



*Ventura Countywide  
Stormwater Quality  
Management Program*

2020-2021  
Permit Year

Ventura Countywide Stormwater Quality  
Management Program Annual Report

# Attachment E – TMDL Reports Part 6



December 15, 2021

Camarillo  
County of Ventura  
Fillmore  
Moorpark  
Ojai  
Oxnard  
Port Hueneme  
Santa Paula  
Simi Valley  
Thousand Oaks  
Ventura  
Ventura County Watershed Protection District

Central Services  
Joan Araujo, Director

Engineering Services  
Christopher Cooper, Director

Transportation  
David Fleisch, Director

Water & Sanitation  
Joseph Pope, Director

Watershed Protection  
Glenn Shephard, Director

December 15, 2020

Dr. L.B. Nye, Chief of Regional Programs  
Regional Water Quality Control Board  
Los Angeles Region  
320 West 4th Street, Suite 200  
Los Angeles, CA 90013

**SUBJECT: UPPER MALIBU CREEK TRASH TMDL 2019-2020 ANNUAL MONITORING  
REPORT DATED DECEMBER 15, 2020**

Dear Dr. Nye:

On behalf of the County of Ventura (County) and Ventura County Watershed Protection District (VCPWD), I am pleased to submit the enclosed the Upper Malibu Creek Trash Total Maximum Daily Load (TMDL) Annual Monitoring Report (AMR) for the 2019-2020 monitoring year. The AMR is being submitted per the requirements of the Malibu Creek Trash Total Maximum Daily Load (TMDL), Los Angeles Regional Water Quality Control Board Resolution No. 2008-007 (effective July 7, 2009) and Conditional Waiver of Waste Discharge Requirements for Discharges of Trash from Nonpoint Sources in Waterbodies Subject to Total Maximum Daily Loads for Trash or Debris (effective September 10, 2020).

AMR documents ninth year of implementation of the Malibu Creek Watershed Trash Monitoring and Reporting Plan and Minimum Frequency of Assessment and Collection (TMRP/MFAC) program, submitted collaboratively by the County, the District, and the City of Thousand Oaks on April 30, 2010. It provides a summary of conducted monitoring activities, a summary of the monitoring results, and documentation of on-going maintenance of full capture devices installed by the County/VCWPD towards point source compliance.

If you have any comments or question regarding the attached document, please contact me via email ([Ewelina.Mutkowska@ventura.org](mailto:Ewelina.Mutkowska@ventura.org)) or by phone at (805) 645-1382.

Sincerely,

Ewelina Mutkowska Digitally signed by Ewelina Mutkowska  
Date: 2020.12.15 09:10:50 -08'00'

Ewelina Mutkowska  
Senior Stormwater Manager

CC: Jun Zhu, Los Angeles Regional Water Quality Control Board  
Alexander Prescott, Los Angeles Regional Water Quality Control Board  
Jeff Pratt, Ventura County Public Works Agency  
Glenn Shephard, Ventura County Public Works Agency Watershed Protection  
Arne Anselm, Ventura County Public Works Agency Watershed Protection





**PUBLIC**  
**VENTURA COUNTY**  
**WORKS**



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DECEMBER 15, 2020

# Upper Malibu Creek Watershed Trash TMDL 2019-2020 Annual Monitoring Report

*submitted to*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,  
LOS ANGELES REGION

*submitted by*

COUNTY OF VENTURA AND  
VENTURA COUNTY WATERSHED PROTECTION DISTRICT

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## Executive Summary

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The purpose of this report is to present the results of the ninth year (July 1, 2019 through June 30, 2020) monitoring efforts conducted by the County of Ventura (County) and Ventura County Watershed Protection District (VCWPD). The program is designed to comply with the requirements of the Amendments to the Water Quality Control Plan – Los Angeles Region for the Malibu Creek Watershed Trash TMDL (Trash TMDL), Resolution No. R4-2008-007 (effective July 7, 2009). The trash monitoring results and compliance assessments are reported for point source waste load allocations (WLAs) and non-point source load allocations (LAs). Monitoring efforts were conducted according to the Trash Monitoring and Report Plan (TMRP) for the Malibu Creek Trash TMDL submitted to the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) on April 30, 2010.

On September 10, 2020, Regional Water Quality Control Board – Los Angeles Region (Los Angeles Water Board) adopted Conditional Waiver of Waste Discharge Requirements for Discharges of Trash from Nonpoint Sources in Waterbodies Subject to Total Maximum Daily Loads for Trash or Debris (Trash Conditional Waiver). This Conditional Waiver required submittal of annual TMRP reports by December 15, therefore in order to meet reporting requirements of both Revised Trash TMDL and Conditional Waiver, this Annual Report is submitted on December 15, 2020.

The County and VCWPD are complying with the point source requirements of the Trash TMDL through the installation of full capture systems in all conveyances collecting drainage from Priority Land Use areas and implementation of a MFAC/BMP Program in all the non-priority land use areas. To comply with the 2009 Trash TMDL point source requirement of a 100 percent reduction of trash from the baseline WLA, the County and VCWPD needs to show a minimum of a 30 percent decrease from at least one of the three baseline WLAs listed in the TMRP. This is due to the installed full capture systems collecting 70 percent of the total trash generated in the County/VCWPD's jurisdictions.

The MFAC trash data showed a 74 percent reduction in the volume of trash compared to the baseline WLA, a 68 percent reduction in the weight of trash compared to the baseline WLA and a 88 percent reduction in trash from the pieces baseline WLA. Based on the amount of trash captured by the County/VCWPD's full capture systems, and the greater than 30 percent reduction shown in the three baseline WLA metrics, the County/VCWPD are complying with the final July 2017 point source requirement of a 100 percent reduction in trash from the baseline WLA.

The County/VCWPD are complying with the non-point source requirements of the Trash TMDL through the implementation of a MFAC/BMP Program. Immediately following each MFAC Event, the MFAC/BMP Program resulted in zero trash as required by the Trash TMDL. Furthermore, the average monthly volume of trash, weight of trash, and the amount of trash were 0.15 cubic feet, 0.43 pounds, and 10 pieces, respectively. This indicates that trash is not accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections. Therefore, the MFAC/BMP Program is effective for meeting the Trash TMDL's non-point source requirements.

In 2015, the State Water Resources Control Board established statewide Trash Amendments to the Water Quality Control Plans for the Ocean Waters of California and Inland Surface Waters, Enclosed Bays, and Estuaries of California (Trash Amendments) in areas not subject to Trash

TMDLs. The Trash Amendments specified that MS4 permittees may install full capture devices in all storm drains that capture runoff from the priority land uses in their jurisdictions. In June 2018, the Regional Board opened the TMDL for reconsideration. Before the TMDL was revised, MS4 permittees (point sources) that chose to comply with the Trash TMDL WLAs via installation of full capture devices were required to install them in all conveyances discharging to the Malibu Creek Watershed. The Trash TMDL was ultimately revised to align with the Trash Amendments and was adopted in June 2018 (Revised Trash TMDL). The Revised Trash TMDL became effective on May 6, 2020.

As required by the Revised Trash TMDL and Trash Conditional Waiver, on August 6, 2020, the County/VCWP submitted a revised TMRP to the Regional Board proposing revisions to the upper Malibu Creek TMRP. The proposed changes include a transition to a visual trash assessment method and revision of monitoring frequency. Trash assessment program will be revised as soon as revised TMRP is approved for implementation.

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# 1 Overview

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The purpose of this Annual Report is to present the results of the ninth-year (2019-2020) monitoring efforts conducted by County of Ventura (County) and Ventura County Watershed Protection District (VCWPD). The monitoring efforts are designed to comply with the requirements of the Amendments to the Water Quality Control Plan – Los Angeles Region for the Malibu Creek Watershed Trash TMDL (Trash TMDL), Resolution No. R4-2008-007 (effective July 7, 2009). Monitoring efforts were conducted according to the Trash Monitoring and Report Plan (TMRP) for the Malibu Creek Trash TMDL submitted to the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) on April 30, 2010. To complete this effort, the responsible parties hired the California Conservation Corps (CCC) to conduct field monitoring efforts.

On September 10, 2020, Regional Water Quality Control Board – Los Angeles Region (Los Angeles Water Board) adopted Conditional Waiver of Waste Discharge Requirements for Discharges of Trash from Nonpoint Sources in Waterbodies Subject to Total Maximum Daily Loads for Trash or Debris (Trash Conditional Waiver). This Conditional Waiver required submittal of annual TMRP reports by December 15, therefore in order to meet reporting requirements of both Revised Trash TMDL and Conditional Waiver, this Annual Report is submitted on December 15, 2020.

The Trash TMDL assigns the County and the VCWPD point source waste load allocations (WLAs) and non-point source load allocations (LAs) as well as a numeric target of “zero trash in the above listed subwatersheds of the Malibu Creek Watershed, and on the shorelines of those waterbodies.” For point sources, zero is defined “as no trash discharged into the listed waterbodies of the Malibu Creek Watershed and on the shorelines of those waterbodies.” For non-point sources, zero is defined as “no trash immediately following each assessment and collection event with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections.” The MFAC Program and TMRP were developed to meet the requirements of the Trash TMDL and to assess compliance with the point source WLAs and non-point source LAs.

This TMRP Annual Report includes:

- A description of the MFAC Site and a summary of the monitoring events conducted during the 2019-2020 reporting year;
- A discussion of the data collected during the 2019-2020 reporting year;
- A compliance discussion for point and non-point sources;
- A summary of trash best management practices (BMPs) implemented; and
- Recommended changes to the MFAC/BMP Program and TMRP.

In 2015, the State Water Resources Control Board established statewide Trash Amendments to the Water Quality Control Plans for the Ocean Waters of California and Inland Surface Waters, Enclosed Bays, and Estuaries of California (Trash Amendments) in areas not subject to Trash TMDLs. The Trash Amendments specified that MS4 permittees may install full capture devices in all storm drains that capture runoff from the priority land uses in their jurisdictions. In June 2018, the Regional Board opened the TMDL for reconsideration. Before the TMDL was revised, MS4 permittees (point sources) that chose to comply with the Trash TMDL WLAs via installation

of full capture devices were required to install them in all conveyances discharging to the Malibu Creek Watershed. The Trash TMDL was ultimately revised to align with the Trash Amendments and was adopted in June 2018 (Revised Trash TMDL). The Revised Trash TMDL became effective on May 6, 2020.

As required by the Revised Trash TMDL and Trash Conditional Waiver, on August 6, 2020, the County/VCWP submitted a revised TMRP to the Regional Board proposing revisions to the upper Malibu Creek TMRP. The proposed changes include a transition to a visual trash assessment method and revision of monitoring frequency. Trash assessment program will be revised as soon as revised TMRP is approved for implementation.

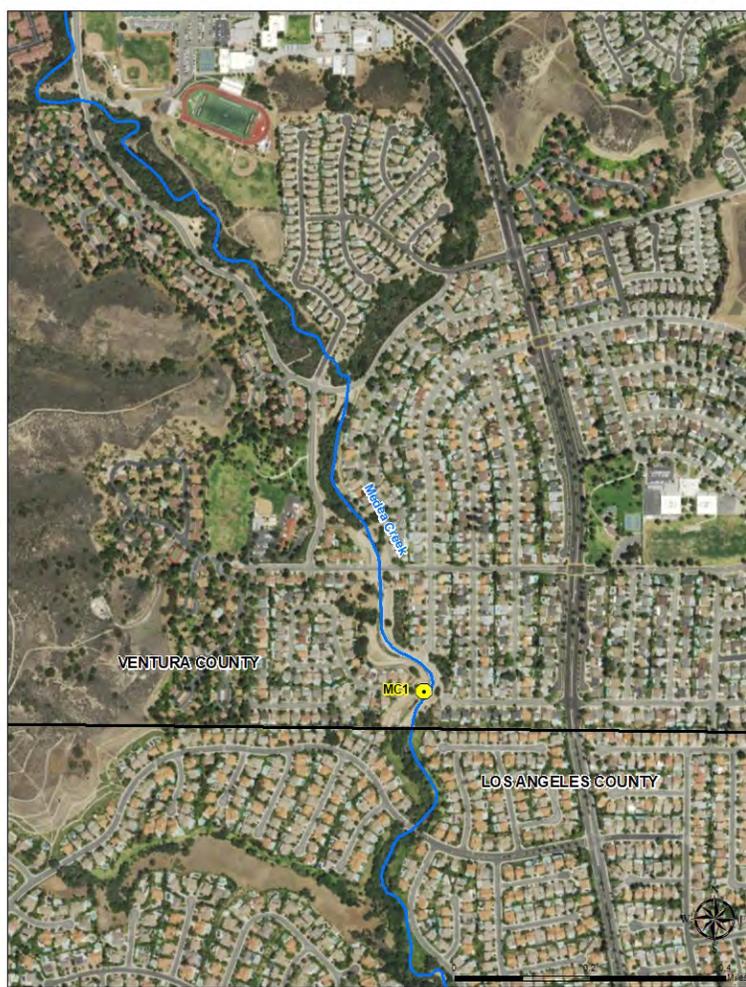
## 2 MFAC Site and Monitoring Events

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The following subsections provide information for the MFAC Site and for the completed monitoring events during the 2019-2020 reporting year.

### 2.1 MFAC SITE LOCATION

The Medea Creek MFAC site (MC1) location was selected at the lowest point of flow from the subwatershed in Ventura County where creek morphology is conducive to accumulate trash deposits. This provides a measure of the level of trash movement in the subwatershed. This location was also judged to be accessible and safe for entry. The area within the County unincorporated community of Oak Park with drainage to Reach 2 of Medea Creek is 3.3 square miles. A breakdown of land uses for this area is: 6.93 percent commercial and community facilities; 30.1 percent residential; and 62.9 percent open space. The population in Oak Park is about 13,800. Medea Creek follows a single flow path as it moves through the assessment area. When flow levels rise due to a storm event, the stream configuration causes bank overflow and deposition of transported trash and debris onto an existing flood plain. The Medea Creek assessment site is shown in **Figure 1**.



**Figure 1. Medea Creek MFAC Site (MC1) Location**

## 2.2 SUMMARY OF MONITORING EVENTS

As specified in the TMRP, a minimum of one MFAC Event per month is conducted at the Medea Creek site. As mentioned above, the CCC conducted all MFAC Events, which were completed as indicated in **Table 1**. The CCC utilized an equivalent method/variation of the Rapid Trash Assessment Protocol (RTAP), developed by the San Francisco Bay Water Board. The CCC began each MFAC event at the lower site boundary and moved upstream making sure to differentiate between items found above and below the high-water line. The CCC collected all identified trash, while simultaneously categorizing and tabulating trash items on the field log (Appendix 1). After the collection was completed, the sum of each item found above and below the high-water line was written next to the item's respective category. The trash collected was then weighed and the volume measured.

**Table 1. MFAC Event Completion Summary (Monitoring)**

Monitoring Date	Medea Creek Reach 2, MC1 Site
7/31/2019	X
8/27/2019	X
9/26/2019	X
10/24/2019	X
11/19/2019	X
12/17/2019	X
1/22/2020	X
2/22/2020	X
3/24/2020	X
4/29/2020	X
5/26/2020	X
6/24/2020	X

"X" indicates a completed MFAC Event

**Table 2. MFAC Event Completion Summary (Special Cleanup)**

Monitoring Date	Medea Creek Reach 2, MC1 Site
7/25/2019	X
8/14/2019	X
9/17/2019	X
10/17/2019	X
11/7/2019	X
12/10/2019	X
1/7/2020	X
2/6/2020	X
3/17/2020	X
4/23/2020	X
5/2020	N/A
6/10/2020	X

"X" indicates a completed MFAC Event

"N/A" no Special Cleanup Event conducted in May 2020

### 3 Data Collection Discussion

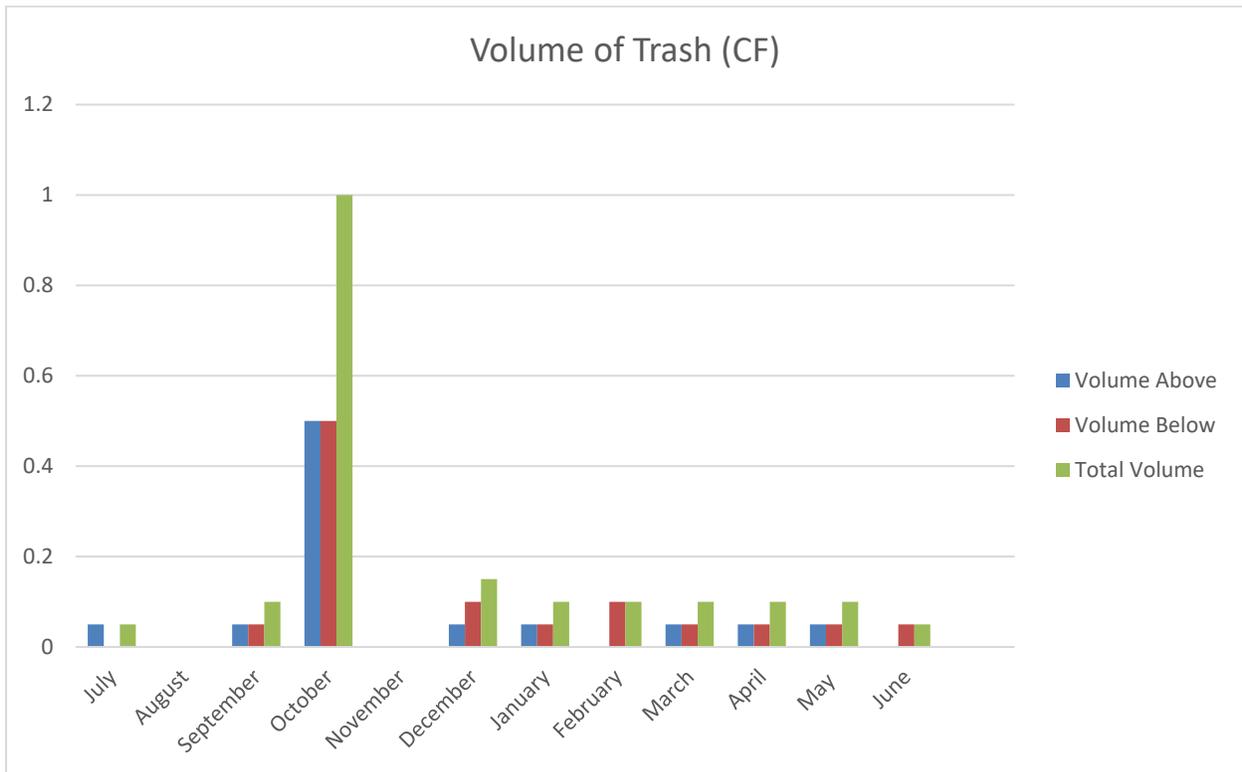
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The location of trash (i.e., above or below the high-water line) at the site is likely associated with the method that the debris was deposited and can assist the Responsible Parties with sourcing the debris. Items found above the high-water line may have been deposited by wind transport, littering from adjacent land uses, and illegal dumping. Items found below the high-water line may have been deposited by downstream accumulation. During the monitoring year, the types of trash found were consistently urban and recreational.

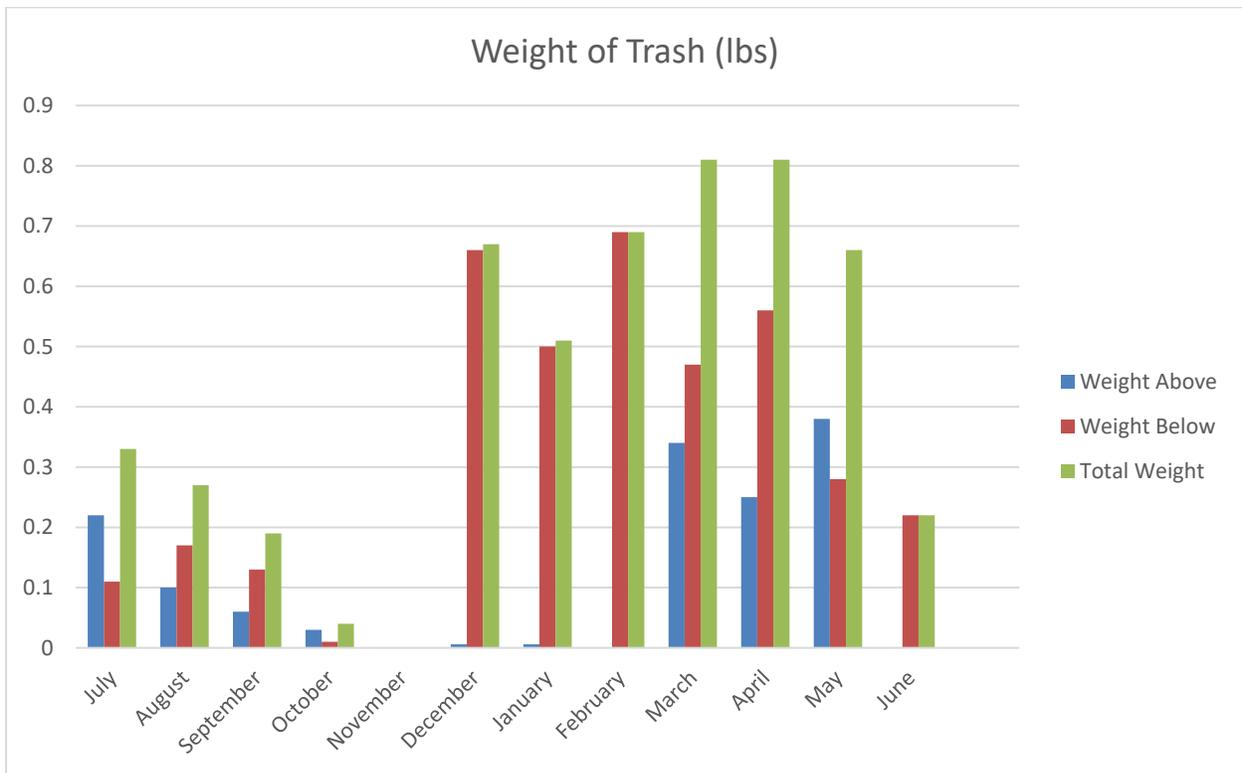
The trash data collected during the 2019-2020 reporting year were highly variable in that during some months, the volume, weight, and pieces were higher above the high-water line than below and in some months, this trend was reversed. In addition, it is difficult to correlate the volume-to-weight-to-pieces data as they often do not align. That is, one month there might be a high volume of trash, but a low weight of trash and a low number of pieces. Again, this trend might be reversed another month. Overall, the highest volume of trash occurred during December 2019, the highest weight in March 2020 and April 2020, and the highest number of pieces occurred in March 2020. Generally, the highest weight and pieces of trash occurred in winter and spring, and there is no clear pattern for volume. **Table 3** summarizes the volume, weight and pieces of trash found above and below the high-water line as well as the total amount of trash collected at MC1 site, by month. **Figure 2**, **Figure 3**, and **Figure 4** show the volume of trash collected, the weight of trash collected, and the pieces of trash collected, respectively.

**Table 3. Trash Data Collected Above and Below the High-Water Line and Total Trash Collected at MC1 (monitoring)**

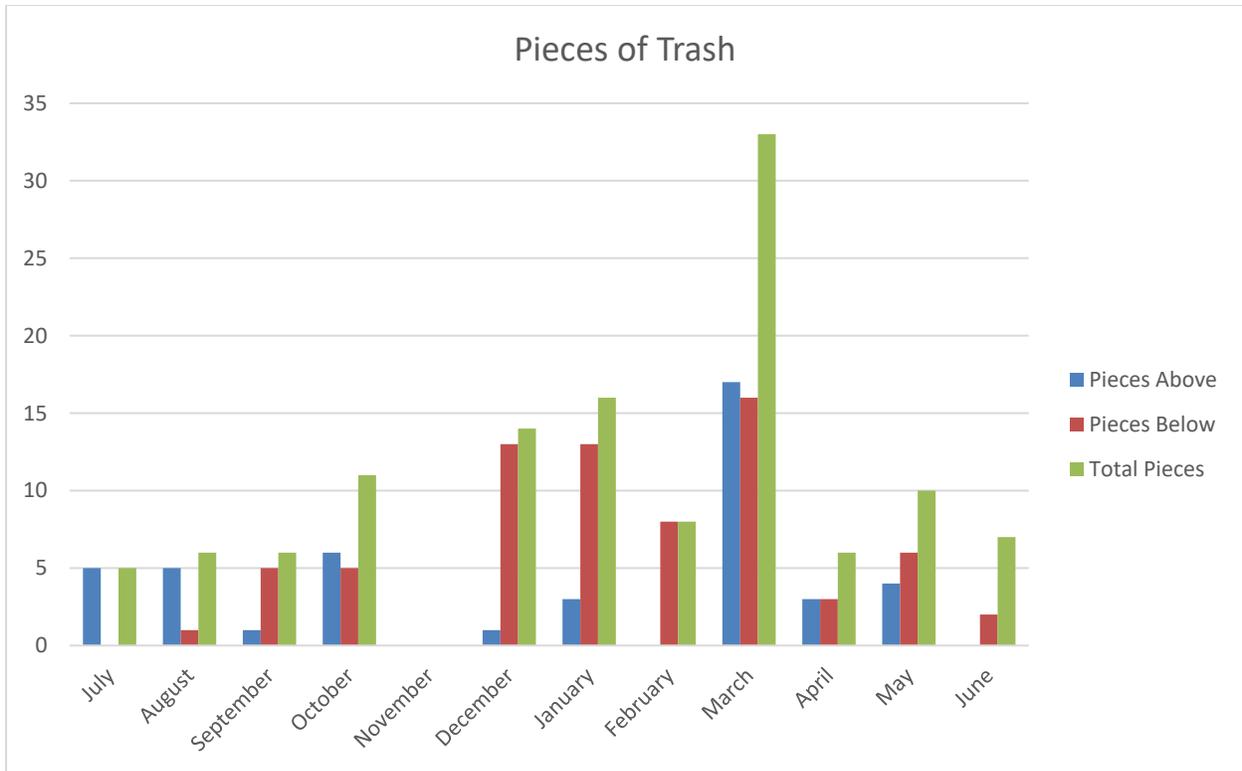
Date	Above High-Water Line			Below High-Water Line			Total Trash Collected		
	Volume (CF)	Weight (lbs)	Total Pieces of Trash	Volume (CF)	Weight (lbs)	Total Pieces of Trash	Volume (CF)	Weight (lbs)	Total Pieces of Trash
7/31/2019	0.05	0.22	5	0.00	0.11	0	0.05	0.33	5
8/27/2019	0	0.10	5	0	0.17	1	0	0.27	6
9/26/2019	0.05	0.06	1	0.05	0.13	5	0.10	0.19	6
10/24/2019	0.50	0.03	6	0.50	0.01	5	1.0	0.04	11
11/19/2019	0	0	0	0	0	0	0	0	0
12/17/2019	0.05	.006	1	0.10	.66	13	0.15	0.67	14
1/22/2020	0.05	.006	3	0.05	0.5	13	0.10	0.51	16
2/20/2020	0	0	0	0.10	0.69	8	0.10	0.69	8
3/24/2020	0.05	0.34	17	0.05	0.47	16	0.10	0.81	33
4/29/2020	0.05	0.25	3	0.05	0.56	3	0.10	0.81	6
5/26/2020	0.05	0.38	4	0.05	0.28	6	0.10	0.66	10
6/24/2020	0	0	0	0.05	0.22	2	0.05	0.22	2
<b>Totals</b>	<b>0.85</b>	<b>1.39</b>	<b>45</b>	<b>1.00</b>	<b>3.80</b>	<b>72</b>	<b>1.85</b>	<b>5.19</b>	<b>117</b>



**Figure 2. Volume of Trash Collected at MC1**



**Figure 3. Weight of Trash Collected at MC1**



**Figure 4. Pieces of Trash Collected at MC1**

## 4 TMDL Compliance Discussion

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### 4.1 POINT SOURCE COMPLIANCE

To address the point source requirements of the Trash TMDL, the County/VCWPD originally implemented a MFAC/BMP Program, which was detailed in the TMRP submitted to the Los Angeles Water Board on April 30, 2010. The Trash TMDL requires implementation of the TMRP six months from receipt of the letter of approval from Regional Board (Table 7-31.2a of the Trash TMDL). The County/VCWPD did not receive a response or approval from Los Angeles Water Board regarding the submitted TMRP and on March 25, 2011, submitted a Notice of Intent (NOI) to proceed with implementing the proposed TMRP. In July 2011, the County/VCWPD commenced implementing the proposed MFAC/BMP Program towards meeting the Trash TMDL's requirements.

The Trash TMDL requires point source dischargers to achieve a stepwise reduction in trash from the baseline WLA in 20 percent increments or install full captures systems in the corresponding percentages of conveyances discharging to the Malibu Creek Watershed. During the first year of monitoring, July 1, 2011 through June 30, 2012, trash volume, weight, and pieces data collected at the Medea Creek (MC1) monitoring location served as the baseline WLAs from which, the County/VCWPD have been assessing compliance (Table 4).

**Table 4. Baseline WLAs for the Medea Creek Reach 2 (MC1) Sampling Site**

Medea Creek Reach 2 (MC1) Sampling Site Baseline WLAs		
Volume (CF)	Weight (lbs)	Pieces
7.2	16.3	970

As discussed in details in the 2016-2017 Trash Monitoring Report, in consultation with Regional Water Board staff, the County revised point source compliance strategy and installed full capture devices to address runoff from priority land uses as defined by the Amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the Proposed Final Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE Plan) (together, "Statewide Trash Provisions"). In addition, County continues addressing all non-priority land uses through a MFAC/BMP Program. To demonstrate compliance with the phased percent reductions required by the Trash TMDL, the County/VCWPD proposed to use the percent reduction identified by the trash data collected during the MFAC Events combined with the percent of total trash generated that is captured by the full capture systems in the priority land use areas. As described in the 2016-2017 Trash Monitoring Report, it was concluded that the County/VCWPD needs to show at least a 30 percent reduction from one of the baselines WLA matrices through the MFAC/BMP Program to comply with the final July 2017's 100 percent reduction from the baseline WLA requirement.

As shown in Table 5, the trash data collected during the 2019-2020 reporting year through the MFAC Program at MC1 showed a 74 percent reduction in the volume of trash compared to the baseline WLA, a 68 percent reduction in the weight of trash compared to the baseline WLA, and a 88 percent reduction in trash from the pieces baseline WLA. Based on the amount of trash captured by the County's/VCWPD's full capture systems, and the greater than 30 percent

reduction shown in the three baseline WLA metrics, the County/VCWPD are complying with the final July 2017 point source requirement of a 100 percent reduction in trash from the baseline WLA.

**Table 5. 2018-2019 Percent Reductions from Baseline WLAs**

<b>Metric</b>	<b>Volume (CF)</b>	<b>Weight (lbs)</b>	<b>Pieces</b>
Baseline WLA	7.2	16.3	970
30 percent Reduction from Baseline WLA Values	5.04	11.41	649
2019-2020 Trash Data	1.85	5.19	117
Percent Reduction from Baseline WLA	74 percent	68 percent	88percent

The Revised Trash TMDL indicates the responsible parties will only need to address priority land uses within their jurisdictions to meet the point source requirements. The County/VCWPD have installed full capture systems all conveyances collecting drainage from priority land use areas within their jurisdictions. As such, the County/VCWPD will no longer need to show 30% reduction from the baseline WLAs for compliance according to the Revised Trash TMDL.

#### **4.2 NON-POINT SOURCE COMPLIANCE**

For non-point sources, the numeric target of zero trash is defined as “no trash immediately following each assessment and collection event with an established Minimum MFAC Program, where the MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections.”

Immediately following each 2019-2020 MFAC Event, the MFAC Program resulted in zero trash as required by the Trash TMDL for non-point sources. Furthermore, the average monthly volume, weight, and amount of trash were 0.15 cubic feet, 0.43 pounds, and 9.75 pieces, respectively. This indicates that trash is not accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections. Therefore, the MFAC/BMP Program is effective for meeting the Trash TMDL’s non-point source requirements.

## 5 Trash BMPs Implemented

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The County/VCWPD Litter Management Program includes the following:

- Catch basin cleaning - Catch basins, including full capture devices, are inspected at least once a year and cleaned when filled to 25 percent or more of the catch basin's capacity as required by the Ventura MS4 Permit. County has been cleaning all inspected catch basins regardless of what percent of catch basin capacity is filled up with vegetation debris and occasional trash. During storm season, all drainage facilities are inspected and cleaned as necessary. Example photos from a full capture device inspection and cleaning event are presented in **Appendix 3**.
- The County is developing an ArcGIS Survey123 app to track catch basin inspections and cleanings. Survey123 allows field staff to collect data via a mobile device and enables staff to efficiently analyze the catch basin inspection results.
- Open channel storm drain maintenance - All channels owned and maintained by VCWPD are cleared, inspected, and cleaned as required, at least once per year.
- In July 2018, County/VCWPD initiated additional monthly cleanups events in addition to monthly trash assessment events.
- Ventura County's catch basins are labeled, "Don't Pollute, Flows to Waterways."
- Trash Management at Public Events - A trash and litter management plan is required when obtaining a permit for staging public events. This plan requires adequate facilities for trash collection and disposal.
- Public areas - Trash receptacles have been placed within high trash generation areas. These devices are cleaned and maintained regularly to prevent trash overflow.
- The amended Ventura County Stormwater Quality Management Ordinance for Unincorporated Areas (Ventura County Ordinance No. 4450) has been in effect since August 2012. It includes litter and trash specific prohibitions (§ 6942 and § 6954) on the discharge or deposition of trash that may enter the County storm drain system or receiving waters. The revised ordinance also includes increased civil penalties for violations and provisions for issuing administrative fines, recovery of costs, and misdemeanor violations.
- The County and VCWPD participate in the Ventura Countywide Stormwater Quality Management Program to that provides outreach and education facilitated by contracted services from "Sagent," a professional advertisement group that designs and conducts countywide, bilingual outreach programs advocating proper trash disposal. Outreach includes social media messages about litter prevention and the protection of stormwater quality.
- Various Stormwater Pollution Prevention -related social media posts by the Ventura County Community for Clean Watersheds.
- The County conducts commercial, industrial, and construction facility/site inspections to ensure pollution prevention BMPs are adequate and maintained and to educate employees about the importance of pollution prevention.

## 6 Recommended MFAC Program and TMRP Changes

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On June 14, 2018, the Los Angeles Water Board adopted proposed revisions to the Trash TMDL that align the Trash TMDL with the Statewide Trash Provisions (Revised Trash TMDL). As required by the Revised Trash TMDL and Trash Conditional Waiver, on August 6, 2020, the County/VCWPD submitted a revised TMRP to the Regional Board proposing revisions to the approved TMRP in response to the revised Trash TMDL. The proposed changes include a transition to a visual trash assessment method and revision of monitoring frequency.

Findings from monitoring during the past nine years have demonstrated that an alternate monitoring method is needed to improve the MFAC/ BMP Program. The proposed approach will utilize the methods and monitoring procedures outlined in the approved TMRPs for Ventura River Estuary and the Revolon Slough/Beardsley Wash Trash TMDLs, which have been successfully implemented in these watersheds since June 2014, and May 2015, respectively.

The current TMRP approach assesses the amount of trash present in the Malibu Creek watershed through collecting and counting the number of pieces of trash and measuring the weight and volume of the trash found in two representative sites within the watershed. The responsible parties propose modifying this approach to transition to a more streamlined process, by implementing a visual assessment method. The visual monitoring approach utilizes a three-point scoring system based on the “Level of Trash” scoring category discussed in the Surface Water Ambient Monitoring Program (SWAMP) Protocol to estimate the presence of litter in a specific area.

The responsible parties propose maintaining the monitoring and MFAC/BMP event frequency established by the April 2010 TMRP, but will update the monitoring approach to follow the visual monitoring approach discussed above. The proposed monitoring frequency, combined with the MFAC/BMP program, is anticipated to be sufficient to collect trash generated during critical condition events. As discussed in the annual reports, targeted critical condition monitoring was conducted during the first year of the monitoring program and discontinued based on the results of that assessment. In subsequent years, an assessment of critical conditions was conducted in the annual reports based on a comparison of the trash levels observed during monitoring events that occurred after the critical condition event. Based on those assessments, the reports identified that rain prior to a monitoring event may increase the amount of trash present during the monitoring event. However, similar elevated levels of trash are present regardless of the amount of time between the rain event and the cleanup event, indicating that the regular cleanup and assessment events can be utilized to address trash generated from critical condition events. Wind events do not appear to have as much of an impact on the trash monitoring results. The monitoring results will continue to be used to evaluate the accumulation of trash between visual monitoring events and to determine if any modifications to the clean-up event frequency is needed to address critical conditions.

In addition, County/VCWPD will continue conducting additional monthly cleanup events in addition to the on-going implementation of the BMP Program, as initiated in July 2018.

## 7 Conclusion

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During the 2019-2020 reporting year, the County/VCWPD conducted monthly MFAC Events at the MC1 site in Medea Creek Reach 2 including collection of trash volume, weight, and number of pieces data during each MFAC Event. The trash data collected were highly variable and it is difficult to correlate the volume-to-weight-to-pieces data as they often do not align. Overall, the highest volume of trash occurred during December 2019, the highest weight in March and April 2020, and the highest number of pieces occurred in March 2020. Generally, the highest weight of trash was found in spring, volume of trash was consistent throughout winter and spring, and there is no clear pattern using pieces of trash data.

The County/VCWPD are complying with the point source requirements of the Trash TMDL through the installation of full capture systems in all conveyances collecting drainage from priority land uses areas and implementation of a MFAC/BMP Program in all the non-priority land use areas. As described in the 2016-2017 Trash Monitoring Report, the installed full capture systems address 70 percent of the total trash generated within the County unincorporated MS4 areas. As such, to comply with the point source requirement of a 100 percent reduction of trash from the baseline WLA, the County/VCWPD needs to show a minimum of a 30 percent decrease from at least one of the three the baseline WLAs listed in the TMRP.

The 2019-2020 MFAC trash data showed a 74 percent reduction in the volume of trash compared to the baseline WLA, 68 percent reduction in the weight of trash compared to the baseline WLA and a 88 percent reduction in trash from the pieces baseline WLA. Based on the amount of trash captured by the County's/VCWPD's full capture systems, and the greater than 30 percent reduction shown in the three baseline WLA metrics, the County/VCWPD are complying with the final July 2017 point source requirement of a 100 percent reduction in trash from the baseline WLA.

As of the effective date of Revised Trash TMDL, May 6, 2020, County/VCWPD complies with point-source WLAs by installation and maintenance of full capture devices in Priority Land Use and does not need to show at least 30% reduction of trash.

The County/VCWPD are complying with the non-point source requirements of the Trash TMDL through the implementation of a MFAC/BMP Program. Immediately following each MFAC Event, the MFAC/BMP Program resulted in zero trash as required by the Trash TMDL. Furthermore, the average monthly volume of trash, weight of trash, and the amount of trash were 0.15 cubic feet, 0.43 pounds, and 9.75 pieces, respectively. This indicates that trash is not accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections. Therefore, the MFAC/BMP Program is effective for meeting the Trash TMDL's non-point source requirements.

As required by the Revised Trash TMDL and Trash Conditional Waiver, on August 6, 2020, the County/VCWP submitted a revised TMRP to the Regional Board proposing revisions to the upper Malibu Creek TMRP. The proposed changes include a transition to a visual trash assessment method and revision of monitoring frequency. Trash assessment program will be revised as soon as revised TMRP is approved for implementation

Appendix 1  
Field Logs and Photos

available at

[https://countyofventuracamy.sharepoint.com/:f:/g/personal/ewelina\\_mutkowska\\_ventura\\_org/Er6t66\\_EqVhFpHMsst9NL4sBMuAX1ls2vTR3HabG0z1U1Q?e=Vh6yfb](https://countyofventuracamy.sharepoint.com/:f:/g/personal/ewelina_mutkowska_ventura_org/Er6t66_EqVhFpHMsst9NL4sBMuAX1ls2vTR3HabG0z1U1Q?e=Vh6yfb)

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Appendix 2  
2019-2020 Public Educational Outreach





September 2019 – Coastal Cleanup Day 2019 posters



County Stormwater Program information booth setup for the CSU Channel Islands Science Carnival March 2020 in Oxnard, California



During 2020 Annual Public Works Week, the County Stormwater Program and 1<sup>st</sup> grade “intern” prepared bilingual, in English and Spanish, presentation about pervious concrete. The movie is available at <https://www.vcpubliworks.org/npww/>

Social Media Posts



Community for a Clean Watershed

June 8 at 10:00 AM · 🌐

Litter is preventable. Keep litter off our streets and parks and out of our rivers, creeks, and ocean. Do your part by putting trash and recyclables in the proper bin. 🗑️ Remember, Ventura County watersheds are yours to enjoy, yours to protect! Visit [CleanWatershed.org](http://CleanWatershed.org). #MyCleanWatershed



4

1 Share

Like

Comment

Share



Community for a Clean Watershed

March 31 at 3:01 PM · 🌐

No one likes litter, especially our watersheds! Keep our watersheds clean and happy by picking up any litter you see while you're practicing #socialdistancing and enjoying our watersheds. 🗑️ #MyCleanWatershed



7

1 Comment

Like

Comment

Share



Community for a Clean Watershed

July 13 at 3:00 PM · 🌐

Did you know cigarette butts make up over half of littered objects? Cigarette butts and other kinds of litter (like bottles and cans) take years to decompose, polluting our local waters. 🌊 Help #KeepVenturaBeautiful by making sure your litter ends up in the proper bins



3

3 Shares

Like

Comment

Share

## Appendix 3

### Example of County of Ventura Catch Basin Cleaning Photos

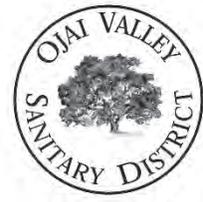




**Figure 1: Catch basin prior to cleaning**



**Figure 2: Cleaned catch basin**



December 16, 2020

Dr. L.B. Nye, Regional Programs Section Chief  
Regional Water Quality Control Board  
320 W. 4th St., Suite 200  
Los Angeles, CA 90013

Subject: **2020 DRY SEASON DATA SUMMARY FOR THE VENTURA RIVER ALGAE TMDL (RESOLUTION NO. R12-011)**

Dear Dr. Nye:

Enclosed for your review and consideration is the 2020 Dry Season Data Summary prepared and submitted to document completion of monitoring activities required by the Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients Total Maximum Daily Load, Resolution No. R12-011 (Ventura River Algae TMDL) and the Ventura River Algae TMDL Comprehensive Monitoring Plan for Receiving Water approved by Regional Water Quality Control Board on October 20, 2014.

This document is being submitted on behalf of the Ojai Valley Sanitary District, County of Ventura, Ventura County Watershed Protection District, City of Ojai, City of Ventura, California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County).

If you have any comments or questions regarding the attached document, please contact me at (805) 645-1382 or [Ewelina.Mutkowska@ventura.org](mailto:Ewelina.Mutkowska@ventura.org).

Sincerely,

Ewelina Mutkowska Digitally signed by Ewelina Mutkowska  
Date: 2020.12.16 09:01:36 -08'00'

Ewelina Mutkowska, Manager  
County Stormwater Program  
Ventura County Public Works Agency

Dr. L.B. Nye  
December 16, 2020  
Page 2 of 2

cc: Jun Zhu, Regional Water Quality Control Board  
Jeff Pratt, County of Ventura Public Works Agency  
Glenn Shephard, Ventura County Watershed Protection District  
Arne Anselm, Ventura County Watershed Protection District  
Joe Yahner, City of Ventura  
Greg Grant, City of Ojai  
Jeff Palmer, Ojai Valley Sanitary District  
John Krist, Farm Bureau of Ventura County  
Shirley Pak, California Department of Transportation  
Bhaskar Joshi, California Department of Transportation

---

DECEMBER 2020



CITY OF  
**VENTURA**



**VENTURA COUNTY**  
Agricultural Irrigated Lands Group



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# TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

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## 2020 DRY SEASON DATA SUMMARY

*Submitted to*

TMDL Responsible Agencies Implementing Receiving Water Monitoring Requirements:

City of Ojai

City of Ventura

County of Ventura

Ojai Valley Sanitary District

California Department of Transportation

Ventura County Agricultural Irrigated Lands Group

Ventura County Watershed Protection District

*Prepared by:*



Rincon Consultants, Inc.  
December 16, 2020

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- Appendix B. Monthly Nutrient Data
- Appendix C. Dry Season Riverine Monthly Algal Biomass (Chlorophyll *a*) and Percent Macroalgal Cover
- Appendix D. Full Size Continuous Data Logging Charts

## EXECUTIVE SUMMARY

On behalf of the Total Maximum Daily Load (TMDL) Responsible Agencies, the Ventura County Watershed Protection District (District) began monitoring in accordance with the Ventura River Algae TMDL Comprehensive Monitoring Plan for Receiving Waters (CMP) on January 14, 2015. Beginning in January 2020, the Responsible Agencies retained Rincon Consultants (Rincon) to implement this monitoring and reporting program. Aquatic Bioassay Consulting Laboratories (ABC) and Larry Walker Associates, subconsultants to Rincon, have been assisting with completion of the work.

