2	0.865	<0.1
			6/16/2016	<1.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	<0.1
			9/23/2016	2	2	<0.1	<0.1	<0.5	<0.2	<0.5	1.460
			12/20/2016	79	79	0.1	<0.1	<0.5	<0.2	<0.5	1.310
		N-004	9/25/2015	14	9.3	<0.1	<0.1	<0.5	<0.2	<0.5	0.288
			12/1/2015	2	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.010
			3/18/2016	2	<1.8	0.1	<0.1	<0.5	<0.2	<0.5	0.648
			6/16/2016	6.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.250
			9/23/2016	4.5	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.290
			12/20/2016	7.8	<1.8	<0.1	<0.1	<0.5	<0.2	<0.5	1.290

Table 3
Surface Water Quality Analytical Results

Location	Monitoring Depth	Well ID	Sample Date	Coliform Bacteria Analysis (MPN/100mL)		Inorganic Analysis (mg/L)					
				Total	Fecal	Nitrate Nitrogen	Nitrite Nitrogen	Nitrogen, Organic	Ammonia Nitrogen	Kjeldahl Nitrogen	Phosphorous, Total
Malibu Lagoon and Creek	1 foot BSW	L-001	9/25/2015	920	49	<0.1	<0.1	2.26	<0.2	2.26	0.558
			12/1/2015	350	33	<0.1	<0.1	0.837	<0.2	0.837	0.218
			3/18/2016	350	23	0.3	<0.1	1.99	<0.2	1.99	0.635
			6/16/2016	350	4.5	<0.1	<0.1	0.696	<0.2	0.696	0.178
			9/23/2016	540	79	<0.1	<0.1	1.04	<0.2	1.04	0.153
			12/20/2016	>1600	49	3.2	<0.1	<0.5	<0.2	<0.5	0.934
		L-002	9/25/2015	920	49	<0.1	<0.1	1.83	<0.2	1.83	0.404
			12/1/2015	540	33	<0.1	<0.1	0.591	<0.2	0.591	0.226
			3/18/2016	280	49	0.6	<0.1	0.852	<0.2	0.852	0.379
			6/16/2016	33	2	<0.1	<0.1	0.964	<0.2	0.964	<0.1
			9/23/2016	14	4.5	0.1	<0.1	0.77	<0.2	0.77	<0.1
			12/20/2016	>1600	240	1.6	<0.1	<0.5	<0.2	<0.5	0.621
		L-003	9/25/2015	540	70	<0.1	<0.1	2.35	<0.2	2.35	0.379
			12/1/2015	240	17	<0.1	<0.1	<0.5	<0.2	<0.5	0.213
			3/18/2016	240	23	0.6	<0.1	1.03	<0.2	1.03	0.397
			6/16/2016	79	4	<0.1	<0.1	<0.5	<0.2	<0.5	0.139
			9/23/2016	23	4.5	<0.1	<0.1	1.21	<0.2	1.21	<0.1
			12/20/2016	220	31	2.7	<0.1	<0.5	<0.2	<0.5	0.984
		L-004	9/25/2015	170	23	<0.1	<0.1	2.67	<0.2	2.67	0.266
			12/1/2015	170	130	<0.1	<0.1	0.583	<0.2	0.583	0.200
			3/18/2016	350	170	0.5	<0.1	0.798	<0.2	0.798	0.350
			6/16/2016	49	2	<0.1	<0.1	0.667	<0.2	0.667	0.114
			9/23/2016	17	4.5	<0.1	<0.1	0.627	<0.2	0.627	<0.1
			12/20/2016	540	79	2.4	<0.1	<0.5	<0.2	<0.5	0.833
		L-005	9/25/2015	350	49	<0.1	<0.1	3.8	<0.2	3.8	0.372
			12/1/2015	350	49	<0.1	<0.1	<0.5	<0.2	<0.5	0.123
			3/18/2016	540	350	1.6	<0.1	1.37	<0.2	1.37	0.661
			6/16/2016	26	6.8	<0.1	<0.1	1.16	<0.2	1.16	0.133
			9/23/2016	7.8	7.8	<0.1	<0.1	<0.5	<0.2	0.53	<0.1
			12/20/2016	350	49	2.5	<0.1	<0.5	<0.2	<0.5	0.865
L-006	9/25/2015	170	170	<0.1	<0.1	3.59	<0.2	3.67	0.320		
	12/1/2015	350	49	<0.1	<0.1	<0.5	<0.2	<0.5	0.168		
	3/18/2016	920	130	0.4	<0.1	1.46	<0.2	1.46	0.366		
	6/16/2016	17	7.8	<0.1	<0.1	1.18	<0.2	1.18	0.172		
	9/23/2016	7.8	7.8	<0.1	<0.1	1.24	<0.2	1.24	<0.1		
	12/20/2016	130	14	0.3	<0.1	<0.5	<0.2	<0.5	0.287		