As required by the TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary (TMDL-Est), one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga and San Antonio Creek (TMDL-R1, TMDL-R2, TMDL-R3, TMDL-R4, TMDL-CL and TMDL-SA, respectively). Continuous monitoring of dissolved oxygen (DO) and pH, as well as conductivity are required at each site every quarter. The CMP also requires monthly monitoring of algae during the dry season (May – September). This report includes dry season monitoring results, monthly checks for flow at observation sites, field and laboratory results, and continuous data logging results from monitoring conducted from May to September 2020.

The Ventura River Watershed has been subjected to increased environmental stresses in recent years. In addition to severe drought, the watershed was heavily impacted by the Thomas Fire, which started on December 4, 2017 and was declared contained on January 12, 2018, becoming, at that time, the largest recorded wildfire in California history. The fire burned most of the open space and forest lands in the Ventura River and other Ventura County watersheds, as well as orchards, homes, and other structures from Fillmore to Santa Barbara. Areas that did not burn, mainly the floor of the Ojai Valley, were still subject to heavy ash deposition.

The 2019/20 wet season produced slightly less than average rainfall and unlike the 2019 dry season, in which surface flow was continuous from the upper watershed through the estuary until September 2019, during the 2020 dry season surface flow in the Ventura River became discontinuous near Santa Ana Blvd by July 2020. Surface flow became discontinuous in San Antonio Creek upstream of TMDL-SA by July 2020 as well. Surface flow continued at TMDL-R4 for the duration of the dry season, and TMDL-R3 and below are perennial. The flow at TMDL-R2 is a combination of flow in the Ventura River downstream of TMDL-R3 and discharge from the Ojai Valley Sanitary District's wastewater treatment plant. Potential causes for changes in flow include surface/subsurface flow, groundwater interaction, geology and infiltration rates, antecedent moisture, agricultural and urban inputs and extractions, etc.

Three out of five sampleable sites exceeded the seasonal average numeric target for macroalgal cover ( $\leq 15\%$  for the estuary and  $\leq 30\%$  for the riverine sites). All sites met the seasonal average numeric target for algal biomass (estuarine phytoplankton seasonal average chlorophyll *a* target of  $\leq 20$  micrograms per liter ( $\mu\text{g/L}$ ), riverine seasonal average chlorophyll *a* target of  $\leq 150$  milligrams per square meter ( $\text{mg/m}^2$ ). All measurements for pH were within the numeric target limits except for TMDL-Est during the June monthly monitoring and TMDL-CL during the May continuous monitoring. Levels of DO below the numeric target were generally measured during periods of low flow and at the low points of the diurnal patterns at some sites. The measured range for total nitrogen was 0.077 Detected Not Quantified (DNQ) milligrams per liter ( $\text{mg/L}$ ) to 1.68  $\text{mg/L}$  and total phosphorus was 0.016 (DNQ)  $\text{mg/L}$  to 0.17  $\text{mg/L}$ .

Hydrolab HL4 water quality sondes have been used for the quarterly two-week continuous monitoring requirement since March 2015. As required by the TMDL, the sondes were deployed in May and September during the 2020 Dry Season; however, the estuary sonde was not deployed in May due to high vandalism risk. Sondes were deployed at all other sites in May and at all sites except TMDL-SA and TMDL-CL in September, due to dry conditions. The sondes were calibrated by ABC before each event to ensure measurements were accurate. Point measurements were taken near the sondes during sonde retrieval to check for drift/fouling of the sonde sensors. Deployed sondes logged data for a two-week period in the 2<sup>nd</sup> and 3<sup>rd</sup> quarters beginning on May 15 and September 10, respectively.

Monitoring event data, including field data sheets and laboratory reports, will be provided in the 2020-21 Annual Report.

## BACKGROUND

The Water Quality Control Plan for the Los Angeles Region was amended on December 6, 2012 to incorporate the Total Maximum Daily Load for Algae, Eutrophic Conditions, and Nutrients in the Ventura River, including the Estuary, and its Tributaries (VR Algae TMDL). The VR Algae TMDL became effective on June 28, 2013 and required the development and implementation of a comprehensive monitoring plan (CMP) for receiving water monitoring to assess numeric attainment and measure in-stream nutrient concentrations. The CMP submitted by the Responsible Agencies (Ojai Valley Sanitary District, Ventura County Watershed Protection District, County of Ventura, City of Ojai, City of San Buenaventura (Ventura), California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County) was approved by the Los Angeles Regional Water Quality Control Board (Regional Board) on October 20, 2014.

On November 18, 2014, the Ventura County Watershed Protection District (District) was retained by the Responsible Agencies to conduct monitoring in accordance with the CMP for up to 5 years. The CMP required monitoring to begin no later than 90 days after the Los Angeles Regional Water Quality Control Board approved the CMP, which equates to January 18, 2015. Monitoring began on January 14, 2015.

As required by the VR Algae TMDL, the CMP prescribes year-round monthly water quality monitoring for nutrients and other water quality parameters at one site in the Ventura River Estuary, one site in each of the Ventura River reaches 1 – 4, and in two main tributaries, Cañada Larga Creek and San Antonio Creek. Continuous monitoring of dissolved oxygen (DO) and pH (both of which also require temperature monitoring), as well as conductivity are required at each site every quarter. The CMP requires monthly monitoring of algae (chlorophyll *a* and percent macroalgal cover) during the dry season (May – September). This report is a summary of monthly dry season monitoring results from May 2020 to September 2020, and quarterly continuous data logging results conducted in May and September.

FIGURE 1. MONITORING SITES AND FLOW OBSERVATION LOCATIONS



Imagery provided by Microsoft Bing and its licensors © 2020.  
Additional data provided by USGS, 2020.

Figure 1 Sampling Sites and Flow Observation Locations

## ACCESS PERMISSION

In 2015, to allow for continuity of site locations, five-year easements were sought from property owners where the sites are located for the fee of \$250 per term. The temporary easements expire five years from the date of approval (early 2020). Two property owners declined the five-year easement request but signed a revocable access permit instead. The sites affected by the permits are TMDL-R2 (which was moved upstream of the site listed in the CMP because the owner of that parcel denied the access request) and TMDL-SA directly above the confluence with the Ventura River. TMDL-R2 was sampled approximately 200 meters upstream of the Ojai Valley Sanitary District OVSD site (OVSD-R5) for monthly monitoring and approximately 300 meters upstream for continuous monitoring to be entirely on permitted property.

## MONTHLY MONITORING

Monthly monitoring was conducted during the 2020 dry season in accordance with the CMP, which included collection of nutrient grab samples, in-situ parameters, flow, algal biomass samples and macroalgae percent cover. Note that storm flows over the 2018 – 2019 wet season redirected the Ventura River near TMDL-R4 to the west bank and heavy flows made access difficult to the former monitoring area during the 2019-2020 monitoring period. As such, monitoring was conducted approximately 100 meters downstream of the previous location. Monitoring event dates and monitoring agency details are presented in **Table 1**.

**TABLE 1. MAY - SEPTEMBER 2020 WATER QUALITY MONITORING DATES**

Site	Monitoring Agency	Monitoring Date				
		May 2020	June 2020	July 2020	August 2020	September 2020
TMDL-Est	Rincon/ABC	5/14/2020	6/11/2020	7/9/2020	8/20/2020	9/10/2020
TMDL-R1	Rincon/ABC	5/14/2020	6/11/2020	7/9/2020	8/20/2020	9/10/2020
TMDL-R2	Rincon/ABC	5/14/2020	6/11/2020	7/9/2020	8/20/2020	9/10/2020
TMDL-R3	Rincon/ABC	5/13/2020	6/10/2020	7/8/2020	8/19/2020	9/9/2020
TMDL-R4	Rincon/ABC	5/13/2020	6/10/2020	7/8/2020	8/19/2020	9/9/2020
TMDL-SA	Rincon/ABC	5/13/2020	6/10/2020	(MOSTLY DRY) 7/8/2020	(DRY) 8/19/2020	(DRY) 9/9/2020
TMDL-CL	Rincon/ABC	5/13/2020	6/10/2020	(DRY) 7/8/2020	(DRY) 8/19/2020	(DRY) 9/9/2020

**Table Notes:**

Grey shading indicates dry or mostly dry conditions.

“Mostly Dry” indicates that water was present at the monitoring site, but flow was insufficient to meet algae sampling protocols so monthly monitoring parameters were sampled but algae monitoring/collection could not be conducted.

“Dry” sites had insufficient water present for any sampling to take place due to absence of flow.

## MONTHLY FIELD RESULTS

### FLOW

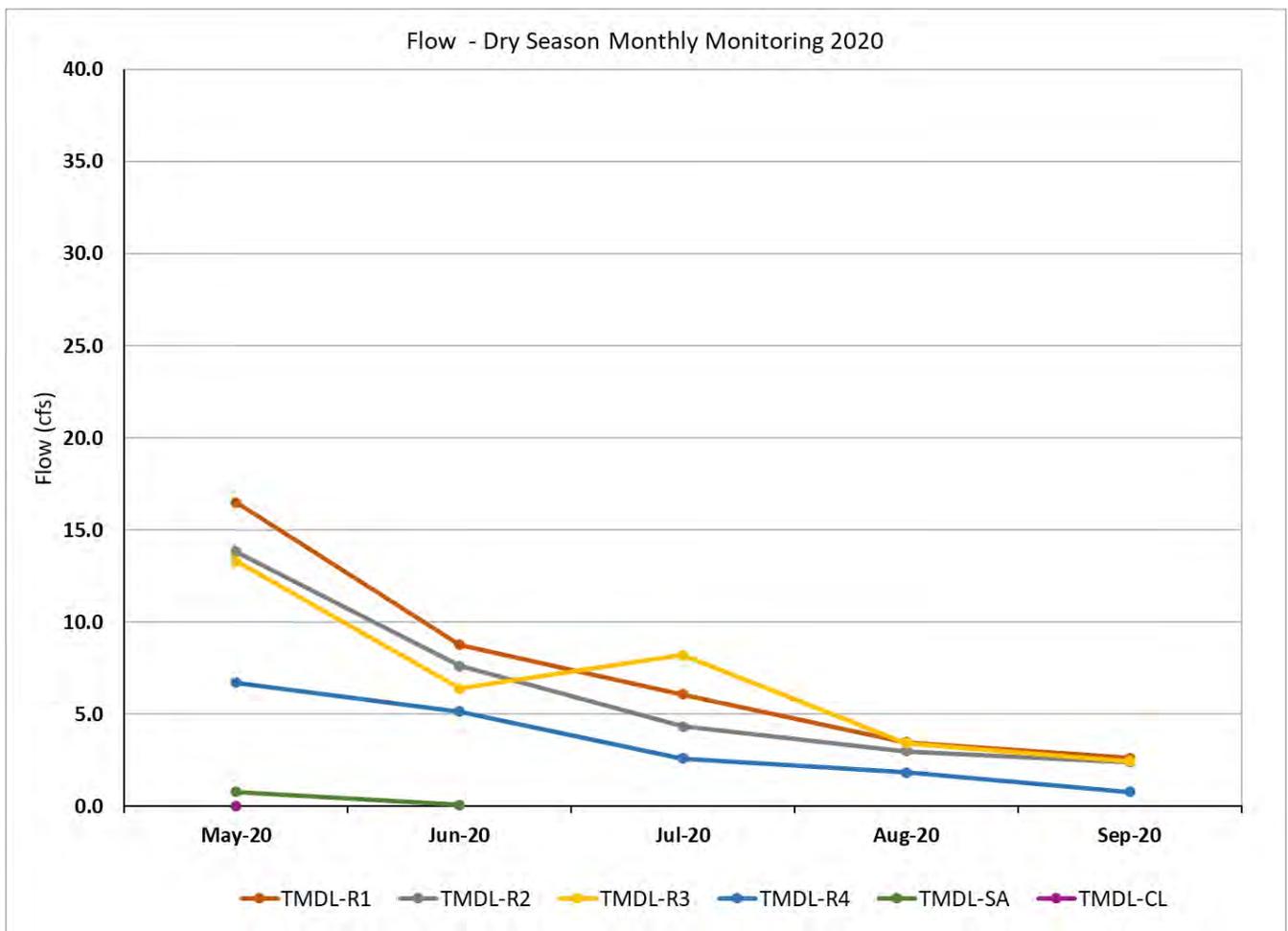
Surface flow was continuous from the upper watershed through to the estuary for both the Ventura River and San Antonio Creek sites through June. After June, surface flow became discontinuous near Santa Ana Boulevard in the Ventura River, and upstream of TMDL-SA in San Antonio Creek. TMDL-R4 flowed for the duration of the dry season monitoring period in addition to the downstream reaches of the Ventura River (TMDL-R3 through TMDL-Est) which are characteristically perennial. Flow presence/absence observations (flowing, ponded, or dry) are provided for the visual observation monitoring locations in **Table 2**. In addition, the estuary berm was open throughout the 2020 dry season monitoring period. A summary table of all monthly field parameters is included in **Appendix A**.

TABLE 2. MAY - SEPTEMBER 2020 OBSERVATION SITES

Date	Ventura River at Hwy 150	Ventura River at Santa Ana Blvd	Ventura River at Casitas Vista Road
5/20/2020	Flowing	Flowing	Flowing
6/19/2020	Flowing	Flowing (Low Flow)	Flowing
7/23/2020	Flowing (Low Flow)	Dry	Flowing
8/20/2020	Dry	Dry	Flowing
9/28/2020	Dry	Dry	Flowing

Monthly flow data for the water quality monitoring locations are presented in **Figure 2**. As seen in this chart, flow during the dry season follows a receding trend, with flow at the four sites on the main stem of the Ventura River gradually receding. As expected, flow at the tributary sites TMDL-SA and TMDL-CL was much lower than at sites in the main stem of the Ventura River, and both sites became dry by June. Note that some variability has been observed during the dry season, potential causes of which may include surface/subsurface flow, groundwater interaction, geology and infiltration rates, antecedent moisture, agricultural and urban inputs and extractions.

FIGURE 2. 2020 DRY SEASON MONTHLY FLOW MONITORING



**Figure Notes:**

Missing data points for TMDL-CL and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

Sites TMDL-R1, TMDL-R2, and TMDL-R3 are perennial. Flow at TMDL-R2 is a combination of flow in the Ventura River downstream of TMDL-R3 and discharge from the Ojai Valley Sanitary District’s wastewater treatment plant.

DISSOLVED OXYGEN

During the 2020 dry season monitoring period DO concentrations measured during monthly monitoring events ranged from 4.07 – 23.86 mg/L (Figure 3). The minimum (4.07 mg/L) was recorded at TMDL-SA during the July monitoring event at 9:45am, the maximum (23.86 mg/L) was recorded at TMDL-Est during the June monitoring event at 1:15pm. DO concentrations fell below the minimum threshold (7 mg/L) at two of the seven sites (TMDL-SA and TMDL-R4), and all concentrations below the minimum threshold were measured between 7:00 – 10:00am. Low levels of DO tended to occur during periods of low flow (Figure 2), possibly due to the ponding (and potential stagnation) of water observed upstream and/or at the measurement location. In addition, DO is typically lower in the early morning and increases during the day, which may have also contributed to these low measurements.

FIGURE 3. 2020 DRY SEASON MONTHLY MONITORING – DISSOLVED OXYGEN

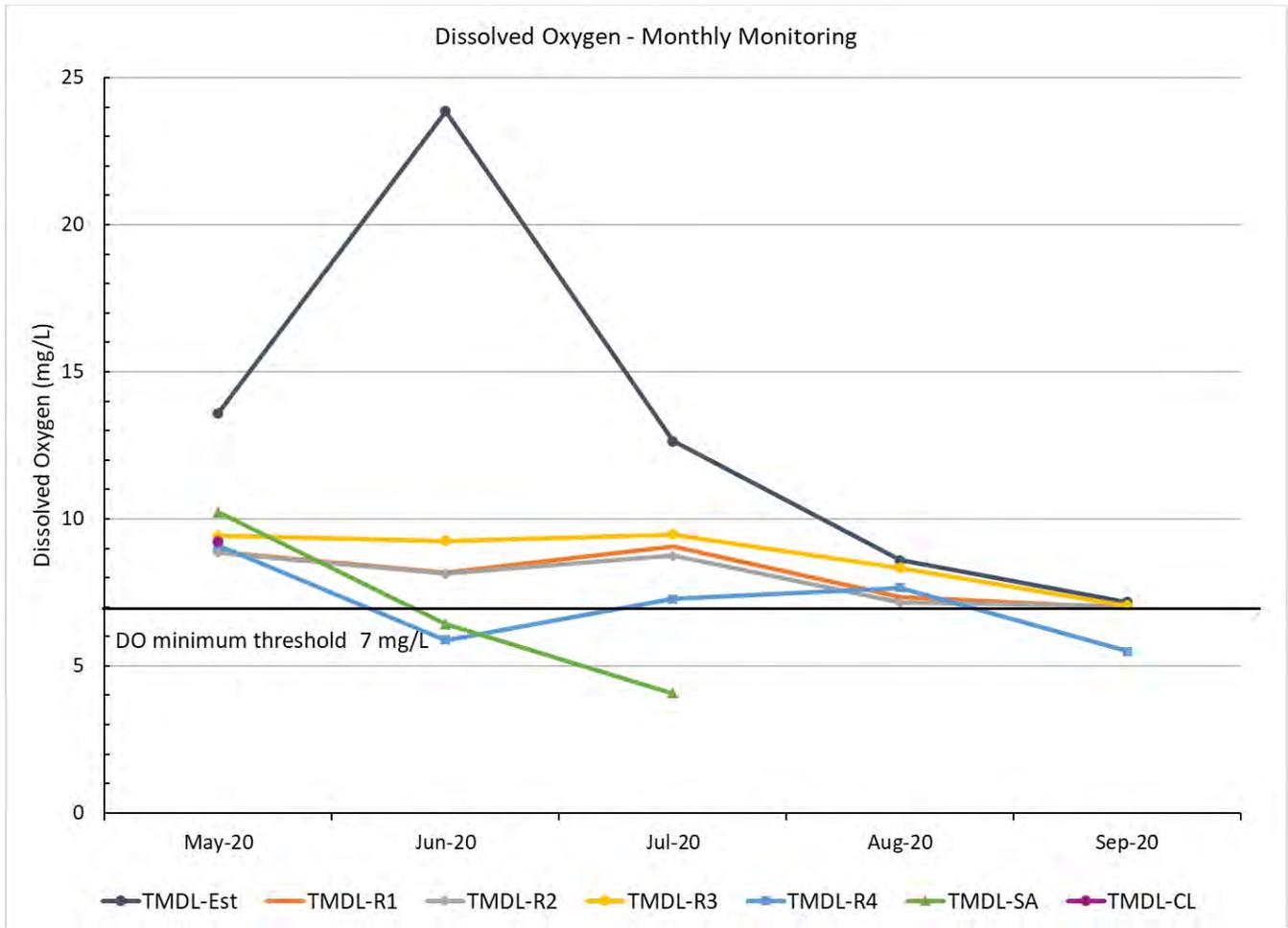


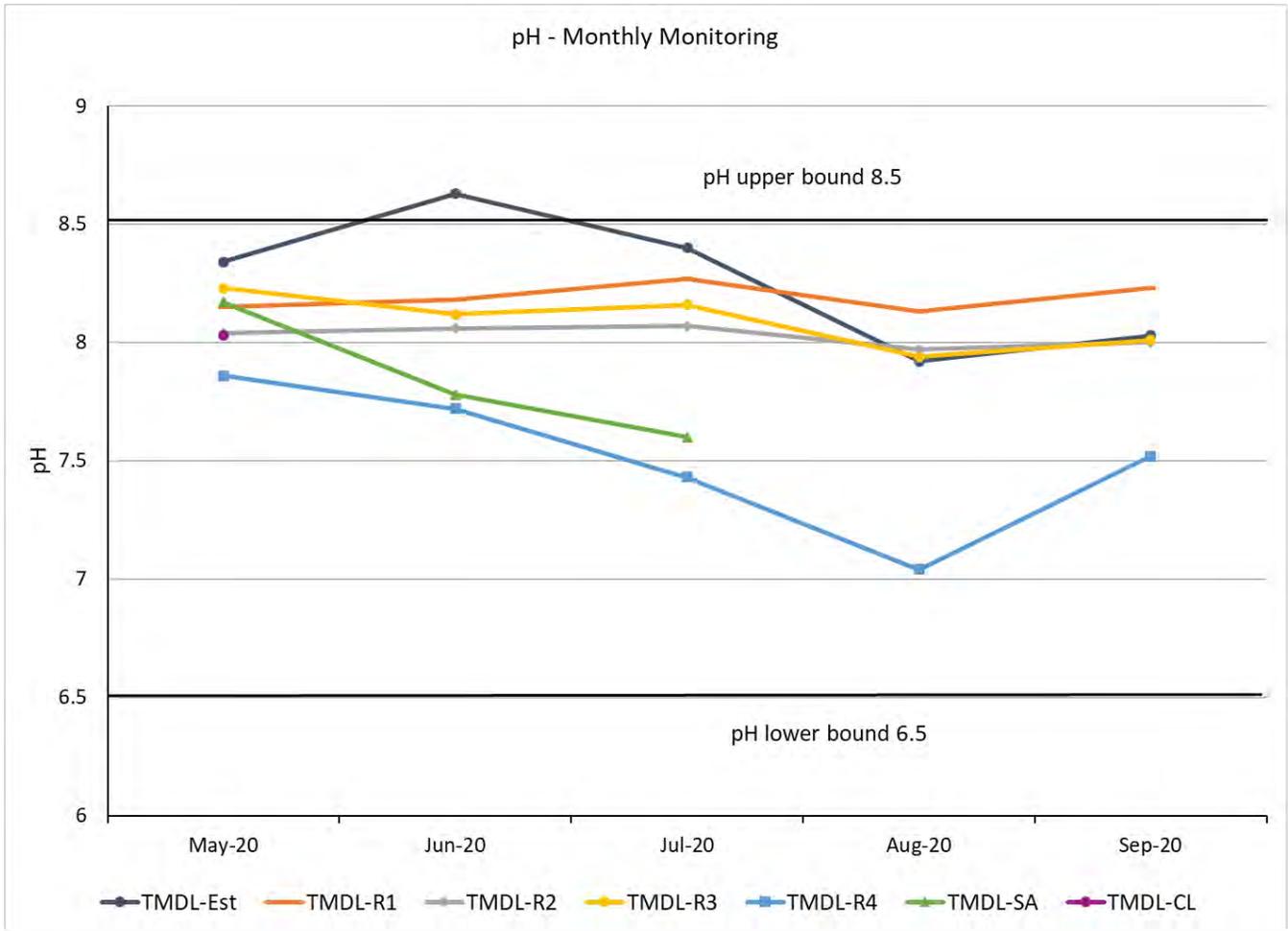
Figure Notes:

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

PH

During the 2020 dry season monitoring period, pH measurements taken during monthly monitoring events ranged from 7.04 to 8.63 (Figure 4). The minimum (7.04) was recorded at TMDL-R4 during the July monitoring event at 7:55am, and the maximum (8.94) was recorded at TMDL-R4 during the August monitoring event at 7:50am. pH measurements at all sites, except TMDL-Est, were within the pH target range (6.5 – 8.5) for the duration of the monitoring period. At TMDL-Est, pH exceeded the upper bound of the target range (8.5) in June with a measurement of 8.63 taken at 1:15pm.

FIGURE 4. 2020 DRY SEASON MONTHLY MONITORING – PH



**Figure Notes:**

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

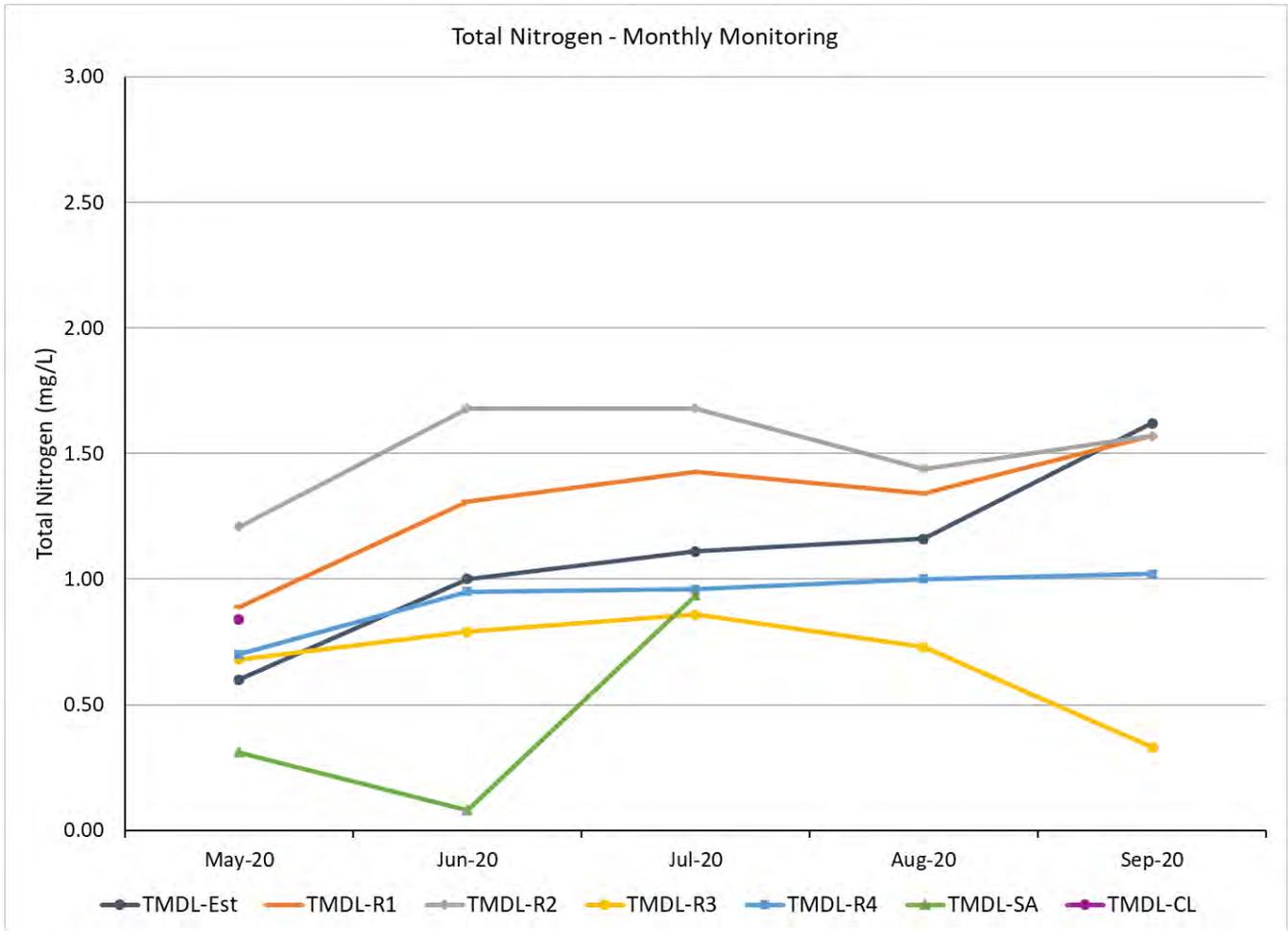
MONTHLY NUTRIENT RESULTS

Charts of results for total nitrogen and total phosphorus from the 2020 dry season are included below. A summary table of all nutrient results from the 2020 dry season is included in **Appendix B**.

NITROGEN

During the 2020 dry season monitoring, concentrations of total nitrogen above the laboratory reporting limit (0.4 mg/L) ranged from 0.60 mg/L to 1.68 mg/L (**Figure 5**). The lowest concentrations, including results below the reporting limit, occurred at TMDL-SA. The maximum concentration occurred during the July monitoring event at TMDL-R2, which had a dry season average of 1.5 mg/L. As a general trend, TMDL-SA and TMDL-R3 had the lowest total nitrogen concentrations, and TMDL-R1 and TMDL-R2 had the highest concentrations. A nitrogen summary table showing all results from the 2020 dry season monthly data is provided as **Appendix B**.

FIGURE 5. 2020 DRY SEASON MONTHLY MONITORING – TOTAL NITROGEN



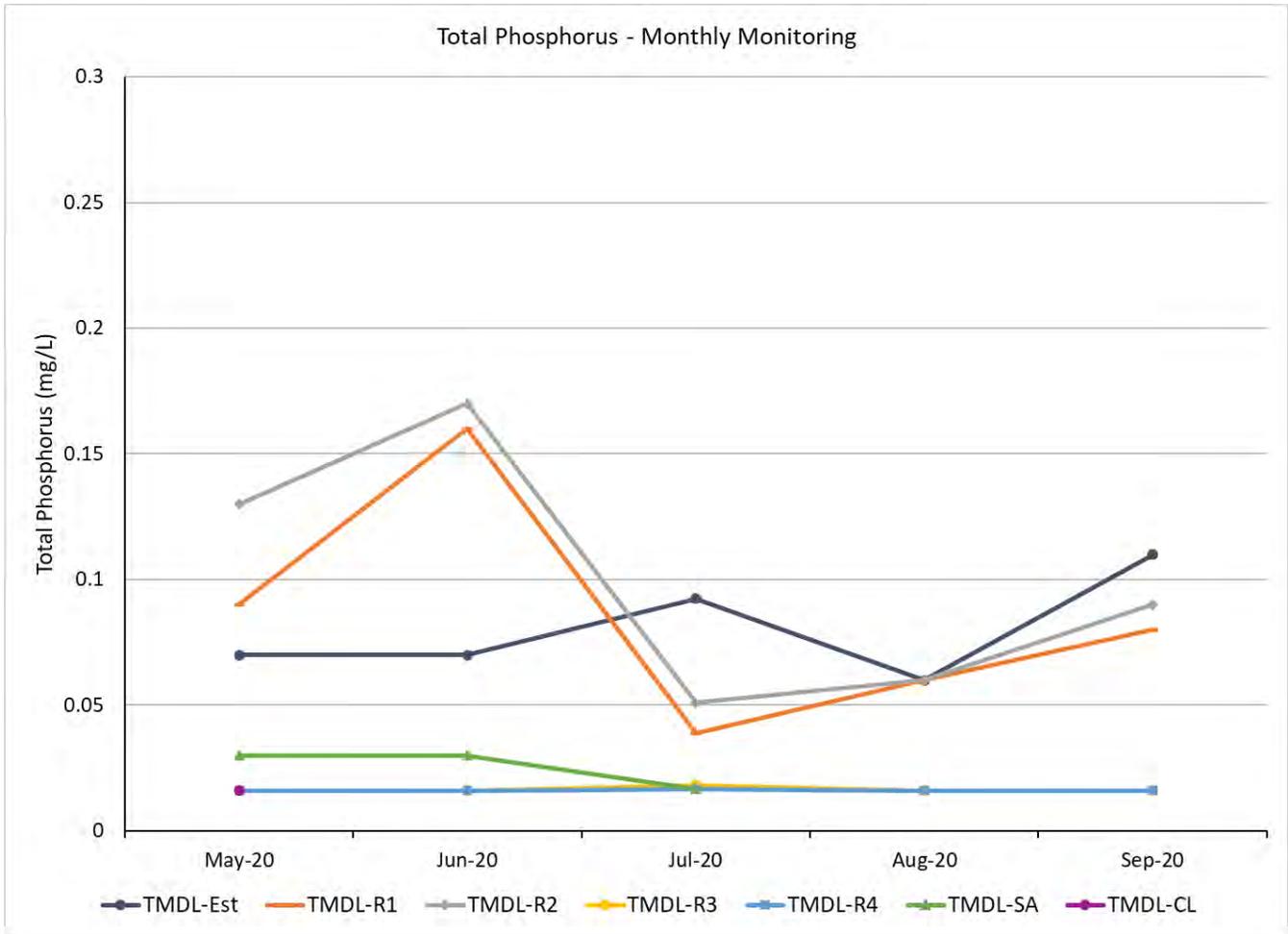
**Figure Notes:**

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

**PHOSPHORUS**

During 2020 dry season monitoring, concentrations of total phosphorus above the laboratory reporting limit (0.02 mg/L) ranged from 0.027 mg/L to 0.171 mg/L (**Figure 6**). The maximum concentration occurred during the June monitoring event at TMDL-R2, which had a dry season average of 0.098 mg/L. As a general trend, sites TMDL-Est, TMDL-R1, and TMDL-R2 had higher total phosphorus concentrations than the other monitoring locations.

FIGURE 6. 2020 DRY SEASON MONTHLY MONITORING – TOTAL PHOSPHORUS



**Figure Notes:**

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

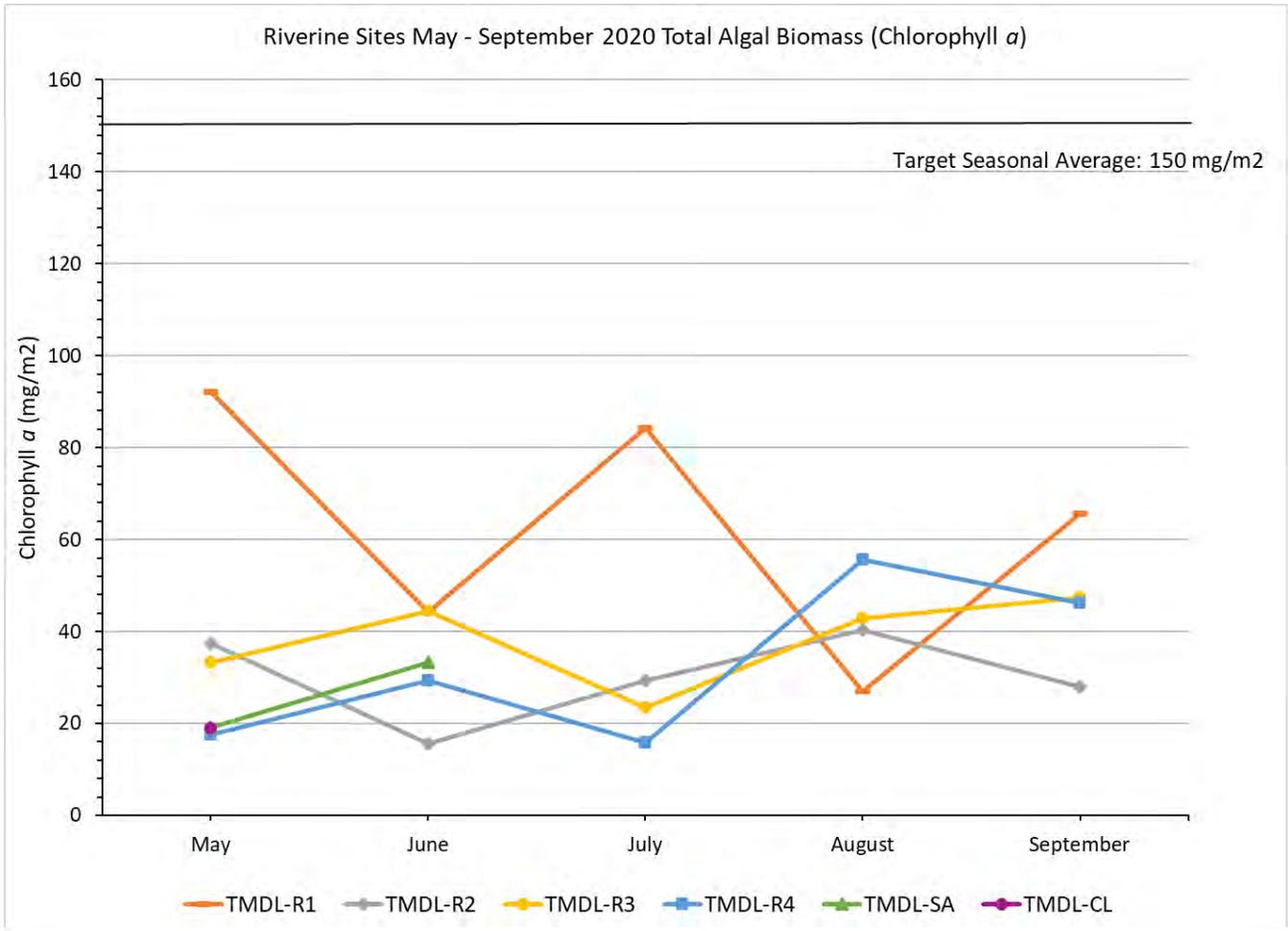
**MONTHLY ALGAE RESULTS**

The 2020 dry season sampling occurred monthly from May through September in accordance with the CMP. As discussed above, the upper watershed remained connected to the lower watershed into June 2020, before surface flows became discontinuous in July 2020 (see **Table 2**). All water quality monitoring locations had enough flow for algae sampling in May 2020. TMDL-CL was completely dry by the June 2020 monitoring event, and TMDL-SA was too dry for algae sampling by the July monitoring event.

**RIVERINE SITES**

In accordance with the VR Algae TMDL and CMP, algae sampling was conducted using the Surface Water Ambient Monitoring Program (SWAMP) protocol for riverine sites. This includes percent cover measurements of both suspended (floating) and attached (land-based), and total algal biomass [measured as chlorophyll a (mg/m<sup>2</sup>)]. Macroalgal percent cover measurements were collected by taking five presence/absence measurements at each of the 11 transects within a site and only include alive algae. Riverine total algal biomass concentrations are shown in **Figure 7** and macroalgal percent cover is displayed in **Figure 8**.

FIGURE 7. 2020 DRY SEASON - TOTAL ALGAL BIOMASS (CHLOROPHYLL A) AT RIVERINE SITES

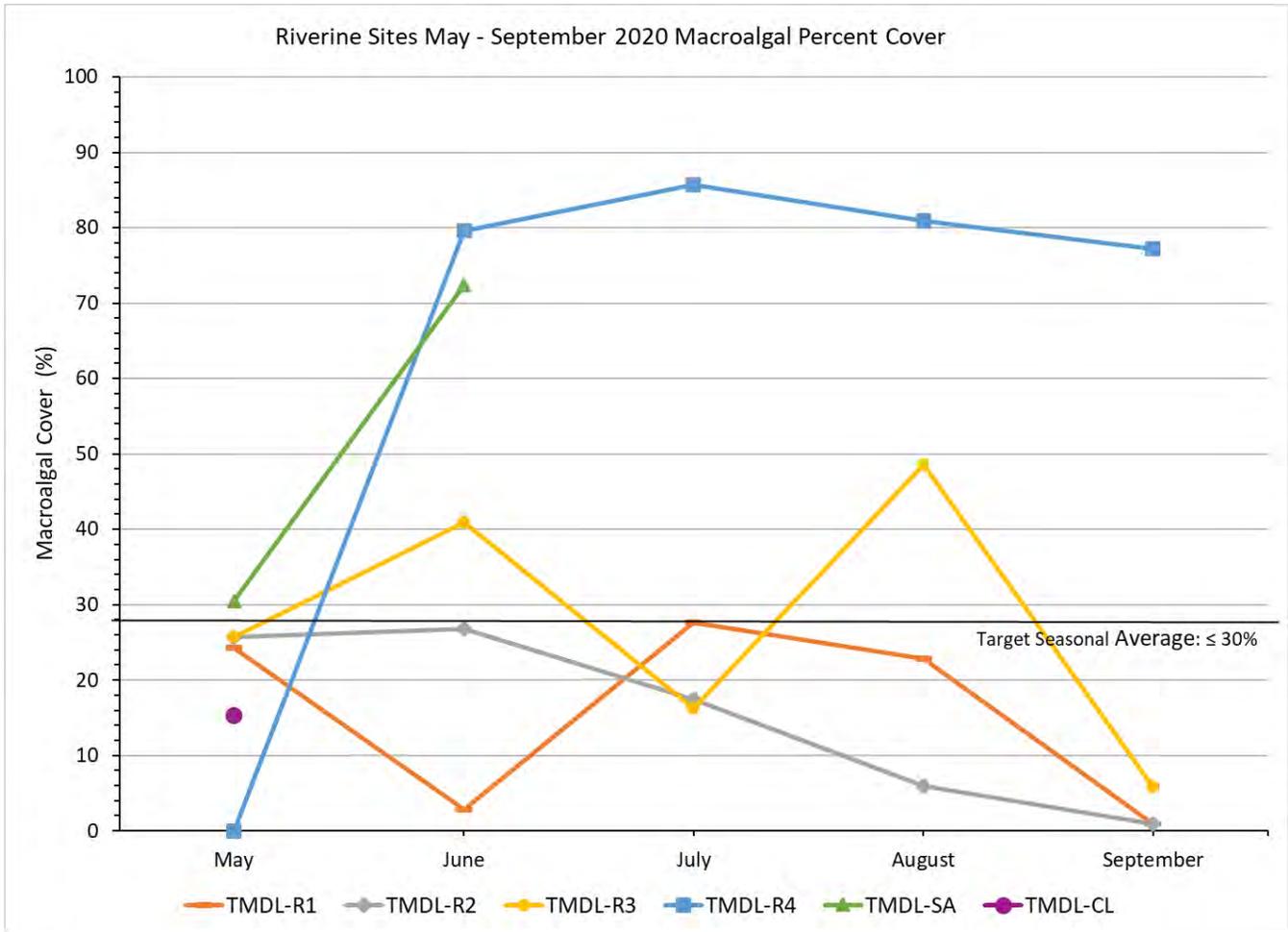


**Figure Notes:**

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

The VR Algae TMDL seasonal average numeric target of 150 mg/m<sup>2</sup> is plotted for reference.

FIGURE 8. 2020 DRY SEASON - MACROALGAL PERCENT COVER AT RIVERINE SITES



**Figure Notes:**

Missing data points for TMDL-CL after May and TMDL-SA after June are due to measurements not taken as a result of flow conditions (e.g., the site was dry or ponded).

The VR Algae TMDL seasonal average numeric target of ≤ 30% is plotted for reference.

Total algal biomass (measured as chlorophyll *a*) ranged from 15.5 to 92.1 mg/m<sup>2</sup> across all six riverine sites (Figure 7). The maximum (92.1 mg/m<sup>2</sup>) was recorded at TMDL-R1 during the May sampling event, and the minimum (15.5 mg/m<sup>2</sup>) was recorded at TMDL-R2 during the June sampling event. Seasonal average concentrations (Table 3) were below the target seasonal average for all sites.

Macroalgal percent cover ranged from 0 to 86 % across all six riverine sites (Figure 8). The minimum (0%) occurred at TMDL-R4 during the May sampling event, and the maximum (86%) occurred at TMDL-R4 during the July sampling event. The lowest percent cover observations occurred during the September sampling event for TMDL-R1, TMDL-R2, and TMDL-R3. Seasonal average concentrations were above the target seasonal average (≤30%) at TMDL-R4 (65%) and TMDL-SA (51%) (Table 3).

Seasonal averages and comparison to exceedances for both total algal biomass and macroalgal percent cover at the riverine water quality monitoring locations are summarized in Table 3. A detailed results summary for dry season monthly algae monitoring is provided in Appendix C.

TABLE 3. DRY SEASON RIVERINE SEASONAL AVERAGES

Site	Seasonal Average Biomass (mg/m <sup>2</sup> chlorophyll <i>a</i> )	Seasonal Average Macroalgal Cover (%)
	<i>Numeric Target Seasonal Average 150 mg/m<sup>2</sup></i>	<i>Numeric Target Seasonal Average ≤30%</i>
TMDL-R1	62.62	16
TMDL-R2	30.1	15
TMDL-R3	38.0	27
TMDL-R4	32.92	<b>65*</b>
TMDL-SA	26.2	<b>51*</b>
TMDL-CL	18.9	15

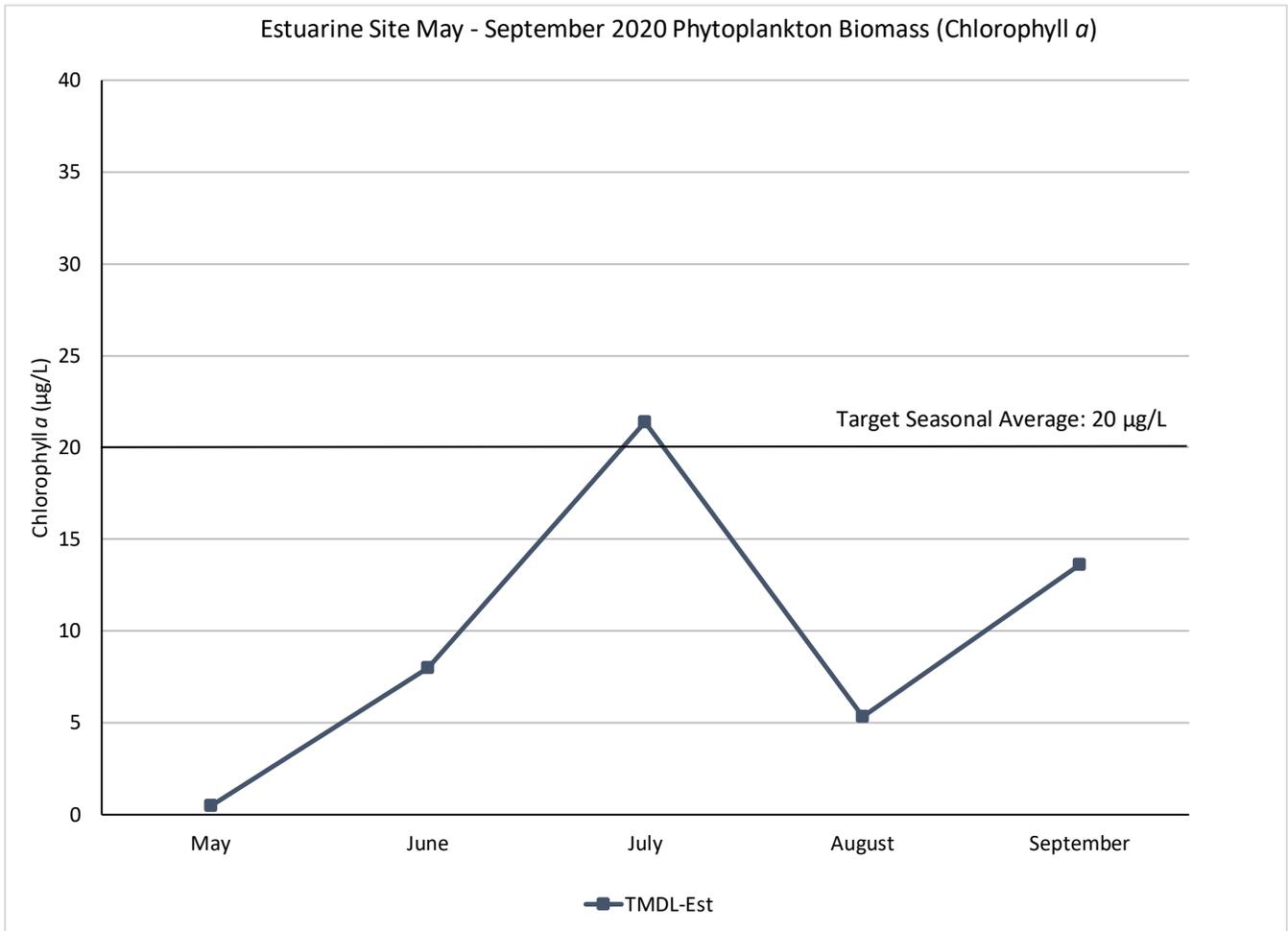
**Table Notes:**

\***Bolded** averages exceed numeric targets

ESTUARINE SITE

In accordance with the VR Algae TMDL and CMP, algae sampling was conducted using the Southern California Bight Regional Monitoring Program: Estuarine Eutrophication (Bight 2008) protocol for the estuary water quality monitoring location. Per this protocol, estuarine phytoplankton biomass [measured as chlorophyll *a* (µg/L)] samples are collected from the water column. Macroalgal percent cover is measured on the shoreline (referred to herein as “attached”) approximately three quarters of the distance upslope from the water’s edge at the mean lowest low water line (MLLW), approximately 1 to 2 feet above MLLW. Coverage of floating algae was estimated from shore to a depth of 0.3 meters, and includes dead, desiccated, fresh, and intermediate algae. Estuarine phytoplankton biomass concentrations are displayed in **Figure 9** and macroalgal percent cover results are displayed in **Figure 10**.

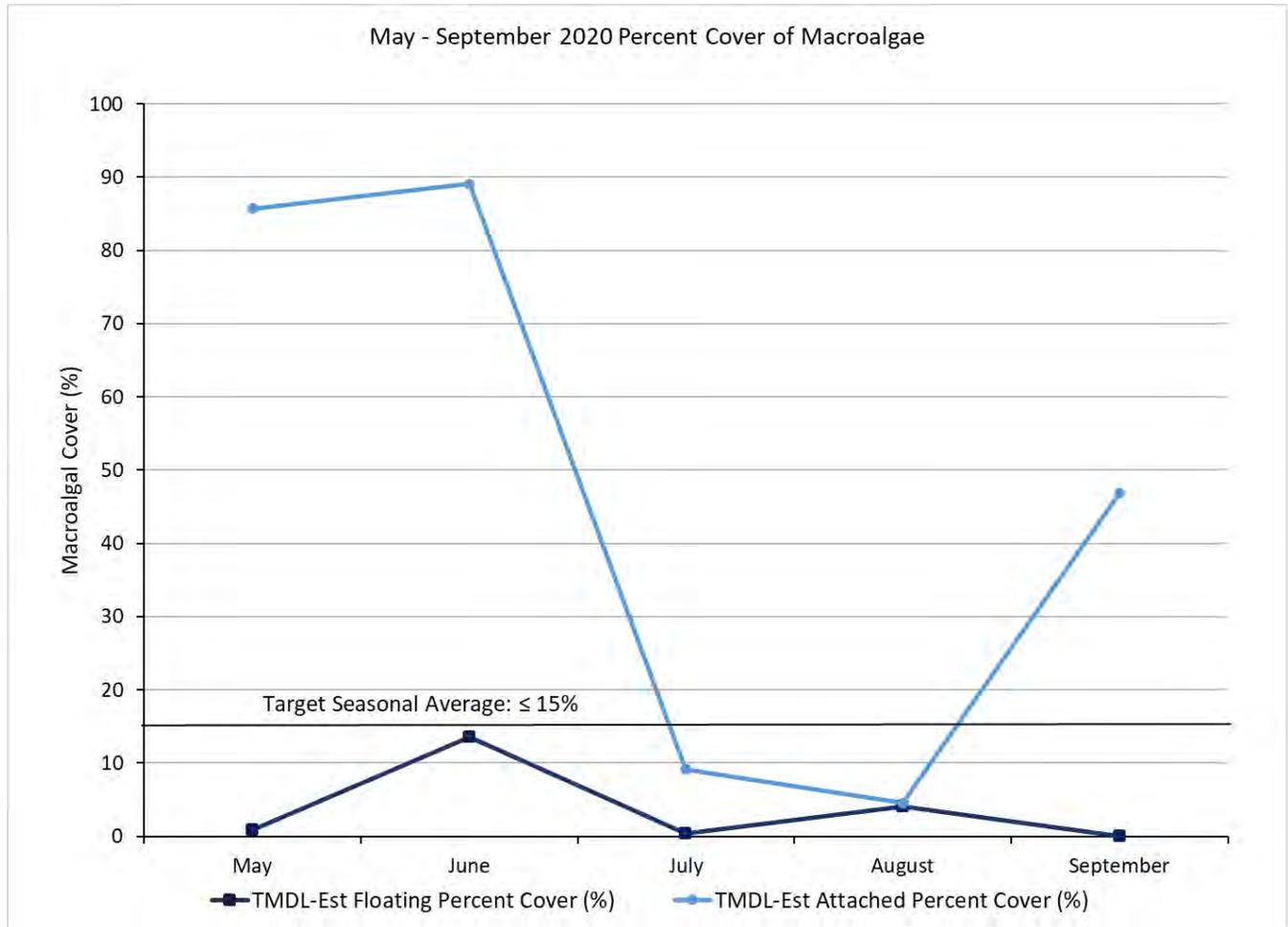
FIGURE 9. 2020 DRY SEASON – ESTUARY CHLOROPHYLL A



**Figure Notes:**

The VR Algae TMDL seasonal average numeric target (20 µg/L chlorophyll a) is plotted for reference.

FIGURE 10. 2020 DRY SEASON – ESTUARY MACROALGAL PERCENT COVER



**Figure Notes:**

The VR Algae TMDL seasonal average numeric target ( $\leq 15\%$  coverage) is plotted for reference.

Phytoplankton biomass (measured as chlorophyll *a*) ranged from  $<1.0 \mu\text{g/L}$  –  $21.4 \mu\text{g/L}$  (the minimum was below the minimum detection limit of  $1 \mu\text{g/L}$ ) at the estuary water quality monitoring location TMDL-Est (**Figure 9**). The maximum occurred during the July monitoring event and the minimum during the May monitoring event. The phytoplankton biomass seasonal average at TMDL-Est ( $9.7 \mu\text{g/L}$ ) was below the numeric target ( $20 \mu\text{g/L}$ ) (**Table 4**).

Attached macroalgal percent cover ranged from 5– 89% and floating macroalgal percent cover ranged from 0 – 14% (**Figure 10**). Attached macroalgal cover was above the target seasonal average ( $\leq 15\%$ ) during 3 of the 5 monitoring events (May, June, and September). Floating macroalgal percent cover was below the target seasonal average ( $\leq 15\%$ ) during all monitoring events. The seasonal average for attached macroalgal percent cover at TMDL-Est (47%) was above the numeric target ( $\leq 15\%$ ) and the season average for floating macroalgal percent cover (4%) was below the numeric target (**Table 4**).

TABLE 4. DRY SEASON ESTUARINE MONTHLY OBSERVATIONS AND SEASONAL AVERAGE

Site	Date	Field Replicate	Phytoplankton Biomass Chlorophyll <i>a</i> (µg/L)	Attached Macroalgal Cover (%)	Floating Macroalgal Cover (%)
<i>Seasonal Average Numeric Target</i>			<i>20 µg/L</i>	<i>≤ 15%</i>	
TMDL-Est	5/14/2020	1	<1 <sup>1</sup>	<b>86*</b>	1
TMDL-Est	6/11/2020	1	8.01	<b>89*</b>	14
TMDL-Est	7/9/2020	1	<b>21.40*</b>	9	0
TMDL-Est	8/20/2020	1	5.34	5	4
TMDL-Est	9/10/2020	1	13.6	<b>47*</b>	0
<b>Seasonal Average</b>			9.7 <sup>2</sup>	<b>47*</b>	4

**Table Notes:**

\***Bolded** averages exceed numeric targets.

<sup>1</sup>The result was below the minimum detection limit (1 µg/L).

## FIELD OBSERVATIONS

### TMDL-EST

The estuary berm was open for the entirety of the 2020 dry season monitoring period, with flow exiting through the east end. Dogs off leash and people recreating in the lagoon are frequently seen, and birds (especially gulls) are commonly present.

### TMDL-R1

The water level was too high to monitor at the typical transect “A” location so the transect was moved upstream and the distance between all transects was shortened to avoid deep pools at both ends. The lower section of this reach is frequently littered with washing materials and containers (e.g. soap, shampoo, laundry detergent, clothing, towels, etc.) and is commonly known as the “laundry site” due to its frequent use for that purpose by the homeless in the area. The Ventura Land Trust removes the items when it sees them and posts signs, as well as speaks with people directly about the hazards and illegal nature of washing in the stream, however most of the activity occurs when no one is around, although one person was actively washing their clothing in May while the monitoring crew was onsite. The use is heavier in the summer months. The Ventura Land Trust plans to remove some of the vegetation in the area outside of nesting season and investigate funding and partnerships for starting an alternative laundry program for homeless people in the area. There were several piles of encampment litter (e.g. discarded clothing, sleeping gear, food containers, etc.) along the access trail to the east of the river, as well as encampment litter in the river.

### TMDL-R2

One large homeless camp was present on the private property in this area. The camp was located on the east bank among the Arundo and spans from transect “C” to transect “G”. Evidence of washing (e.g. soap, shampoo bottles, etc.) are frequently seen near the water. Some rocks have been moved to create deeper pools for the camp. Arundo was cleared and the camp expanded upstream from May through September, and an earthen berm was constructed in this new area to create an additional pool of water. Additionally, overgrown Arundo on the left bank occasionally made measurements on that bank infeasible, with the greatest impact to monitoring during June and August.

### TMDL-R3

The channel splits at transect “H” and the left channel was monitored during every monitoring event of the dry season. Debris from the wet season blocked the original access path so flow and water monitoring occurred downstream of the deep pool to allow crew safer access. Algae was sampled upstream of the pool in the same area as previous years.

#### TMDL-R4

Monitoring was conducted on the west bank and downstream of previous dry season locations due to the change in the path of the river.

#### TMDL-SA

Evidence of urban recreational use at transect “F” was observed during the May monitoring event, and horses were observed downstream of the site during this event as well. During the June monitoring event, some areas were not monitored due to the presence of dense poison oak. By the July monitoring event the site was dry above transect “C” and only water quality and in-situ field parameters were monitored. The site was dry by August.

#### TMDL-CL

Water was not present at the site by June, although the streambed was still damp at this time. The streambed was completely dry by July.

## CONTINUOUS DATA LOGGING

In accordance with the VR Algae TMDL and CMP, DO and pH were measured continuously for two-week periods during May and September. This section provides an overview of the equipment used to measure these parameters and presents results for the 2020 dry season monitoring period.

### DATA COLLECTION EQUIPMENT

Continuous water quality measurements have been collected over the past five years using Hydrolab HL4 water quality data sondes. The HL4 measures and logs DO, pH, conductivity and temperature within a self-contained package. An adjustment for salinity is required for DO measurements in saltwater, which the HL4 completes internally utilizing its conductivity sensor.

Data sonde installations are vulnerable to vandalism and theft, which has occurred at the estuary monitoring location (TMDL-Est) over the five-year period of this monitoring program. Two HL4 data sondes have been stolen from this deployment location, including an underwater and mid-channel anchored location and a hidden shore anchored location. Field staff have taken extensive measures to hide and secure equipment at inconspicuous locations using anti-theft housings, chains, and cables. However, theft and vandalism will continue to be an issue at these water quality monitoring locations due to the homeless community presence. Additional actions were eventually taken to further secure future deployments, including evaluation of alternative deployment locations, enhanced housings for the data loggers, and procurement of a robust security chain and locking system. These actions proved successful and no theft occurred during the September deployment at TMDL-Est.

### CONTINUOUS WATER QUALITY RESULTS

Continuous water quality monitoring for pH and DO was conducted in accordance with the VR Algae TMDL and CMP in May and September of the dry season monitoring period. **Table 5** presents deployment dates and provides general notes related to each deployment where applicable. As noted, the 2020 dry season monitoring period presented several challenges with continuous water quality data collection. These challenges included technical malfunction of equipment during deployments, and non-deployment due to the risk of theft and vandalism. Continuous water quality monitoring data for pH and DO measured during each quarter is presented as **Figure 10** and **Figure 11**, respectively, for full size charts see **Appendix D**. As discussed below, data for multiple deployments are suspect. For the most part, pH and DO did not exceed numeric thresholds excluding consistently low DO measurements at TMDL-Est during the September deployment.

TABLE 5. 2020 DRY SEASON TWO-WEEK CONTINUOUS MONITORING PERIODS

Site	2020 Quarter 2 (May <sup>1</sup> )	2019 Quarter 3 (September <sup>1</sup> )
TMDL-Est	Not deployed <sup>2</sup>	9/10/2020-9/25/2020
TMDL-R1	5/15/2020 – 6/1/2020 <sup>3</sup>	9/10/2020-9/25/2020
TMDL-R2	5/15/2020 – 6/1/2020	9/10/2020-9/25/2020
TMDL-R3	5/15/2020 – 6/1/2020	9/10/2020-9/25/2020
TMDL-R4	5/15/2020 – 6/1/2020	9/10/2020-9/25/2020 <sup>6</sup>
TMDL-SA	5/15/2020 – 6/1/2020	DRY
TMDL-CL	5/15/2020 – 6/1/2020 <sup>4,5</sup>	DRY

**Table Notes:**

1. Month required by TMDL.
2. The estuary lacked a deployable location due to high theft/vandalism risk after high wet-season flows cleared out concealing vegetation and reshaped the estuary eliminating the discreet locations for deployment.
3. pH sensor maintenance expired 5/22 11:15pm and data are suspect
4. HOBO used for pH and DO monitoring, no specific conductivity data available due to using HOBO
5. The pH sensor appears to have become bio-fouled or otherwise disturbed on 5/27 and data after this date are suspect
6. Specific conductivity sensor had error code Parameter Reading Unstable on 9/25, indicating sensor maintenance or replacement could be necessary if the environment is stable, data after this date are suspect.

In May 2020, four Hydrolab HL4 water quality data sondes were installed and began logging data on May 15, 2019 at 6:00pm. Estuary shape precluded deployment of a sonde at TMDL-Est as described above. A HOBO data logger was deployed for continuous water quality monitoring at TMDL-CL. HOBO data loggers do not collect specific conductivity data and therefore this parameter was not monitored at TMDL-CL, however conductivity is not a required measurement. The TMDL-CL pH sensor appears to have become bio-fouled or otherwise disturbed on May 27<sup>th</sup> after which pH measurements sharply declined, and pH data collected after this date at TMDL-CL are suspect. The maintenance expired on the TMDL-R1 pH sensor during deployment, and while there is a noticeable change after this the data are within the range of readings taken before the pH sensor maintenance expired.

In September 2020, sondes were installed at five water quality monitoring sites for continuous data logging. Sondes were not installed at TMDL-SA and TMD-CL due to dry conditions. The sondes were installed before the logging program began on September 10, 2020 and were removed after two weeks of logging. The TMDL-R4 specific conductivity sensor had an error code on September 25<sup>th</sup> and while conductivity data collected after this date don't substantially change, the data should be considered suspect.

FIGURE 11. DRY SEASON 2020 (MAY AND SEPTEMBER) - PH

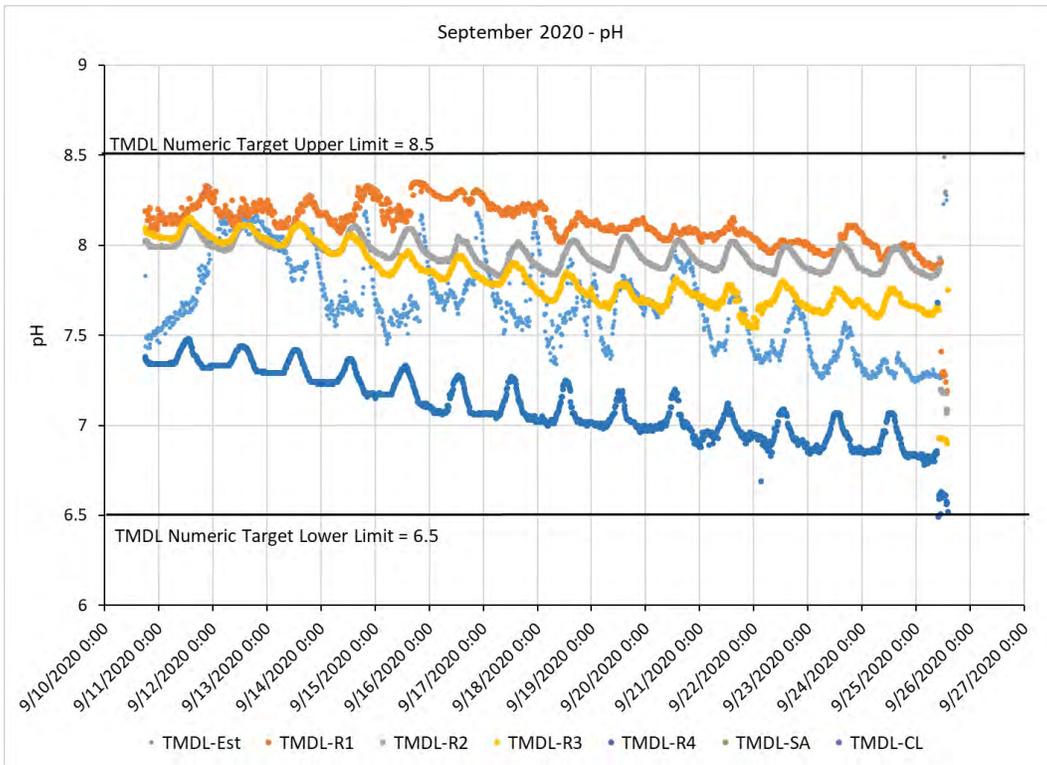
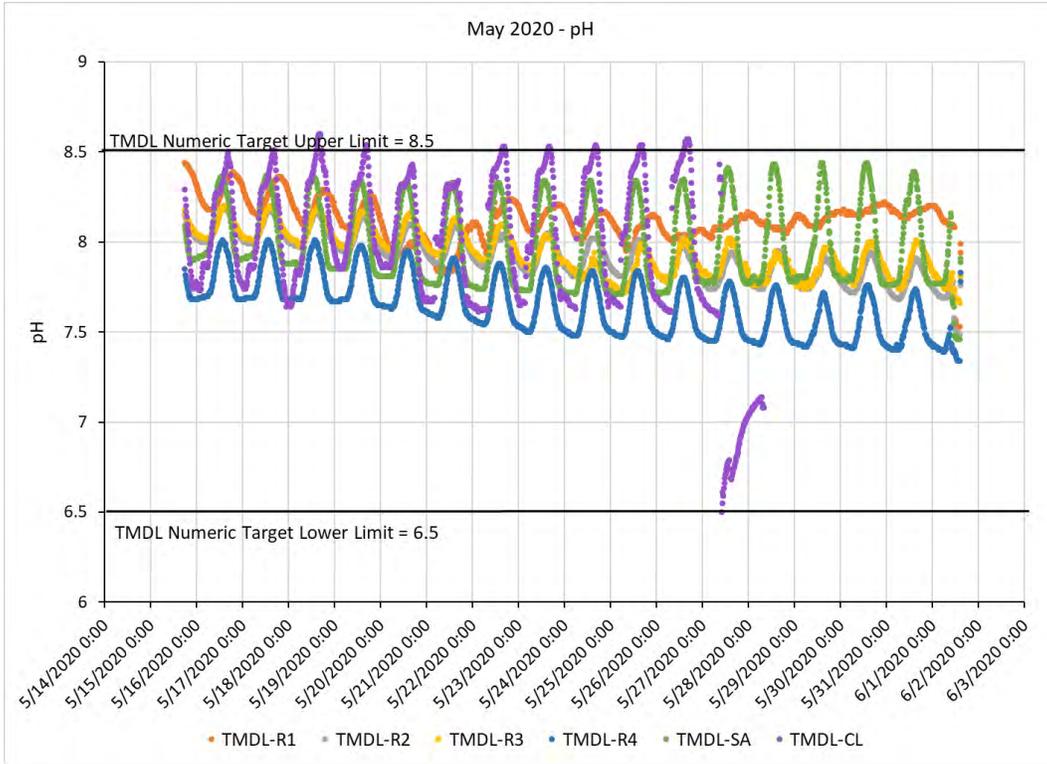
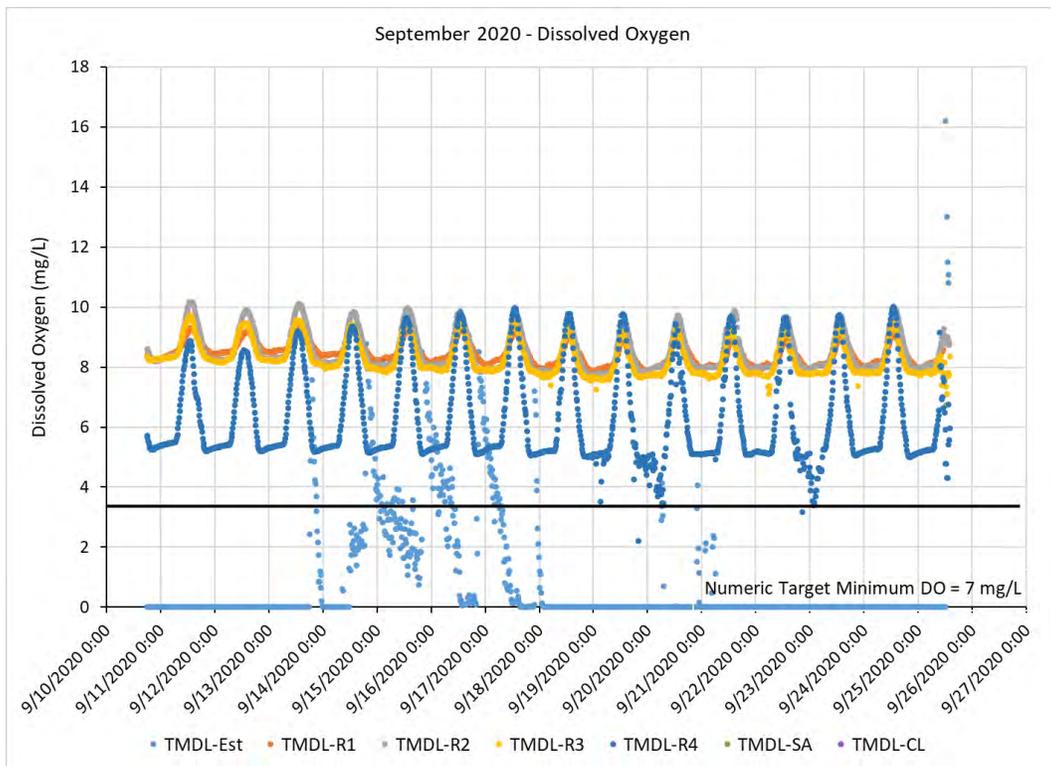
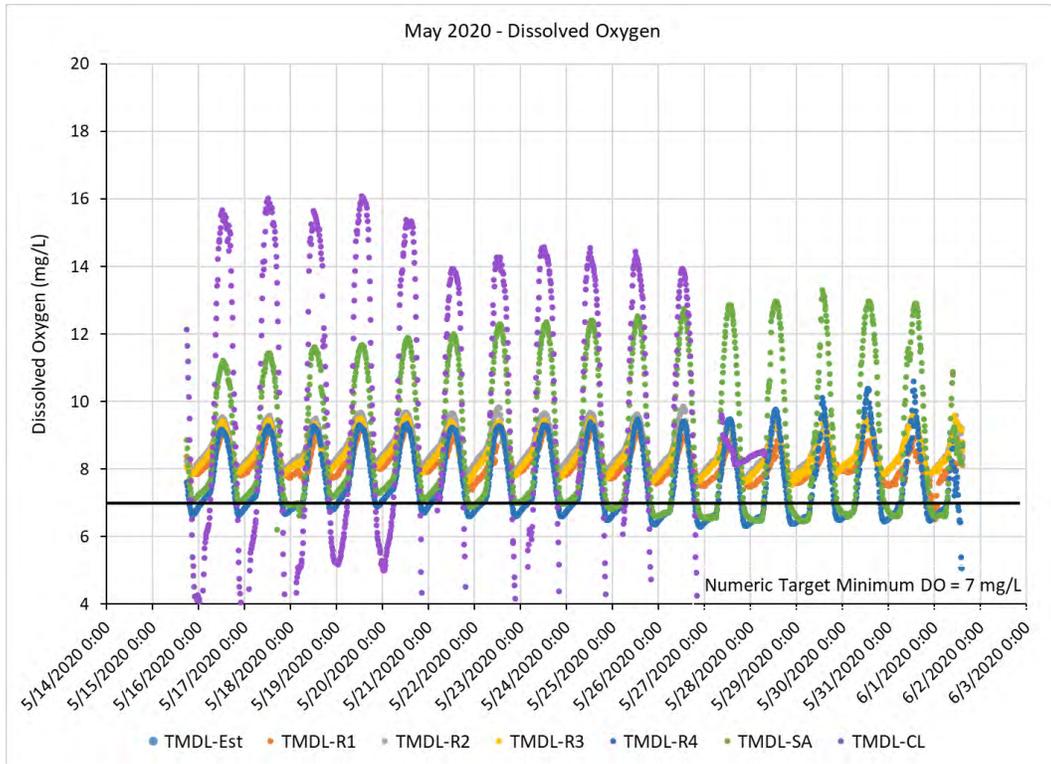


FIGURE 12. DRY SEASON 2020 (MAY AND SEPTEMBER) – DISSOLVED OXYGEN



## OBSERVATIONS AND LESSONS LEARNED

This section presents a summary of key monitoring results including the frequency of exceedances for VR Algae TMDL numeric targets and general data trends and observations. Important lessons learned during the 2019-2020 monitoring period are discussed to further inform future monitoring program implementation and management decisions.

### KEY FINDINGS

A summary of exceedances is provided in **Table 6**, which considers monthly grab sample and continuous water quality monitoring results. While DO measurements at three monitoring locations (TMDL-R1, TMDL-R4, and TMDL-SA) and pH measurements at one monitoring location (TMDL-Est) exceeded VR TMDL numeric targets during monthly monitoring events, continuous water quality monitoring measurements coupled with monthly in-situ measurements indicate that DO and pH are meeting the VR Algae TMDL numeric targets. Numeric target exceedances during monthly monitoring events for DO (7 mg/L) occurred at TMDL-R1, TMDL-R4, and TMDL-SA, where minimum measurements for each site were 6.99 mg/L (TMDL-R1 September 2020), 5.49 mg/L (TMDL-R4, September 2020), and 4.07 mg/L (TMDL-SA, July 2020). Low DO concentrations at TMDL-SA were likely attributed to low flow conditions, particularly during the July monitoring event where the site was ponded and mostly dry (<0.01 cubic feet per second (cfs)). In addition, DO is typically lower in the early morning due to photosynthesis stopping at night while respiration continues, and increases during the day, which may have contributed to low results during monthly grab monitoring events. This was observed in the continuous water quality monitoring data, which illustrates daily variation. An exceedance of the upper bound (8.5) of numeric targets for pH occurred during one monthly monitoring event at TMDL-Est (8.63, June 2020). The seasonal average numeric targets for macroalgal percent cover ( $\leq 15\%$  for the estuary and  $\leq 30\%$  for riverine sites) were exceeded at three monitoring locations (TMDL-Est, TMDL-R4, and TMDL-SA).

**TABLE 6. EXCEEDANCES BY SITE AND MONTH**

Season	Sample Month	TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
Dry Season 2020	May 2020	No Sonde	-	-	-	DO (c)	DO (c)	pH (c) DO (c)
	Jun 2020	> pH (m)	-	-	-	DO (m)	DO (m)	Dry
	Jul 2020	-	-	-	-	-	DO (m)*	Dry
	Aug 2020	-	-	-	-	-	Dry	Dry
	Sept 2020	DO (c)	DO (m)	-	-	DO (m) DO (c)	Dry	Dry
	Seasonal Average	Macroalgal cover	-	-	-	Macroalgal cover	Macroalgal cover	-

**Table Notes:**

(m): Monthly grab sample measurement.

(c): Continuously monitored sonde measurement.

\*: Very low flow (<0.01 cfs). Low flow conditions likely contributed to exceedance of DO numeric target.

No Sonde: No sonde data available due to no deployment or questionable data (see continuous data logging section)

-: No exceedances.

### LESSONS LEARNED

Following the theft of the data sonde from TMDL-Est during the March 2020 deployment, Rincon researched and procured Onset's HOBO data loggers to replace the stolen HL4 data sonde. The HOBO data loggers are designed as standalone loggers for DO, temperature, and pH. To reduce costs while optimizing equipment suitability, Rincon only purchased two loggers. To correctly measure DO in the estuary during future monitoring events, an existing HL4 data sonde will be deployed at TMDL-Est and the HOBO loggers will be deployed at a freshwater monitoring location (i.e., TMDL-R4). Additional actions were taken to further secure future deployments, including evaluation of alternative deployment locations, enhanced housings for the

data loggers, and procurement of a robust security chain and locking system. These actions proved successful and no theft occurred during the September deployment at TMDL-Est.

Siltation can be an issue in slow moving water and when data sondes and data loggers are installed higher in the water column in areas where this is likely to occur. All data sondes and loggers were checked and/or calibrated by monitoring staff before and after deployment, regardless of history, and field meter readings were taken in the vicinity of the sondes immediately prior to their removal to check/confirm that the sondes were still reading accurately in situ at the end of the deployment.

APPENDICES TO DRY SEASON REPORT

APPENDIX A. MONTHLY IN-SITU PARAMETERS

Site	Sample Date	Sample Time	Berm Status	Flow Field Meter (cfs)	pH Field Meter (pH Units) <i>Numeric Target 6.5 - 8.5</i>	DO Field Meter (mg/L) <i>Numeric Target &gt;7 mg/L</i>	SC Field Meter (µS)	Salinity Field Meter (ppt)	Water Temp Field Meter (°C)
TMDL-Est	5/14/2020	13:27	Open-east end	NA	8.34	13.6	1472	0.7	21.2
TMDL-Est	6/11/2020	13:15	Open-east end	NA	8.63	23.86	2030	1.0	26.4
TMDL-Est	7/9/2020	13:00	Open-east end	NA	8.4	12.64	3519	1.8	23.3
TMDL-Est	8/20/2020	11:40	Open-east end	NA	7.92	8.59	26122	16.0	24.2
TMDL-Est	9/10/2020	11:10	Open-east end	NA	8.03	7.17	3502	1.8	20.7
TMDL-R1	5/14/2020	10:20	NA	16.5	8.15	8.88	1186	0.6	18.3
TMDL-R1	6/11/2020	10:20	NA	8.8	8.18	8.16	1263	0.6	19.5
TMDL-R1	7/9/2020	10:10	NA	6.1	8.27	9.05	1051	0.5	20.3
TMDL-R1	8/20/2020	9:35	NA	3.5	8.13	7.34	1293	0.7	23.1
TMDL-R1	9/10/2020	9:20	NA	2.6	8.23	6.99	1355	0.7	19.9
TMDL-R2	5/14/2020	7:40	NA	13.8	8.04	8.86	1090	0.5	17.5
TMDL-R2	6/11/2020	7:40	NA	7.6	8.06	8.13	1135	0.6	18.8
TMDL-R2	7/9/2020	7:50	NA	4.3	8.07	8.75	965	0.5	19.9
TMDL-R2	8/20/2020	7:40	NA	3.0	7.97	7.15	1102	0.6	22.6
TMDL-R2	9/10/2020	7:20	NA	2.4	8.00	7.04	1122	0.6	20.1
TMDL-R3	5/13/2020	14:23	NA	13.3	8.23	9.42	1050	0.5	20.5
TMDL-R3	6/10/2020	12:05	NA	6.4	8.12	9.26	1081	0.5	19.4
TMDL-R3	7/8/2020	10:30	NA	8.2	8.16	9.47	9.54	0.5	19.3
TMDL-R3	8/19/2020	10:00	NA	3.4	7.94	8.34	1032	0.5	22
TMDL-R3	9/9/2020	9:35	NA	2.5	8.01	7.04	1031	0.5	20
TMDL-R4	5/13/2020	9:57	NA	6.7	7.86	9.1	986	0.5	17.6
TMDL-R4	6/10/2020	8:00	NA	5.2	7.72	5.88	1032	0.5	17.6
TMDL-R4	7/8/2020	7:55	NA	2.6	7.43	7.28	880	0.4	18.3
TMDL-R4	8/19/2020	7:50	NA	1.8	7.04	7.66	1003	0.5	19.4
TMDL-R4	9/9/2020	7:45	NA	0.8	7.52	5.49	1012	0.5	18.8
TMDL-SA	5/13/2020	11:35	NA	0.8	8.17	10.22	1532	0.8	20.3
TMDL-SA	6/10/2020	9:30	NA	0.1	7.78	6.42	1537	0.8	17.7
TMDL-SA	7/8/2020	9:45	NA	Mostly Dry	7.60	4.07	873	0.4	17.3
TMDL-SA	8/19/2020	9:25	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-SA	9/9/2020	9:00	NA	DRY	DRY	DRY	DRY	DRY	DRY

Site	Sample Date	Sample Time	Berm Status	Flow Field Meter (cfs)	pH Field Meter (pH Units) <i>Numeric Target 6.5 - 8.5</i>	DO Field Meter (mg/L) <i>Numeric Target &gt;7 mg/L</i>	SC Field Meter (µS)	Salinity Field Meter (ppt)	Water Temp Field Meter (°C)
TMDL-CL	5/13/2020	7:25	NA	0.0	8.03	9.22	4172	2.2	12.6
TMDL-CL	6/12/2020	7:10	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	7/8/2020	7:15	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	8/19/2020	7:10	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	9/9/2020	7:12	NA	DRY	DRY	DRY	DRY	DRY	DRY

**Table Notes:**

Grey shading indicates a value in exceedance of numeric targets

APPENDIX B. MONTHLY NUTRIENT DATA

Site	Sample Date	P Total EPA 365.1 (mg/L)	RL	P Diss EPA 365.1 (mg/L)*	RL	TKN Total EPA 351.2 (mg/L)	RL	TKN Diss EPA 351.2 (mg/L)	RL	N Total Calculated (mg/L)	RL	N Diss Calculated (mg/L)	RL	NO <sub>3</sub> +NO <sub>2</sub> -N EPA 353.2 (mg/L)	RL
TMDL-Est	5/14/2020	0.0691	0.02	0.0448	0.03	0.200 (DNQ)	0.4	0.100 (DNQ)	0.4	0.604	NA	0.504	NA	0.404	NA
TMDL-Est	6/11/2020	0.0673	0.02	0.0571	0.03	0.530	0.4	0.170 (DNQ)	0.4	1.001	NA	0.641	NA	0.471	NA
TMDL-Est	7/9/2020	0.0924	0.02	0.0217 (DNQ)	0.03	0.610	0.4	0.49	0.4	1.110	NA	0.990	NA	0.500	NA
TMDL-Est	8/20/2020	0.0571	0.02	<0.0160	0.03	1.000	0.4	0.057 (DNQ)	0.4	1.155	NA	0.212	NA	0.155	NA
TMDL-Est	9/10/2020	0.11	0.02	0.0502	0.03	0.79	0.4	0.670	0.4	1.621	NA	1.501	NA	0.831	NA
TMDL-R1	5/14/2020	0.089	0.02	0.0726	0.03	0.200 (DNQ)	0.4	0.200 (DNQ)	0.4	0.889	NA	0.889	NA	0.689	NA
TMDL-R1	6/11/2020	0.159	0.02	0.132	0.03	0.120 (DNQ)	0.4	0.120 (DNQ)	0.4	1.310	NA	1.310	NA	1.190	NA
TMDL-R1	7/9/2020	0.0388	0.02	0.0343	0.03	0.530	0.4	0.380 (DNQ)	0.4	1.427	NA	1.277	NA	0.897	NA
TMDL-R1	8/20/2020	0.0637	0.02	0.0406	0.03	0.580	0.4	0.350 (DNQ)	0.4	1.344	NA	1.114	NA	0.764	NA
TMDL-R1	9/10/2020	0.0767	0.02	0.0675	0.03	0.370 (DNQ)	0.4	0.32	0.4	1.570	NA	1.520	NA	1.200	NA
TMDL-R2	5/14/2020	0.127	0.02	0.11	0.03	0.250 (DNQ)	0.4	0.110 (DNQ)	0.4	1.210	NA	1.070	NA	0.960	NA
TMDL-R2	6/11/2020	0.171	0.02	0.162	0.03	0.170 (DNQ)	0.4	0.110 (DNQ)	0.4	1.680	NA	1.620	NA	1.510	NA
TMDL-R2	7/9/2020	0.0509	0.02	0.0463	0.03	0.40 (DNQ)	0.4	0.360 (DNQ)	0.4	1.680	NA	1.640	NA	1.280	NA
TMDL-R2	8/20/2020	0.0566	0.02	0.0489	0.03	0.450	0.4	0.300 (DNQ)	0.4	1.436	NA	1.286	NA	0.986	NA
TMDL-R2	9/10/2020	0.0883	0.02	0.0824	0.03	0.140 (DNQ)	0.4	<0.052	0.4	1.570	NA	1.430	NA	1.430	NA
TMDL-R3	5/13/2020	<0.0160	0.02	<0.0160	0.03	0.190 (DNQ)	0.4	0.091 (DNQ)	0.4	0.683	NA	0.584	NA	0.493	NA
TMDL-R3	6/10/2020	<0.0160	0.02	<0.0160	0.03	0.110 (DNQ)	0.4	<0.052	0.4	0.793	NA	0.683	NA	0.683	NA

Site	Sample Date	P Total EPA 365.1 (mg/L)	RL	P Diss EPA 365.1 (mg/L)*	RL	TKN Total EPA 351.2 (mg/L)	RL	TKN Diss EPA 351.2 (mg/L)	RL	N Total Calculated (mg/L)	RL	N Diss Calculated (mg/L)	RL	NO <sub>3</sub> +NO <sub>2</sub> -N EPA 353.2 (mg/L)	RL
TMDL-R3	7/8/2020	0.0181 (DNQ)	0.02	<0.0160	0.03	0.340 (DNQ)	0.4	0.200 (DNQ)	0.4	0.858	NA	0.718	NA	0.518	NA
TMDL-R3	8/19/2020	<0.0160	0.02	<0.0160	0.03	0.460	0.4	0.400	0.4	0.727	NA	0.667	NA	0.267	NA
TMDL-R3	9/9/2020	<0.0160	0.02	<0.0160	0.03	<0.052	0.4	<0.052	0.4	0.334	NA	0.334	NA	0.334	NA
TMDL-R4	5/13/2020	<0.0160	0.02	<0.0160	0.03	0.099 (DNQ)	0.4	0.054 (DNQ)	0.4	0.697	NA	0.652	NA	0.598	NA
TMDL-R4	6/10/2020	<0.0160	0.02	<0.0160	0.03	<0.052	0.4	<0.052	0.4	0.949	NA	0.949	NA	0.949	NA
TMDL-R4	7/8/2020	0.0165 (DNQ)	0.02	<0.0160	0.03	0.170 (DNQ)	0.4	0.100 (DNQ)	0.4	0.960	NA	0.890	NA	0.790	NA
TMDL-R4	8/19/2020	<0.0160	0.02	<0.0160	0.03	0.350 (DNQ)	0.4	0.210 (DNQ)	0.4	0.998	NA	0.858	NA	0.648	NA
TMDL-R4	9/9/2020	<0.0160	0.02	<0.0160	0.03	0.390 (DNQ)	0.4	0.21	0.4	1.024	NA	0.844	NA	0.634	NA
TMDL-SA	5/13/2020	0.0267	0.02	0.0204 (DNQ)	0.03	0.270 (DNQ)	0.4	0.240 (DNQ)	0.4	0.314	NA	0.284	NA	0.044	NA
TMDL-SA	6/10/2020	0.0306	0.02	0.0299 (DNQ)	0.03	0.060 (DNQ)	0.4	0.072 (DNQ)	0.4	0.077	NA	0.089	NA	0.017	NA
TMDL-SA	7/8/2020	0.0167 (DNQ)	0.02	DRY	0.03	0.650	0.4	0.100 (DNQ)	0.4	0.937	NA	0.387	NA	0.287	NA
TMDL-SA	8/19/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA
TMDL-SA	9/9/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA
TMDL-CL	5/13/2020	<0.0160	0.02	<0.0160	0.03	0.840	0.4	0.370 (DNQ)	0.4	0.840	NA	0.370	NA	0.00	NA
TMDL-CL	6/10/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA
TMDL-CL	7/8/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA
TMDL-CL	8/19/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA
TMDL-CL	9/9/2020	DRY	0.02	DRY	0.03	DRY	0.4	DRY	0.4	DRY	NA	DRY	NA	DRY	NA