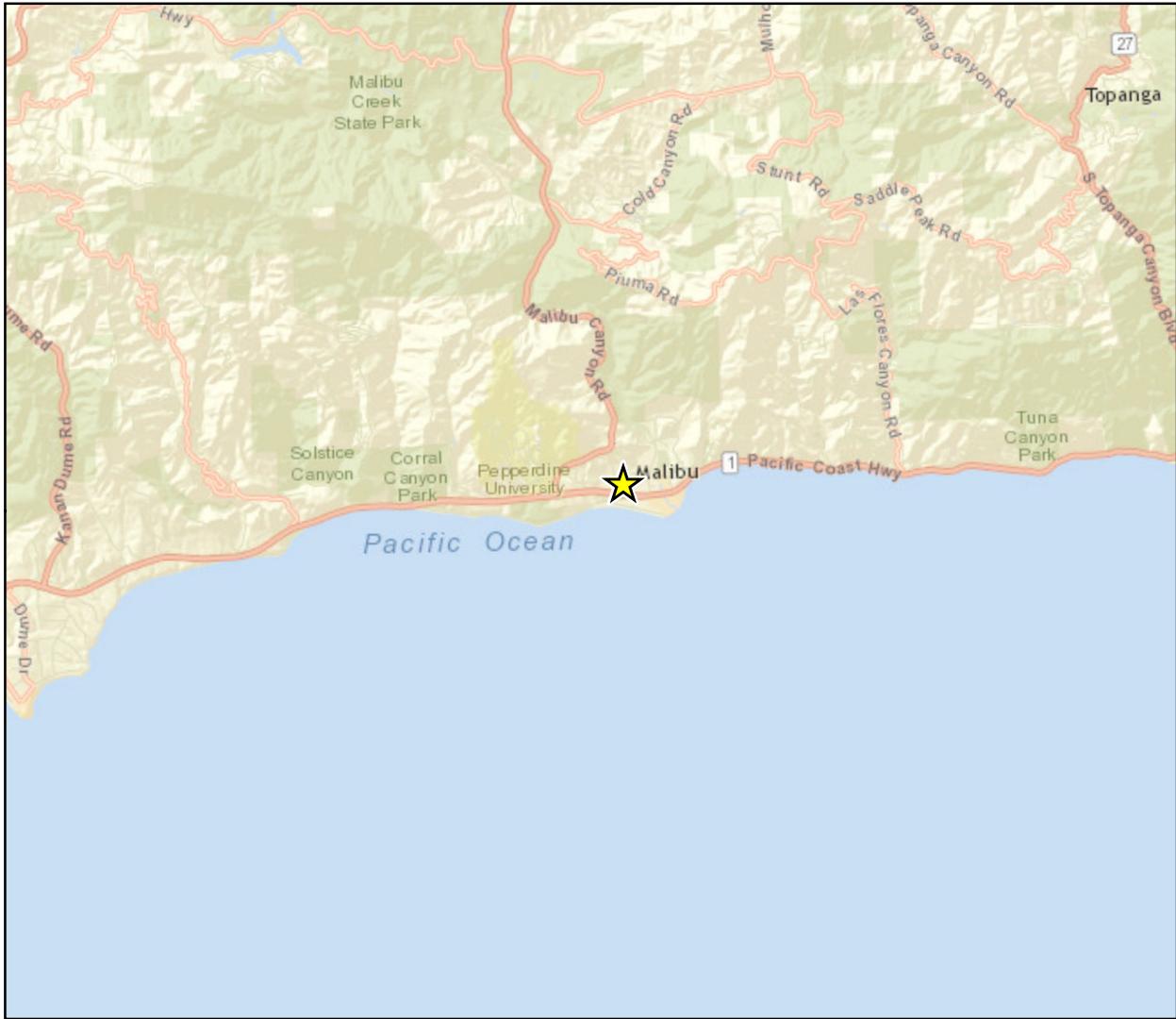
Notes:

mg/L: milligrams per liter

MPN/100mL: Most Probable Number per 100 milliliters

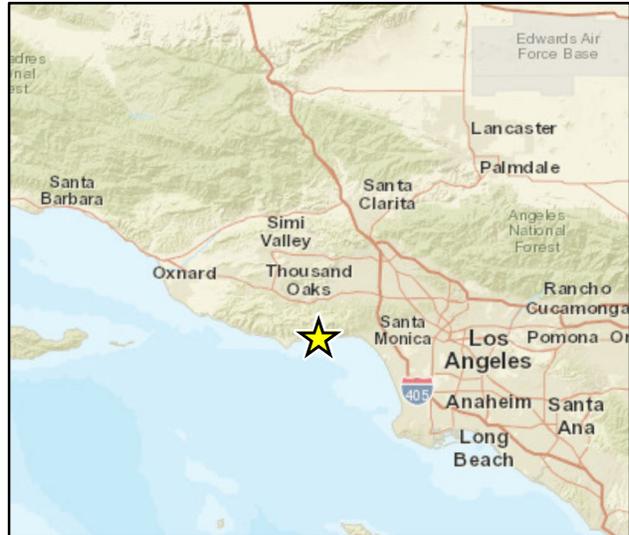
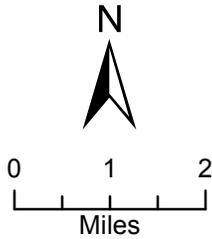
BSW: below surface water

<: not detected above the Practical Quantitation Limit (PQL)



Imagery provided by National Geographic Society, ESRI and its licensors © 2016. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

★ Project Location



Vicinity Map

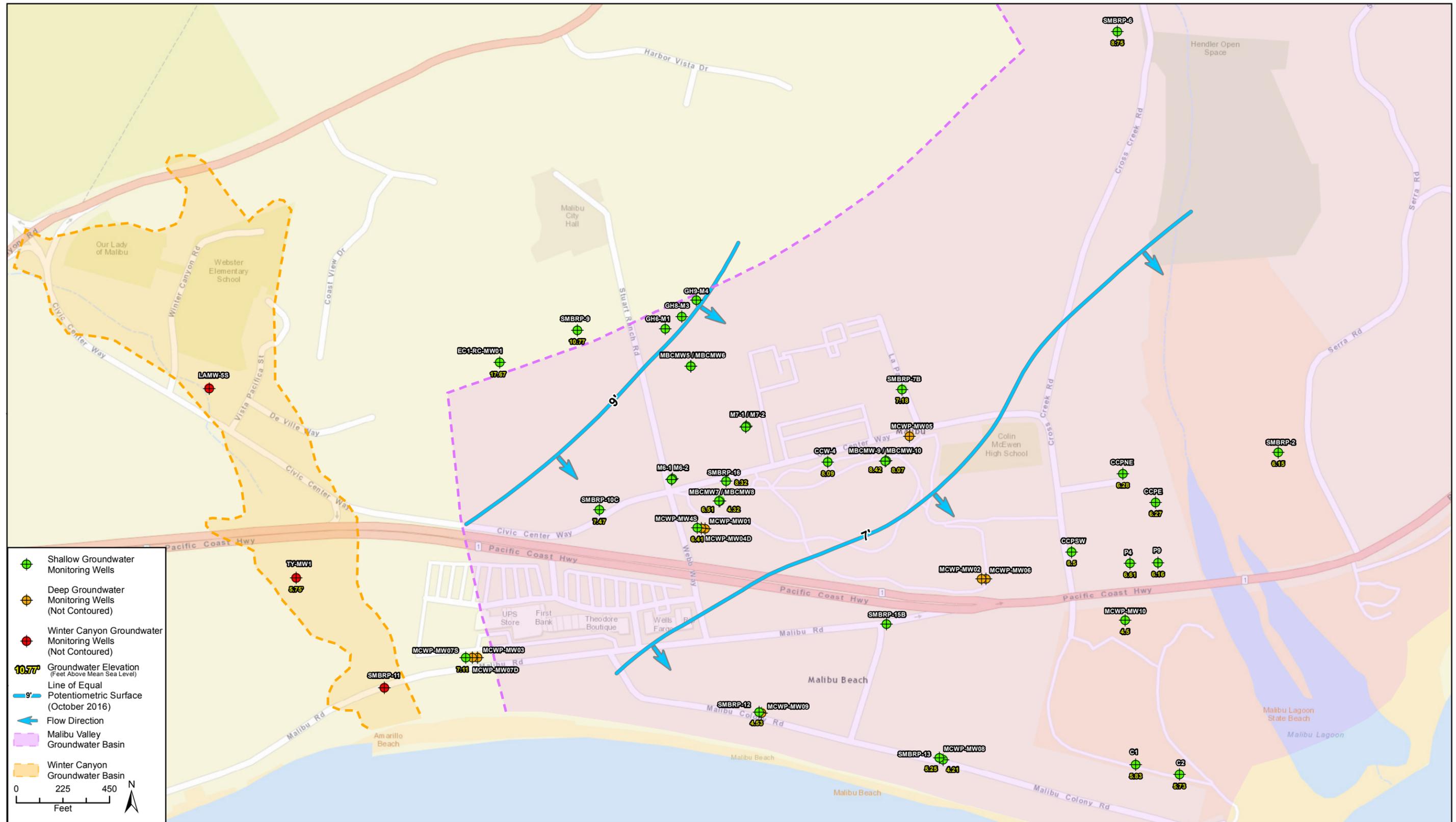
Figure 1



Imagery provided by ESRI and its licensors © 2015.

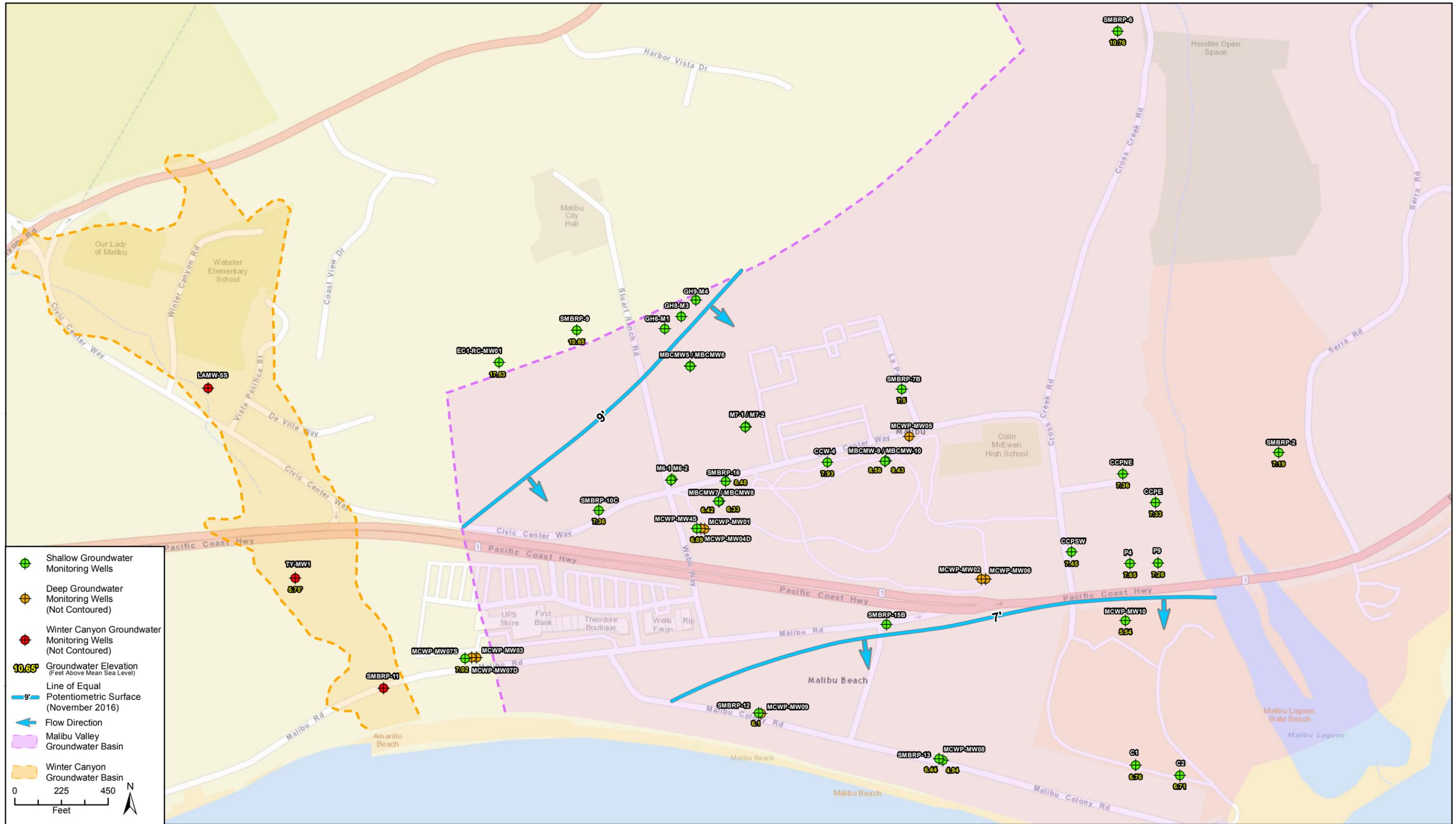
Site Map

Figure 2
 Rincon Consultants Inc.



Imagery provided by ESRI and its licensors © 2017.