**Table Notes:**

DNQ: Detected Not Quantified (analyte can be positively identified but is below the method reporting limit)

APPENDIX C. RIVERINE MONTHLY ALGAL BIOMASS (CHLOROPHYLL A) AND PERCENT MACROALGAL COVER

Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll <i>a</i>	Chlorophyll <i>a</i> units	Macroalgal Cover (%)
TMDL-R1	5/14/2020	1	11	92.1	mg/m <sup>2</sup>	24
TMDL-R1	6/11/2020	1	11	44.2	mg/m <sup>2</sup>	3
TMDL-R1	7/9/2020	1	11	84.2	mg/m <sup>2</sup>	28
TMDL-R1	8/20/2020	1	11	27	mg/m <sup>2</sup>	23
TMDL-R1	9/10/2020	1	11	65.6	mg/m <sup>2</sup>	1
TMDL-R2	5/14/2020	1	11	37.3	mg/m <sup>2</sup>	26
TMDL-R2	6/11/2020	1	11	15.5	mg/m <sup>2</sup>	27
TMDL-R2	7/9/2020	1	11	29.4	mg/m <sup>2</sup>	17
TMDL-R2	8/20/2020	1	11	40.3	mg/m <sup>2</sup>	6
TMDL-R2	9/10/2020	1	11	28	mg/m <sup>2</sup>	1
TMDL-R3	5/13/2020	1	11	33.3	mg/m <sup>2</sup>	26
TMDL-R3	6/10/2020	1	11	44.4	mg/m <sup>2</sup>	41
TMDL-R3	7/8/2020	1	11	23.5	mg/m <sup>2</sup>	16
TMDL-R3	8/19/2020	1	11	42.8	mg/m <sup>2</sup>	49
TMDL-R3	9/9/2020	1	11	47.3	mg/m <sup>2</sup>	6
TMDL-R4	5/13/2020	1	11	17.5	mg/m <sup>2</sup>	0
TMDL-R4	6/10/2020	1	11	29.4	mg/m <sup>2</sup>	80
TMDL-R4	7/8/2020	1	11	15.8	mg/m <sup>2</sup>	86
TMDL-R4	8/19/2020	1	11	55.7	mg/m <sup>2</sup>	81
TMDL-R4	9/9/2020	1	11	46.2	mg/m <sup>2</sup>	77
TMDL-SA	5/13/2020	1	11	19.2	mg/m <sup>2</sup>	30
TMDL-SA	6/10/2020	1	11	33.2	mg/m <sup>2</sup>	72
TMDL-SA	7/8/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-SA	8/19/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-SA	9/9/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-CL	5/13/2020	1	11	32.1	mg/m <sup>2</sup>	15
TMDL-CL	6/10/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-CL	7/8/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-CL	8/19/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY
TMDL-CL	9/9/2020	1	DRY	DRY	mg/m <sup>2</sup>	DRY

# APPENDIX D. FULL SIZE CONTINUOUS MONITORING CHARTS

## FIGURE D1. 2020 SECOND QUARTER (MAY) PH CONTINUOUS DATA LOGGING

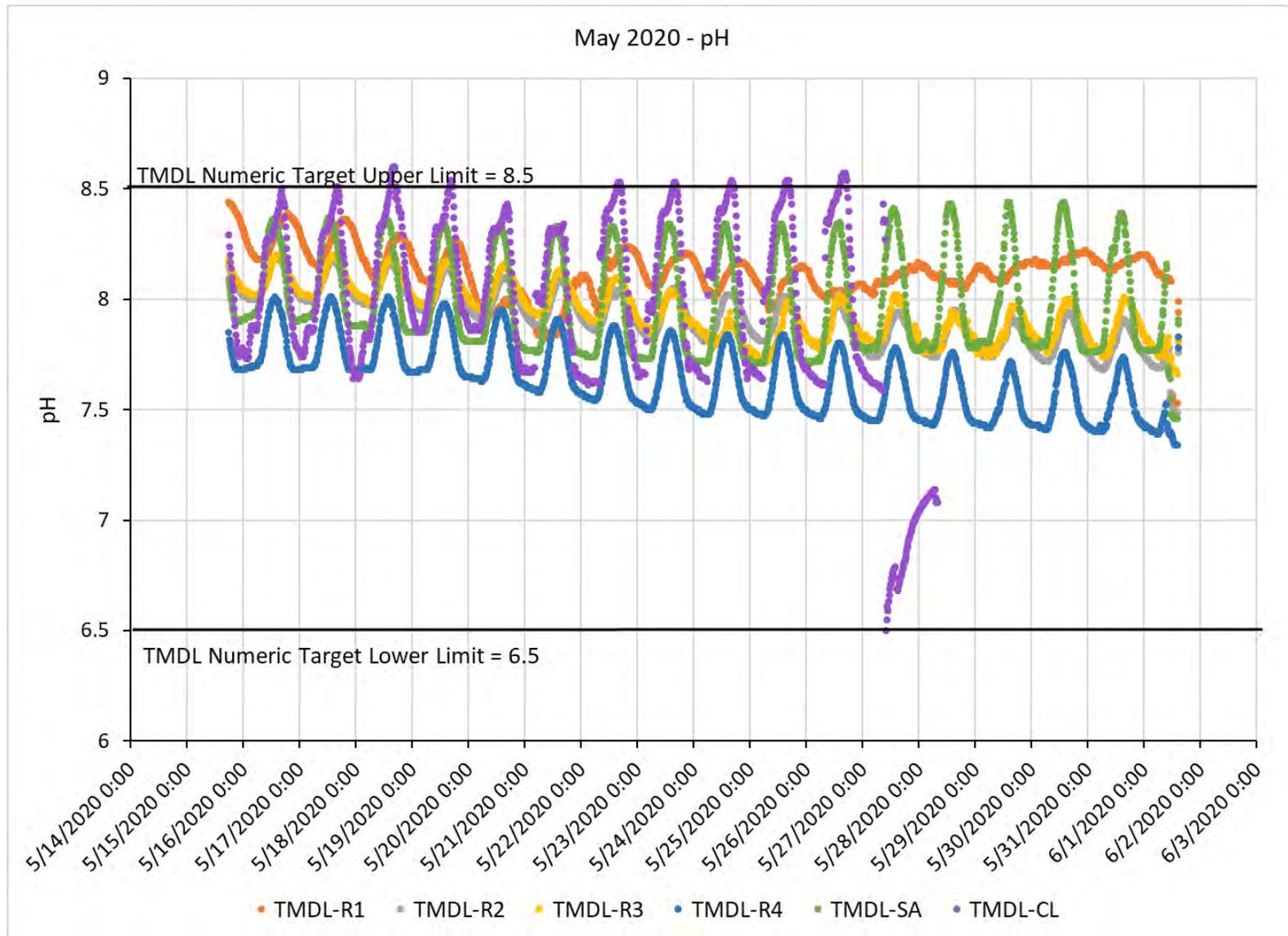


FIGURE D2. 2020 THIRD QUARTER (SEPTEMBER) PH CONTINUOUS DATA LOGGING

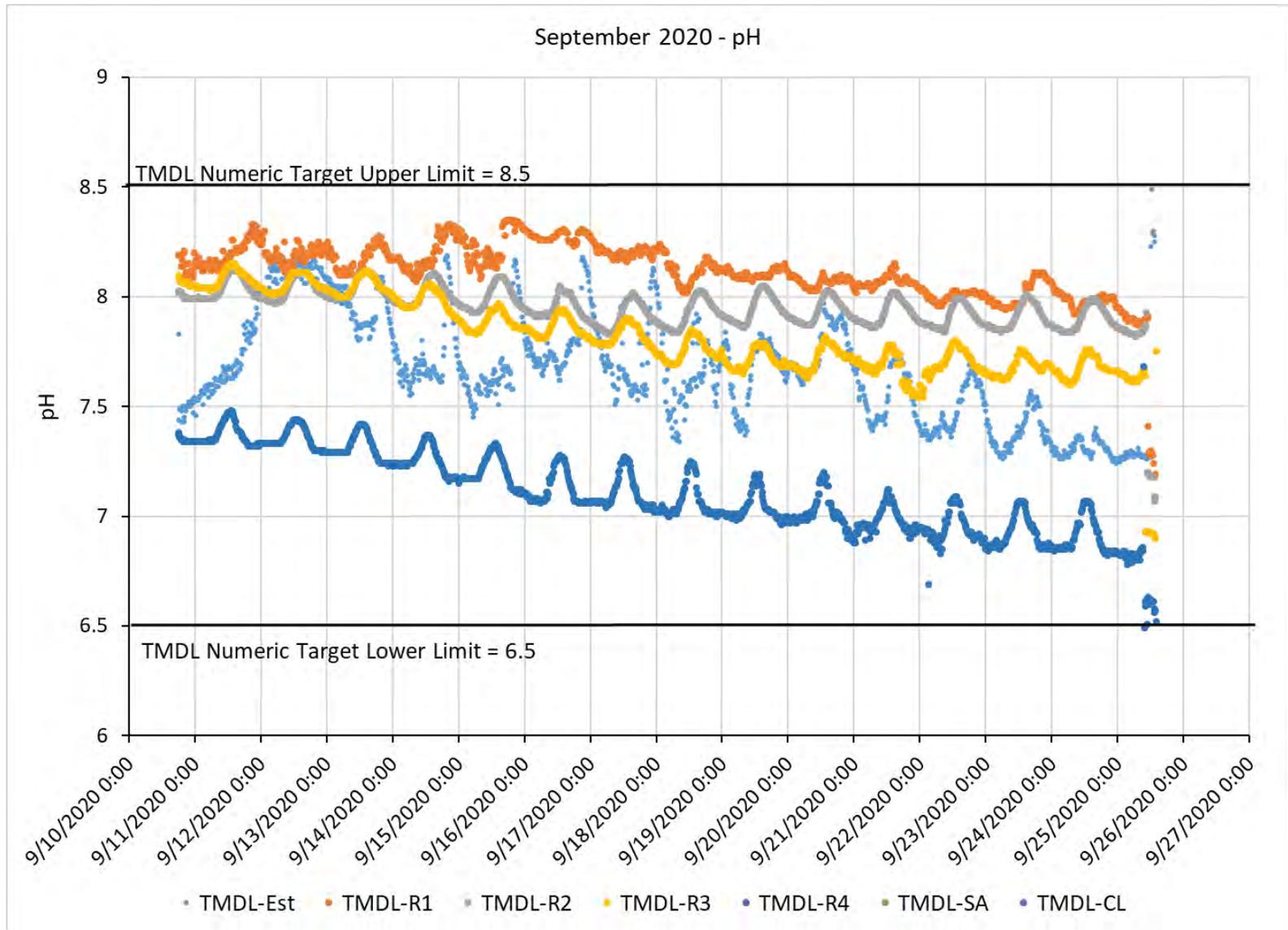


FIGURE D3. 2020 SECOND QUARTER (MAY) DISSOLVED OXYGEN CONTINUOUS DATA LOGGING

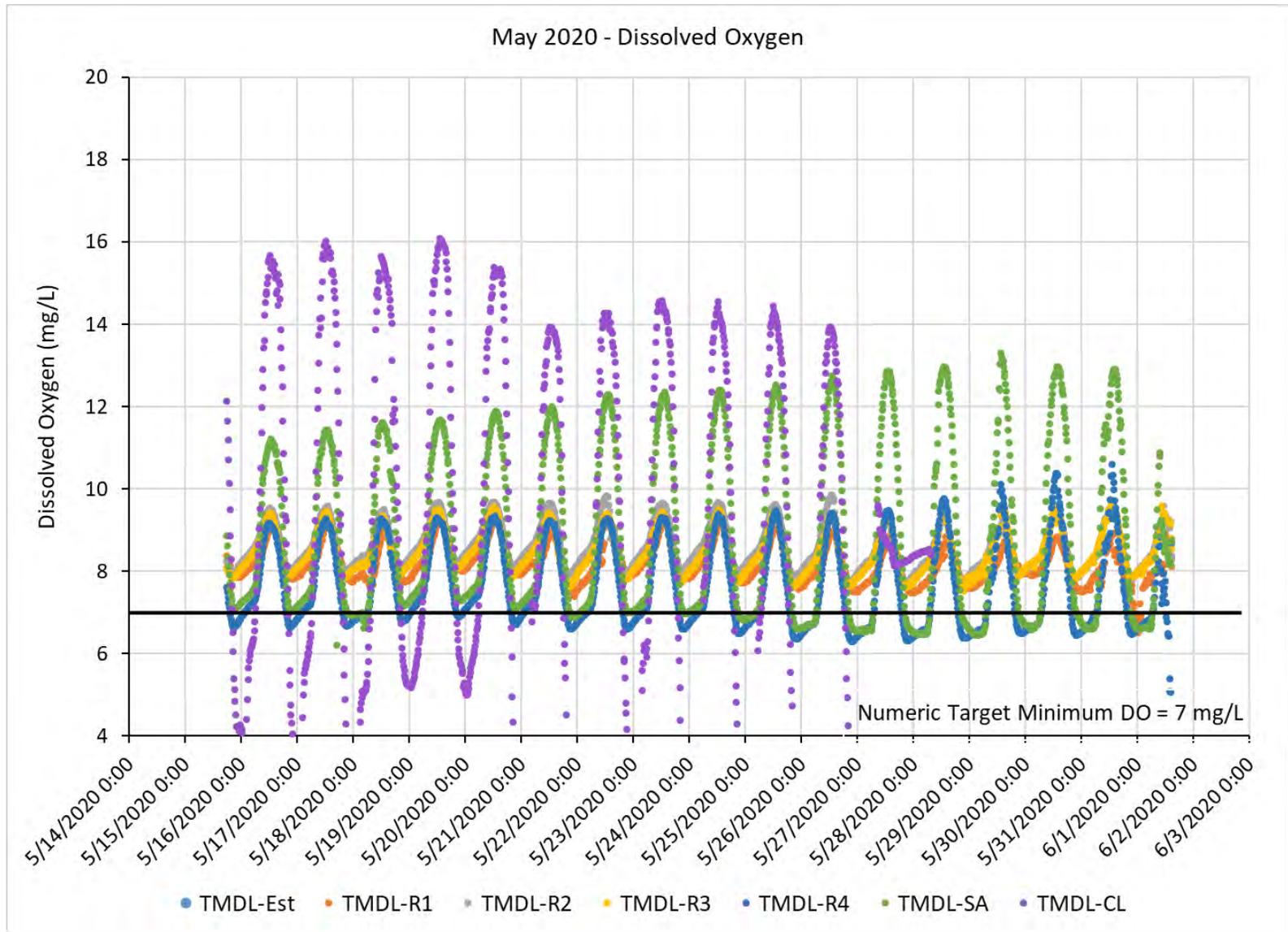
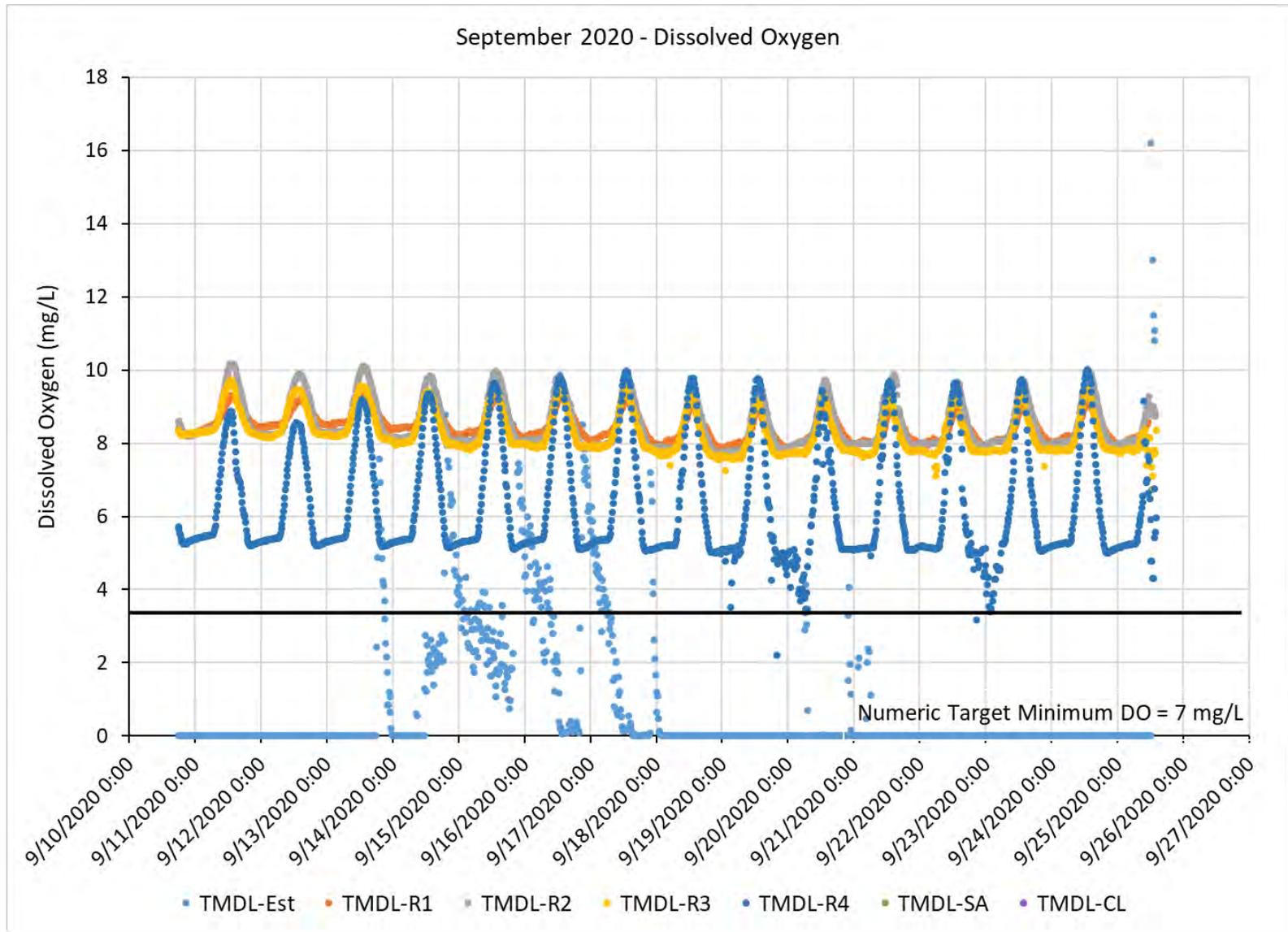


FIGURE D4. 2020 THIRD QUARTER (SEPTEMBER) DISSOLVED OXYGEN CONTINUOUS DATA LOGGING





July 31, 2020

LB Nye, Chief of Regional Programs  
Los Angeles Regional Water Quality Control Board  
320 W. 4th St., Suite 200  
Los Angeles, CA 90013

Subject: **2020 ANNUAL REPORT FOR THE VENTURA RIVER ALGAE TMDL  
(RESOLUTION NO. R12-011)**

Dear Ms. Nye:

Enclosed for your review and consideration is the 2020 Annual Report prepared and submitted to document completion of monitoring activities required by the Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients Total Maximum Daily Load, Resolution No. R12-011 (Ventura Algae TMDL) and the Ventura Algae TMDL Comprehensive Monitoring Plan for Receiving Water approved by Los Angeles Regional Water Quality Control Board on October 20, 2014.

This document is being submitted on behalf of the County of Ventura, Ventura County Watershed Protection District, Ojai Valley Sanitary District, City of Ojai, City of Ventura, California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County).

If you have any comments or questions regarding the attached document, please contact me at (805) 645-1382 or [Ewelina.Mutkowska@ventura.org](mailto:Ewelina.Mutkowska@ventura.org).

Sincerely,

Ewelina Mutkowska  
Senior Stormwater Manager  
Ventura County Public Works Agency

Ms. LB Nye,  
July 28, 2020  
Page 2 of 2

cc: Jun Zhu, Los Angeles Regional Water Quality Control Board  
Jeff Pratt, Ventura County Public Works Agency  
Glenn Shephard, Ventura County Watershed Protection District  
Arne Anselm, Ventura County Watershed Protection District  
Jodi Switzer, Farm Bureau of Ventura County  
Joe Yahner, City of Ventura  
Peter Shallenberger, City of Ventura  
Greg Grant, City of Ojai  
Jeff Palmer, Ojai Valley Sanitary District  
Shirley Pak, California Department of Transportation  
Bhaskar Joshi, California Department of Transportation  
Mike Roger, California Department of Transportation

JULY 2020



CITY OF  
**VENTURA**



**VENTURA COUNTY**  
Agricultural Irrigated Lands Group



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# TOTAL MAXIMUM DAILY LOAD FOR ALGAE, EUTROPHIC CONDITIONS, AND NUTRIENTS IN VENTURA RIVER, INCLUDING THE ESTUARY, AND ITS TRIBUTARIES (VR ALGAE TMDL)

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## 2020 ANNUAL REPORT

*Submitted to*  
TMDL Responsible Agencies Implementing Receiving Water Monitoring Requirements:

City of Ojai  
City of Ventura  
County of Ventura  
Ojai Valley Sanitary District  
California Department of Transportation  
Ventura County Agricultural Irrigated Lands Group  
Ventura County Watershed Protection District

*Prepared by:*



Rincon Consultants, Inc.  
July 27, 2020

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## EXECUTIVE SUMMARY

On behalf of the Ventura River Algae Total Maximum Daily Load (VR Algae TMDL) Responsible Agencies, the Ventura County Watershed Protection District (VCPWD) began sampling in accordance with the VR Algae TMDL Comprehensive Monitoring Plan (CMP) for Receiving Waters on January 14, 2015. Beginning in January 2020, the Responsible Agencies retained Rincon Consultants (Rincon) to implement this monitoring and reporting program. Aquatic Bioassay Consulting Laboratories and Larry Walker Associates, subconsultants to Rincon, have been assisting with completion of the work.

This monitoring report covers monitoring activities conducted in the Ventura River Estuary (TMDL-Est), Ventura River reaches 1 – 4, and in two main tributaries from May 2019 through April 2020. The VCPWD conducted monitoring from May 2019 through December 2019 and Rincon conducted from January 2020 to April 2020. This report includes field measurements and observations, continuous data logger results, and laboratory results at each site, including monthly flow measurements, nutrients, dissolved oxygen (DO), and pH; two-week continuous monitoring of DO and pH every quarter; qualitative observations of flow along the Ventura River mainstem (flowing, ponded, or dry); and monthly monitoring of algae during the dry season (May – September) for chlorophyll a (total algal and phytoplankton biomass) and macroalgal cover.

The Ventura River Watershed was subjected to increased environmental stresses over the past five years of this monitoring program. Severe drought conditions existed during the first three years of monitoring activities, from 2015-2017. The entire watershed was heavily impacted by the Thomas Fire, which started on December 4, 2017 and continued through January 9, 2018, becoming the largest recorded wildfire in California history at that time. The fire burned most of the open space and forest lands in the Ventura River and other Ventura County watersheds, as well as orchards, homes, and other structures from Fillmore to Santa Barbara. Areas that did not burn (mainly the Ojai Valley), were still subject to heavy ash deposition.

Drought conditions have generally eased for Ventura County and the past three wet seasons produced average or just below average rainfall. While it is unclear how much current flow patterns are related to rainfall and/or land cover changes and channel deposition post-fire, surface flow during the 2019 dry season was continuous from the upper watershed through to the estuary for both Ventura River and San Antonio Creek until September. In October, flow became discontinuous for the Ventura River near Santa Ana Boulevard and upstream of the San Antonio Creek monitoring location. Flow was present at the Ventura River Reach 4, San Antonio Creek, and Cañada Larga monitoring locations later in the season than in any of the preceding five years due to late storms in March and April 2020. The monitoring sites at Ventura River Reach 4 and downstream were perennial, and flow at the Ventura River Reach 2 monitoring location includes treated discharge waters from the Ojai Valley Sanitary District's wastewater treatment plant.

DO at the San Antonio Creek monitoring location was below the daily minimum numeric target for DO (7 mg/L) during four of the monthly in-situ measurement collection events but the pH instantaneous numeric target range (6.5 – 8.5) was not exceeded at this site. DO at Ventura River Reach 4 was also below the minimum threshold daily minimum numeric target for DO during four of the monthly monitoring events; pH at this site exceeded the upper pH instantaneous numeric target range during the March 2020 monthly event. pH exceeded the upper pH instantaneous numeric target range at the estuary monitoring location during the June, August, and October 2019 monitoring events. Continuous water quality monitoring measurements indicate that DO measurements at the Reach 4 monitoring location fell below the daily minimum numeric target for DO for numerous 5-min intervals during the May and December monitoring event, while DO measurements at the San Antonio Creek monitoring location fell below the minimum numeric target for DO during several days in the beginning of the December monitoring event. However, continuous water quality monitoring measurements coupled with monthly in-situ measurements indicate that pH and DO follow similar trends at each monitoring location and in general are within the VR Algae TMDL numeric targets.

The Ventura River Reach 2 was the only monitoring location where the seasonal average for total algal or phytoplankton biomass (measured as chlorophyll a) was exceeded. However, the VR Algae TMDL seasonal average numeric target for macroalgal cover ( $\leq 30\%$  for riverine sites,  $\leq 15\%$  for the estuary) was exceeded at all monitoring locations. Per the VR Algae TMDL, if no significant difference is observed between monthly dry season algal biomass measurements after two years of

CMP implementation, algal biomass monitoring may be reduced to three times per dry season (i.e., conducted in May, July and September). Referencing the five year dataset for algal biomass, monthly algal biomass measurement differences occur depending on the monitoring location and year. However, over the past five years, seasonal averages calculated using a 5-month (May through September) and 3-month (May, July, and September) dataset produce nearly identical compliance results. As such, the 3-month dataset appears to provide representative data of the dry season average for comparison to the VR Algae TMDL numeric targets. The Responsible Agencies are planning to discuss the monitoring results with RWQCB staff and request monitoring frequency reduction.

Field teams have continued to experience technical issues as well as logistical challenges related to deployment of the continuous water quality monitoring equipment. Technical challenges experienced over the 2019-2020 monitoring period included sensor errors related to calibration, biofouling, and failure. As discussed in previous monitoring reports, homeless persons and their encampments continue to present a high risk for vandalism and theft at numerous continuous monitoring locations. Equipment was not deployed at the estuary monitoring location during the second and third quarters of 2019 due to risk of vandalism. Monitoring equipment was deployed during the first quarter of 2020 in a manner intended to be less conspicuous, but this was ineffective as equipment was still stolen. Considering this theft, actions have been taken to further secure future deployments, including evaluation of alternative locations, enhanced housings for the data loggers, and procurement of a robust security chain and locking system.

## BACKGROUND

The Water Quality Control Plan for the Los Angeles region was amended on December 6, 2012 to incorporate the TMDL for algae, eutrophic conditions, and nutrients in the Ventura River, including the Estuary, and its tributaries (VR Algae TMDL). The VR Algae TMDL became effective on June 28, 2013 and required the development and implementation of a CMP for receiving water monitoring to assess numeric attainment and measure in-stream nutrient concentrations. The CMP submitted by the Responsible Agencies<sup>1</sup> was approved by the Los Angeles Regional Water Quality Control Board on October 20, 2014.

On November 18, 2014, the Ventura County Watershed Protection District (VCWPD) was retained by the Responsible Agencies to conduct monitoring in accordance with the CMP for up to five years. The CMP required sampling to begin no later than 90 days after the Los Angeles Regional Water Quality Control Board approved the CMP, and monitoring began on January 14, 2015. Beginning in January 2020, the TMDL Responsible Agencies retained Rincon to continue implementation of this monitoring and reporting program.

Water quality monitoring is conducted at seven locations (**Figure 1**), including one site in the Ventura River Estuary (TMDL-Est), one site in each of the four Ventura River reaches identified in the VR Algae TMDL (TMDL-R1, TMDL-R2, TMDL-R3, and TMDL-R4), and in two main tributaries: Cañada Larga (TMDL-CL) and San Antonio Creek (TMDL-SA). Visual observations of river status and flow conditions are conducted at three locations on Ventura River at Casitas Vista Road Bridge (TMDL-CVR), Santa Ana Boulevard Bridge (TMDL-SAB), and State Route 150 bridge (TMDL-H150).

In accordance with the CMP, water quality monitoring is conducted for algal biomass, algal percent cover, nutrients (total and dissolved), in situ water quality parameters (dissolved oxygen, pH, temperature, electrical conductivity), and flow for the river and estuary. Visual observations are made to document the status of the Estuary (open or closed), and the status of the river (flowing, ponded, or dry) at specific flow observation locations, which identifies wet/dry delineations and potential locations of groundwater upwelling. Monitoring for algal biomass and percent cover is conducted once per month in the dry season (May 1st to September 30th), and sampling for nutrients, in-situ parameters, and flow is conducted monthly throughout the year. In addition, DO and pH are measured continuously for two-week periods on a quarterly basis; these measurements occur during the months of May and September in the second and third quarters in accordance with the CMP. DO and pH were also measured continuously for two-week periods during the months of December and March in the fourth and first quarters.

This report is a summary of monthly dry season monitoring data from May 2019 – September 2019, monthly wet season monitoring data from October 2019 – April 2020, and quarterly continuous data logging conducted in May 2019, September 2019, and December 2019, and March 2020.

---

<sup>1</sup> Responsible Agencies include Ojai Valley Sanitary District, Ventura County Watershed Protection District, County of Ventura, City of Ojai, City of San Buenaventura (Ventura), California Department of Transportation, and the Ventura County Agricultural Irrigated Lands Group (represented by the Farm Bureau of Ventura County)

FIGURE 1. SAMPLING SITES AND FLOW OBSERVATION LOCATIONS



Imagery provided by Microsoft Bing and its licensors © 2020.  
 Additional data provided by USGS, 2017.

Figure 1 Sampling Sites and Flow Observation Locations

## ACCESS PERMISSION

In 2015, to allow for continuity of monitoring site locations, five-year easements were sought from property owners where sampling sites are located for the fee of \$250 per term. The temporary easements expire five years from the date of approval (early 2020). Two property owners declined the five-year easement request but signed a revocable access permit instead. The sites affected by the permits are TMDL-R2 (which was moved upstream of the site listed in the CMP because the owner of that parcel denied the access request) and TMDL-SA directly above the San Antonio Creek confluence with the Ventura River. TMDL-R2 was sampled approximately 200 meters upstream of the Ojai Valley Sanitary District site (OVSD-R5) for monthly monitoring and approximately 300 meters upstream for continuous monitoring to be entirely on permitted property.

## MONTHLY MONITORING

Monthly monitoring was conducted in accordance with the CMP, which included collection of nutrient grab samples, in-situ parameters, and flow during the wet and dry season, and collection of algal biomass samples and macroalgae percent cover during the dry season. Note that storm flows over the 2018 – 2019 wet season redirected the Ventura River near TMDL-R4 to the west bank and heavy flows made access difficult to the former sampling area during the 2019-2020 monitoring period. As such, monitoring was conducted approximately 100 meters downstream of the previous location. Monitoring event dates and collecting agency details are presented in **Table 1**. Monthly in-situ parameters for each site are presented in **Appendix A**.

**TABLE 1. MAY 2019 – APRIL 2020 WATER QUALITY SAMPLE COLLECTION DATES**

Sample Month	Season	Data Collection	Sample Date						
			TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
MAY 2019	Dry	VCWPD	5/8	5/8	5/8	5/7	5/7	5/7	5/15
JUN 2019	Dry	VCWPD	6/13	6/13	6/13	6/12	6/12	6/12	6/13
JUL 2019	Dry	VCWPD	7/10	7/11	7/11	7/10	7/10	7/10	7/10
AUG 2019	Dry	VCWPD	8/14	8/15	8/15	8/14	8/14	8/14	Dry (8/15)
SEP 2019	Dry	VCWPD	9/9	9/11	9/11	9/9	9/9	Mostly Dry (9/9)	Dry (9/11)
OCT 2019	Wet	VCWPD	10/16	10/16	10/16	10/16	10/16	10/16	Dry (10/16)
NOV 2019	Wet	VCWPD	11/6	11/6	11/6	11/6	11/6	11/6	Dry (11/6)
DEC 2019	Wet	VCWPD	12/19	12/19	12/19	12/19	12/19	12/19	12/19
JAN 2020	Wet	Rincon	1/15	1/15	1/15	1/15	1/15	1/15	1/15
FEB 2020	Wet	Rincon	2/12	2/12	2/12	2/12	2/12	2/12	2/12
MAR 2020	Wet	Rincon	3/19	3/19	3/19	3/19	3/19	3/19	3/19
APR 2020	Wet	Rincon	4/15	4/15	4/15	4/15	4/15	4/15	4/15

**Table Notes:**

Grey shading indicates dry or mostly dry conditions.

“Mostly Dry” indicates that water was present at the monitoring site, but flow was insufficient to meet algae sampling protocols so monthly monitoring parameters were sampled but algae monitoring/collection could not be conducted.

“Dry” sites had insufficient water present for any sampling to take place due to absence of flow.

## MONTHLY FIELD RESULTS

### FLOW

Unlike previous years, surface flow was continuous from the upper watershed through to the estuary for both Ventura River and San Antonio Creek from May through September 2019. After September, flow became discontinuous for the Ventura

River near Santa Ana Boulevard for the Ventura River, and upstream of TMDL-SA for San Antonio Creek. In addition, TMDL-R4, TMDL-SA, and TMDL-CL flowed longer than in any of the preceding 5 years, with TMDL-R4 flowing for the duration of the 2019-2020 monitoring period. Flow presence/absence observations (flowing, ponded, or dry) are provided for the visual observation monitoring locations in **Table 2**. In addition, the estuary berm was open throughout the 2019-2020 monitoring period.

**TABLE 2. MAY 2019 – APRIL 2020 QUALITATIVE FLOW OBSERVATIONS**

<b>Date</b>	<b>Ventura River at Hwy 150</b>	<b>Ventura River at Santa Ana Blvd</b>	<b>Ventura River at Casitas Vista Road</b>
5/10/2019	Flowing	Flowing	Flowing
6/10/2019	Flowing	Flowing	Flowing
7/10/2019	Flowing	Flowing	Flowing
8/14/2019	Flowing	Flowing (< 1 cfs)	Flowing
9/9/2019	Flowing	Dry	Flowing
10/14/2019	Flowing	Dry	Flowing
11/6/2019	Flowing	Dry	Flowing
12/18/2019	Flowing	Flowing	Flowing
1/15/2020	Flowing	Flowing	Flowing
2/12/2020	Flowing	Flowing	Flowing
3/19/2020	Flowing	Flowing	Flowing
4/15/2020	Flowing	Flowing	Flowing

**Table Notes:**

During the months of January through April 2020 river status observations were not performed in the field. River status observations were derived by inference from flow estimates obtained at water quality monitoring locations and desktop assessment of County gages SOTC1, VRTC1, and VRVC1.

cfs: cubic feet per second

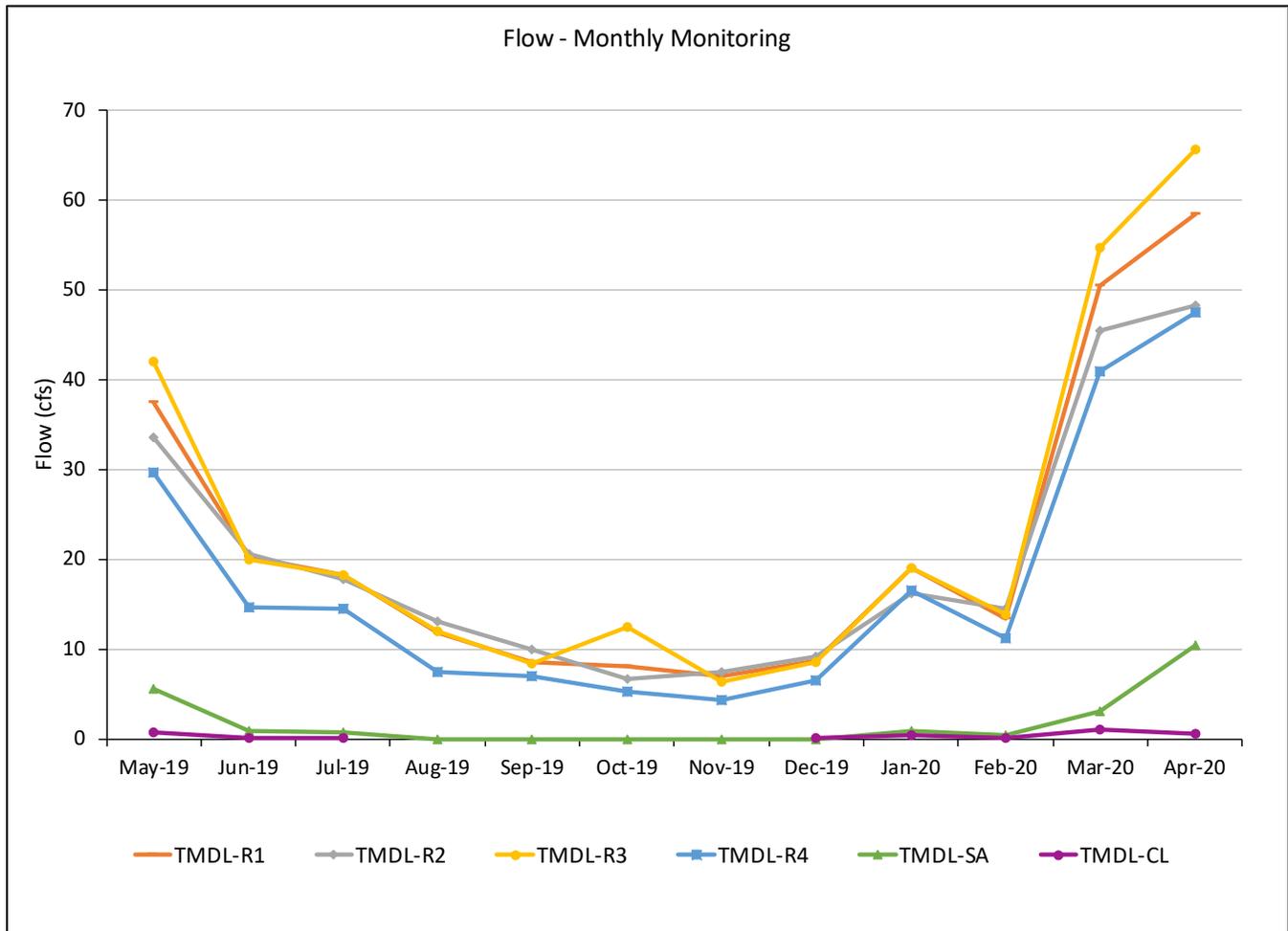
Monthly flow data for the water quality monitoring locations are presented in **Figure 2**. As seen in this chart, flow follows a cyclical trend of elevated flow during the wet season with a gradual decline into the dry season, followed by an increase as storm events deliver precipitation in the watershed. As seen in the monitoring results, flow began to increase following the November monitoring event which corresponds with a recorded total of 4.9 inches of rainfall at the Ojai-County Fire Station (Site ID 030D) between the November and December monitoring event.<sup>2</sup> Note that some variability has been seen during the dry season, potential causes of which may include surface/subsurface flow, groundwater interaction, geology and infiltration rates, antecedent moisture, agricultural and urban inputs and extractions.

**Figures 3 and 4** provide additional context to the flow regime at the water quality monitoring locations over the past five years and present monthly instantaneous flow measurements (primary y-axis) compared to monthly rainfall totals measured at the Ojai-County Fire Station (secondary y-axis).<sup>3</sup> As illustrated in this figure, flow began to increase following a series of storm events during the 2017 rainy season. The flows during the dry season were elevated in 2018 and 2019 at the four Ventura River monitoring locations compared to the previous three years.

<sup>2</sup> Data download available here: [https://www.vcwatershed.net/hydrodata/php/getstation.php?siteid=030D#rain\\_hour](https://www.vcwatershed.net/hydrodata/php/getstation.php?siteid=030D#rain_hour)

<sup>3</sup> Note that river discharge responds more to rain in the upper watershed, where precipitation depths are much higher than those recorded at Site ID 030D. The rainfall data is presented here as an indicator of the differences

FIGURE 2. 2019-2020 MONTHLY FLOW MONITORING

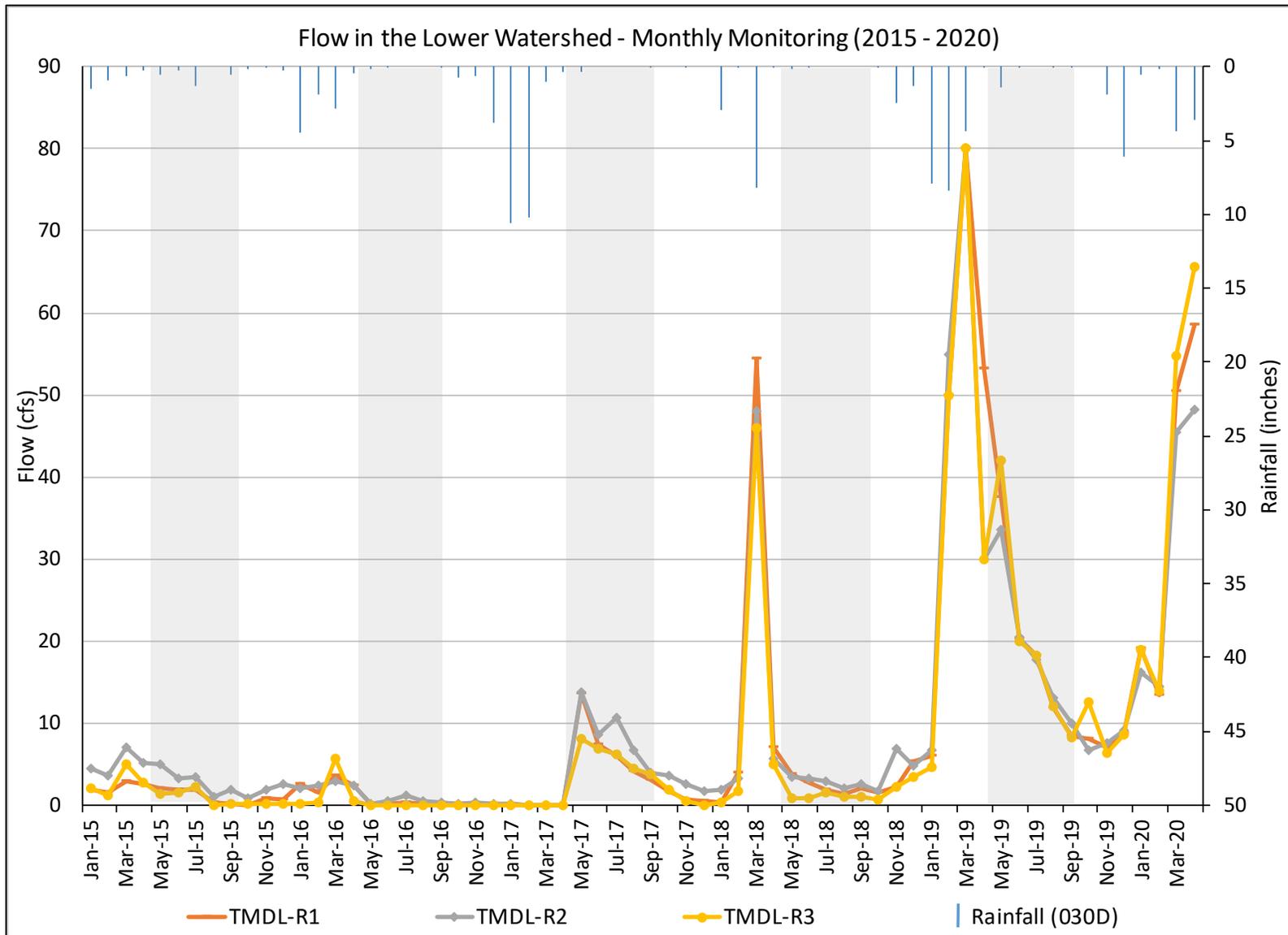


**Figure Notes:**

Missing data points for TMDL-CL between August 2019 and November 2019 indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded).