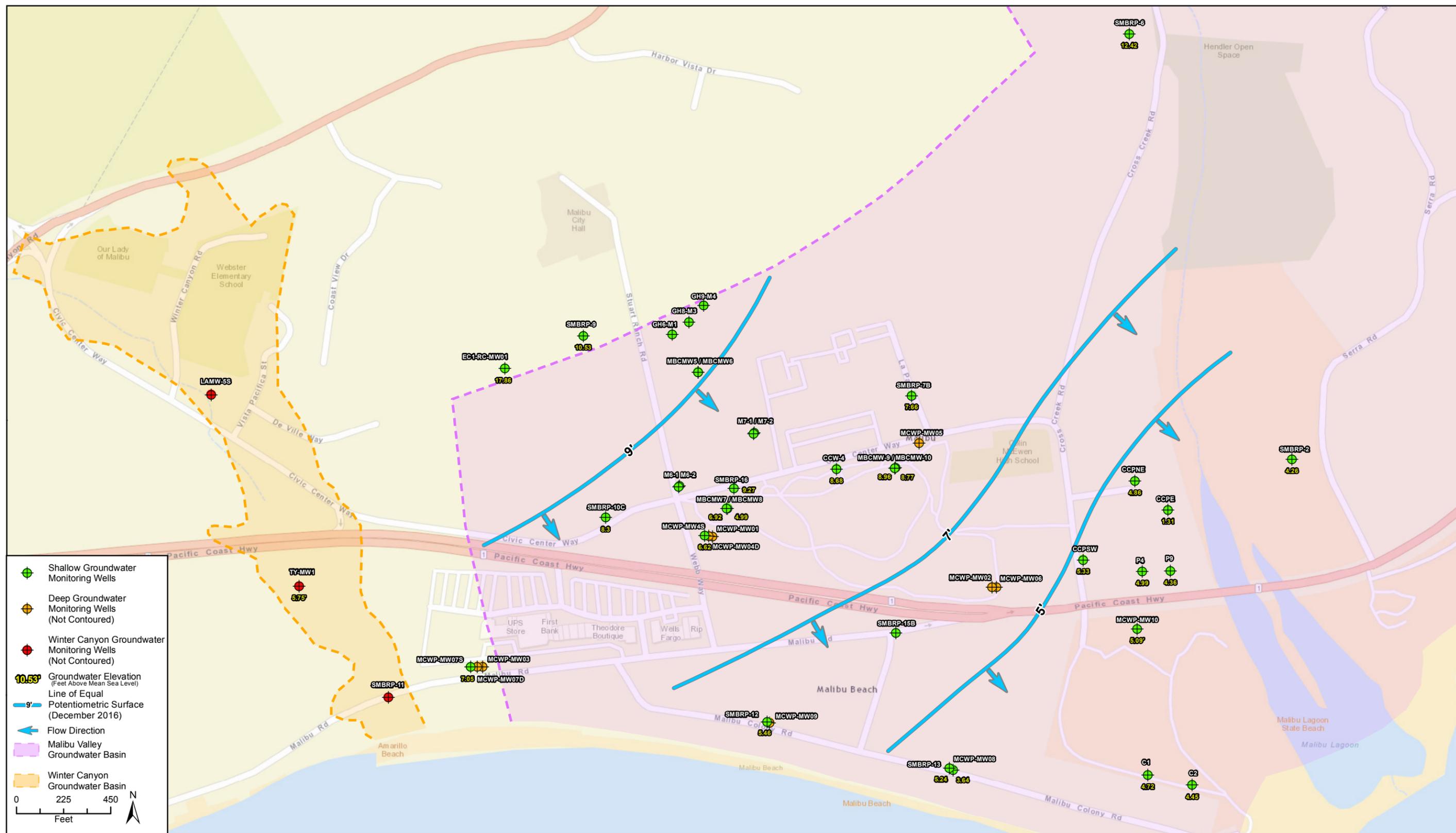
Shallow Groundwater Elevation
 October 2016



Imagery provided by ESRI and its licensors © 2017.

Shallow Groundwater Elevations
 November 2016

Figure 4
 Rincon Consultants Inc.



Imagery provided by ESRI and its licensors © 2017.

Shallow Groundwater Elevations
 December 2016

Figure 5
 Rincon Consultants Inc.

Appendix A

Groundwater and Surface Water Field Sheets

Lagoon Stage - Full (Barr closed)

Malibu Creek - Dry @ SMBRP-G

Arrive: 7:45am
Depart: 12:00pm

10-21-14

Kincon Consultants

Sampler - Peter
Shellenbarger

Table 1

Groundwater Monitoring Well Construction

Well ID	Total Well Depth (ft bTOC)	Well Diameter (in)	TOC Elevation (ft amsl)	Depth to Water 10/21/2016	Time	Depth to Water 8/24/2015 (ft bTOC)
1 C-1	14.5	n/a	11.47	5.64	1021	n/a
2 C-2	14.5	2	11.19	5.46	1018	5.11
3 CCPE	20	2	12.935	6.67	1042	5.76
4 CCPNE		2	13.675	7.40	1045	6.44
5 CCPSW		2	13.67	7.17	1048	6.29
6 CCW-4		1	15.765	7.68	0926	6.5
7 GH6-M1	35	2		29.85	1146	28.92
8 GH8-M3	40	2		29.36	1143	28.37
9 GH9-M4	45	2		31.29	1140	30.31
10 Lagoon		n/a		NA		n/a
11 LAMW-5S	20	4	104.55	55.00	0807	53.71
12 M6-1	45	2		7.83	1150	6.61
13 M6-2	20	2		6.82	1154	5.76
14 M7-1	40	2		9.01	1134	8.09
15 M7-2	25	2		8.64	1130	7.78
16 MBCMW-5	19.4	n/a	29.03	NA		n/a
17 MBCMW-6	64.26	n/a	29.02	NA		n/a
18 MBCMW-7	52.5	2	16.635	12.32	0920	11.26
19 MBCMW-8	10	2	16.53	10.02	0918	9.11
20 MBCMW-9	10	2	17.71	Dry - 9/28/29	0939	8.7
21 MBCMW-10	53	2	17.74	9.67	0936	8.63
22 MCWP-MW01	148	6		11.19	1059	10.22
23 MCWP-MW02	145	6	18.06	11.41	1054	10.39
24 MCWP-MW03	134	6		8.94	0843	7.65
25 MCWP-MW04D	148	4		10.40	1101	9.35
26 MCWP-MW04S	20	4		8.88	1103	7.55
27 MCWP-MW05	158	4		NO ACCESS - construction Lift Station construction	0930	7.62

28	MCWP-MW06	153	2		10.90	1051	9.87
29	MCWP-MW07D	134	2		8.81	0841	7.51
30	MCWP-MW07S	20	2		6.61	0838	6.76
31	MCWP-MW08	77	2		8.00	0856	7.64
32	MCWP-MW09	95	2	16.3	6.71	0904	7.52
33	MCWP-MW10	60	2		6.61	1012	5.7
34	P-4	12.5	4	12.155	SFS	1036	4.58
35	P-9	14.3	4	12.165	6.01	1039	5.07
36	SMBRP-2	25	2	13.131	6.98	1003	6.04
37	SMBRP-6	25	2	26.875	18.13	0953	16.49
38	SMBRP-7b	45	2	18.985	11.81	0933	10.69
39	SMBRP-8 (EG-RC)	60	4		31.02	0823	28.74
40	SMBRP-9	45	2	50.32	39.55	0817	38.24
41	SMBRP-10C	25	2	16.25	8.78	0833	7.37
42	SMBRP-11	20	2	18.35	8.71	0845	8.88
43	SMBRP-12	25	2	12.615	8.09	0900	5.69
44	SMBRP-13	20	2	13.58	8.33	0854	8.32
45	SMBRP-15b	25	1	16.765	Dry	0850	dry, recorded depth 8.77
46	SMBRP-16	25	2	14.5	6.18	0916	4.95

Legend

-  Monthly Transducer Well
-  Monthly
-  Other Well



 earthforensics, inc.

**MONTHLY
GROUNDWATER WELLS**

Civic Center Area

Malibu, CA

DATE: 8/1/2016 PROJECT NUMBER: 2012.160

PROJECT NAME: MCA#

Rendered by: EarthForensics, Inc. Base, Imagery, and Data: Aerial Imagery, CNES Airbus DS, USGS, and USGS Digital Data Center

Sunny, 75°F, S-15mph
clear E-NE

Peter Shellenberg
11-18-16
DTW Event

PS

Start - 10:00 End - 1445

Table 1

Groundwater Monitoring Well Construction

Well ID	Total Well Depth (ft bTOC)	Well Diameter (in)	TOC Elevation (ft amsl)	Depth to Water 11/18/2016	Time	Depth to Water 8/24/2015 (ft bTOC)
1 C-1	14.5	n/a	11.47	4.71	1150	n/a
2 C-2	14.5	2	11.19	4.48	1147	5.11
3 CCPE	20	2	12.935	5.61	1204	5.76
4 CCPNE		2	13.675	6.32	1206	6.44
5 CCPSW		2	13.67	6.22	1250	6.29
6 CCW-4		1	15.765	7.84	1108	6.5
7 GH6-M1	35	2		29.95	1408	28.92
8 GH8-M3	40	2		29.36	1405	28.37
9 GH9-M4	45	2		30.87	1402	30.31
10 Lagoon		n/a		N/A	---	n/a
11 LAMW-5S	20	4	104.55	54.91	1007	53.71
12 M6-1	45	2		7.19	1412	6.61
13 M6-2	20	2		6.96	1415	5.76
14 M7-1	40	2		8.98	1359	8.09
15 M7-2	25	2		8.88	1355	7.78
16 MBCMW-5	19.4	n/a	29.03	N/A	---	n/a
17 MBCMW-6	64.26	n/a	29.02	N/A	---	n/a
18 MBCMW-7	52.5	2	16.635	10.31	1050	11.26
19 MBCMW-8	10	2	16.53	10.11	1045	9.11
20 MBCMW-9	10	2	17.71	9.15	1117	8.7
21 MBCMW-10	53	2	17.74	8.31	1115	8.63
22 MCWP-MW01	148	6		9.94	1310	10.22
23 MCWP-MW02	145	6	18.06	10.16	1258	10.39
24 MCWP-MW03	134	6		7.64	1341	7.65
25 MCWP-MW04D	148	4		9.12	1313	9.35
26 MCWP-MW04S	20	4		8.40	1315	7.55
27 MCWP-MW05	158	4		not accessible due to construction		7.62

Malibu Creek Stage = High
Lagoon closed -> High H2O level in Lagoon

SMPPP - low water level in Malibu Creek up. Visible in creek -> Tidal discharge possible? Very little rain

28	MCWP-MW06	153	2		9.62	1256	9.87
29	MCWP-MW07D	134	2		7.54	1343	7.51
30	MCWP-MW07S	20	2		10.70	1346	6.76
31	MCWP-MW08	77	2		7.27	1429	7.64
32	MCWP-MW09	95	2	16.3	5.68	1433	7.52
33	MCWP-MW10	60	2		5.57	1140	5.7
34	P-4	12.5	4	12.155	4.51	1158	4.58
35	P-9	14.3	4	12.165	4.91	1200	5.07
36	SMBRP-2	25	2	13.131	5.94	1133	6.04
37	SMBRP-6	25	2	26.875	16.12	1125	16.49
38	SMBRP-7b	45	2	18.985	11.49	1112	10.69
39	SMBRP-8 (EG-RC)	60	4		31.16	1031	28.74
40	SMBRP-9	45	2	50.32	39.67	1023	38.24
41	SMBRP-10C	25	2	16.25	8.89	1016	7.37
42	SMBRP-11	20	2	18.35	8.47	1349	8.88
43	SMBRP-12	25	2	12.615	6.52	1435	5.69
44	SMBRP-13	20	2	13.58	7.14	1427	8.32
45	SMBRP-15b	25	1	16.765	Dry	Dry	dry, recorded depth 8.77
46	SMBRP-16	25	2	14.5	6.02	1042	4.95

✓

Legend

- Monthly Transducer Well
- Monthly
- Other Well



ef earthforensics, inc.

**MONTHLY
GROUNDWATER WELLS**
Civic Center Area
Malibu, CA

DATE	PROJECT NUMBER	SHEET
5/1/2015	2012-190	1
PLAN VIEW	AS SHOWN	

Images: Earthstar Systems, Inc./Esri, Inc./Bing, Inc./British Aerials, Inc./CNES/Airbus DS/USDA/USGS/Aerial
© 2015 Earthstar Systems, Inc.