Sites TMDL-R1, TMDL-R2, and TMDL-R3 are perennial. Flow at TMDL-R2 is a combination of flow in the Ventura River downstream of TMDL-R3 and discharge from the Ojai Valley Sanitary District's wastewater treatment plant.

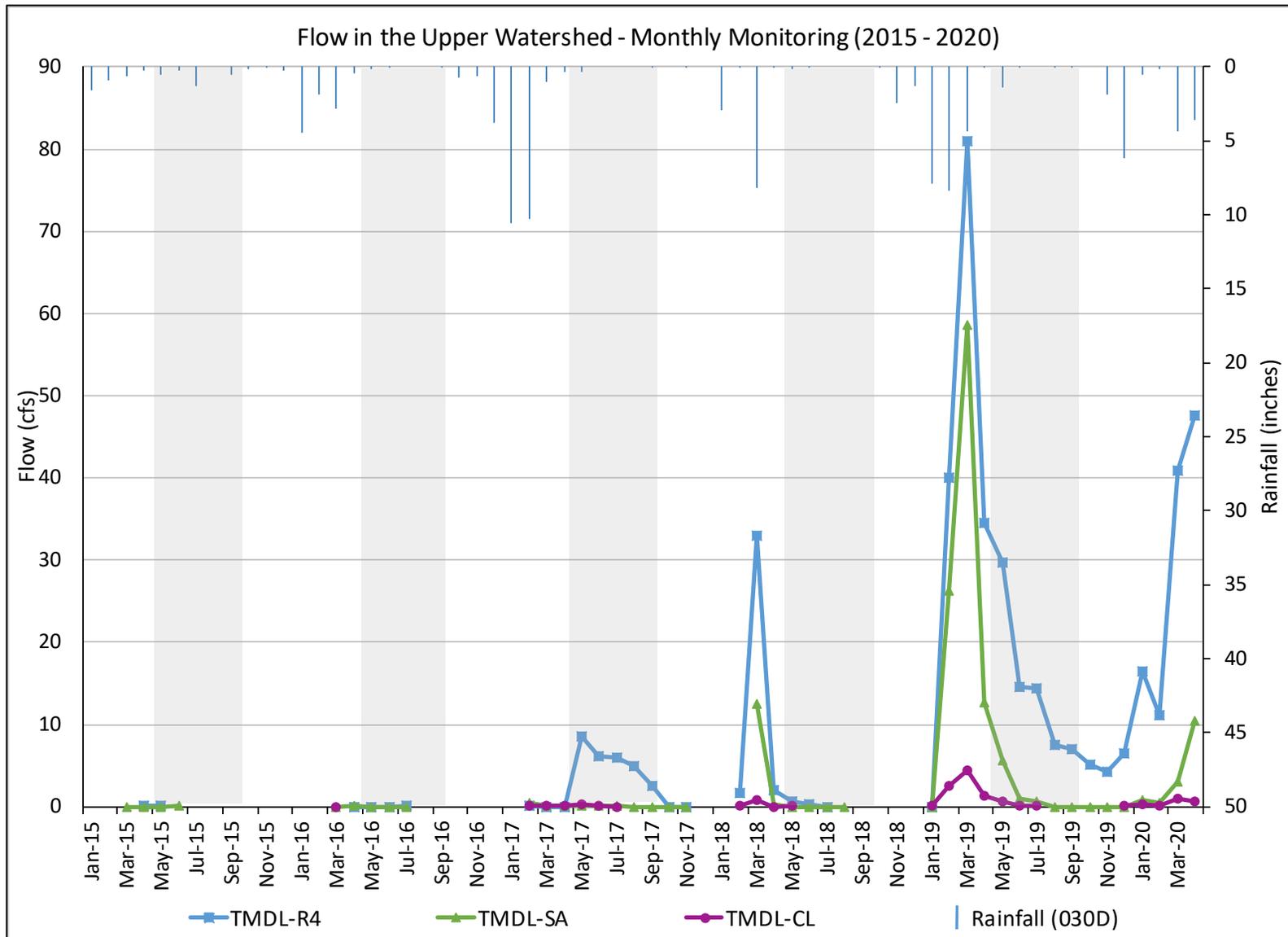
FIGURE 3. 2015-2020 MONTHLY FLOW MONITORING IN THE LOWER WATERSHED



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

FIGURE 4. 2015-2020 MONTHLY FLOW MONITORING IN THE UPPER WATERSHED



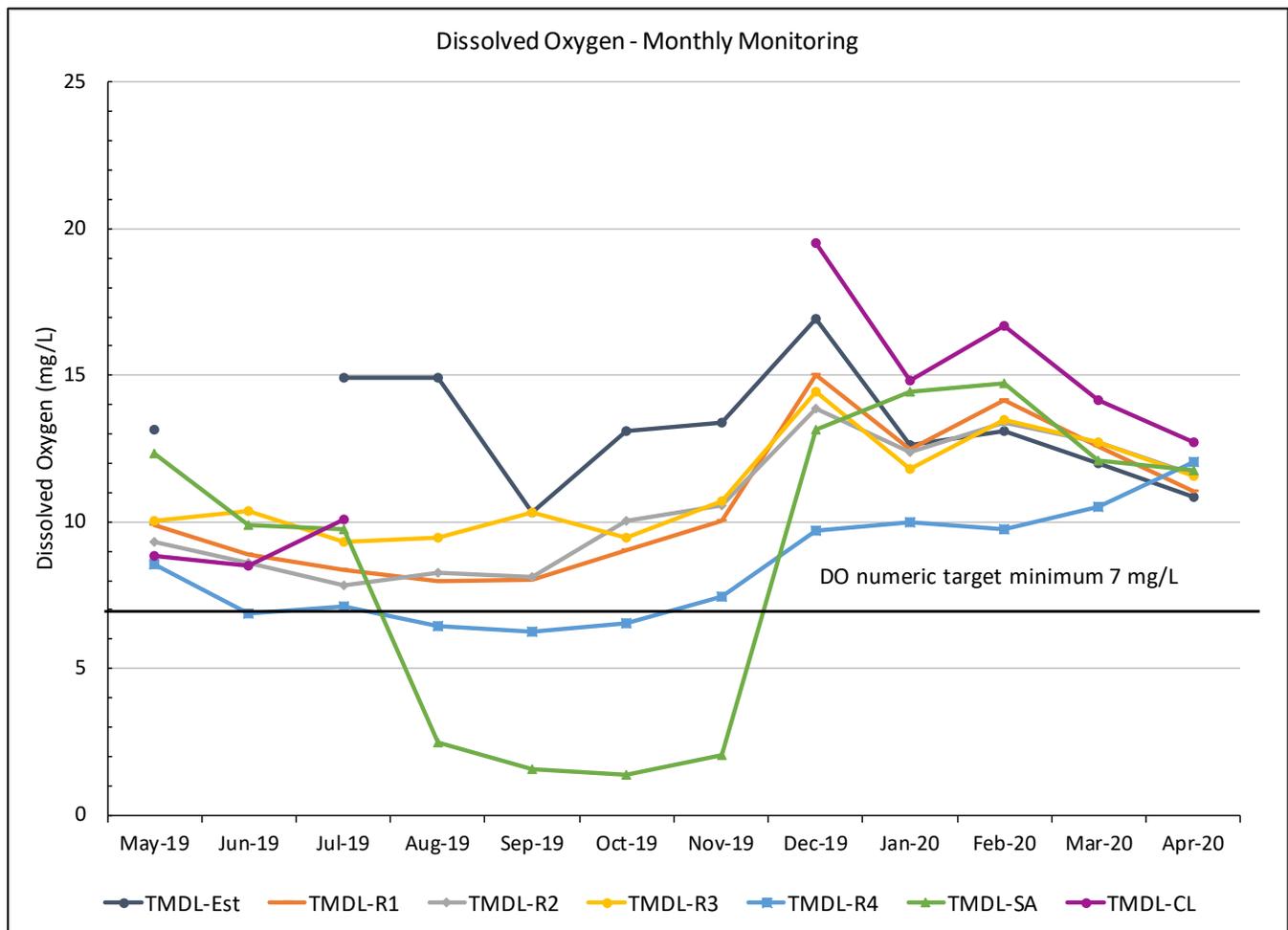
**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

## DISSOLVED OXYGEN

During the 2019-2020 monitoring period DO concentrations measured during monthly sampling ranged from 1.39 – 19.5 mg/L (Figure 5). The minimum (1.39 mg/L) was recorded at TMDL-SA during the October sampling event at 10:00am, the maximum (19.5 mg/L) was recorded at TMDL-CL during the December sampling event at 7:45am. DO concentrations fell below the target minimum (7 mg/L) at two of the seven sites (TMDL-SA and TMDL-R4), and these concentrations were all measured between 8:00 – 10:00am during the August – November sampling events. Low levels of DO tended to occur during periods of low flow (Figure 2, Table 2), possibly due to the ponding (and potential stagnation) of water observed upstream and/or at the measurement location. In addition, DO is typically low in the early morning and increases during the day, which may explain these low measurements.

FIGURE 5. 2019 - 2020 MONTHLY MONITORING - DISSOLVED OXYGEN



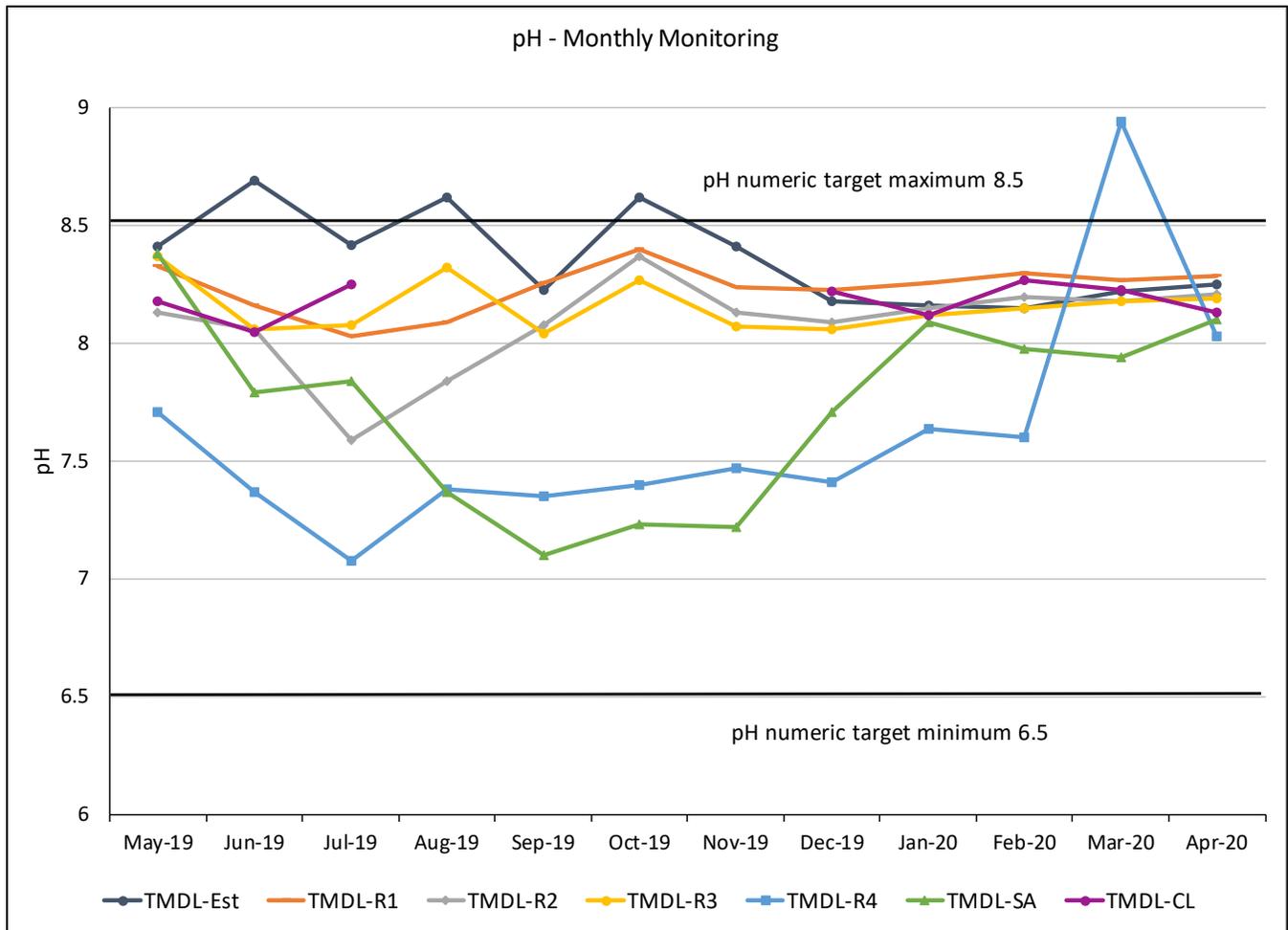
### Figure Notes:

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded).

## pH

During the 2019-2020 monitoring period, pH measurements taken during monthly sampling ranged from 7.08 – 8.94 (Figure 6). The minimum (7.08) was recorded at TMDL-R4 during the July sampling event at 7:55am, and the maximum (8.94) was recorded at TMDL-R4 during the March sampling event at 8:35am. pH measurements at all sites, except TMDL-Est, were within the pH target range (6.5 – 8.5) for the duration of the monitoring period. At TMDL-Est, pH exceeded the upper bound of the target range (8.5) in June, August, and October; these three measurements were all taken between 1:30 – 2:30pm. pH at TMDL-R4 exceeded the upper bound of the target range in March.

FIGURE 6. 2019 - 2020 MONTHLY MONITORING - PH



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded).

## MONTHLY NUTRIENT RESULTS

Nutrient levels show variation between sites, seasons, and years. Charts of results for total nitrogen and total phosphorus from 2019-2020 and the previous five years (2015-2020) are included below for comparison.

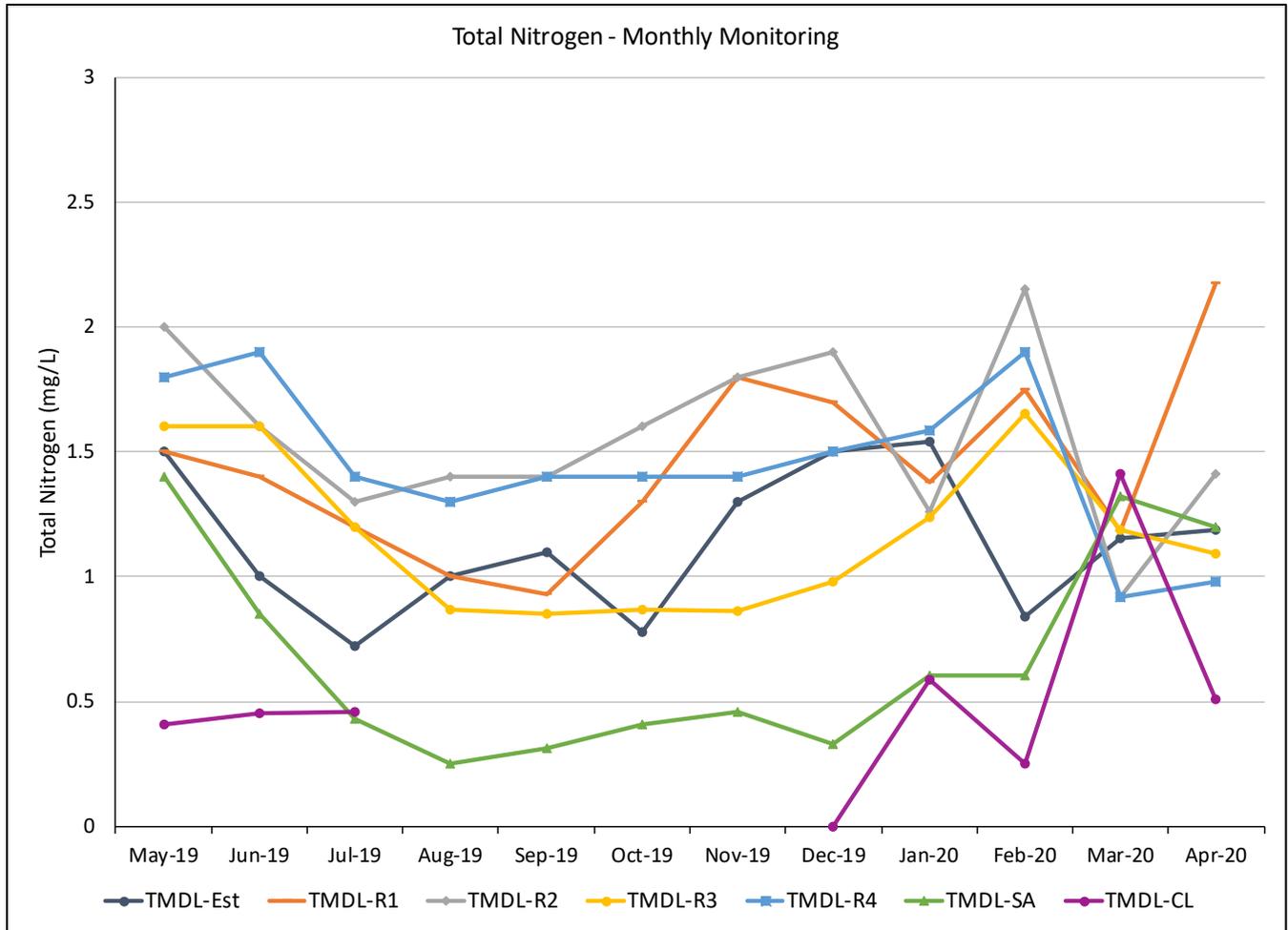
### NITROGEN

During 2019-2020 monitoring, concentrations of total nitrogen above the laboratory reporting limit (0.2 and 0.3 mg/L) ranged from 0.25 mg/L to 2.05 mg/L (**Figure 7**). The lowest concentrations, including results below the reporting limit, occurred at TMDL-SA and TMDL-CL. The maximum concentration occurred during the February sampling event at TMDL-R2, which had an annual average of 1.6 mg/L. As a general trend, TMDL-SA and TMDL-CL had the lowest total nitrogen concentrations, and TMDL-R2 and TMDL-R4 had the highest concentrations. A nitrogen summary table showing all results from the 2019-2020 monthly data is provided as **Appendix B**.

To provide important context as to how these results compare to previous monitoring periods, **Figures 8 and 9** present the past five years of nitrogen monitoring results. Total nitrogen concentrations in 2019-2020 were generally lower and varied less between site and season than in previous years. Through a visual assessment of the results it is apparent that nitrogen concentrations at all monitoring locations have historically (since monitoring began in 2015) demonstrated greater seasonal

variation, and in general had higher concentrations during dry years. TMDL-R3 is an exception to this trend with low concentrations throughout 2015 and 2016, and again through the 2018 dry season. These results may be associated with the period of severe drought prior to 2018 during which mobilization and transport of nitrogen during wet weather may have enhanced seasonal variation in water quality.

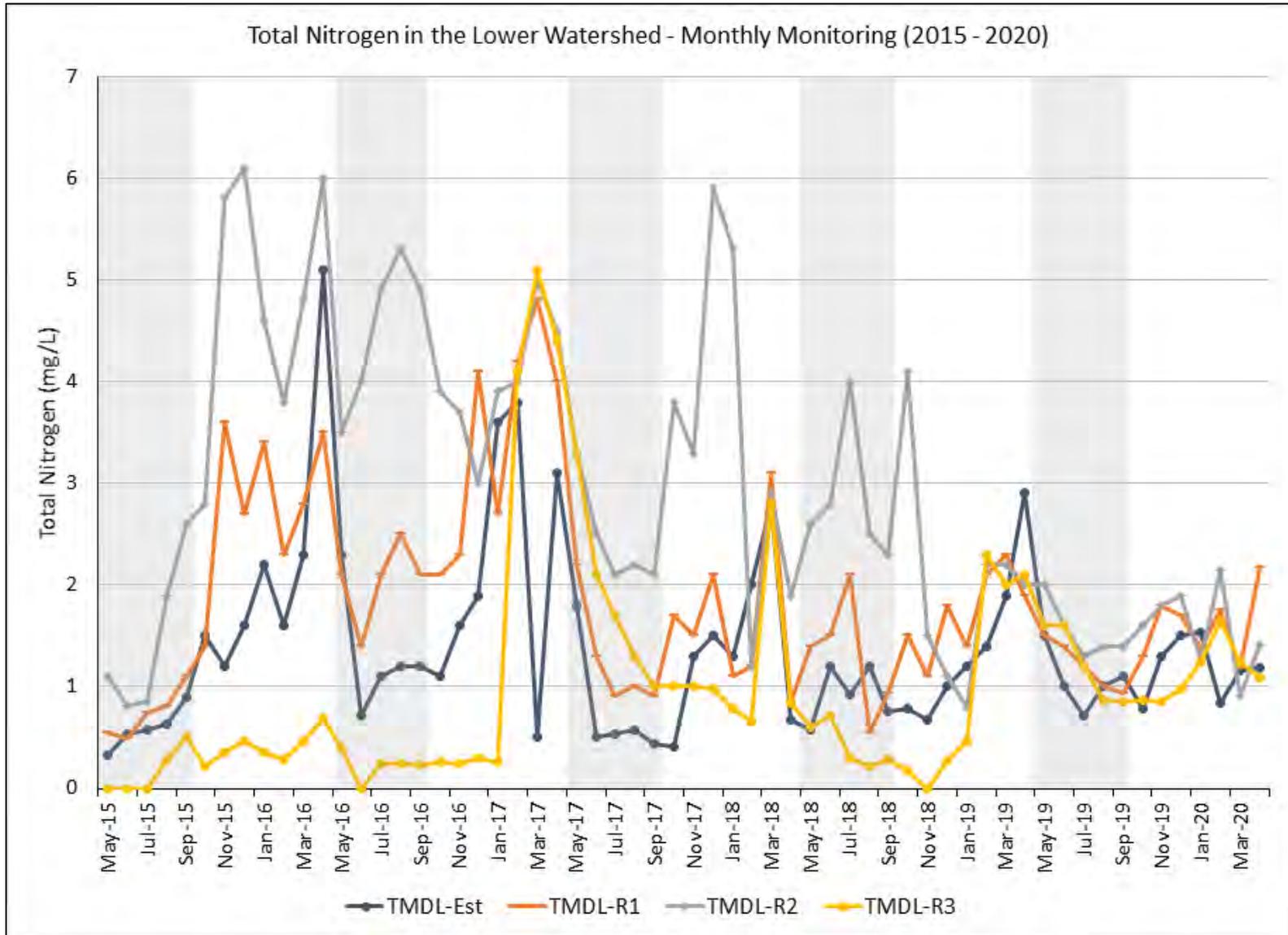
FIGURE 7. 2019 - 2020 MONTHLY MONITORING - TOTAL NITROGEN



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded)

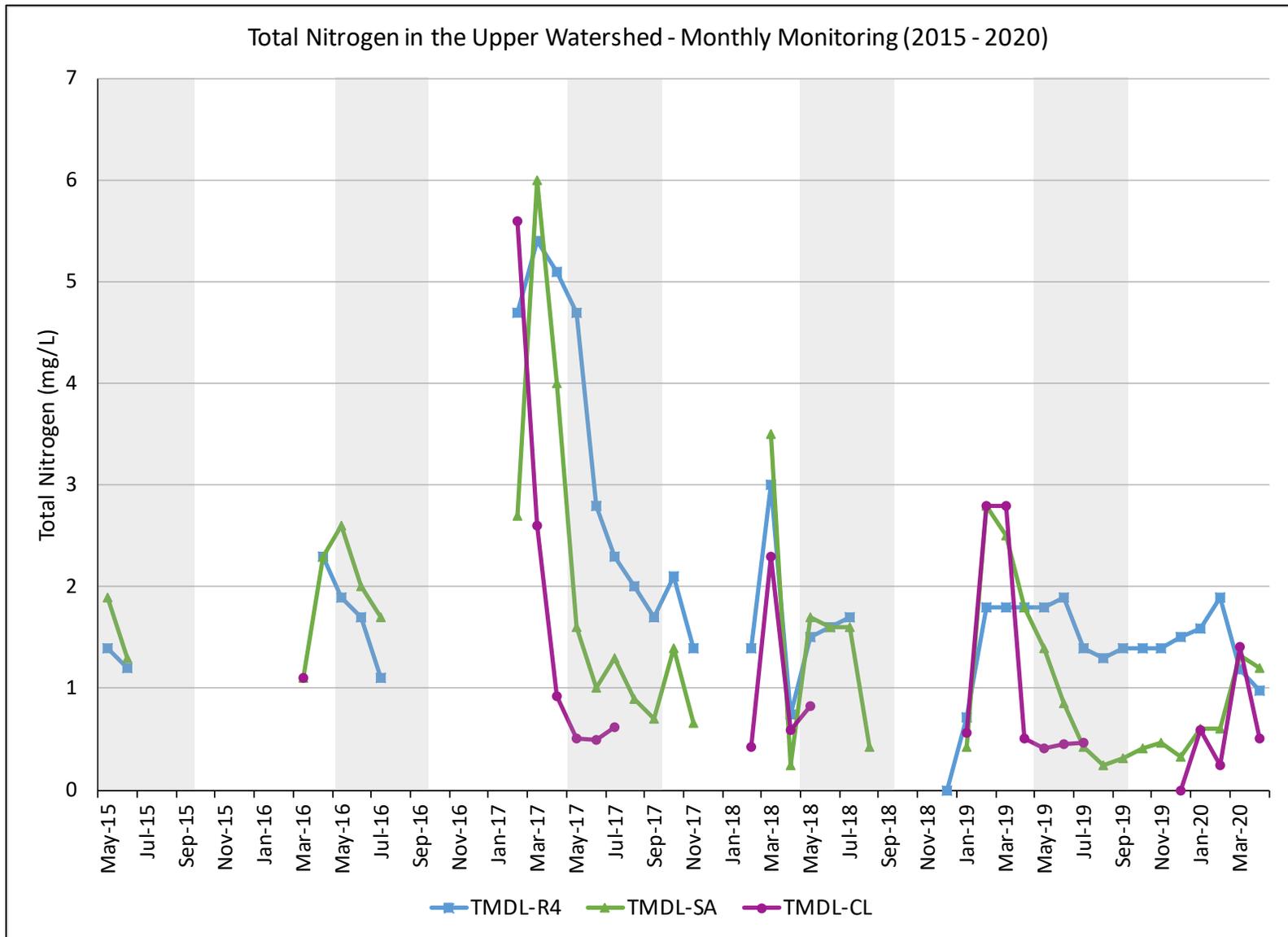
FIGURE 8. 2015 - 2020 MONTHLY MONITORING - TOTAL NITROGEN, LOWER WATERSHED



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

FIGURE 9. 2015 - 2020 MONTHLY MONITORING - TOTAL NITROGEN, UPPER WATERSHED



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

PHOSPHORUS

During 2019-2020 monitoring, concentrations of total phosphorus above the minimum detection limit (0.0014 or 0.016) ranged from 0.012 mg/L to 0.23 mg/L (Figure 10). The lowest concentrations occurred throughout the monitoring period at TMDL-CL, TMDL-SA, TMDL-R4, and TMDL-R3. The maximum concentration occurred during the March sampling event TMDL-R2, which had an annual average of 0.034 mg/L. As a general trend, sites TMDL-Est, TMDL-R1, and TMDL-R2 had higher total phosphorus concentrations than the other monitoring locations.

Similar to the long-term data assessment for nitrogen presented above, total phosphorus concentrations for the 2019 – 2020 monitoring period were generally lower and varied less between site and season than in previous years. Figures 11 and 12 present the past five years of total phosphorous monitoring results, which illustrate greater seasonal variation, especially for TMDL-R2. Unlike the historic variation of nitrogen concentrations, total phosphorous does not display the same level of variation between sites over this five-year dataset.

FIGURE 10. 2019 - 2020 MONTHLY MONITORING - TOTAL PHOSPHORUS

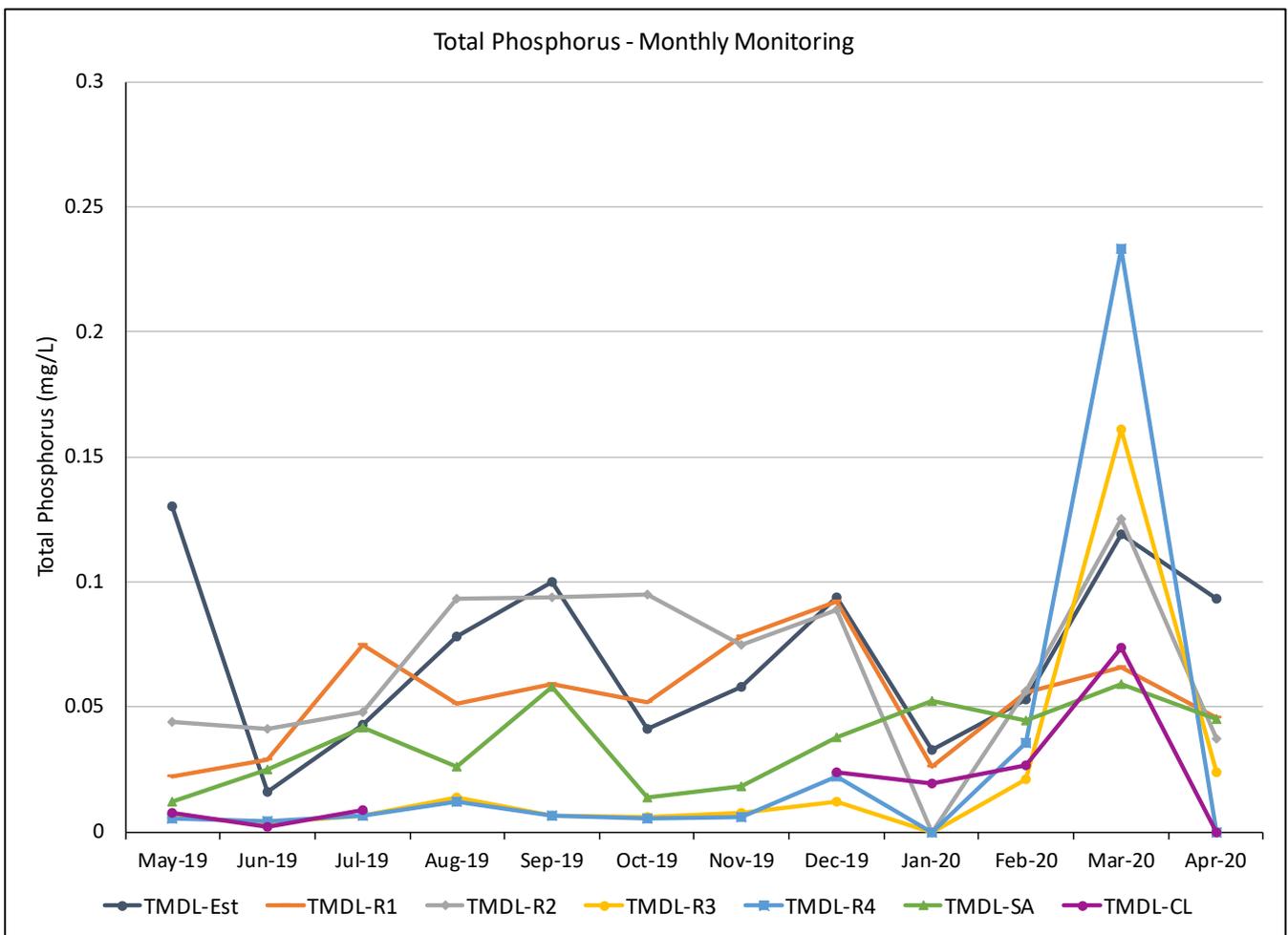
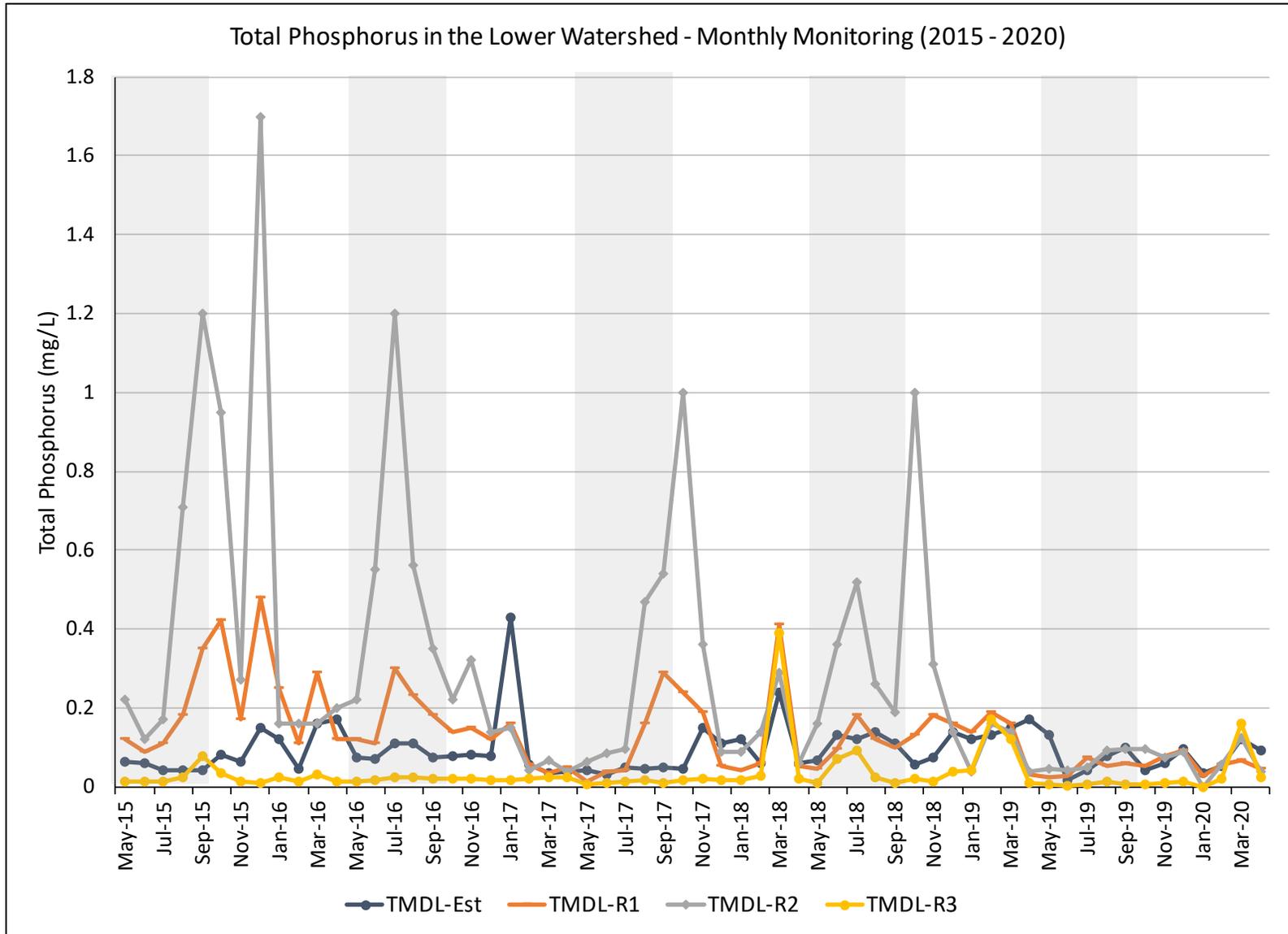


Figure Notes:

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded).

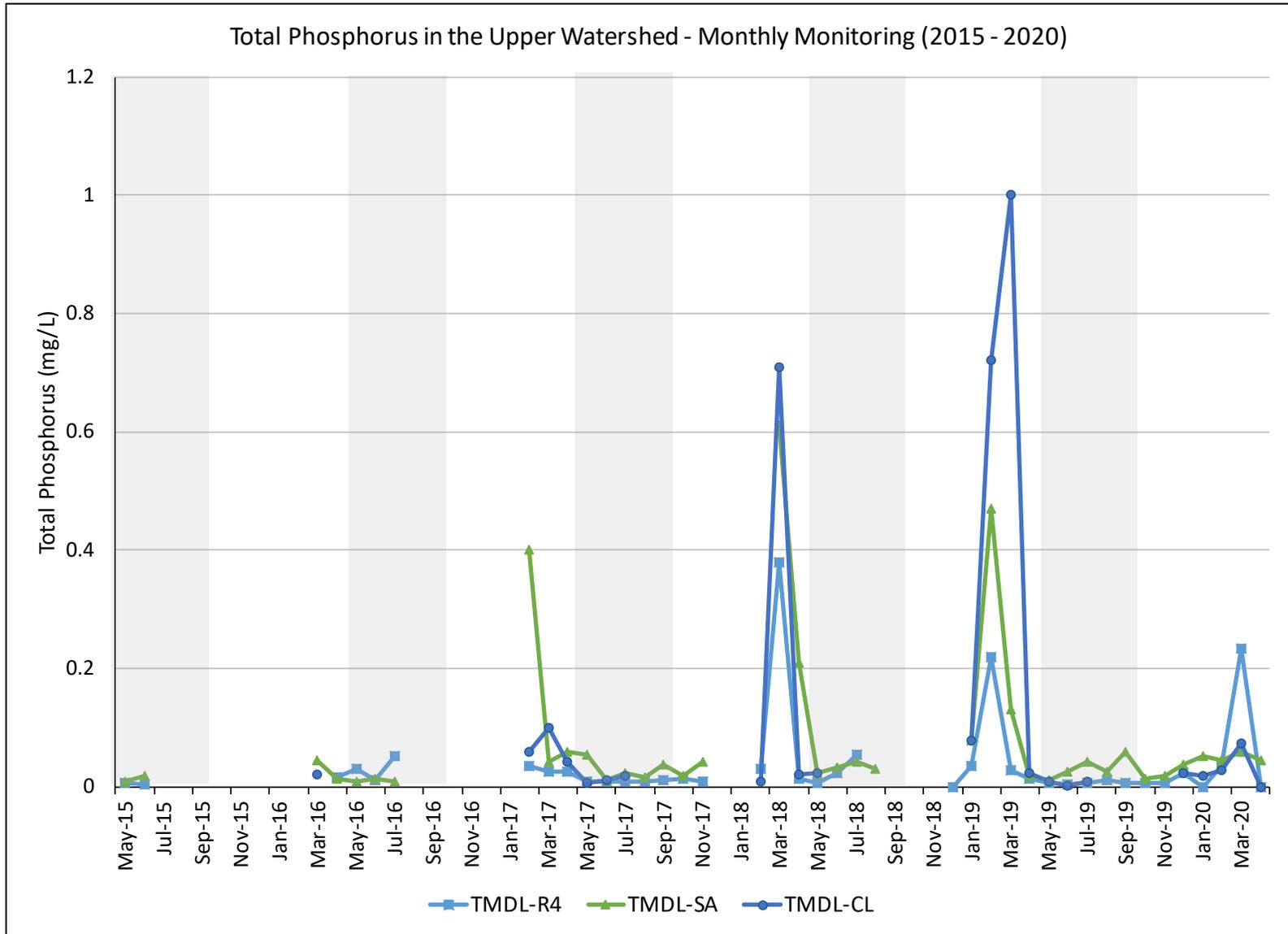
FIGURE 11. 2015 - 2020 MONTHLY MONITORING - TOTAL PHOSPHORUS, LOWER WATERSHED



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

FIGURE 12. 2015 - 2020 MONTHLY MONITORING - TOTAL PHOSPHORUS, LOWER WATERSHED



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). Grey bars indicate dry season (May – September).

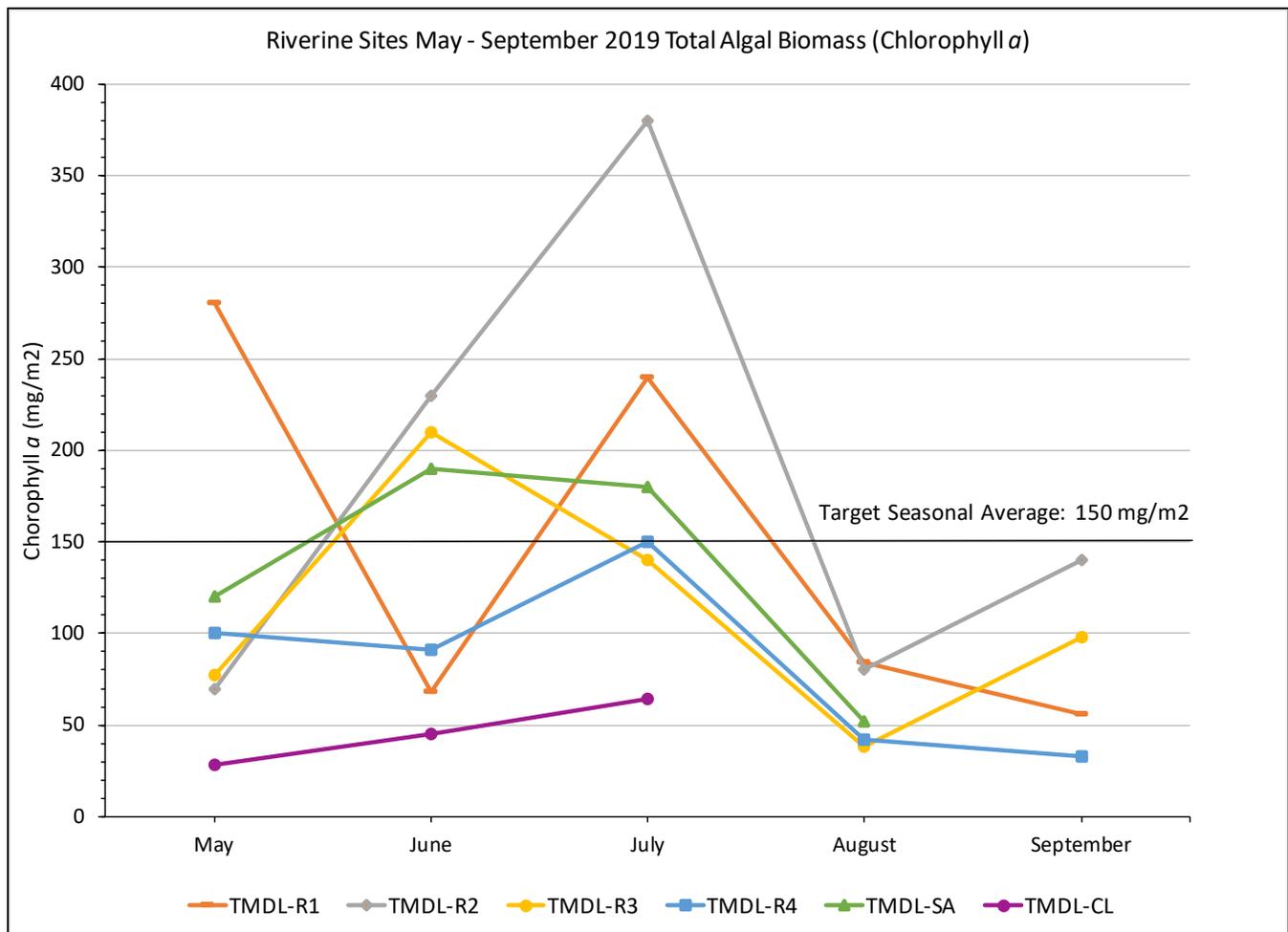
## DRY SEASON MONTHLY ALGAE RESULTS

The 2019 dry season sampling occurred monthly from May through September in accordance with the CMP. As discussed above, the upper watershed remained connected to the lower watershed into August 2019, before the river became dry at Santa Ana Boulevard in September 2019 (see **Table 1**). All water quality monitoring locations had enough flow for algae sampling through July 2019. TMDL-CL was completely dry by the August 2019 monitoring event, and TMDL-SA was too dry for algae sampling by the September monitoring event.