Rincon Sampler: Peter Shellenbarger

12-19-2016

Rincon Consultants

DTW Malibu Civic Center

meeting w/
Andrew Sheldon
1050-1135

Arrive 10:15 AM

Leave 3:30 PM

Table 1
Groundwater Monitoring Well Construction

Well ID	Total Well Depth (ft bTOC)	Well Diameter (in)	TOC Elevation (ft amsl)	Depth to Water 12/19/2016	Time	Depth to Water 8/24/2015 (ft bTOC)
1 C-1	14.5	n/a	11.47	11.47 6.75	1245	n/a
2 C-2	14.5	2	11.19	6.74	1240	5.11
3 CCPE	20	2	12.935	11.63	1300	5.76
4 CCPNE		2	13.675	8.82	1310	6.44
5 CCPSW		2	13.67	8.34	1312	6.29
6 CCW-4		1	15.765	7.09	1153	6.5
7 GH6-M1	35	2		30.05	1438	28.92
8 GH8-M3	40	2		29.44	1436	28.37
9 GH9-M4	45	2		31.11	1434	30.31
10 Lagoon		n/a		NA	NA	n/a
11 LAMW-5S	20	4	104.55	53.83	1027	53.71
12 M6-1	45	2		7.26	1445	6.61
13 M6-2	20	2		5.93	1429	5.76
14 M7-1	40	2		8.68	1427	8.09
15 M7-2	25	2		8.21	1425	7.78
16 MBCMW-5	19.4	n/a	29.03	NA	NA	n/a
17 MBCMW-6	64.26	n/a	29.02	NA	NA	n/a
18 MBCMW-7	52.5	2	16.635	11.65	1150	11.26
19 MBCMW-8	10	2	16.53	9.61	1148	9.11
20 MBCMW-9	10	2	17.71	8.75	1204	8.7
21 MBCMW-10	53	2	17.74	8.97	1202	8.63
22 MCWP-MW01	148	6		10.56	1322	10.22
23 MCWP-MW02	145	6	18.06	10.82	1310	10.39
24 MCWP-MW03	134	6		8.09	1410	7.65
25 MCWP-MW04D	148	4		9.68	1326	9.35
26 MCWP-MW04S	20	4		8.67	1330	7.55
27 MCWP-MW05	158	4		NA	N/A	7.62

Lagoon Stage very low - large steel beams recently Breached.

Malibu Creek full @ SMBRP-6

MCWP-MW05 (1155) - No access. pump station for WWTP construction

28	MCWP-MW06	153	2		10.20	1316	9.87
29	MCWP-MW07D	134	2		7.99	1414	7.51
30	MCWP-MW07S	20	2		6.67	1418	6.76
31	MCWP-MW08	77	2		8.57	1501	7.64
32	MCWP-MW09	95	2	16.3	6.31	1508	7.52
33	MCWP-MW10	60	2		NA	NA	5.7
34	P-4	12.5	4	12.155	7.17	1259	4.58
35	P-9	14.3	4	12.165	7.81	1301	5.07
36	SMBRP-2	25	2	13.131	8.87	1229	6.04
37	SMBRP-6	25	2	26.875	14.46	1219	16.49
38	SMBRP-7b	45	2	18.985	11.33	1157	10.69
39	SMBRP-8 (EG-RC)	60	4		30.83	1139	28.74
40	SMBRP-9	45	2	50.32	39.79	1135	38.24
41	SMBRP-10C	25	2	16.25	7.95	1035	7.37
42	SMBRP-11	20	2	18.35	8.71	1422	8.88
43	SMBRP-12	25	2	12.615	7.16	1506	5.69
44	SMBRP-13	20	2	13.58	8.34	1600	8.32
45	SMBRP-15b	25	1	16.765	Dry	7.25'	dry, recorded depth 8.77
46	SMBRP-16	25	2	14.5	5.23	1145	4.95

MCWP-MW10 Not accessible due to California State Park maintenance. Several trailers parked over groundwater monitoring well. @ 1235

Legend

- Monthly Transducer Well
- Monthly
- Other Well



earthforensics, inc.

**MONTHLY
GROUNDWATER WELLS**
Civic Center Area
Malibu, CA

Date	8/1/2018	Scale	2012.150	Page	1
Project Name	MCWP				

James B. ...

Handwritten mark

Dec 20, 2016

Project

Malibu Civic Center WWTP Task 1 - Surface H₂O Sampling

Rincon Consultants
Peter
Shellenbarger
(PS)

Arrive in Malibu @ 1115
Time Samples Taken:

L-001 @ 1150

N-001 @ 1440

L-002 @ 1350

N-002 @ 1450

L-003 @ 1210

N-003 @ 1235

L-004 @ 1315

L-005 @ 1225

N-004 @ 1500

L-006 @ 1335

- Weather - Clear, 65°F, 0-10 mph wind
NE

- Tide

- Lagoon Stage = Low -> breached recently

- Malibu Creek: Flow Present, above Creek/Lagoon
pooling -> Tropic Release + rain

- Laboratory Drop-off @ 1620

(PS)

Appendix B

Analytical Laboratory Reports

January 11, 2017

Rincon Consultants, Inc.
 Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Lab ID : SP 1615252
 Customer : 2-25173

Laboratory Report

Introduction: This report package contains total of 14 pages divided into 3 sections:

Case Narrative (2 pages) : An overview of the work performed at FGL.
 Sample Results (10 pages) : Results for each sample submitted.
 Quality Control (2 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
N-001	12/20/2016	12/20/2016	SP 1615252-001	SW
N-002	12/20/2016	12/20/2016	SP 1615252-002	SW
N-003	12/20/2016	12/20/2016	SP 1615252-003	SW
N-004	12/20/2016	12/20/2016	SP 1615252-004	SW
L-001	12/20/2016	12/20/2016	SP 1615252-005	SW
L-002	12/20/2016	12/20/2016	SP 1615252-006	SW
L-003	12/20/2016	12/20/2016	SP 1615252-007	SW
L-004	12/20/2016	12/20/2016	SP 1615252-008	SW
L-005	12/20/2016	12/20/2016	SP 1615252-009	SW
L-006	12/20/2016	12/20/2016	SP 1615252-010	SW

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived on ice. All samples were prepared and analyzed within the method specified hold time. 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 - Wet Chemistry QC

351.2	12/21/2016:215196 All preparation quality controls are within established criteria
4500NH3G	12/21/2016:218461 All analysis quality controls are within established criteria
	12/21/2016:215195 All preparation quality controls are within established criteria
4500NO2F	12/21/2016:215253 All preparation quality controls are within established criteria

January 11, 2017
Rincon Consultants, Inc.

Lab ID : SP 1615252
Customer : 2-25173

Inorganic - Wet Chemistry QC

4500NO3F	12/21/2016:218510 All analysis quality controls are within established criteria
	12/21/2016:218511 All analysis quality controls are within established criteria
	12/21/2016:215252 All preparation quality controls are within established criteria
4500-P B	01/04/2017:200111 All preparation quality controls are within established criteria
4500PE	01/05/2017:200131 All analysis quality controls are within established criteria
EPA351.2	12/21/2016:218486 All analysis quality controls are within established criteria

Certification:: I certify that this data package is in compliance with ELAP 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: 2017-01-11

January 11, 2017

Lab ID : SP 1615252-001
 Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-14:40
 Sampled By : Peter Shellenbarger
 Received On : December 20, 2016-16:20
 Matrix : Surface Water

Description : N-001
 Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	0.100	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:47JDD
Nitrite Nitrogen	ND	0.1	0.011	mg/L	1	U	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:44JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:47AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:47AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-10:57AMB
Phosphorus, Total	1.01	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:18SJJ

DQF Flags Definition:

U Constituent results were non-detect.

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-002

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-14:50

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : N-002

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	0.100	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:49JDD
Nitrite Nitrogen	ND	0.1	0.011	mg/L	1	U	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:46JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:49AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:49AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-10:58AMB
Phosphorus, Total	1.35	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:19SJN
DQF Flags Definition:												
U Constituent results were non-detect.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-003

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-12:35

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : N-003

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	0.100	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:53JDD
Nitrite Nitrogen	ND	0.1	0.011	mg/L	1	U	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:51JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:52AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:52AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-10:59AMB
Phosphorus, Total	1.31	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:20SJN
DQF Flags Definition:												
U Constituent results were non-detect.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-004

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-15:00

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : N-004

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	0.0700	0.1	0.032	mg/L	1	J	4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:55JDD
Nitrite Nitrogen	ND	0.1	0.011	mg/L	1	U	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:53JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:54AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:54AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:00AMB
Phosphorus, Total	1.29	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:21SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-005

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-11:50

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-001

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	3.20	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:51JDD
Nitrite Nitrogen	0.0480	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:49JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:56AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:56AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:04AMB
Phosphorus, Total	0.934	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:22SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-006

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-13:50

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-002

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	1.60	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-12:57JDD
Nitrite Nitrogen	0.0290	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:55JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:59AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-07:59AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:05AMB
Phosphorus, Total	0.621	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:25SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-007

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-12:10

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-003

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	2.70	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-13:00JDD
Nitrite Nitrogen	0.0470	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:57JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:11AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:11AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:06AMB
Phosphorus, Total	0.984	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:26SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-008

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-13:15

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-004

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	2.40	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-13:02JDD
Nitrite Nitrogen	0.0580	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-12:59JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:12AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:12AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:07AMB
Phosphorus, Total	0.833	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:27SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-009

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-12:25

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-005

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	2.50	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-13:15JDD
Nitrite Nitrogen	0.0550	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-13:13JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:20AMB
Ammonia Nitrogen	ND	0.2	0.072	mg/L	1	U	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:20AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:08AMB
Phosphorus, Total	0.865	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:28SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017

Lab ID : SP 1615252-010

Customer ID : 2-25173

Rincon Consultants, Inc.

Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

Sampled On : December 20, 2016-13:35

Sampled By : Peter Shellenbarger

Received On : December 20, 2016-16:20

Matrix : Surface Water

Description : L-006

Project : Malibu WWTP - Surface Water Monitoring

Sample Result - Inorganic

Constituent	Result	PQL	MDL	Units	Dilution	DQF	Sample Preparation			Sample Analysis		
							Method	ID	Time	Method	ID	Time
Wet Chemistry												
Nitrate Nitrogen	0.300	0.1	0.032	mg/L	1		4500NO3F	215252	12/21/16 11:30	4500NO3F	218511-FI207	12/21/16-13:17JDD
Nitrite Nitrogen	0.0250	0.1	0.011	mg/L	1	J	4500NO2F	215253	12/21/16 11:30	4500NO3F	218510-FI207	12/21/16-13:14JDD
Nitrogen, Organic	ND	0.5	0.072	mg/L	1	JU	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:22AMB
Ammonia Nitrogen	0.116	0.2	0.072	mg/L	1	J	4500NH3G	215195	12/21/16 05:50	4500NH3G	218461-FI207	12/21/16-08:22AMB
Kjeldahl Nitrogen	ND	0.5	0.32	mg/L	1	U	351.2	215196	12/21/16 06:22	EPA351.2	218486-FI206	12/21/16-11:09AMB
Phosphorus, Total	0.287	0.1	0.031	mg/L	1		4500-P B	200111	01/04/17 16:40	4500PE	200131-UV205	01/05/17-17:29SJN
DQF Flags Definition:												
U Constituent results were non-detect.												
J Reported value is estimated; detected at a concentration below the PQL and above the laboratory MDL.												

ND=Non-Detected. PQL=Practical Quantitation Limit.

January 11, 2017
Rincon Consultants, Inc.