### RIVERINE SITES

In accordance with the VR Algae TMDL and CMP, algae sampling was conducted using the Surface Water Ambient Monitoring Program (SWAMP) protocol for riverine sites. This includes percent cover estimates of both suspended (floating) and attached (land-based), and total algal biomass [measured as chlorophyll *a* (mg/m<sup>2</sup>)]. Macroalgal percent cover estimates only include alive algae. Riverine total algal biomass concentrations are shown in **Figure 13** and macroalgal percent cover is displayed in **Figure 14**.

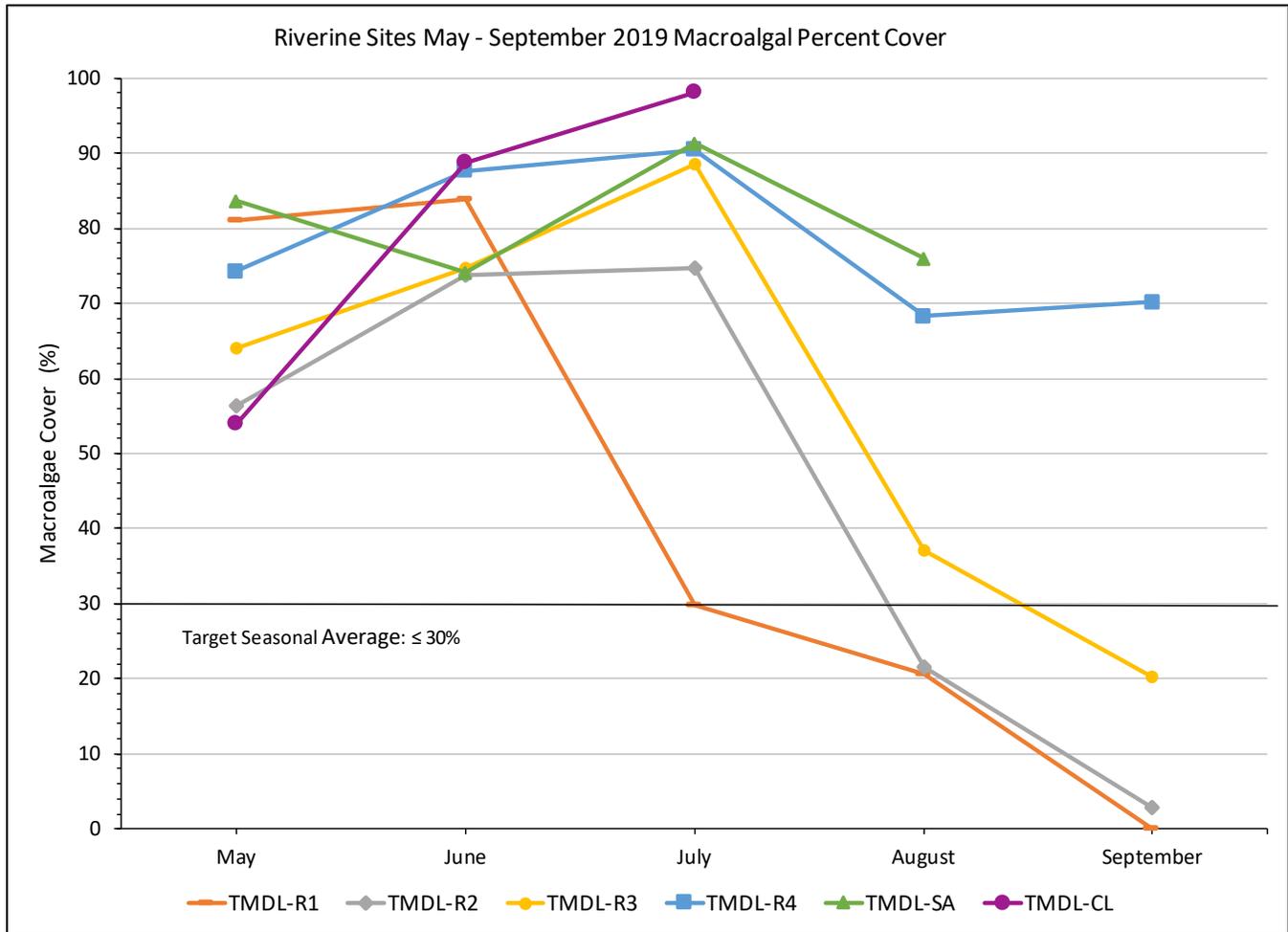
**FIGURE 13. 2019-2020 DRY SEASON - TOTAL ALGAL BIOMASS (CHLOROPHYLL A) AT RIVERINE SITES**



#### Figure Notes:

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded). The VR Algae TMDL seasonal average numeric target of 150 mg/m<sup>2</sup> is plotted for reference, and seasonal averages for each site are presented in Table 3.

FIGURE 14. 2019-2020 DRY SEASON - MACROALGAL PERCENT COVER AT RIVERINE SITES



**Figure Notes:**

Missing data points indicate that the measurement could not be taken due to flow conditions (e.g., the site was dry or ponded).

The VR Algae TMDL seasonal average numeric target of  $\leq 30\%$  is plotted for reference, and seasonal averages for each site are presented in Table 3.

Total algal biomass (measured as chlorophyll a) ranged from 28 – 380 mg/m<sup>2</sup> across all six riverine sites (Figure 13). The maximum (380 mg/m<sup>2</sup>) was recorded at TMDL-R2 during the July sampling event, and the minimum (28 mg/m<sup>2</sup>) was recorded at TMDL-CL during the May sampling event. Seasonal average concentrations (Table 3) were below the target seasonal average for all sites except for TMDL-R2.

Macroalgal percent cover ranged from 0 – 98.02% across all six riverine sites (Figure 14). The minimum (0%) occurred at TMDL-R1 during the September sampling event, and the maximum (98.02%) occurred at TMDL-CL during the July sampling event. The lowest percent cover observations occurred during the September sampling event for TMDL-R1, TMDL-R2, and TMDL-R3. Seasonal average concentrations were above the target seasonal average ( $\leq 30\%$ ) at all sites, ranging from 43.05% (TMDL-R1) to 81.23% (TMDL-SA).

Seasonal averages and comparison to exceedances for both total algal biomass and macroalgal percent cover at the riverine water quality monitoring locations are summarized in Table 3. A detailed results summary for dry season monthly algae monitoring is provided in Appendix C.

TABLE 3. DRY SEASON RIVERINE SEASONAL AVERAGES

Site	Seasonal Average Biomass (mg/m <sup>2</sup> chlorophyll a)	Seasonal Average Macroalgal Cover (%)
	<i>Numeric Target Seasonal Average 150 mg/m<sup>2</sup></i>	<i>Numeric Target Seasonal Average ≤ 30%</i>
TMDL-R1	145.60	<b>43.05*</b>
TMDL-R2	<b>180.00*</b>	<b>45.89*</b>
TMDL-R3	113.00	<b>56.95*</b>
TMDL-R4	83.20	<b>78.16*</b>
TMDL-SA	133.00	<b>81.23*</b>
TMDL-CL	45.67	<b>80.23*</b>

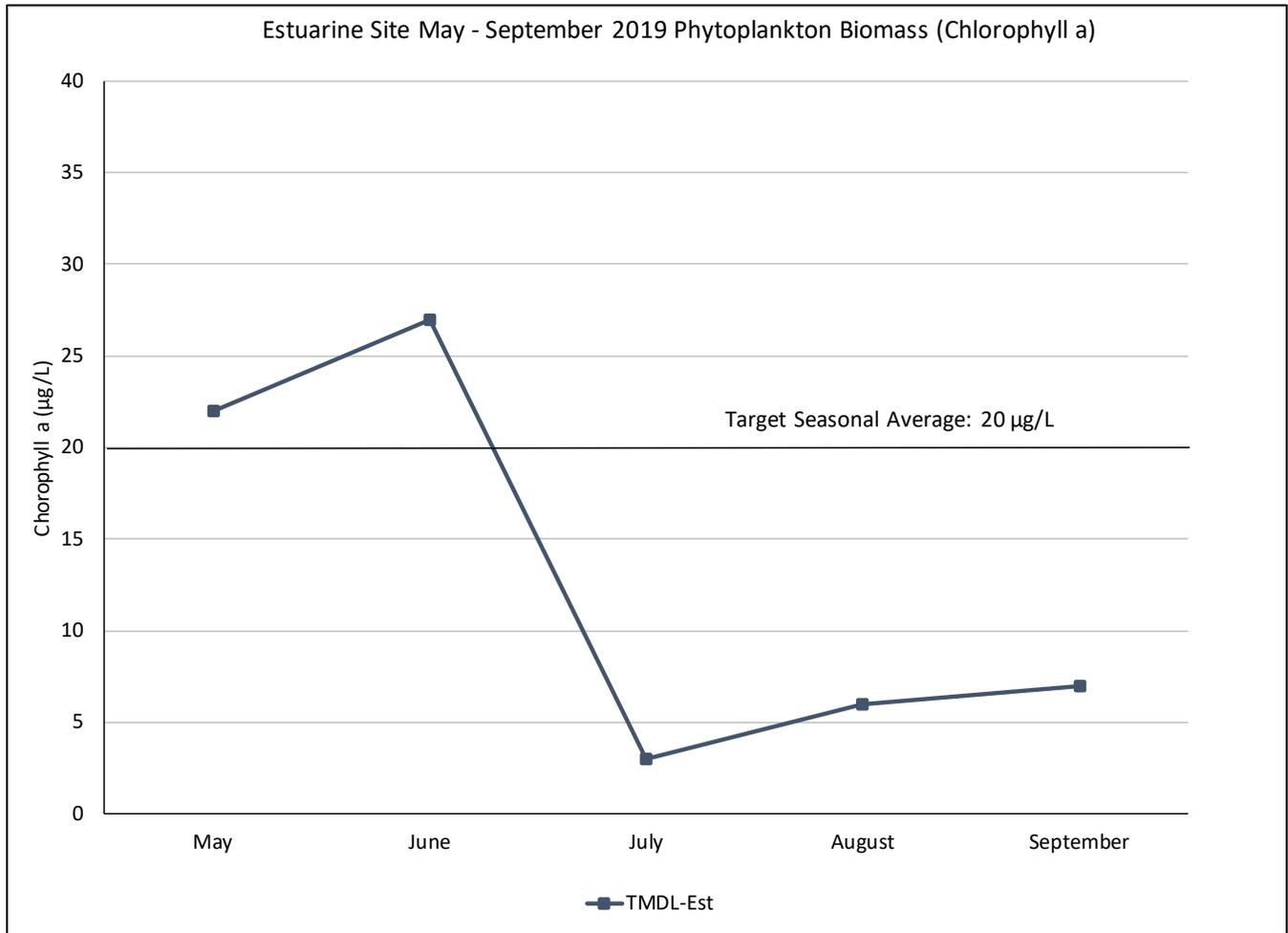
**Table Notes:**

\***Bolded** averages exceed numeric targets.

ESTUARINE SITE

In accordance with the VR Algae TMDL and CMP, algae sampling was conducted using the Southern California Bight Regional Monitoring Program: Estuarine Eutrophication (Bight 2008) protocol for the estuary water quality monitoring location. Per this protocol, estuarine phytoplankton biomass [measured as chlorophyll *a* (µg/L)] samples are collected from the water column. Macroalgal percent cover is measured on the shoreline approximately three quarters of the distance upslope from the water’s edge at the mean lowest low water line (MLLW), approximately 1 to 2 feet above MLLW, as well as floating to a depth of 0.3 meters, and includes dead, desiccated, fresh, and intermediate algae. Estuarine phytoplankton biomass concentrations are displayed in **Figure 15** and macroalgal percent cover results are displayed in **Figure 16**.

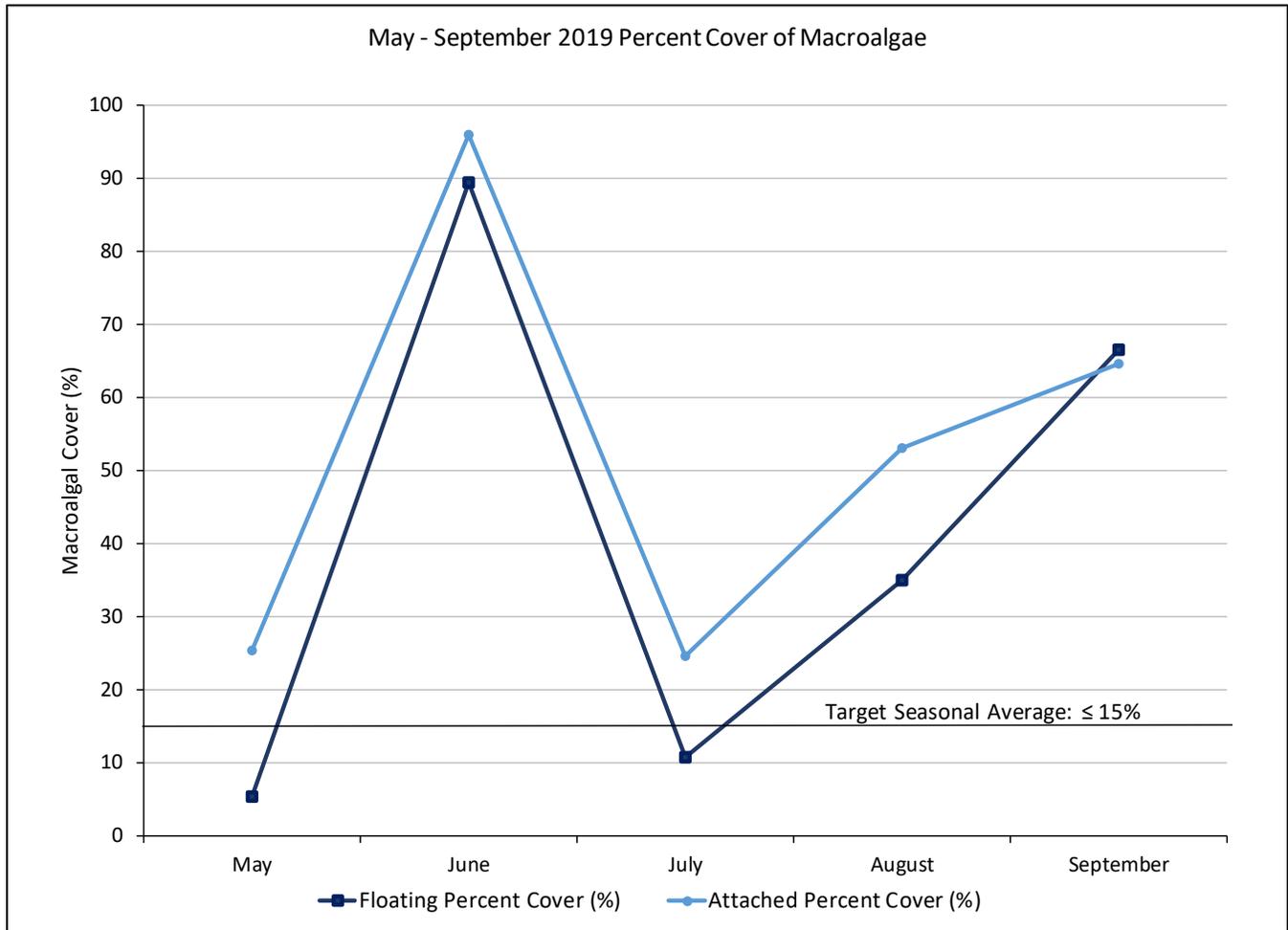
FIGURE 15. 2019-2020 DRY SEASON – ESTUARY CHLOROPHYLL A



**Figure Notes:**

The VR Algae TMDL seasonal average numeric target (20 µg/L chlorophyll *a*) is plotted for reference, and seasonal averages for each site are presented in Table 4.

FIGURE 16. 2019-2020 DRY SEASON – ESTUARY MACROALGAL PERCENT COVER



**Figure Notes:**

The VR Algae TMDL seasonal average numeric target ( $\leq 15\%$  coverage) is plotted for reference, and seasonal averages for each site are presented in Table 4.

Phytoplankton biomass (measured as chlorophyll a) ranged from  $3 \mu\text{g/L}$  –  $27 \mu\text{g/L}$  at the estuary water quality monitoring location TMDL-Est (**Figure 15**). The maximum occurred during the June sampling event and the minimum during the July sampling event. The phytoplankton biomass seasonal average at TMDL-Est ( $12.67 \mu\text{g/L}$ ) was below the numeric target ( $20 \mu\text{g/L}$ )(**Table 4**).

Attached macroalgal percent cover ranged from  $25.31 - 64.69\%$  and floating macroalgal percent cover ranged from  $5 - 67\%$  (**Figure 16**). Attached macroalgal cover was above the target seasonal average ( $\leq 15\%$ ) during each sampling event. Floating macroalgal percent cover was above the target seasonal average ( $\leq 15\%$ ) during 3 of the 5 sampling events (June, August, and September). The seasonal averages for macroalgal percent cover at TMDL-Est were above the numeric target ( $\leq 15\%$ ) for both attached ( $52.73\%$ ) and floating macroalgae ( $41.43\%$ ) (**Table 4**).

TABLE 4. DRY SEASON ESTUARINE MONTHLY OBSERVATIONS AND SEASONAL AVERAGE

Site	Date	Field Replicate	Phytoplankton Biomass Chlorophyll <i>a</i> (µg/L)	Attached Macroalgal Cover (%)	Floating Macroalgal Cover (%)
<i>Seasonal Average Numeric Target</i>			<i>20 µg/L</i>	<i>≤ 15%</i>	
TMDL-Est	5/8/2019	1	22	25.31	5.44
TMDL-Est	6/13/2019	1	27	95.99	89.46
TMDL-Est	6/13/2019	2	11	NA	NA
TMDL-Est	7/11/2019	1	3	24.69	10.71
TMDL-Est	8/14/2019	1	6	52.99	35.03
TMDL-Est	9/9/2019	1	7	64.69	66.50
<b>Seasonal Average</b>			12.67	<b>52.73*</b>	<b>41.43*</b>

Table Notes:

\***Bolded** averages exceed numeric targets.

CHLOROPHYLL A EVALUATION

Per the VR Algae TMDL, if no significant difference is observed between monthly dry season algal biomass measurements after two years of CMP implementation, algal biomass monitoring may be reduced to three times per dry season (i.e., conducted in May, July and September). An evaluation of the five year dataset was completed to assess monthly algal biomass differences to determine if a reduced monitoring frequency may be warranted.

Over the past five years, maximum monthly measurements occurred most frequently during the month of June, followed by May, July, August, and September at all monitoring locations. **Table 5** presents the monthly maximum measurement frequency during the five year monitoring period. In addition, a quantitative comparison of numeric target exceedances for the 5-month (May through September) and 3-month (May, July, and September) seasonal average is summarized in **Table 6**, which references the VR Algae TMDL numeric targets of 150 mg/m<sup>2</sup> and 20 µg/L for riverine and estuary monitoring locations, respectively. Note that one difference between dry season average numeric target exceedances occurred at TMDL-R1 during the 2019 dry season. The 2019 seasonal average concentration at this monitoring location for the 5-month average was 146 mg/m<sup>2</sup>, whereas the 3-month average was 192 mg/m<sup>2</sup>. This difference of 46 mg/m<sup>2</sup> is approximately a 30 percent difference between the two seasonal averages and is less than the season’s standard deviation of 120 mg/m<sup>2</sup>.

TABLE 5. FREQUENCY OF MAXIMUM MEASUREMENTS BY DRY SEASON MONITORING MONTH

Dry Season Monitoring Month	Maximum Measurement Frequency
June	10
May	9
July	8
August	4
September	2

TABLE 6. ALGAL BIOMASS NUMERIC TARGET EXCEEDANCES

Monitoring Location	Algal Biomass Exceedances (5-month dataset)	Algal Biomass Exceedances (3-month dataset)
TMDL-Est	3	3
TMDL-R1	4	5
TMDL-R2	4	4
TMDL-R3	2	2
TMDL-R4	1	1
TMDL-CL	0	0
TMDL-SA	1	1
<b>Total:</b>	<b>15</b>	<b>16</b>

**Table Note:**

May, July, and September measurements were used to evaluate numeric target exceedances for the 3-month average calculation

## FIELD OBSERVATIONS

### TMDL-EST

Water level in the estuary fluctuates with tides and river flow, which also affects berm status and estuary shape. Heavy runoff during the 2018/19 wet season breached the berms at the east and west ends of the estuary and altered the shape of the estuary. At the start of the dry season, all flow exited the estuary through the west end. The east end was disconnected from the river by a berm that formed during high flow events in the main channel upstream, but it was still open and connected to the ocean. By July, the west end berm closed, resulting in water levels high enough to flow over the rock berm and through connector channels to the east end which was open to the ocean. By August and September, the estuary had returned to its most recent horseshoe shape condition, and all flow exited through the east end (**Figure 17**). Dogs are frequently seen in the water and birds (especially gulls) are always present.

FIGURE 17. PHOTOS OF ESTUARY BERM STATUS



**Figure Note:**

Landward view of east end of the estuary in May when all flow exited through the west end (left), and landward view of the east end of the estuary in August when all flow exited through the east end (right).

### TMDL-R1

The water level was too high and fast in May to sample at the typical transect “A” location so the transect was moved upstream and shortened to avoid deep pools at both ends, and velocity was not measured across the whole wetted width. The lower section of this reach is frequently littered with washing materials and containers (e.g. soap, shampoo, laundry detergent, clothing, towels, etc.) and is commonly known as the “laundry site” due to its frequent use for that purpose by

the homeless in the area. The Ventura Land Trust occasionally removes trash and debris, posts signs, and communicates with people directly about the hazards and illegal nature of washing in the stream. Most of this activity occurs when no one is around, although one person was actively washing clothing in September while the monitoring crew was onsite. The use is heavier in the summer months. The Ventura Land Trust plans to remove some of the vegetation in the area outside of nesting season and investigate funding and partnerships for starting an alternative laundry program for homeless people in the area. There were several piles of encampment litter (e.g., discarded clothing, sleeping gear, food containers) along the access trail to the east of the river including a recently used portable toilet chair.

## TMDL-R2

Several homeless camps are present on the private property in this area. Two camps are on the east bank among stands of giant reed (*Arundo donax*). Evidence of washing (e.g., soap, shampoo bottles) and human waste are frequently seen near the water. Some rocks have been moved to create deeper sections for the camps. In July, a new camp was being built next to an established camp. In August, there was modification of the east bank at the camp to create an earthen “patio” on which a portable toilet-chair with toilet paper roll was positioned with evidence of recent digging underneath the chair. A new stand of *Arundo* had been cleared and a chain link fence panel was laying by the River. In September, there were horseshoe pits added to the patio, three free-range chickens were observed at the camp, and a tent had been placed in the cleared *Arundo*. The toilet chair was still on the patio, with disturbed dirt under and next to it and the area had a strong latrine odor.

## TMDL-R3

Debris from the wet season blocked the original access path so flow and water samples were collected approximately 100 feet downstream of the deep pool to allow crew safer access. Similar to previous year, algae was sampled just upstream of the pool.

## TMDL-R4

Monitoring was conducted on the west bank and approximately 100 meters downstream of previous dry season locations due to the change in the path of the river.

## TMDL-SA

A natural spring tends to keep the area directly above the confluence with the Ventura River wet for most or all of the year, but upstream/influent flow dried out by September.

## TMDL-CL

Water was not present at the site by August, although the streambed was still damp. The streambed was completely dry by September.

## CONTINUOUS DATA LOGGING

In accordance with the VR Algae TMDL and CMP, DO and pH is measured continuously for two-week periods on a quarterly basis during the months of May, September, December and March. This section provides an overview of the equipment used to measure these parameters and presents results for the 2019-2020 monitoring period.

## DATA COLLECTION EQUIPMENT

Continuous water quality measurements have been collected over the past five years using Hydrolab HL4 water quality data sondes. The HL4 can accurately measure and log DO and pH, as well as conductivity and temperature within a self-contained

package. An adjustment for salinity is required for DO measurements in saltwater, which the HL4 completes internally utilizing its conductivity sensor.

Data sondes installations are vulnerable to vandalism and theft, which has occurred at the estuary monitoring location (TMDL-Est) over the five-year period of this monitoring program. Two HL4 data sondes have been stolen from this deployment location, including an underwater and mid-channel anchored location and a hidden shore anchored location. Field staff have taken extensive measures to hide and secure equipment at inconspicuous locations using anti-theft housings, chains, and cables. However, theft and vandalism will continue to be an issue at these water quality monitoring locations due to the homeless community presence.

## CONTINUOUS WATER QUALITY RESULTS

Continuous water quality monitoring for pH and DO was conducted in accordance with the VR Algae TMDL and CMP in May, September, and December 2019, and March 2020. **Table 7** presents deployment dates and provides general notes related to each deployment where applicable. As noted, the 2019-2020 monitoring period presented several challenges with continuous water quality data collection. These challenges included technical malfunction of equipment during numerous deployments, non-deployment due to the risk of theft and vandalism, and actual theft of data logging equipment in March 2020. Continuous water quality monitoring data for pH and DO measured during each quarter is presented as **Figure 18** and **Figure 19**, respectively (full size charts are provided as **Appendix D**). As discussed below, data for multiple deployments are suspect and are not displayed in the figures below. For the most part, pH and DO did not exceed numeric thresholds.

**TABLE 7. SONDE DEPLOYMENT DATES**

Site	2019 Quarter 2 (May <sup>1</sup> )	2019 Quarter 3 (September <sup>1</sup> )	2019 Quarter 4 (December)	2020 Quarter 1 (March)
TMDL-Est	Not deployed <sup>2</sup>	Not deployed <sup>2</sup>	12/11/2019 – 12/24/2019	Stolen
TMDL-R1	5/17/2019 – 5/31/2019 <sup>3</sup>	9/13/2019 – 9/27/2019 <sup>4</sup>	12/11/2019 -12/24/2019	3/25/2020 – 4/4/2020
TMDL-R2	5/17/2019 – 5/31/2019	9/13/2019 – 9/27/2019	12/11/2019 – 12/24/2019	3/25/2020 – 4/4/2020
TMDL-R3	5/17/2019 – 5/31/2019	9/13/2019 – 9/27/2019	12/11/2019 – 12/23/2019	3/25/2020 – 4/4/2020
TMDL-R4	5/17/2019 – 5/31/2019	9/13/2019 – 9/27/2019 <sup>5</sup>	12/11/2019 – 12/23/2019	3/25/2020 – 4/4/2020
TMDL-SA	5/17/2019 – 5/31/2019 <sup>5</sup>	Dry	12/11/2019 – 12/24/2019 <sup>6</sup>	3/25/2020 – 4/4/2020 <sup>7</sup>
TMDL-CL	5/17/2019 – 5/31/2019	Dry	12/27/2019 – 1/10/2020	Not Deployed <sup>8</sup>

**Table Notes:**

1. Month required by TMDL.
2. The estuary lacked a deployable location due to high theft/vandalism risk after high wet-season flows cleared out concealing vegetation and reshaped the estuary eliminating the discreet locations for deployment.
3. Conductivity sensor became bio-fouled several days after deployment but data appears reliable.
4. Temperature sensor failed during deployment and data are suspect.
5. Conductivity sensors not properly calibrated and data are suspect.
6. DO and conductivity sensors not properly calibrated and data are suspect.
7. DO, pH, and Conductivity sensors failed during deployment and data are suspect.
8. Calibration failed prior to deployment and sondes was not deployed.

In May 2019, six Hydrolab HL4 water quality data sondes were installed and began logging data on May 17, 2019. The estuary lacked a location where the equipment could be deployed due to high theft/vandalism risk after high wet-season flows cleared out concealing vegetation and reshaped the estuary. This eliminated the discreet locations for deployment at TMDL-Est. The conductivity sensor at TMDL-R1 became bio-fouled several days after deployment and the conductivity sensor at

TMDL-SA read in error for the full deployment. Conductivity is not a required measurement at these sites because it is low enough at those locations not to affect the other data collected.<sup>4</sup>

In September 2019, sondes were installed at four water quality monitoring sites for continuous data logging. Sondes were not installed at TMDL-Est due to a continuing high risk of vandalism, nor at TMDL-SA and TMD-CL due to dry conditions. The sondes were installed before the logging program began on September 13, 2019 and were removed after two weeks of logging. The temperature sensor failed at TMDL-R1 during this deployment, making all data suspect as temperature is required for sensors to read accurately (per manufacturer). DO and conductivity sensors for TMDL-R4 were not calibrated properly and data are suspect.

In December 2019, sondes were installed at all seven water quality monitoring sites and began logging data on December 11, 2019. The DO and conductivity sensors at TMDL-SA did not calibrate properly as the sensor failed for the duration of the sampling period and data is suspect. Following manufacturer technical support which delayed deployment, the sonde for TMDL-CL was deployed for data collection on December 27, 2019.

In March 2020, sondes were installed at six water quality monitoring locations and began logging on March 25, 2020 following a series of storm events and manufacturer technical support activities that prohibited earlier deployment. Prior to this deployment, four data loggers experienced system failures and were maintained by the manufacturer at the end of February 2020. This deployment was limited to one week due to a forecasted storm event for April 5, 2020, which produced over 3.5 inches of rainfall at the Ojai-County Fire Station rain gage. The integrity of data recorded at TMDL-SA during this event was questionable due to sensor failures for DO, pH, and conductivity. The monitoring equipment at TMDL-Est was stolen. Scheduled maintenance and equipment purchases will reduce the potential for the issues that occurred during this monitoring season. Increased security measures will also reduce the potential of theft for future monitoring events.

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<sup>4</sup> The sonde uses the conductivity measurement when calculating DO, but the influence of conductivity on DO measurements for the conductivity levels seen at the TMDL riverine stations is negligible.

FIGURE 18. 2019-2020 CONTINUOUS DATA LOGGING – PH

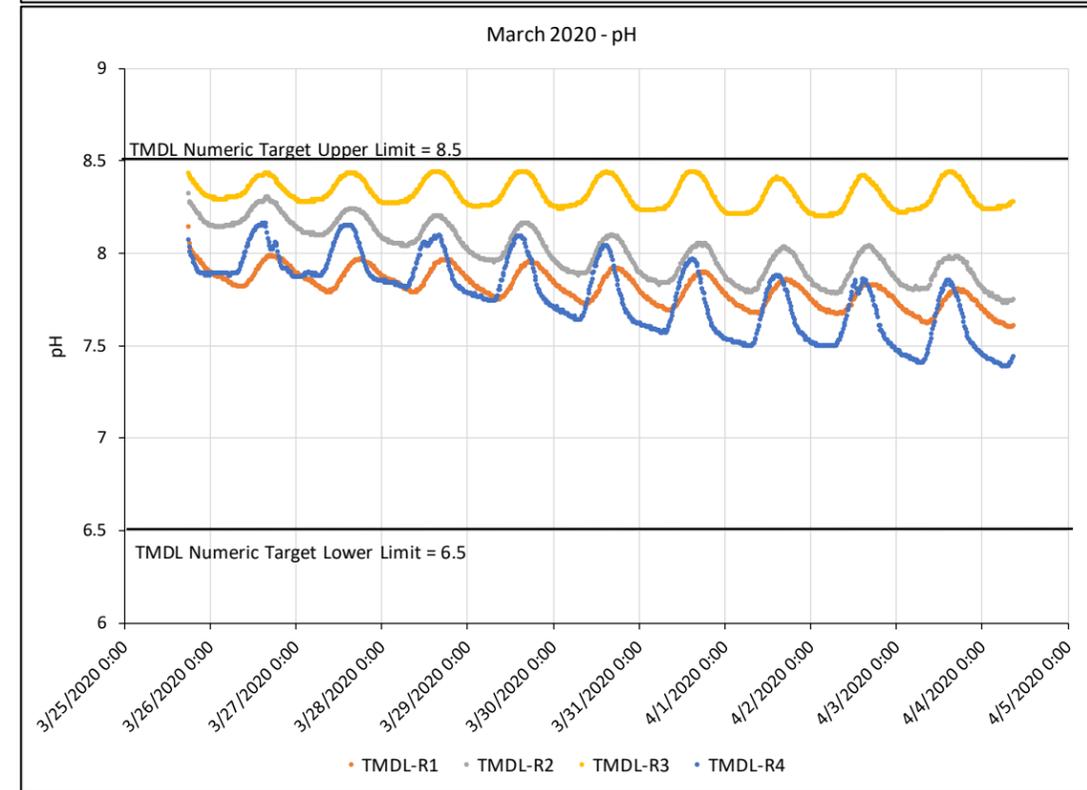
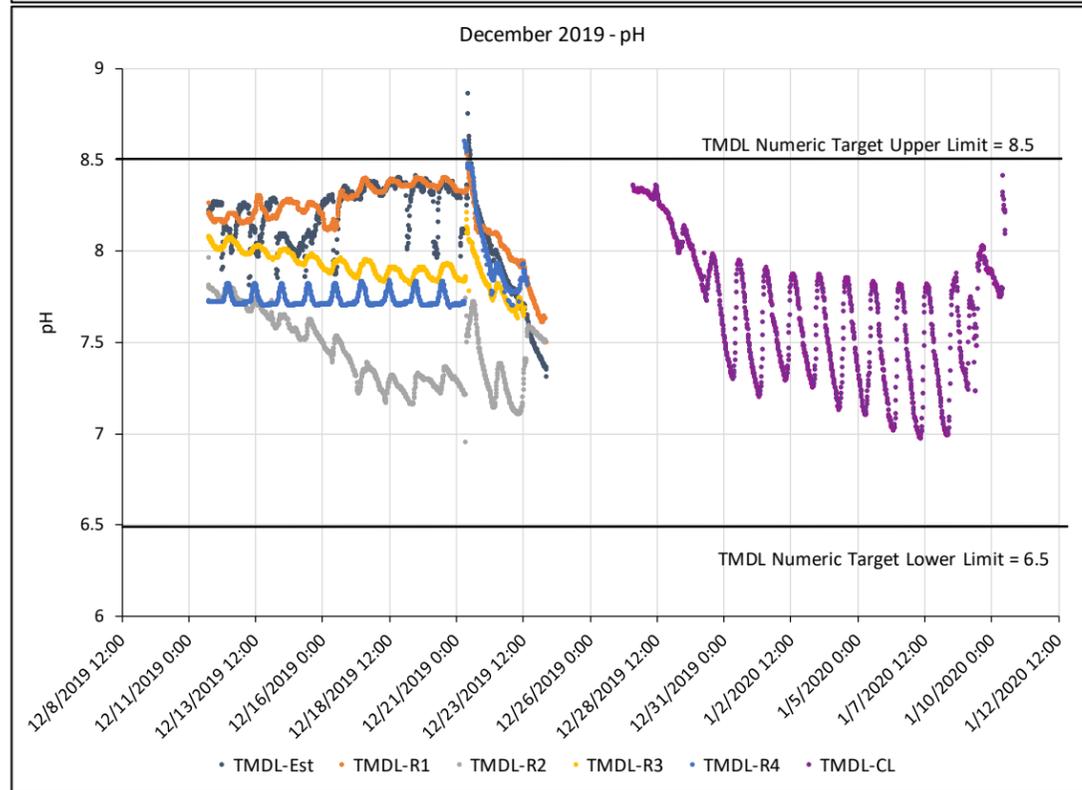
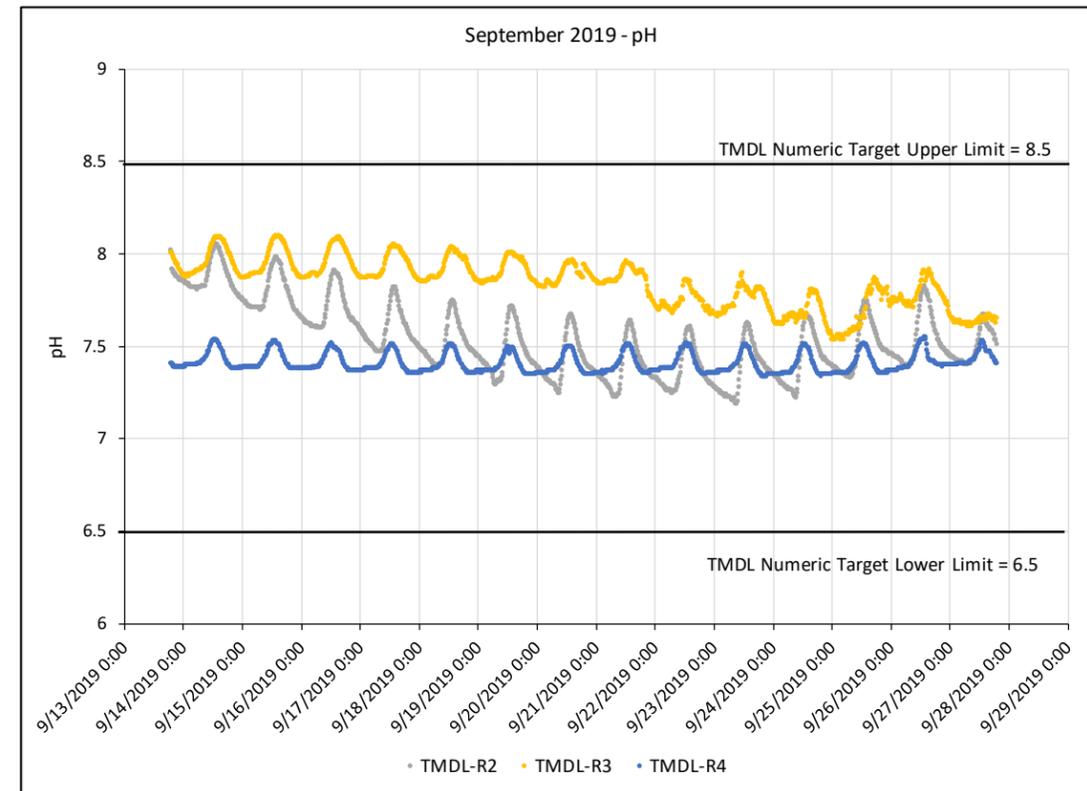
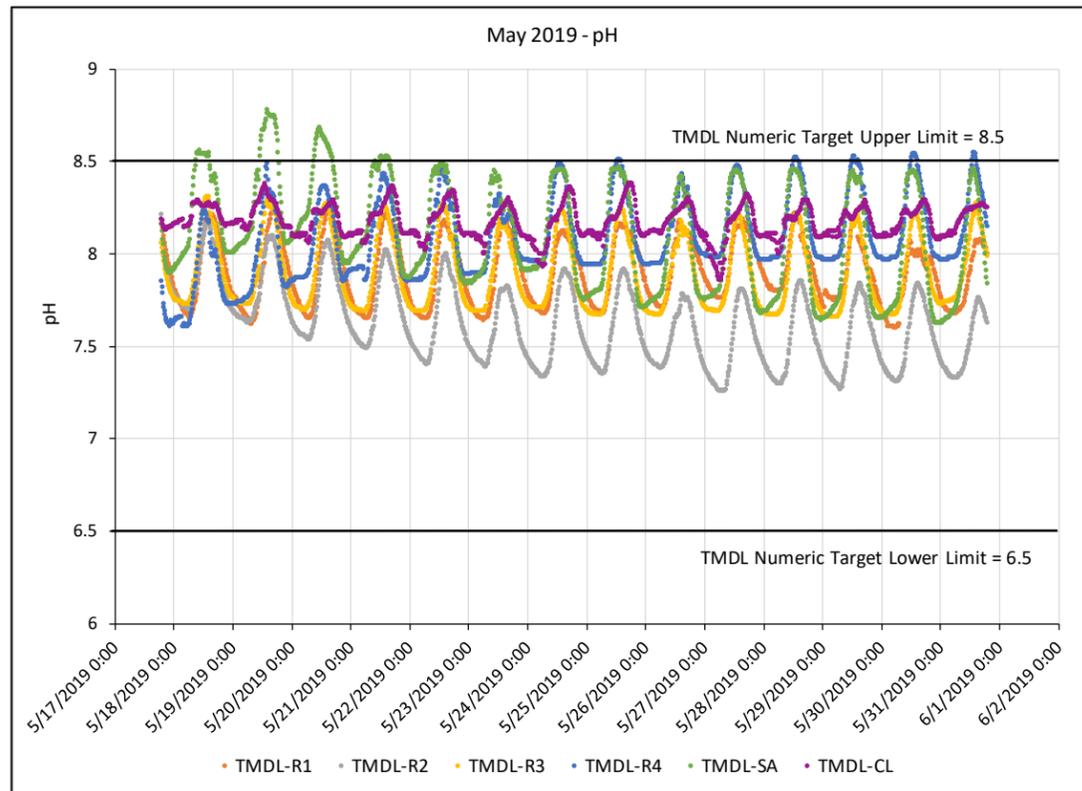
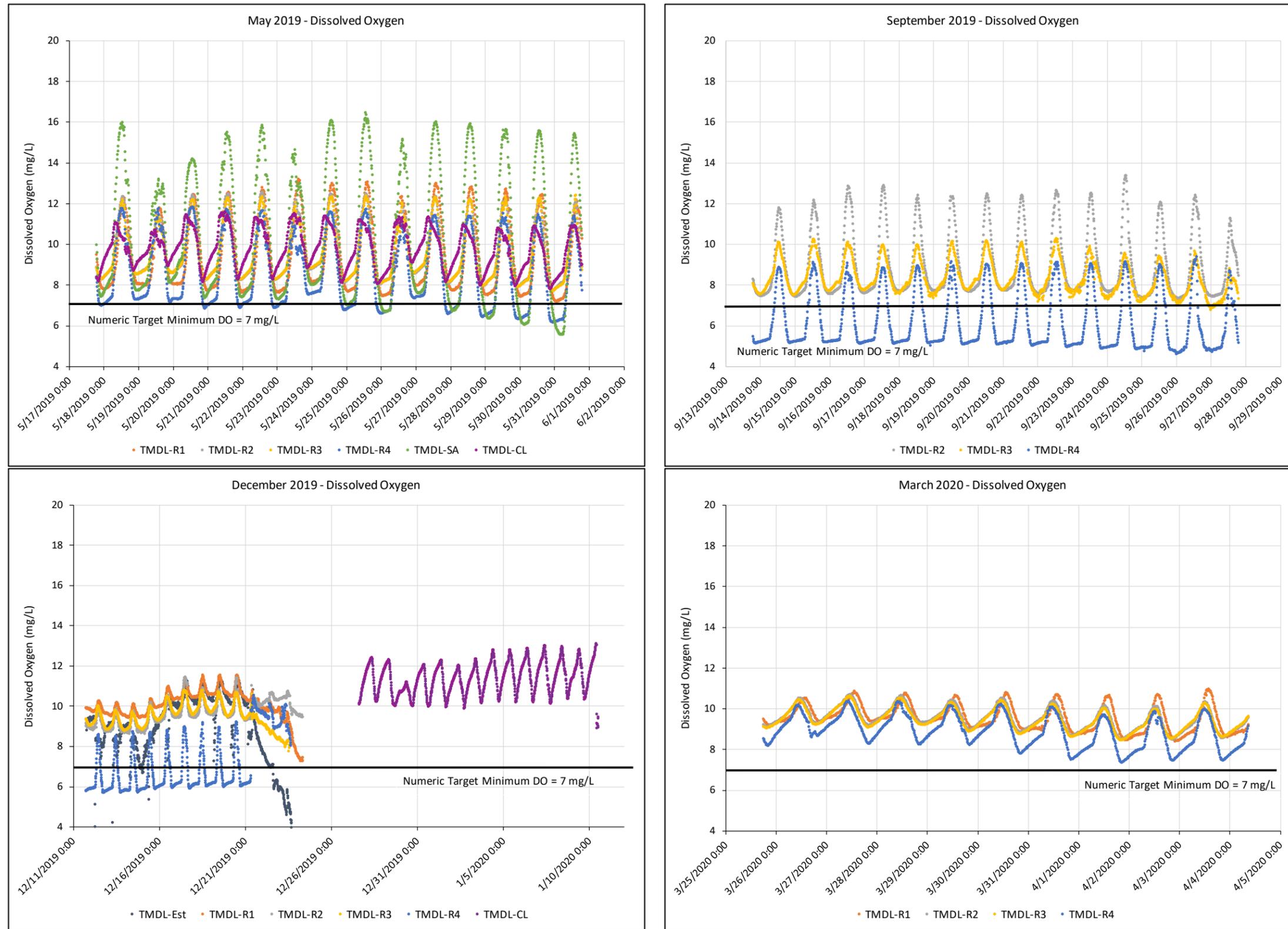


FIGURE 19. 2019-2020 CONTINUOUS DATA LOGGING – DISSOLVED OXYGEN



## OBSERVATIONS AND LESSONS LEARNED

This section presents a summary of key monitoring results including the frequency of exceedances for VR Algae TMDL numeric targets and general data trends and observations. Important lessons learned during the 2019-2020 monitoring period are discussed to further inform future monitoring program implementation and management decisions. Field data sheets are provided as **Appendix E** and chain of custody forms and laboratory results are included as **Appendix F**.

### KEY FINDINGS

Unlike past years, the 2019-2020 monitoring period experienced elevated flows at multiple monitoring locations throughout the year. Over the past five years, flows were generally observed to increase starting in the 2017 rainy season with higher flow rates through 2018, 2019, and 2020. Unlike past years when chlorophyll a concentrations exceeded the seasonal average numeric target (150 mg/m<sup>2</sup>) at multiple locations, in 2019-2020 TMDL-R2 was the only monitoring location where chlorophyll a exceeded the seasonal average numeric target (**Table 8**). Macroalgal percent cover exceeded the VR Algae TMDL seasonal average numeric target at all monitoring locations.

A summary of exceedances is provided in **Table 8**, which considers monthly grab sample and continuous water quality monitoring results. While DO and pH measurements at two monitoring locations (TMDL-R4 and TMDL-SA) exceeded VR TMDL numeric targets during several monitoring events, continuous water quality monitoring measurements coupled with monthly in-situ measurements indicate that pH and DO are meeting the VR Algae TMDL numeric targets. Exceedances of the numeric targets for pH during monthly monitoring events occurred for the upper target (8.5) at TMDL-Est and TMDL-R4, where the highest measurements for each site were 8.69 (June 2019) and 8.94 (March 2020), respectively. Numeric target exceedances during monthly monitoring events for DO (7 mg/L) occurred only at TMDL-R4 and TMDL-SA, where minimum measurements for each site were 6.24 (September 2019) and 1.39 (October 2019), respectively. Low DO concentrations at TMDL-SA were likely attributed to low flow conditions (<0.01 cfs). In addition, DO is typically low in the early morning and increases during the day, which may explain low measurements during monthly grab sampling events. This is observed in the continuous water quality monitoring data, which illustrates daily variation.

Referencing the five year dataset for algal biomass, monthly algal biomass measurement differences occur depending on the monitoring location and year. However, over the past five years, seasonal averages calculated using a 5-month (May through September) and 3-month (May, July, and September) dataset produce nearly identical compliance results. As such, the 3-month dataset appears to provide representative data of the dry season average for comparison to the VR Algae TMDL numeric targets.

**TABLE 8. EXCEEDANCES BY SITE AND MONTH**

Season	Sample Month	TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
Dry Season 2019	May 2019	No Sonde	-	-	-	pH (c) DO (c)	pH (c) DO (c)	-
	Jun 2019	> pH (m)	-	-	-	DO (m)	-	-
	Jun 2019	-	-	-	-	-	-	-
	Aug 2019	> pH (m)	-	-	-	DO (m)	DO (m)*	Dry
	Sept 2019	No Sonde	No Sonde	-	DO (c)	DO (m) DO (c)	DO (m)*	Dry
	Seasonal Average	Macroalgal cover	Macroalgal cover	Chl a Macroalgal cover	Macroalgal cover	Macroalgal cover	Macroalgal cover	Macroalgal cover
Wet Season 2019/2020	Oct 2019	> pH (m)	-	-	-	DO (m)	DO (m)*	Dry
	Nov 2019	-	-	-	-	-	DO (m)*	Dry
	Dec 2019	> pH (c)	> pH (c)	-	-	> pH (c)	No Sonde	-

Season	Sample Month	TMDL-Est	TMDL-R1	TMDL-R2	TMDL-R3	TMDL-R4	TMDL-SA	TMDL-CL
		DO (c)				DO (c)		
	Jan 2020	-	-	-	-	-	-	-
	Feb 2020	-	-	-	-	-	-	-
	Mar 2020	No Sonde	-	-	-	>pH (m)	No Sonde	No Sonde
	Apr 2020	-	-	-	-	-	-	-

**Table Notes:**

(m): Monthly grab sample measurement.

(c): Continuously monitored sonde measurement.

\*: Very low flow (<0.01 cfs). Low flow conditions likely contributed to exceedance of DO numeric target.

No Sonde: No sonde data available due to no deployment or questionable data (see continuous data logging section)

-: No exceedances.

Chl a: Chlorophyll a, a measurement of algal biomass.

## LESSONS LEARNED

Following the theft of the data sonde from TMDL-Est during the March 2020 deployment, Rincon researched and procured onset HOBO data loggers to replace the stolen HL4 data sonde. The HOBO data loggers are designed as standalone sondes for DO/temperature, pH, and conductivity. To reduce costs while optimizing equipment suitability, Rincon only purchased two sondes (DO/temperature and pH). To correctly measure DO in the estuary during future monitoring events, an existing HL4 data logger will be deployed at TMDL-Est and the HOBO loggers will be deployed at a freshwater monitoring location (i.e., TMDL-R4). Additional actions were taken to further secure future deployments, including evaluation of alternative deployment locations, enhanced housings for the data loggers, and procurement of a robust security chain and locking system.

Siltation can be an issue in slow moving water and when sondes are installed higher in the water column in areas where this is likely to occur. All sondes were checked and/or calibrated by monitoring staff before and after deployment, regardless of history, and field meter readings were taken in the vicinity of the sondes immediately prior to their removal to check/confirm that the sondes were still reading accurately in situ at the end of the deployment.

## APPENDICES TO ANNUAL REPORT

Summarized field data, field data sheets, chain of custodies, and laboratory reports are provided as appendices to this report.

### APPENDIX A. MONTHLY IN-SITU PARAMETERS

	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target &gt;7 mg/L</i>			
TMDL-Est	5/8/2019	13:15	Open both ends	NA	8.41	13.15	1,532	0.7	18.9
TMDL-Est	6/13/2019	13:30	Open-west end	NA	8.69	Over range	4,514	2.4	23.9
TMDL-Est	7/10/2019	12:25	Open-east end	NA	8.42	14.9	2,810	1.5	23.7
TMDL-Est	8/14/2019	13:40	Open-east end	NA	8.62	14.91	9,940	5.6	24.4
TMDL-Est	9/9/2019	13:20	Open-east end	NA	8.23	10.3	2,990	1.5	22.9
TMDL-Est	10/14/2019	15:15	Open-east end	NA	8.62	13.1	17,130	10.3	20.5
TMDL-Est	11/6/2019	14:40	Open-east end	NA	8.41	13.38	13,890	8	18.2
TMDL-Est	12/19/2019	13:01	Open-east west	NA	8.18	16.94	5,100	2.76	13.5
TMDL-Est	1/15/2020	12:48	Open-east end	NA	8.16	12.6	2,645	1.38	12.6
TMDL-Est	2/12/2020	12:05	Open-east end	NA	8.15	13.11	2,999	11.13	14.3
TMDL-Est	3/19/2020	13:22	Open-east end	NA	8.22	12	1,345	0.68	15.2
TMDL-Est	4/15/2020	12:40	Open-east end	NA	8.25	10.84	1,262	0.63	18.6
TMDL-R1	5/8/2019	11:00	NA	37.5	8.33	9.9	1,183	0.6	17.5
TMDL-R1	6/13/2019	11:45	NA	20.3	8.16	8.87	1,206	0.6	21.2
TMDL-R1	7/11/2019	10:20	NA	18.2	8.03	8.38	1,236	0.6	20.3
TMDL-R1	8/15/2019	10:40	NA	11.8	8.09	7.96	1,300	0.7	20.8
TMDL-R1	9/11/2019	10:50	NA	8.5	8.26	8.02	1,285	0.6	20.4
TMDL-R1	10/14/2019	13:30	NA	8.1	8.4	9.04	1,355	0.7	16.8
TMDL-R1	11/6/2019	13:45	NA	7.0	8.24	10.02	1,339	0.7	15.1
TMDL-R1	12/19/2019	11:54	NA	8.7	8.23	15.03	1,517	0.77	10.5
TMDL-R1	1/15/2020	12:00	NA	19.1	8.26	12.48	1,327	0.67	11.8
TMDL-R1	2/12/2020	11:30	NA	13.4	8.3	14.14	1,327	0.69	12.3
TMDL-R1	3/19/2020	12:25	NA	50.5	8.27	12.58	1,220	0.61	13.3
TMDL-R1	4/15/2020	11:20	NA	58.5	8.29	11.05	1,185	0.59	16.8
TMDL-R2	5/8/2019	7:50	NA	33.5	8.13	9.32	1,068	0.5	16.9
TMDL-R2	6/13/2019	9:20	NA	20.5	8.06	8.59	1,064	0.5	19.6
TMDL-R2	7/11/2019	7:50	NA	17.7	7.59	7.85	1,061	0.5	19.1
TMDL-R2	8/15/2019	8:20	NA	13.0	7.84	8.25	1,125	0.6	20.2
TMDL-R2	9/11/2019	8:45	NA	9.9	8.08	8.12	1,113	0.6	19.5
TMDL-R2	10/14/2019	12:10	NA	6.7	8.37	10.04	1,161	0.6	18.5

	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target &gt;7 mg/L</i>			
TMDL-R2	11/6/2019	12:00	NA	7.5	8.13	10.58	1,115	0.6	17.7
TMDL-R2	12/19/2019	11:03	NA	9.2	8.09	13.85	1,212	0.61	12.4
TMDL-R2	1/15/2020	11:07	NA	16.2	8.15	12.4	1,128	0.56	11.9
TMDL-R2	2/12/2020	10:35	NA	14.5	8.2	13.4	1,180	0.59	12.8
TMDL-R2	3/19/2020	11:08	NA	45.5	8.18	12.74	1,038	0.52	12.4
TMDL-R2	4/15/2020	10:30	NA	48.2	8.21	11.62	1,077	0.54	15.5
TMDL-R3	5/7/2019	12:00	NA	42.0	8.37	10.05	1,031	0.5	18
TMDL-R3	6/12/2019	12:45	NA	20.0	8.06	10.35	1,020	0.5	22.5
TMDL-R3	7/10/2019	11:00	NA	18.3	8.08	9.32	1,044	0.5	19.4
TMDL-R3	8/14/2019	11:30	NA	12.0	8.32	9.45	1,056	0.5	20.4
TMDL-R3	9/9/2019	11:05	NA	8.3	8.04	10.34	1,049	0.5	19.8
TMDL-R3	10/14/2019	10:40	NA	12.5	8.27	9.46	1,043	0.5	16
TMDL-R3	11/6/2019	11:10	NA	6.3	8.07	10.7	1,034	0.5	15.8
TMDL-R3	12/19/2019	10:12	NA	8.6	8.06	14.42	1,139	0.57	10.9
TMDL-R3	1/15/2020	10:16	NA	19.0	8.12	11.81	1,120	0.56	11.4
TMDL-R3	2/12/2020	9:45	NA	13.9	8.15	13.48	1,136	0.6	11.8
TMDL-R3	3/19/2020	10:20	NA	54.7	8.18	12.72	1,020	0.5	11.9
TMDL-R3	4/15/2020	9:40		65.6	8.19	11.58	1,048	0.5	14.8
TMDL-R4	5/7/2019	7:50	NA	29.7	7.71	8.54	920	0.5	16.3
TMDL-R4	6/12/2019	7:55	NA	14.6	7.37	6.87	974	0.5	19.7
TMDL-R4	7/10/2019	7:55	NA	14.4	7.08	7.13	990	0.5	18.7
TMDL-R4	8/14/2019	8:00	NA	7.5	7.38	6.46	1,018	0.5	19.1
TMDL-R4	9/9/2019	8:40	NA	7.0	7.35	6.24	1,015	0.5	19.4
TMDL-R4	10/14/2019	9:10	NA	5.2	7.4	6.54	986	0.5	18.1
TMDL-R4	11/6/2019	9:00	NA	4.3	7.47	7.47	919	0.5	18
TMDL-R4	12/19/2019	8:55	NA	6.5	7.41	9.7	1,071	0.53	16
TMDL-R4	1/15/2020	8:54	NA	16.5	7.64	10.01	1,060	0.53	12.8
TMDL-R4	2/12/2020	8:35	NA	11.2	7.6	9.73	1,071	0.53	14.2
TMDL-R4	3/19/2020	8:35	NA	40.8	8.94	10.51	937	0.46	10.5
TMDL-R4	4/15/2020	8:28	NA	47.6	8.03	12.04	938	0.47	14.2
TMDL-SA	5/7/2019	10:10	NA	5.6	8.38	12.33	1,377	0.7	16.9
TMDL-SA	6/12/2019	10:00	NA	0.9	7.79	9.87	1,407	0.7	21.1
TMDL-SA	7/10/2019	9:35	NA	0.7	7.84	9.77	1,476	0.7	19.7
TMDL-SA	8/14/2019	9:30	NA	<0.01	7.37	2.49	1,057	0.5	17.7
TMDL-SA	9/9/2019	10:10	NA	<0.01	7.1	1.55	1,040	0.5	17.7
TMDL-SA	10/14/2019	10:00	NA	<0.01	7.23	1.39	1,019	0.5	14.4
TMDL-SA	11/6/2019	9:30	NA	<0.01	7.22	2.06	1,007	0.5	13.7
TMDL-SA	12/19/2019	9:25	NA	<0.01	7.71	13.17	1,515	0.77	9
TMDL-SA	1/15/2020	9:15	NA	0.8	8.09	14.42	1,614	0.82	10
TMDL-SA	2/12/2020	9:00	NA	0.4	7.98	14.75	1,631	0.83	9.7
TMDL-SA	3/19/2020	9:10	NA	3.1	7.94	12.09	1,607	0.82	12
TMDL-SA	4/15/2020	8:55	NA	10.4	8.1	11.74	1,389	0.7	13.6
TMDL-CL	5/7/2019	14:20	NA	0.7	8.18	8.85	3,734	2	21.8
TMDL-CL	6/13/2019	7:45	NA	0.2	8.05	8.51	3,750	2	19
TMDL-CL	7/10/2019	12:55	NA	0.1	8.25	10.07	3,793	2	31.5
TMDL-CL	8/15/2019	8:00	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	9/11/2019	8:25	NA	DRY	DRY	DRY	DRY	DRY	DRY

	Sample Date	Sample Time	Berm Status	Flow (cfs)	pH (pH Units)	DO (mg/L)	SC (µS/cm)	Salinity (ppt)	Water Temp (°C)
					<i>Numeric Target 6.5 - 8.5</i>	<i>Numeric Target &gt;7 mg/L</i>			
TMDL-CL	10/14/2019	8:40	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	11/6/2019	8:30	NA	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	12/19/2019	7:45	NA	0.1	8.22	19.5	4,548	2.39	1.6
TMDL-CL	1/15/2020	7:45	NA	0.4	8.12	14.84	4,388	2.31	2.9
TMDL-CL	2/12/2020		NA	0.1	8.27	16.67	4,326	2.29	4.1
TMDL-CL	3/19/2020	7:47	NA	0.9	8.23	14.13	4,356	2.32	7
TMDL-CL	4/15/2020	7:45	NA	0.6	8.13	12.71	4,193	2.24	11.6

Grey shaded cells indicate a value in exceedance of numeric targets.

APPENDIX B. MONTHLY NUTRIENT DATA

Site	Sample Date	P Total EPA 365.1 (mg/L)*	P Diss EPA 365.1 (mg/L)*	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+NO2- N EPA 353.2 (mg/L)
TMDL-Est	5/8/2019	0.1300	0.028	0.26	0.12	1.50	1.30	1.2
TMDL-Est	6/13/2019	0.0160	0.027	0.3	0.16	1.00	0.86	0.7
TMDL-Est	7/10/2019	0.0430	0.043	0.39	0.32	0.72	0.64	0.32
TMDL-Est	8/14/2019	0.0780	0.062	0.61	0.31	1.00	0.72	0.41
TMDL-Est	9/9/2019	0.1000	0.033	0.79	0.42	1.10	0.74	0.32
TMDL-Est	10/16/2019	0.0410	0.024	0.31	0.26	0.78	0.73	0.47
TMDL-Est	11/6/2019	0.0580	0.04	0.42	0.23	1.30	1.10	0.83
TMDL-Est	12/19/2019	0.0940	0.07	0.2	0.16	1.50	1.50	1.3
TMDL-Est	1/15/2020	0.0330	0.0195 (DNQ)	0.604	0.387 (DNQ)	1.54		0.93
TMDL-Est	2/12/2020	0.0527	0.0165 (DNQ)	0.087 (DNQ)	0.083 (DNQ)	0.84	0.84	0.75
TMDL-Est	3/19/2020	0.1190	0.0222	0.29	0.13	1.16	1.00	0.87
TMDL-Est	4/15/2020	0.0935	0.0345	0.23 (DNQ)	0.17	1.19	1.13	0.96
TMDL-R1	5/8/2019	0.0220	0.023	0.065 (DNQ)	<0.050	1.50	1.40	1.4
TMDL-R1	6/13/2019	0.0290	0.043	0.27	<0.050	1.40	1.10	1.1
TMDL-R1	7/11/2019	0.0750	0.079	0.29	0.22	1.20	1.10	0.88
TMDL-R1	8/15/2019	0.0510	0.049	0.21	0.24	1.00	1.10	0.82
TMDL-R1	9/11/2019	0.0590	0.052	0.24	0.096 (DNQ)	0.93	0.79	0.69
TMDL-R1	10/16/2019	0.0520	0.048	0.28	0.18	1.30	1.20	1
TMDL-R1	11/6/2019	0.0780	0.077	0.26	0.26	1.80	1.80	1.5
TMDL-R1	12/19/2019	0.0920	0.072	0.19	0.21	1.70	1.70	1.5
TMDL-R1	1/15/2020	0.0258	<0.016	0.342 (DNQ)	0.369 (DNQ)	1.38		1.04
TMDL-R1	2/12/2020	0.0555	0.0181 (DNQ)	0.39 (DNQ)	0.34 (DNQ)	1.75	1.70	1.36
TMDL-R1	3/19/2020	0.0659	<0.016	0.26	0.15	1.18	1.16	0.92
TMDL-R1	4/15/2020	0.0454	0.0258 (DNQ)	1.2	0.13 (DNQ)	2.17	1.10	0.97
TMDL-R2	5/8/2019	0.0440	0.049	0.17	0.1	2.00	2.00	1.8
TMDL-R2	6/13/2019	0.0410	0.051	<0.050	<0.050	1.60	1.60	1.6
TMDL-R2	7/11/2019	0.0480	0.057	0.074 (DNQ)	<0.050	1.30	1.30	1.3
TMDL-R2	8/15/2019	0.0930	0.09	0.16	0.28	1.40	1.50	1.2
TMDL-R2	9/11/2019	0.0940	0.087	0.31	<0.050	1.40	1.10	1.1
TMDL-R2	10/16/2019	0.0950	0.075	0.11	0.13	1.60	1.60	1.5
TMDL-R2	11/6/2019	0.0750	0.063	0.22	0.19	1.80	1.80	1.6
TMDL-R2	12/19/2019	0.0890	0.078	<0.018	<0.018	1.90	1.90	1.9
TMDL-R2	1/15/2020	<0.0160	<0.016	0.285 (DNQ)	0.298 (DNQ)	1.26		0.97
TMDL-R2	2/12/2020	0.0561	0.0306	0.47	0.37 (DNQ)	2.15	2.05	1.68
TMDL-R2	3/19/2020	0.1250	<0.016	0.21	0.13	1.24	1.07	0.89
TMDL-R2	4/15/2020	0.0372	0.0258 (DNQ)	0.25 (DNQ)	0.21 (DNQ)	1.41	1.37	1.16

Site	Sample Date	P Total EPA 365.1 (mg/L)*	P Diss EPA 365.1 (mg/L)*	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+NO2- N EPA 353.2 (mg/L)
TMDL-R3	5/7/2019	0.0057 (DNQ)	<0.012	<0.050	<0.050	1.60	1.60	1.6
TMDL-R3	6/12/2019	0.0037 (DNQ)	<0.012	0.071 (DNQ)	<0.050	1.60	1.50	1.5
TMDL-R3	7/10/2019	0.0065 (DNQ)	0.015 (DNQ)	<0.050	0.087 (DNQ)	1.20	1.20	1.2
TMDL-R3	8/14/2019	0.0140	0.022	<0.050	<0.050	0.87	0.87	0.87
TMDL-R3	9/9/2019	0.0065 (DNQ)	0.0045 (DNQ)	0.069 (DNQ)	<0.050	0.85	0.78	0.78
TMDL-R3	10/16/2019	0.0059 (DNQ)	0.0045 (DNQ)	0.070 (DNQ)	<0.050	0.87	0.80	0.8
TMDL-R3	11/6/2019	0.0076 (DNQ)	0.0075 (DNQ)	0.037 (DNQ)	0.031 (DNQ)	0.86	0.85	0.82
TMDL-R3	12/19/2019	0.0120	0.010	<0.018	<0.018	0.98	0.98	0.98
TMDL-R3	1/15/2020	<0.0160	<0.016	0.251 (DNQ)	0.506	1.24		0.99
TMDL-R3	2/12/2020	0.0208	<0.016	0.36 (DNQ)	0.2 (DNQ)	1.65	1.49	1.29
TMDL-R3	3/19/2020	0.1610	<0.016	0.3	0.15	1.19	1.04	0.95
TMDL-R3	4/15/2020	0.0240	0.0179 (DNQ)	0.22 (DNQ)	0.18 (DNQ)	1.09	1.05	0.87
TMDL-R4	5/7/2019	0.0054 (DNQ)	0.012 (DNQ)	<0.050	<0.050	1.80	1.80	1.8
TMDL-R4	6/12/2019	0.0043 (DNQ)	<0.012	<0.050	<0.050	1.90	1.90	1.9
TMDL-R4	7/10/2019	0.0064 (DNQ)	<0.012	<0.050	<0.050	1.40	1.40	1.4
TMDL-R4	8/14/2019	0.012	<0.012	<0.050	<0.050	1.30	1.30	1.3
TMDL-R4	9/9/2019	0.0065 (DNQ)	0.0039 (DNQ)	0.2	<0.050	1.40	1.20	1.2
TMDL-R4	10/16/2019	0.0052 (DNQ)	0.0052 (DNQ)	0.13	0.12	1.40	1.40	1.3
TMDL-R4	11/6/2019	0.0058 (DNQ)	0.0093 (DNQ)	<0.018	<0.018	1.40	1.40	1.4
TMDL-R4	12/19/2019	0.0220	0.0083 (DNQ)	<0.018	<0.018	1.50	1.50	1.5
TMDL-R4	1/15/2020	<0.0160	<0.016	0.41	0.358 (DNQ)	1.59		1.18
TMDL-R4	2/12/2020	0.0356	<0.016	0.28 (DNQ)	0.21 (DNQ)	1.90	1.83	1.62
TMDL-R4	3/19/2020	0.2330	<0.016	0.37	0.24	0.92	0.76	1.03
TMDL-R4	4/15/2020	<0.016	<0.016	0.18 (DNQ)	0.11 (DNQ)	0.98	0.91	0.80
TMDL-SA	5/7/2019	0.0120	<0.012	0.21	0.090 (DNQ)	1.40	1.30	1.2
TMDL-SA	6/12/2019	0.0250	0.038	0.22	0.056 (DNQ)	0.85	0.68	0.63
TMDL-SA	7/10/2019	0.0420	0.047	0.22	0.19	0.43	0.40	0.21
TMDL-SA	8/14/2019	0.0260	<0.012	<0.050	<0.050	0.25	0.25	0.25

Site	Sample Date	P Total EPA 365.1 (mg/L)*	P Diss EPA 365.1 (mg/L)*	TKN Total EPA 351.2 (mg/L)	TKN Diss EPA 351.2 (mg/L)	N Total Calculated (mg/L)	N Diss Calculated (mg/L)	NO3+NO2- N EPA 353.2 (mg/L)
TMDL-SA	9/9/2019	0.0580	0.014	0.091 (DNQ)	<0.050	0.31	0.22	0.22
TMDL-SA	10/16/2019	0.0140	0.0052 (DNQ)	0.064 (DNQ)	<0.050	0.41	0.34	0.34
TMDL-SA	11/6/2019	0.0180	0.0052 (DNQ)	0.049 (DNQ)	<0.018	0.46	0.41	0.41
TMDL-SA	12/19/2019	0.0380	0.029	<0.018	0.088 (DNQ)	0.33	0.42	0.33
TMDL-SA	1/15/2020	0.0523	0.0489	0.4	0.403	0.60		0.20
TMDL-SA	2/12/2020	0.0448	<0.016	0.19 (DNQ)	0.27 (DNQ)	0.60	0.68	0.41
TMDL-SA	3/19/2020	0.0589	0.0329	0.42	0.26	1.32	1.19	0.50
TMDL-SA	4/15/2020	0.0450	0.0393	0.26 (DNQ)	0.24 (DNQ)	1.20	1.18	0.95
TMDL-CL	5/7/2019	0.0076 (DNQ)	0.014 (DNQ)	0.41	0.34	0.41	0.34	<0.083
TMDL-CL	6/13/2019	0.0022 (DNQ)	<0.012	0.45	0.46	0.45	0.46	<0.083
TMDL-CL	7/10/2019	0.0085 (DNQ)	<0.012	0.46	0.45	0.46	0.45	<0.083
TMDL-CL	8/15/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	9/11/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	10/16/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	11/6/2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
TMDL-CL	12/19/2019	0.0240	0.02	0.25	0.25	<0.098	<0.098	<0.080
TMDL-CL	1/15/2020	0.0193 (DNQ)	<0.016	0.575	0.624	0.59		0.01
TMDL-CL	2/12/2020	0.0267	<0.016	0.25 (DNQ)	0.32 (DNQ)	0.25	0.32	0
TMDL-CL	3/19/2020	0.0737	0.0739	1.1	0.97	1.41	1.28	0.31
TMDL-CL	4/15/2020	<0.0160	<0.016	0.49	0.43	0.51	0.45	0.02

\*Total and dissolved phosphorus analyzed using Standard Method (SM) methodologies for January, February, March, April samples. These are accepted as equivalent to EPA methodologies.

DNQ: Did Not Quantify, the measurement is above the minimum detection limit but below the reporting limit.

APPENDIX C. DRY SEASON RIVERINE MONTHLY ALGAL BIOMASS (CHLOROPHYLL A) AND PERCENT MACROALGAL COVER

Site	Date	Field Replicate	Number of Transects Collected	Chlorophyll a (mg/m <sup>2</sup> )	Percent Presence Macroalgae (%)
TMDL-R1	5/8/2019	1	11	280	81.05
TMDL-R1	6/13/2019	1	11	68	83.81
TMDL-R1	7/11/2019	1	11	240	29.81
TMDL-R1	8/15/2019	1	11	84	20.59
TMDL-R1	9/11/2019	1	11	56	0.00
TMDL-R2	5/8/2019	1	11	70	56.44
TMDL-R2	6/12/2019	1	11	230	73.79
TMDL-R2	7/11/2019	1	11	380	74.76
TMDL-R2	8/14/2018	1	11	80	21.57
TMDL-R2	9/11/2019	1	11	140	2.88
TMDL-R3	5/7/2019	1	11	77	64.08
TMDL-R3	6/12/2019	1	11	210	74.76
TMDL-R3	7/10/2019	1	11	140	88.57
TMDL-R3	8/14/2019	1	11	38	37.14
TMDL-R3	9/9/2019	1	11	98	20.19
TMDL-R4	5/7/2019	1	11	100	74.23
TMDL-R4	6/12/2019	1	11	91	87.62
TMDL-R4	7/10/2019	1	11	150	90.48
TMDL-R4	8/14/2019	1	11	42	68.27
TMDL-R4	9/9/2019	1	11	33	70.19
TMDL-SA	5/7/2019	1	11	120	83.65
TMDL-SA	6/12/2019	1	11	190	74.04
TMDL-SA	6/12/2019	2	11	170	NA
TMDL-SA	7/10/2019	1	11	180	91.26
TMDL-SA	8/14/2019	1	11	52	75.96
TMDL-SA	9/9/2019	1	DRY	DRY	DRY
TMDL-CL	5/7/2019	1	11	28	54.00
TMDL-CL	6/13/2019	1	11	45	88.66
TMDL-CL	7/10/2019	1	11	64	98.02
TMDL-CL	8/15/2019	1	DRY	DRY	DRY
TMDL-CL	9/11/2019	1	DRY	DRY	DRY