Lab ID : SP 1615252
Customer : 2-25173

Quality Control - Inorganic

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Nitrogen, Total Kjeldahl	351.2	12/21/16:215196jmg (SP 1615148-001)	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	75.5 %	73-124	
			MS	mg/L	12.00	79.7 %	54-136	
			MSD	mg/L	12.00	85.8 %	54-136	
			MSRPD	mg/L	12.00	6.7%	≤27	
Ammonia Nitrogen	4500NH3G	(CC 1684252-001) (SP 1615252-009)	MS	mg/L	2.000	108 %	70-130	
			MSD	mg/L	2.000	106 %	70-130	
			MSRPD	mg/L	2.000	1.6%	≤20	
			MS	mg/L	2.000	104 %	70-130	
			MSD	mg/L	2.000	102 %	70-130	
	MSRPD	mg/L	2.000	2.3%	≤20			
	4500NH3G	12/21/16:218461AMB	CCB	mg/L		-0.043	0.2	
			CCV	mg/L	2.000	95.4 %	90-110	
			CCB	mg/L		-0.067	0.2	
			CCV	mg/L	2.000	107 %	90-110	
CCB			mg/L		-0.064	0.2		
CCV	mg/L	2.000	106 %	90-110				
Nitrite as Nitrogen	4500NO2F	(SP 1615242-001)	MS	mg/L	1.218	97.4 %	50-150	
			MSD	mg/L	1.218	98.0 %	50-150	
			MSRPD	mg/L	1.218	0.7%	≤30	
Nitrate + Nitrite as N	4500NO3F	(SP 1615242-001)	MS	mg/L	11.22	92.6 %	5-285	
			MSD	mg/L	11.22	95.1 %	5-285	
			MSRPD	mg/L	11.22	2.4%	≤30.4	
	4500NO3F	12/21/16:218511JDD	CCB	mg/L		0.015	0.1	
			CCV	mg/L	11.22	94.6 %	90-110	
			CCB	mg/L		0.022	0.1	
			CCB	mg/L		0.016	0.1	
			CCV	mg/L	11.22	94.0 %	90-110	
			CCB	mg/L		0.070	0.1	
			CCV	mg/L	11.22	94.1 %	90-110	
Nitrite as Nitrogen	4500NO3F	12/21/16:218510JDD	CCB	mg/L		0.00500	0.012	
			CCV	mg/L	1.218	101 %	90-110	
			CCB	mg/L		0.00500	0.012	
			CCB	mg/L		0.00500	0.012	
			CCV	mg/L	1.218	102 %	90-110	
			CCB	mg/L		0.00600	0.012	
			CCV	mg/L	1.218	102 %	90-110	
Phosphorus	4500-P B	01/04/17:200111sjn (CC 1684279-001)	Blank	mg/L		ND	<0.1	
			LCS	mg/L	0.5000	108 %	90-116	
			MS	mg/L	0.2500	-1310 %	<¼	
			MSD	mg/L	0.2500	-1190 %	<¼	
			MSRPD	mg/L	0.2500	5.0%	≤13.2	
Total Phosphorus	4500PE	01/05/17:200131SJN	CCB	mg/L		0.022	0.1	
			CCV	mg/L	0.5000	109 %	90-110	
			CCB	mg/L		0.022	0.1	
			CCV	mg/L	0.5000	107 %	90-110	
			CCB	mg/L		0.022	0.1	
			CCV	mg/L	0.5000	106 %	90-110	
Nitrogen, Total Kjeldahl	EPA351.2	12/21/16:218486AMB	ICB	mg/L		0.000	0.5	
			ICV	mg/L	5.000	90.3 %	90-110	
			CCB	mg/L		0.000	0.5	
			CCV	mg/L	5.000	91.5 %	90-110	
			CCB	mg/L		0.000	0.5	
			CCV	mg/L	5.000	91.3 %	90-110	

January 11, 2017
Rincon Consultants, Inc.

Lab ID : SP 1615252
Customer : 2-25173

Quality Control - Inorganic

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 analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
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.
<1/4	: High Sample Background - Spike concentration was less than one fourth of the sample concentration.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.

December 29, 2016

Rincon Consultants, Inc.
 Attn: Torin Snyder
 180 N. Ashwood Ave.
 Ventura, CA 93003

SP 1615252:1-10 COLIFORM BACTERIA ANALYSIS
 Customer ID : 2-25173

System Number :
 Project Name : Malibu WWTP - Surface Water Monitoring

Sample Handling Information

ID	Sample Number	Sample Description	Sample Type/Reason	Sampled By	Employed By	Sampled	Started	Finished
1	SP 1615252-001	N-001	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 14:40	12/20/2016 16:39 LMM	12/23/2016 LMM
2	SP 1615252-002	N-002	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 14:50	12/20/2016 16:41 LMM	12/22/2016 LMM
3	SP 1615252-003	N-003	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 12:35	12/20/2016 16:43 LMM	12/23/2016 LMM
4	SP 1615252-004	N-004	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 15:00	12/20/2016 16:45 LMM	12/24/2016 LMM
5	SP 1615252-005	L-001	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 11:50	12/20/2016 16:47 LMM	12/24/2016 LMM
6	SP 1615252-006	L-002	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 13:50	12/20/2016 16:49 LMM	12/23/2016 LMM
7	SP 1615252-007	L-003	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 12:10	12/20/2016 16:51 LMM	12/24/2016 LMM
8	SP 1615252-008	L-004	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 13:15	12/20/2016 16:53 LMM	12/23/2016 LMM
9	SP 1615252-009	L-005	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 12:25	12/20/2016 16:40 LM	12/23/2016 LM
10	SP 1615252-010	L-006	Source-Other	Peter Shellenbarger	Not Available	12/20/2016 13:35	12/20/2016 16:42 LM	12/22/2016 LM

Analytical Results

ID	Sample Description	Chlorine Total/Free	Temp °C	Method	Units	Total	Fecal	E. Coli	Person Notified ‡	Date ‡ Notified	Time ‡ Notified	Foot Note
1	N-001	---	---	SM 9221B	MPN/100ml	49	49	---	N/R			
2	N-002	---	---	SM 9221B	MPN/100ml	< 1.8	< 1.8	---	N/R			
3	N-003	---	---	SM 9221B	MPN/100ml	79	79	---	N/R			
4	N-004	---	---	SM 9221B	MPN/100ml	7.8	< 1.8	---	N/R			
5	L-001	---	---	SM 9221B	MPN/100ml	> 1600	49	---	N/R			
6	L-002	---	---	SM 9221B	MPN/100ml	> 1600	240	---	N/R			
7	L-003	---	---	SM 9221B	MPN/100ml	220	31	---	N/R			
8	L-004	---	---	SM 9221B	MPN/100ml	540	79	---	N/R			
9	L-005	---	---	SM 9221B	MPN/100ml	350	49	---	N/R			
10	L-006	---	---	SM 9221B	MPN/100ml	130	14	---	N/R			

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

‡ Client Notification details.

Analyses were performed using Standard Methods 22nd edition. If you have any questions regarding your results, please call.

Reviewed and
 Approved By

Raquel R. Harvey



Digitally signed by Raquel R. Harvey
 Title: Tech Director Microbiology
 Date: 2016-12-29