# APPENDIX D. FULL SIZE CONTINUOUS MONITORING CHARTS

FIGURE D1. 2019 SECOND QUARTER PH CONTINUOUS DATA LOGGING

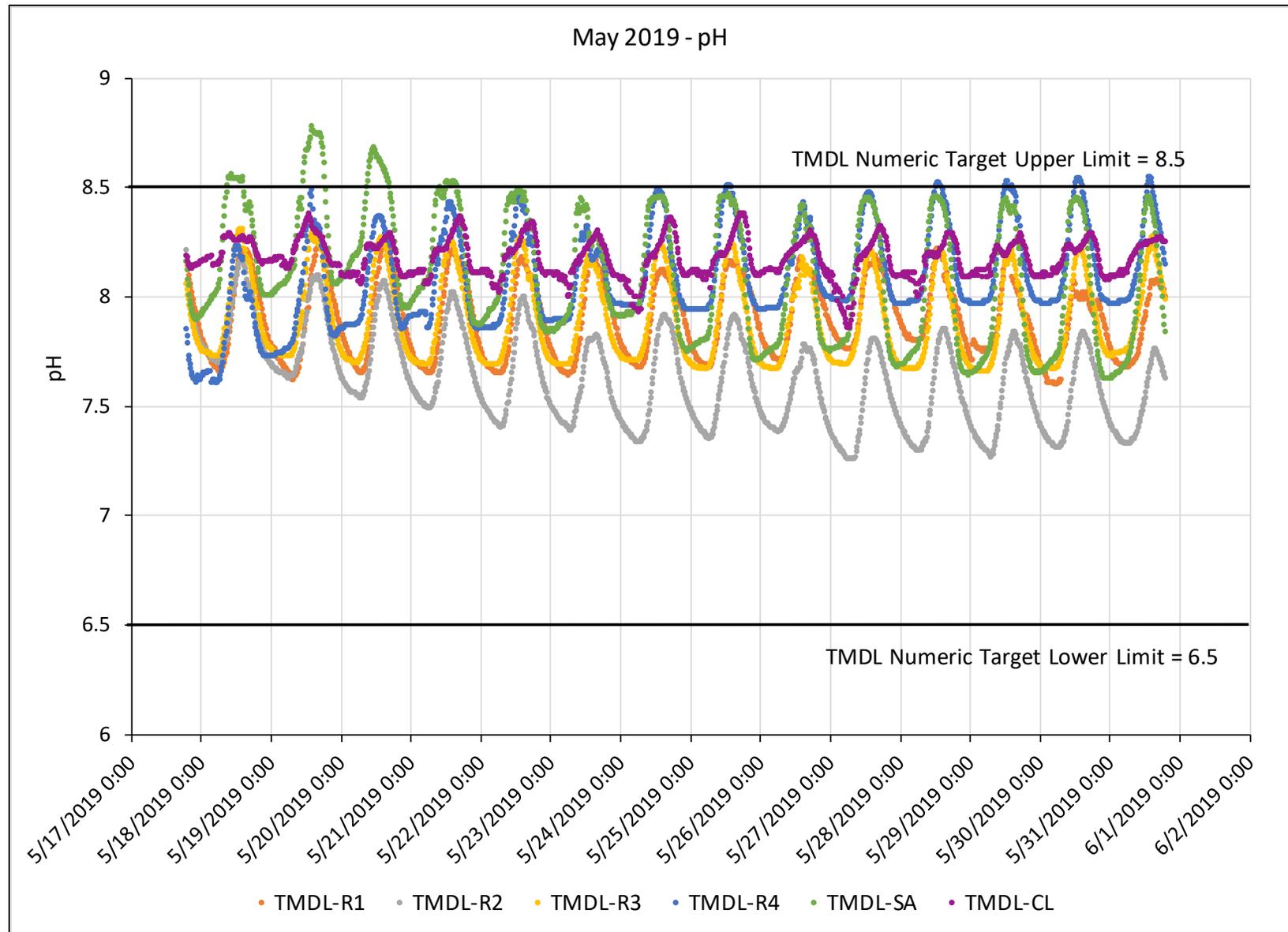


FIGURE D2. 2019 THIRD QUARTER PH CONTINUOUS DATA LOGGING

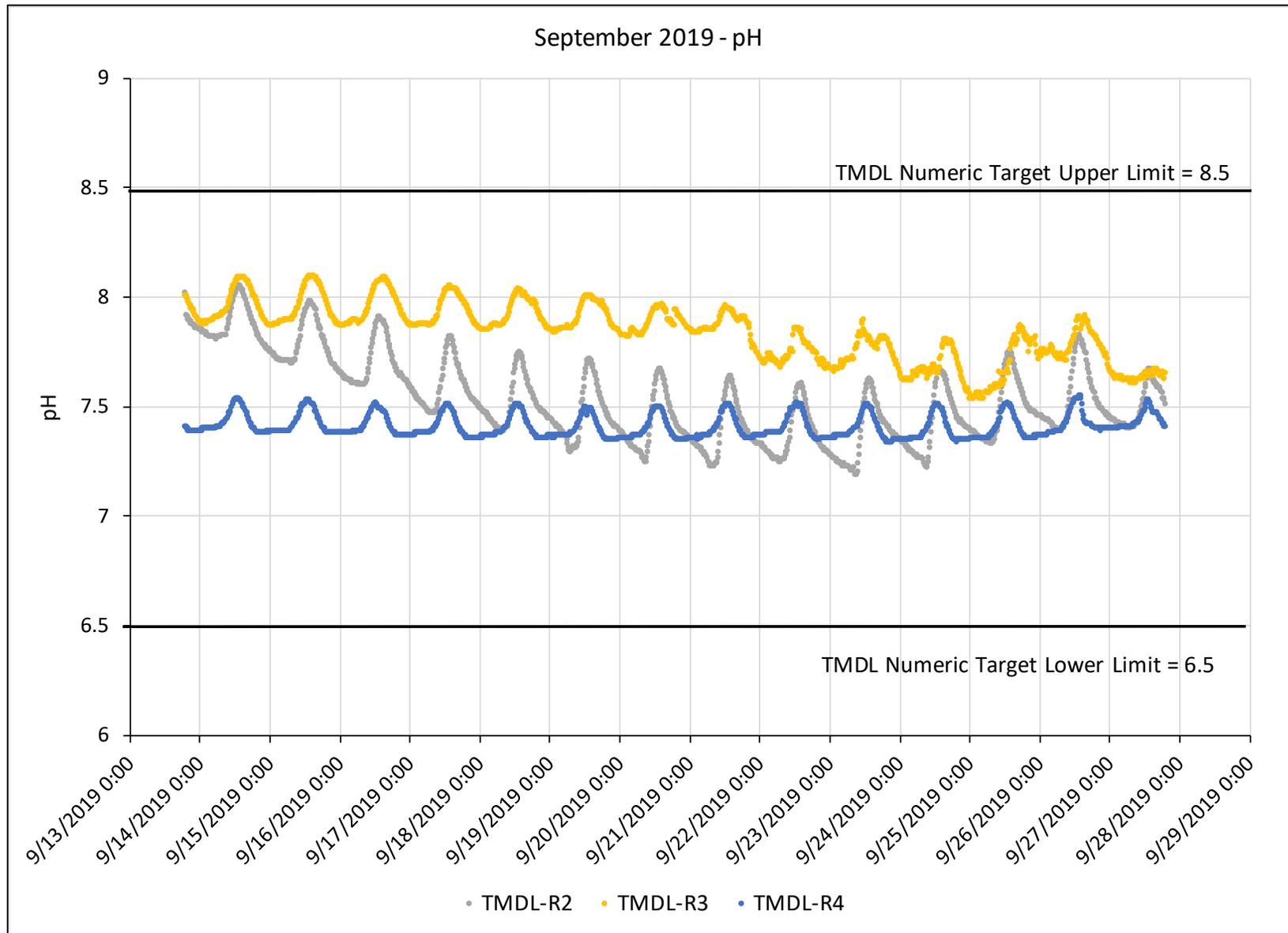


FIGURE D3. 2019 FOURTH QUARTER PH CONTINUOUS DATA LOGGING

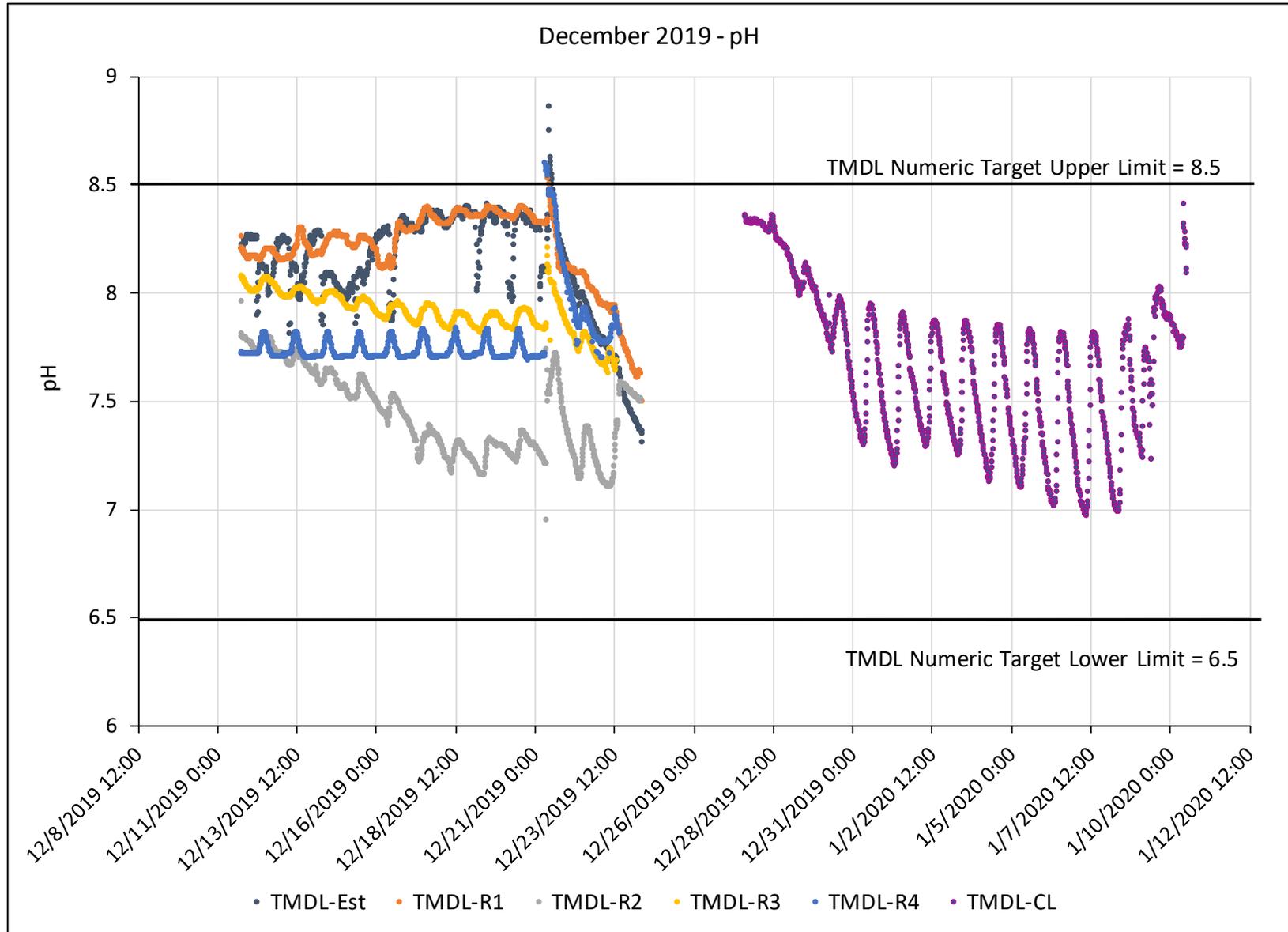


FIGURE D4. 2020 FIRST QUARTER PH CONTINUOUS DATA LOGGING

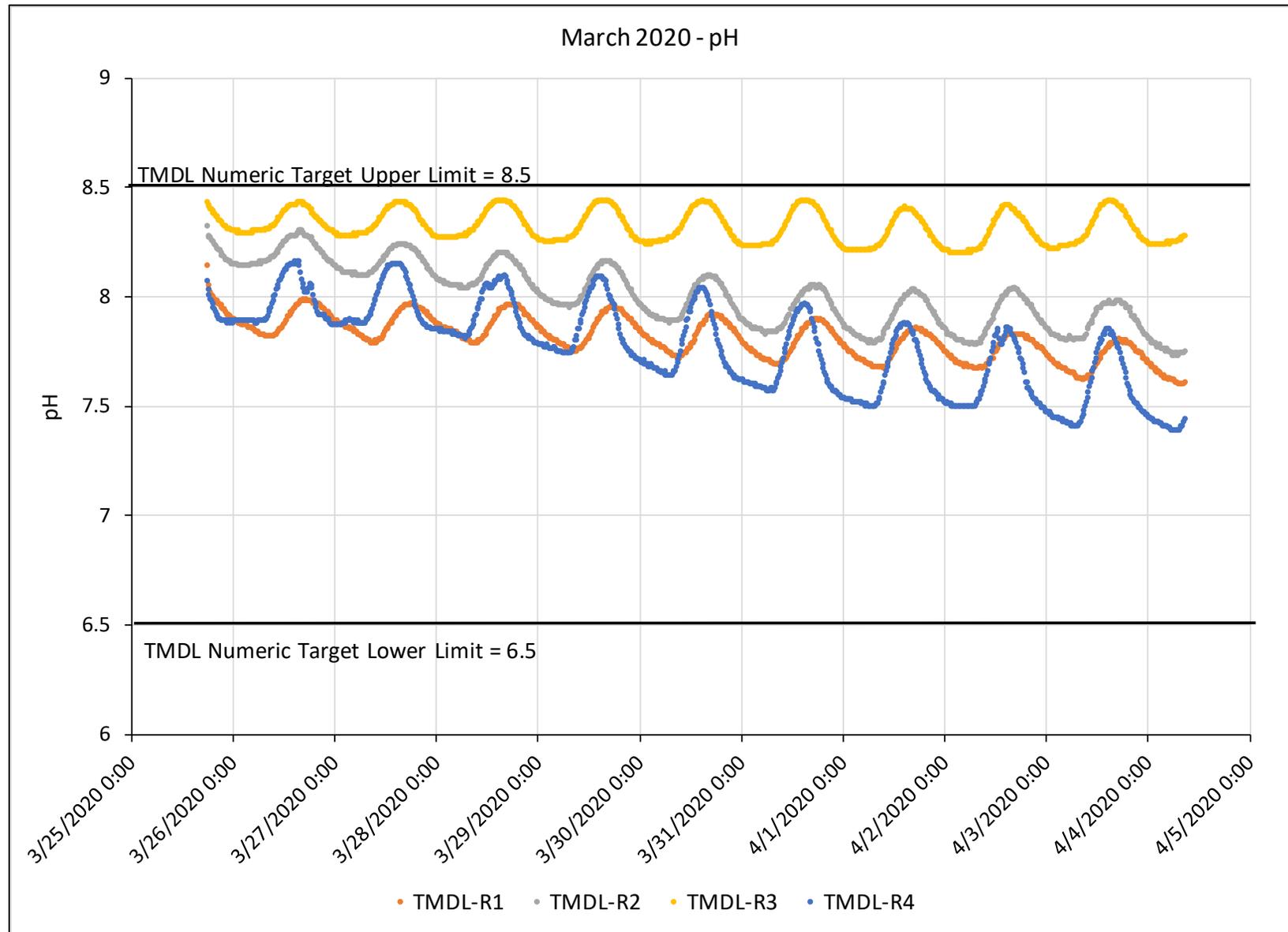


FIGURE D5. 2019 SECOND QUARTER DISSOLVED OXYGEN CONTINUOUS DATA LOGGING

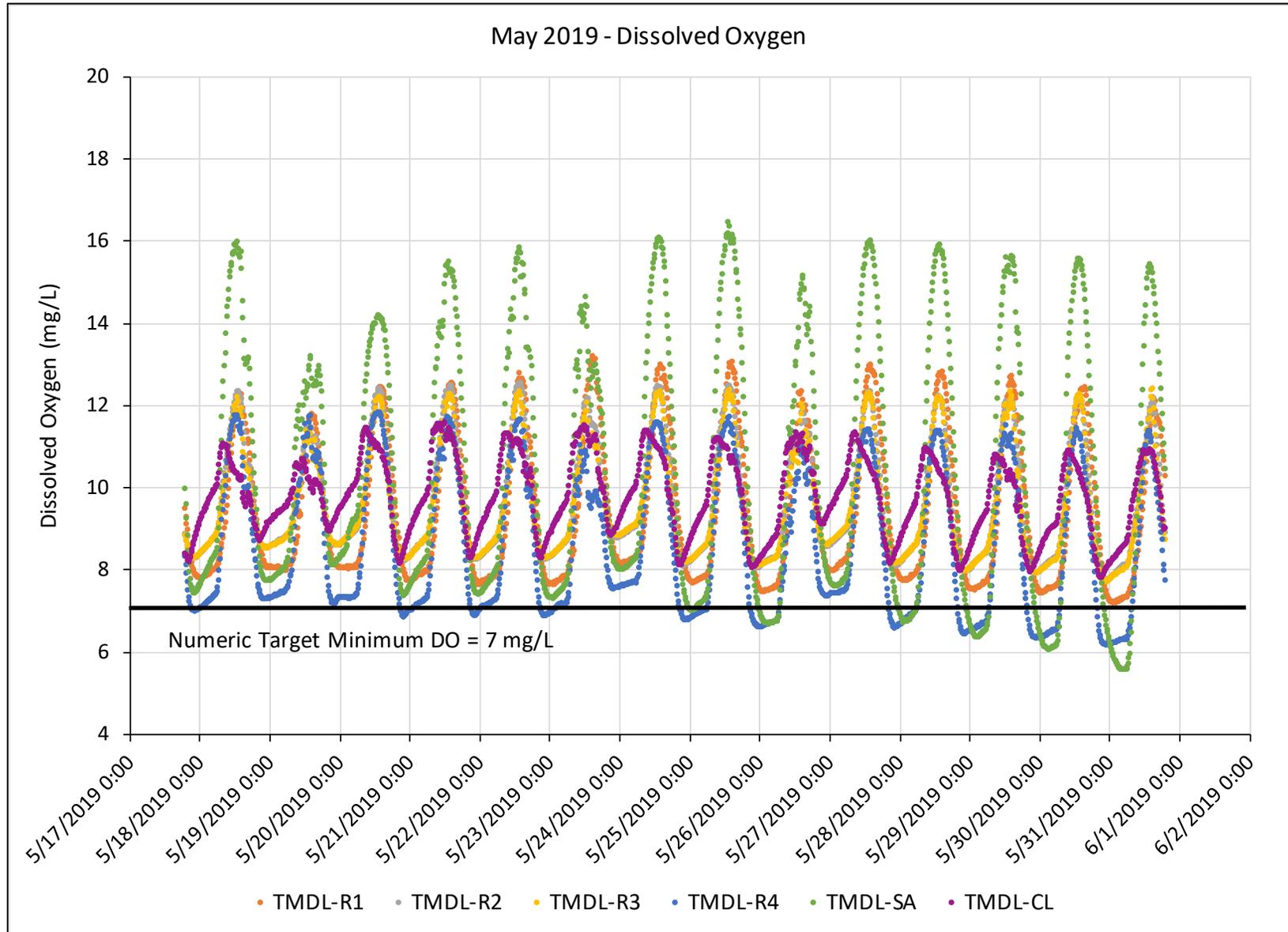


FIGURE D6. 2019 THIRD QUARTER DISSOLVED OXYGEN CONTINUOUS DATA LOGGING

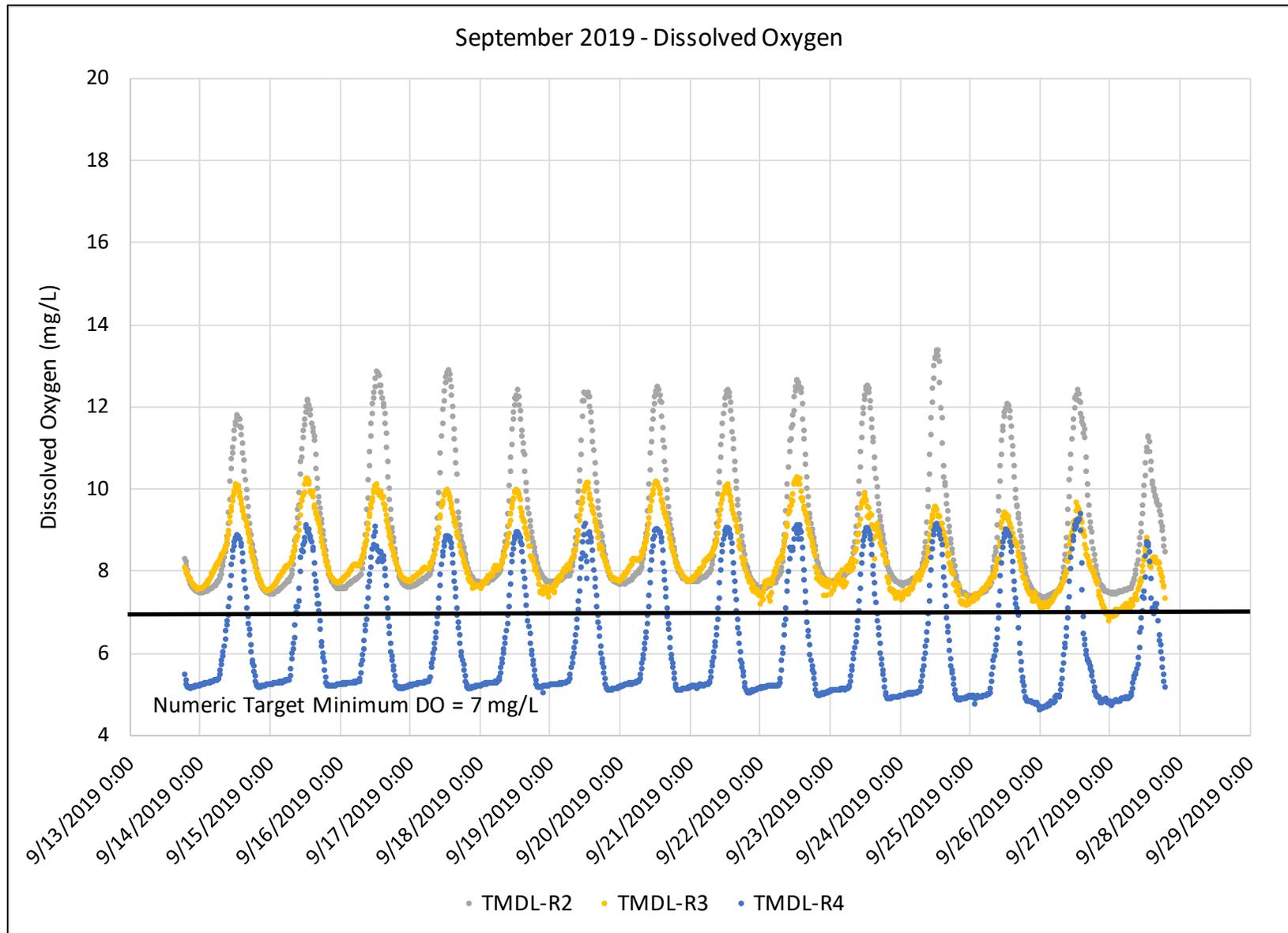


FIGURE D7. 2019 FOURTH QUARTER DISSOLVED OXYGEN CONTINUOUS DATA LOGGING

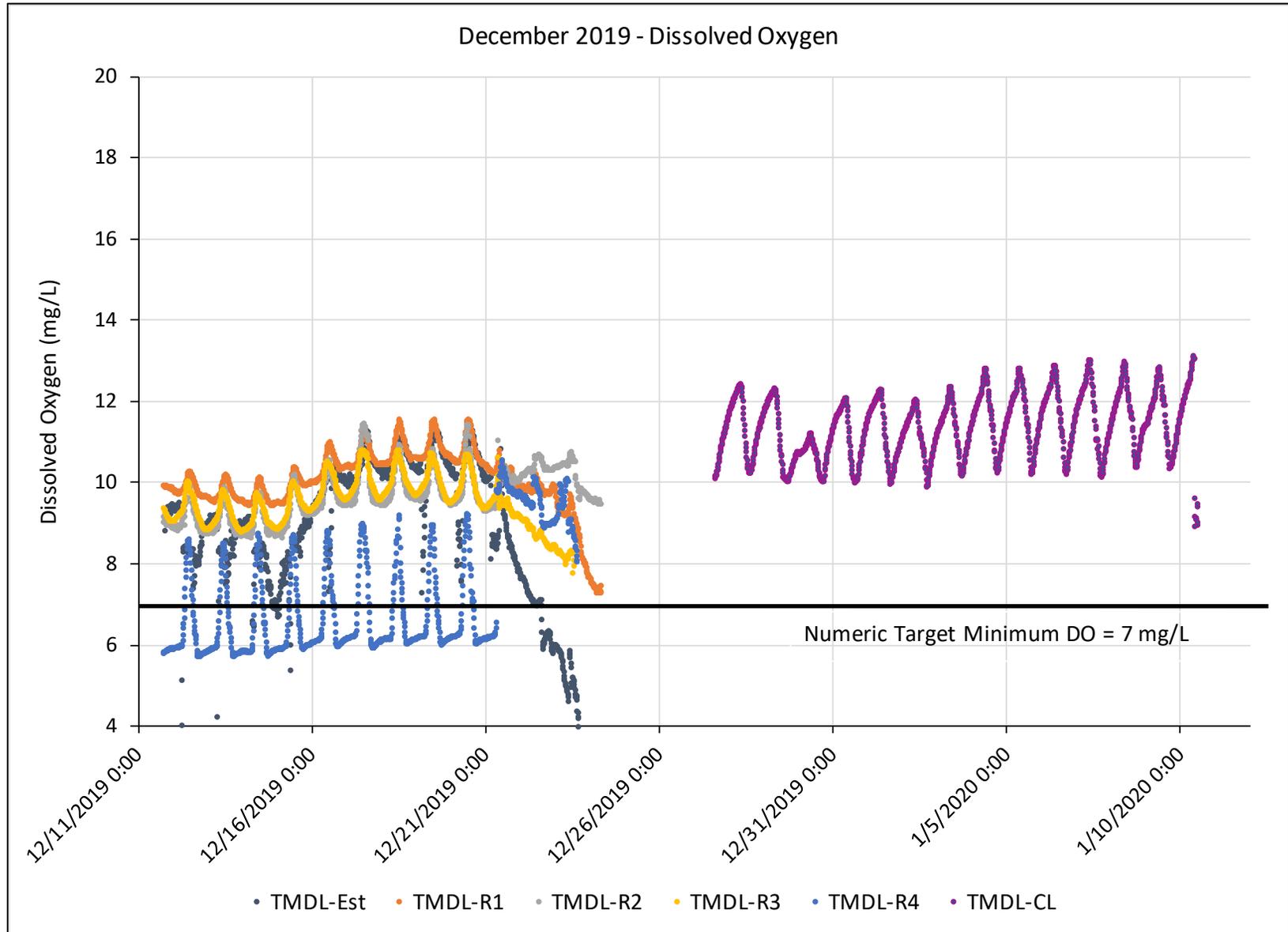
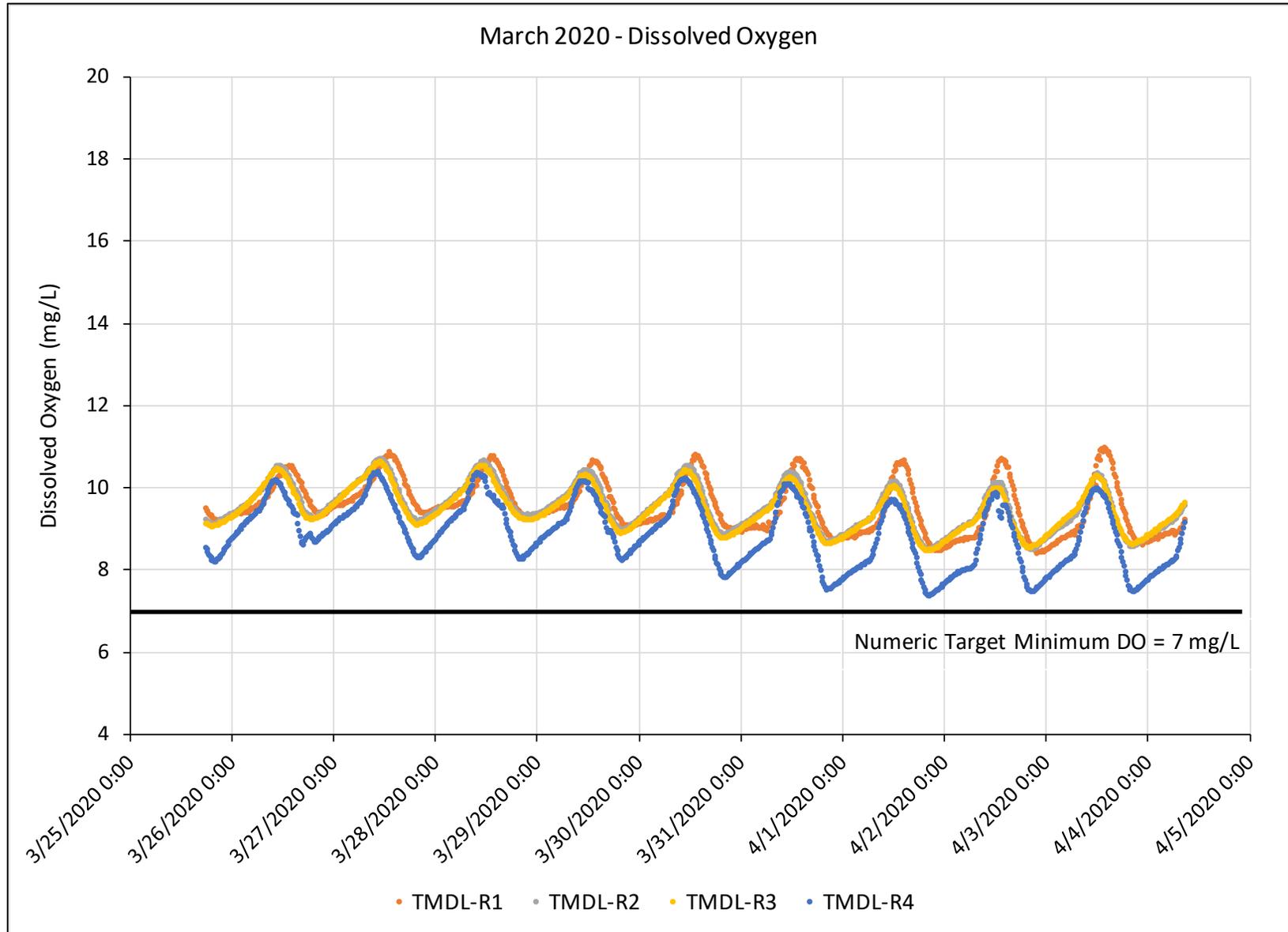


FIGURE D8. 2020 FIRST QUARTER DISSOLVED OXYGEN CONTINUOUS DATA LOGGING



## APPENDIX E. FIELD DATA SHEETS

# Ventura River Algae TMDL Event Details

## EVENT DETAILS

Event ID (Month Year): MAY 2019 Date: 5/7+8/19  
Crew Members: K. HAAS, E. LOMELI, J. MANN (5/7/19), B. JONES (5/8/19), A. WALLING-REIN  
Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other \_\_\_\_\_  
Event Type (check):  Dry (<0.1" rain per day for the preceding three days)  
 Wet (days with ≥0.1" rain and the three days following)  
Notes: YS185 # 05E1126  
Beckman 255 # 2554

## OBSERVATION SITES (RIVER FLOW)

WBC 5/10/19

### Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 20 cfs) Photos Taken: Upstream / Downstream  
Notes: \_\_\_\_\_

### Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 20 cfs) Photos Taken: Upstream / Downstream  
Notes: \_\_\_\_\_

### Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 37 cfs) Photos Taken: Upstream / Downstream  
Notes: (USGS gauge)

### Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs) Photos Taken: Upstream / Downstream  
Notes: \_\_\_\_\_

## UNSAMPLED TMDL SITES

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
Reason not sampled (if flowing): \_\_\_\_\_  
Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
Reason not sampled (if flowing): \_\_\_\_\_  
Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
Reason not sampled (if flowing): \_\_\_\_\_  
Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
Reason not sampled (if flowing): \_\_\_\_\_  
Notes: \_\_\_\_\_

# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

## Ventura River Algae TMDL—Estuary Details

**Site ID:** TMDL-Est  
**Event ID (Month Year):** MAY 2019 **Date:** 5/8/19 1315  
**Crew Members:** KH, EL, RJ, AW  
**Weather (circle one):** Clear / Partly Cloudy / Overcast / Rainy / Foggy **Ocean Inlet (circle one):** Open / Restricted / Closed  
**Direction of Tide:** Ebb / Flood / Slack / N/A **Time of Low Tide:** 0658 **Time of High Tide:** 1339  
**Wind Strength:** Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind **Wind Direction:** Blowing From / To W  
**Notes (e.g. homeless, wildlife, dogs, swimming/recreation):** East end only connected to ocean. River enters + stays on west end. >100 gulls each side.

## TRANSECT 1

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**

**Monthly (Jan—Dec):**  
 pH: 8.41 pH units      EC: 1177  $\mu\text{S/cm}$       Water Temp: 18.9 °C  
 DO: 13.15 mg/L      SC: 1532  $\mu\text{S/cm}$   
 DO: 141.8 %      Salinity: 0.7 ppt

Photos: <input type="checkbox"/> Oceanward <input type="checkbox"/> Landward	Start Time: <u>1325</u>	End Time: <u>1350</u>
Start Latitude: <u>34.27685</u>	Start Longitude: <u>-119.30885</u>	
End Latitude: <u>34.27657</u>	End Longitude: <u>-119.30885</u>	
PVC Latitude:	PVC Longitude:	

**Water Samples Collected (check box)**

**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**

**Monthly Water (Jan—Dec):**

Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:

**Dry Season Algae (May—Sep):**

Chlorophyll a (phytoplankton):   
 Volume filtered per sample: \_\_\_\_\_

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	2.2	3	4.3	6.4	7.3	9.3	17.5	18.6	25.5	27.3				
Water Depth (must be $\leq 0.3$ m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> <sup>3</sup> <u>Int</u> <sup>1</sup> Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> <sup>10</sup> <u>Int</u> <sup>1</sup> Des Dd	<u>Frsh</u> <sup>7</sup> <u>Int</u> <sup>4</sup> Des Dd	<u>Frsh</u> Int Des Dd	Frsh Int Des Dd	<u>Frsh</u> Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	10	12	8	4	3	11	<del>14</del>	8	11	11	1	0	1	0
No. Crosshairs with Macroalgae Absent	39	37	41	45	46	38	45	41	<del>38</del>	38	48	49	48	49
Crosshair Total (must equal 49)	49										49	49	49	49

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## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: 5/8/19 Crew: KN, EL, BJ, AW

### TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward						Start Time: <u>1357</u>					End Time: <u>1415</u>			
Start Latitude: <u>34.27640</u>						Start Longitude: <u>-119.30901</u>								
End Latitude: <u>34.27612</u>						End Longitude: <u>-119.30906</u>								
PVC Latitude:						PVC Longitude:								
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>2.2</u>	<u>3</u>	<u>4.3</u>	<u>6.4</u>	<u>7.3</u>	<u>9.3</u>	<u>17.5</u>	<u>18.6</u>	<u>25.5</u>	<u>27.3</u>	—————			
Water Depth (must be ≤ 0.3 m)											<u>0.3</u> —————→			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>30</sup> Int <sup>3</sup> Des Dd	Frsh <sup>4</sup> Int <sup>5</sup> Des Dd	Frsh <sup>19</sup> Int <sup>6</sup> Des Dd	Frsh <sup>1</sup> Int <sup>5</sup> Des Dd	2Frsh <sup>18</sup> Int <sup>6</sup> Des Dd	Frsh <sup>8</sup> Int <sup>2</sup> Des Dd	Frsh <sup>3</sup> Int Des Dd	Frsh <sup>12</sup> Int <sup>3</sup> Des Dd	Frsh <sup>8</sup> Int <sup>3</sup> Des Dd	Frsh <sup>13</sup> Int <sup>2</sup> Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>33</u>	<u>9</u>	<u>25</u>	<u>6</u>	<u>6</u>	<u>10</u>	<u>3</u>	<u>15</u>	<u>11</u>	<u>15</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>0</u>
No. Crosshairs with Macroalgae Absent	<u>16</u>	<u>40</u>	<u>24</u>	<u>43</u>	<u>43</u>	<u>39</u>	<u>36</u>	<u>34</u>	<u>38</u>	<u>34</u>	<u>48</u>	<u>48</u>	<u>48</u>	<u>49</u>
Crosshair Total (must equal 49)	<u>49</u> —————→										<u>49</u> —————→			

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### TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward						Start Time: <u>1422</u>					End Time: <u>1436</u>			
Start Latitude: <u>34.27597</u>						Start Longitude: <u>-119.30902</u>								
End Latitude: <u>34.27575</u>						End Longitude: <u>-119.30920</u>								
PVC Latitude:						PVC Longitude:								
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>2.2</u>	<u>3</u>	<u>4.3</u>	<u>6.4</u>	<u>7.3</u>	<u>17.5</u>	<u>18.6</u>	<u>218.6</u>	<u>25.5</u>	<u>27.3</u>	—————			
Water Depth (must be ≤ 0.3 m)											<u>0.3</u> —————→			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	8Frsh <sup>30</sup> Int <sup>3</sup> Des Dd	Frsh <sup>25</sup> Int <sup>1</sup> Des Dd	Frsh <sup>12</sup> Int Des Dd	Frsh <sup>20</sup> Int <sup>2</sup> Des Dd	Frsh <sup>12</sup> Int Des Dd	Frsh <sup>17</sup> Int Des Dd	Frsh <sup>5</sup> Int <sup>2</sup> Des Dd	Frsh <sup>4</sup> Int <sup>5</sup> Des Dd	Frsh <sup>22</sup> Int Des Dd	Frsh <sup>13</sup> Int <sup>6</sup> Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh <sup>2</sup> Int Des Dd	Frsh <sup>23</sup> Int Des Dd
No. Crosshairs with Macroalgae Present	<u>11</u>	<u>26</u>	<u>12</u>	<u>22</u>	<u>12</u>	<u>17</u>	<u>7</u>	<u>9</u>	<u>22</u>	<u>19</u>	<u>0</u>	<u>2</u>	<u>2</u>	<u>23</u>
No. Crosshairs with Macroalgae Absent	<u>38</u>	<u>23</u>	<u>37</u>	<u>27</u>	<u>37</u>	<u>32</u>	<u>42</u>	<u>40</u>	<u>27</u>	<u>30</u>	<u>49</u>	<u>47</u>	<u>47</u>	<u>26</u>
Crosshair Total (must equal 49)	<u>49</u> —————→										<u>49</u> —————→			

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2019  
 Site ID: TMDL-R1  
 Date/Time: 05/08/19 1100  
 Crew Members: 34-28058, -119-30855  
 Latitude/Longitude: KH, EL, BJ AW  
 Flow (circle one): Flowing / Pondered / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): shortened reach due to deep pools at both ends

**January—December Monthly In Situ Measurements:**  
 pH: 8.33 pH units EC: 1015  $\mu\text{S}/\text{cm}$  1015  
 DO: 9.9 mg/L SC: 1183  $\mu\text{S}/\text{cm}$   
 DO: 104.6 % Salinity: 0.6 ppt  
 Water Temp: 17.5 °C  
 Flow (from discharge measurement): 37.5 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	0	0
2	4.5	0.7	1.23
3	6.0	0.9	1.66
4	7.5	0.2	1.73
5	9.0	1.65	0.72
6	10.5	1.85	1.60
7	12.0	1.75	1.45
8	13.5	1.80	1.39
9	15.5	1.8	1.59
10	17.0	1.7	1.74
11	18.5	1.5	1.33
12	20.0	1.5	1.11
13	21.5	1.8	0.92
14	23.0	1.9	0.49
15	24.5	0.8	0.10
16	26.0	0.5	0.18
17	27.2	0	0
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	3
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	6
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	363
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R1 Date: 5/8/19 Crew: KH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/m)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5	2P	59A	69P	75P	25A	2	2	9	0	✓
AB	4.8	3P	<del>50A</del> 46P	60P	50P	55A					
B	5.6	inaccess	14A	64P	42P	0A	17	17	15	16	
BC	5.6	inaccess	50A	55P	25P	4P					
C	5	4P	30P	41P	60P	0P	11	8	4	1	
CD	5	1P	37P	55P	47P	0P					
D	6.5	inaccess	32P	45P	30P	3P	9	0	10	5	
DE	4	2P	71P	67P	42P	20P					
E	4	1P	47P	44P	47P	2P	17	13	12	2	
EF	4	2P	57P	60P	55P	1P					
F	4.1	3P	57P	49P	30P	20P	17	3	6	5	✓
FG	3.5	56P	68P	70P	46P	3P					
G	4.7	inaccess	15P	13P	5P	0A	17	17	17	17	
GH	3	1A	11P	30P	12P	0P					
H	3-8	inaccess	20P	23P	9P	0A	12	5	8	0	
HI	3.2	inaccess	36P	53P	37P	0P					
I	3.7	2A	4P	25P	<del>25</del> 30P	2P	7	8	12	12	
IJ	2.6	4P	20P	40P	16P	0A					
J	6.5	3A	52P	68P	36A	0A	1	11	17	0	
JK	9	inaccess	74P	95P	90A	0A					
K	8	inaccess	79A	123A	DEEP	inaccess	17	17	17	13	✓

10      17      20      18      12  
77/95

Partial flow due to extremely fast turbid water in one channel covered w/ logs so unsafe to access.

too deep

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2019  
 Site ID: R2  
 Date/Time: 5/8/19 0750  
 Crew Members: KU, EL, BJ, AN  
 Latitude/Longitude: 34.33937, -119.29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.13 pH units EC: 904  $\mu$ S/cm  
 DO: 9.32 mg/L SC: 1068  $\mu$ S/cm  
 DO: 96.4 % Salinity: .5 ppt  
 Water Temp: 16.9 °C  
 Flow (from discharge measurement): 33-5 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	1.0	0	0
2	1.0	0.75	0.31
3	3.0	1.7	0.06
4	5.0	2.6	0.97
5	7.0	2.1	2.09
6	9.0	2.4	0.27
7	10.0	2.4	0.70
8	12.0	2.2	1.47
9	14.0	1.6	0.86
10	16.0	1.6	0.83
11	18.0	1.2	0.57
12	20.0	1.0	0.56
13	22.0	0.8	0.47
14	25.0	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	1
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	7
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	544
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R2 Date: 5/8/19 Crew: KH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in) <sup>cm</sup>					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	6	2P	20P	28P	25P	0A	14	5	8	0	✓
AB	5	4A	35P	60P	60P	55P					
B	5.5	0P	12P	53P	40P	2P	17	8	13	4	
BC	5	15P	35P	40P	30P	5P					
C	9	8P	37P	32P	4A	0A	17	17	13	12	
CD	10	2P	43A	53P	35P	0A					
D	6	4A	60P	65P	75P	4A	17	9	8	10	
DE	7	62P	69P	85P	55P	10A					
E	10	Inaccess	DRY	54P	20A	10A	15	5	4	6	
EF	7.5	28A	67P	90P	65P	0A					
F	7.5	13A	54P	63P	60P	0A	17	9	11	13	✓
FG	9	Inaccess	20A	55P	33P	0A					
G	8.1	10A	30A	19P	45P	0A	14	0	12	9	
GH	9.5	13A	27P	55P	23A	0A					
H	8	Inaccess	42P	34P	11P	0A	17	15	14	5	
HI	6.5	5A	56P	50P	52P	2A					
I	6	2A	21A	67P	63P	0A	17	17	17	17	
II	7.5	2A	38A	52P	48A	0A					
J	6.5	2A	48A	59P	46P	0A	17	17	17	17	
JK	7.4	2A	66A	45A	10P	0A					
K	7.2	15A	33A	8A	14P	0A	17	17	17	17	✓

6      12      19      17      3  
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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2019  
 Site ID: R3  
 Date/Time: 5/7/19 1200  
 Crew Members: KH, EL, JM, AW  
 Latitude/Longitude: 34.34524, -119.29978  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.37 pH units EC: 894  $\mu\text{S}/\text{cm}$   
 DO: 10.05 mg/L SC: 1031  $\mu\text{S}/\text{cm}$   
 DO: 88 % 105 Salinity: 0.5 ppt  
 Water Temp: 18.0 °C  
 Flow (from discharge measurement): 42.0 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.4	$\emptyset$	$\emptyset$
2	4.5	1.1	0.53
3	5.5	1.7	1.43
4	6.5	1.7	2.34
5	7.5	1.8	3.24
6	8.5	1.7	3.60
7	9.5	1.5	3.56
8	10.5	1.2	3.84
9	11.5	1.2	2.74
10	12.5	1.2	2.37
11	13.5	1.1	2.32
12	14.5	0.9	3.2
13	15.5	0.5	1.88
14	16.5	0.5	0.99
15	17.5	0.2	0.30
16	17.9	$\emptyset$	$\emptyset$
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	4
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	3
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	460
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R3 Date: 5/7/19 Crew: KH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	11	OA	30P	54P	29P	<del>100P</del>	3	15	12	0	✓
AB	12	OA	26P	40P	44P	3A					
B	10	OP	20A	40P	38P	<del>100P</del>	10	0	12	1	
BC	12.5	OA	8P	38P	25P	5A					
C	12	2A	35P	32P	26P	10P	8	3	12	0	
CD	12	OA	39P	37P	36P	3P					
D	12	OA	2A	55A	56P	2A	10	0	14	1	
DE	9	OA	24A	50P	<del>50P</del>	3A					
E	10	OA	24A	40P	59P	15A	8	0	11	1	
EF	10	OA	34P	40P	57P	59P					
F	6.5	OA	37A	65P	63P	20P	10	4	13	2	✓
FG	6	OP	41P	55P	48P	30P					
G	6.5	OP	27P	58P	56P	40A	2	4	13	7	
GH	6.5	OA	30P	65P	45P	13A					
H	9	OP	2P	42A	65P	10P	17	11	12	17	
HI	5	2A	35A	65P	39P	15A					
I	5	5A	15P	41P	38P	2P	11	7	14	5	
II	5	2A	38P	40P	32A	13A					
J	6.5	OA	47P	40P	50P	38A	14	15	17	11	
JK	5.5	1P	21P	10P	47A	5A					
K	6.5	OA	17P	53P	43P	10P	15	6	10	14	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2019  
 Site ID: R4  
 Date/Time: 5/7/19 0750  
 Crew Members: KH, EL, JM, AW  
 Latitude/Longitude: 34.32997, -119.30861  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	14	0	0
2	15	0.2	0.45
3	17	0.6	0.05
4	19	0.5	-0.02
5	21	0.5	0.82
6	23	0.7	0.61
7	25	0.5	0.79
8	27	0.5	0.71
9	29	0.5	1.93
10	31	0.7	1.48
11	33	0.8	1.79
12	35	0.8	1.74
13	37	0.7	1.52
14	39	0.6	1.90
15	41	0.6	1.59
16	43	0.6	1.94
17	45	0.7	1.99
18	47	0.6	1.32
19	49	0.6	1.60
20	51	0.7	1.22

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.71 pH units EC: 765  $\mu\text{S}/\text{cm}$   
 DO: 8.54 mg/L SC: 920  $\mu\text{S}/\text{cm}$   
 DO: 87 % Salinity: .5 ppt  
 Water Temp: 10.3 °C  
 Flow (from discharge measurement): 29.7 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	360
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

21 53 1.45 0.63  
 22 53.3 1.4 0.01

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R4 Date: 5/7/19 Crew: KH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in.) <sup>cm</sup>					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	13	OA	30P	26P	27P	2P	8	4	13	4	✓
AB	12	OA	27P	19P	36P	inaccess					
B	13	OA	15P	<del>11A</del> 30P	46P	6P	17	17	9	14	
BC	<del>11</del>	OA	10P	35P	48P	2A					
C	<del>10.5</del> 10.5	inaccess	15P	30P	70P	inaccess	14	5	8	5	
CD	11	4A	22P	30P	51P	5A					
D	8	OA	36P	55P	45P	3P	11	13	16	15	
DE	9	OA	51P	60P	60P	inaccess					
E	7	OP	70P	65P	28P	3A	12	0	11	14	
EF	6	inaccess	inaccess	30P	DRY	1A					
F	9	OP	6P	<del>25</del> 25P	11P	8P	3	0	3	2	✓
FG	11	4P	15P	20P	32P	2P					
G	11	OA	25P	22P	28P	5A	12	8	3	0	
GH	11	OA	22P	22P	23P	5P					
H	10.5	OA	35P	DRY	19P	8P	13	2	3	2	
HI	10.5	OA	34P	37P	24P	9A					
I	9	15A	34P	46P	33P	15P	13	2	2	2	
II	<del>9.25</del>	10A	33P	42P	31P	15A					
J	8	OA	35P	38P	48P	9A	3	0	0	0	
JK	9	OA	37P	23P	21P	2P					
K	12	OP	34P	20P	25P	2A	0	0	0	0	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): MAY 2019  
 Site ID: SA  
 Date/Time: 5/7/19 1010  
 Crew Members: KH, EL, JM, AW  
 Latitude/Longitude: 34-38081 -119-30735  
 Flow (circle one): (Flowing) / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.38 pH units EC: 11109  $\mu\text{S}/\text{cm}$   
 DO: 12.33 mg/L SC: 1377  $\mu\text{S}/\text{cm}$   
 DO: 127.9 % Salinity: 0.7 ppt  
 Water Temp: 16.9 °C  
 Flow (from discharge measurement): 5-6 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.70	0	0
2	5.0	0.8	0.18
3	6.0	0.9	0.39
4	7.0	0.95	0.20
5	8.0	0.8	0.22
6	10.0	0.8	0.51
7	12.0	0.7	0.78
8	14.0	0.7	1.15
9	16.0	0.6	0.87
10	18.0	0.25	0.22
11	19.6	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	7
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	420
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: 5A Date: 5/7/19 Crew: CH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	5.0	5A	24A	27P	13A	15A	17	16	11	6	✓
AB	5.3	5A	20A	24P	30P	0A					
B	5.0	2P	23P	11P	25P	0A	17	17	8	17	
BC	5.0	70P	34P	30P	8P	0P					
C	6.7	2P	26P	15P	6P	0A	15	13	17	17	
CD	9	3P	4P	DRY	0P	0P					
D	8	2P	4P	10P	13P	0P	13	5	10	17	
DE	6	1P	14P	15P	5P	1P					
E	6	3P	14P	11P	20P	0P	5	3	0	6	
EF	8	3P	9P	9P	11P	3P					
F	8	9A	14P	9P	8P	0P	3	1	15	11	✓
FG	7	5P	16P	13P	9P	0A					
G	7	6A	66P	13P	7P	15A	4	10	9	4	
GH	7	22P	5P	14P	24P	0A					
H	6	3P	5P	14P	19P	2P	3	12	17	16	
HI	5.4	6A	15P	20P	21P	0A					
I	6	2P	10P	14P	22P	0P	9	7	15	15	
II	5	3P	5P	6P	22P	1P					
J	7	1P	9P	17P	12P	1P	0	3	16	6	
JK	6	1P	8P	21P	27P	0A					
K	4.5	1P	9P	26P	22P	19P	0	0	0	1	✓

16

19

20

20

12

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## Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

### Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** MAY 2019  
**Site ID:** TMDL CL  
**Date/Time:** 5.7.19 1420  
**Crew Members:** KH, EL, JM, AW  
**Latitude/Longitude:** 34.34208, -119.28637  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To N  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.18 pH units EC: 3,509  $\mu\text{S}/\text{cm}$   
 DO: 8.85 mg/L SC: 3,734  $\mu\text{S}/\text{cm}$   
 DO: 101.8 % Salinity: 2.0 ppt  
 Water Temp: 21.8 °C  
 Flow (from discharge measurement): 0.65 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.5	0.0	0.0
2	4.5	0.55	0.13
3	5.0	0.50	0.56
4	5.5	0.40	0.66
5	6.0	0.40	0.39
6	6.5	0.40	0.54
7	7.0	0.30	0.34
8	7.5	0.20	0.27
9	8.0	0.20	0.34
10	8.5	0.15	0.20
11	9.5	0.0	0.0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	446
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: CL Date: 5/7/19 Crew: KH, EL

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	3.9	OA	2P	2P	7P	2P	0	0	5	0	✓
AB	3.8	OA	15P	1A	4P	0P					
B	1.8	OA	11P	15A	11P	0A	0	0	6	0	
BC	2.2	OA	1P	5P	8A	0A					
C	2.75	0P	10P	DRY	15P	5P	0	0	2	0	
CD	4.3	OA	7A	DRY	9P	0A					
D	4.2	2P	2P	1P	11P	3P	0	0	0	0	
DE	3.95	OA	0A	DRY	11A	0P					
E	3.6	0P	0A	0P	7A	1P	0	0	0	0	
EF	4.15	OA	DRY	5A	3P	0P					
F	5.4.05	2P	5P	4P	2P	1P	0	0	1	1	✓
FG	5	OA	4A	9A	2P	0A					
G	5.7	1P	DRY	7P	4P	1P	0	1	0	0	
GH	4.8	OA	0A	8A	2A	0A					
H	3.25	1P	4A	9P	4P	1P	1	0	14	0	
HI	2.8	0P	5A	8A	0A	0A					
I	3.0	4P	5A	5A	0P	1P	3	0	0	0	
J	2.4	0A	6A	5A	5A	0A					
J	<del>1.35</del>	2P	14A	9P	0A	0P	2	0	2	0	
JK	1.35	0P	13P	10P	10P	0A					
K	1.5	1A	10P	9A	9P	1A	14	14	15	16	✓

3-25 →

10      9      9      14      12      17      15  
 $\frac{54}{100}$

# Ventura River Algae TMDL Event Details

**EVENT DETAILS**

Event ID (Month Year): JUNE 2019 Date: 6/10, 12, 13, 14/2019

Crew Members: K. HAHS, J. PEREZ, A. WALLENGREN, B. JONES (RI+EST)

Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other \_\_\_\_\_

Event Type (check):  Dry (<0.1" rain per day for the preceding three days)  
 Wet (days with ≥0.1" rain and the three days following)

Notes : \_\_\_\_\_  
 \_\_\_\_\_

**OBSERVATION SITES (RIVER FLOW)**

6/10/19

Ventura River at Highway 150 (Baldwin Road)  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: ~10 cfs) Photos Taken: Upstream /  Downstream  
 Notes: \_\_\_\_\_

6/14/19

Ventura River at Santa Ana Blvd  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: ~10 cfs) Photos Taken: Upstream /  Downstream  
 Notes: \_\_\_\_\_

6/14/19

Ventura River at Casitas Vista Road  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: ~10 cfs) Photos Taken: Upstream /  Downstream  
 Notes: ~ 10 cfs east bank over ~ 1-2 cfs west bank

Additional Observation Site: \_\_\_\_\_  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs) Photos Taken: Upstream / Downstream  
 Notes: \_\_\_\_\_

**UNSAMPLED TMDL SITES**

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
 Reason not sampled (if flowing): \_\_\_\_\_  
 Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
 Reason not sampled (if flowing): \_\_\_\_\_  
 Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
 Reason not sampled (if flowing): \_\_\_\_\_  
 Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream  
 Flow Status : Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)  
 Reason not sampled (if flowing): \_\_\_\_\_  
 Notes: \_\_\_\_\_

# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

## Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): JUNE 2019

Date: 6/13/19 1330

Crew Members: KH, JP, AW

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed open west end

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 13:11 Time of High Tide: 1935

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To SW

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): Field dup for chl a. Benth closed east end. ~60 gulls in/on water. East end disconnected from river and ocean. West end connected to river and ocean.

## TRANSECT 1

### In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.68 pH units 8.70 EC: 4396  $\mu\text{S/cm}$  Water Temp: 23.9  $^{\circ}\text{C}$

DO: over 100 mg/L SC: 4519  $\mu\text{S/cm}$

DO: 280 % Salinity: 2.4 ppt

Photos:  Oceanward  Landward Start Time: 1336 End Time: 1445

Start Latitude: 34.27588 Start Longitude: -119.30910

End Latitude: 34.27563 End Longitude: -119.30928

PVC Latitude: PVC Longitude:

### Water Samples Collected (check box)

Collect at Floating Macroalgae Quadrat 1, Transect 1

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton):  dup

Volume filtered per sample: 500 500

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13	22.1	23.7	29.9				
Water Depth (must be $\leq 0.3$ m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	Frsh 36 Int 12 Des Dd	<u>Frsh</u> Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	<u>Frsh</u> Int Des Dd	<u>Frsh</u> Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	49	48	47	43	40	49	48	49	49	49	48	49	49	49
No. Crosshairs with Macroalgae Absent	0	1	2	6	9	0	1	0	0	0	1	0	0	0
Crosshair Total (must equal 49)	49										49			

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## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: ~~11/11~~ JUN 2019 Crew: KH, BJ, AW

### TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input type="checkbox"/> Landward	Start Time: 1352	End Time: 1402
Start Latitude: 34.27615	Start Longitude: -119.30907	
End Latitude: 34.27638	End Longitude: -119.30901	
PVC Latitude:	PVC Longitude:	

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13	22.1	23.7	29.9				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd													
No. Crosshairs with Macroalgae Present	45	49	40	48	48	49	45	29	49	49	48	43	27	21
No. Crosshairs with Macroalgae Absent	4	0	9	1	1	0	4	20	0	0	1	6	22	28
Crosshair Total (must equal 49)	49										49			

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### TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: 1404	End Time: 1412
Start Latitude: 34.27686	Start Longitude: -119.30885	
End Latitude: 34.27656	End Longitude: -119.30885	
PVC Latitude:	PVC Longitude:	

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	0.6	3.9	5.6	6.1	9.6	11.7	13	22.1	23.7	29.9				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd													
No. Crosshairs with Macroalgae Present	49	49	49	49	49	49	48	49	49	49	49	49	47	47
No. Crosshairs with Macroalgae Absent	0	0	0	0	0	0	1	0	0	0	0	0	2	2
Crosshair Total (must equal 49)	49										49			

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** 06/2019  
**Site ID:** TMDL-R1  
**Date/Time:** 06/13/19 1145  
**Crew Members:** KH, JP, AW, BT  
**Latitude/Longitude:** 34.28016 -119.30836  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.16 pH units EC: 1117  $\mu\text{S}/\text{cm}$   
 DO: 8.87 mg/L SC: 1200  $\mu\text{S}/\text{cm}$   
 DO: 100.0% Salinity: 0.6 ppt  
 Water Temp: 21.2 °C  
 Flow (from discharge measurement): 20-3 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4	0	0
2	5	0.4	0.27
3	6	0.6	1.09
4	7	0	0
5	8	0	0
6	8.5	1.3	0.51
7	10.5	1.4	1.20
8	12.5	1.45	1.13
9	14.5	1.45	1.14
10	16.5	1.45	1.13
11	18.5	1.25	1.11
12	20.5	1.1	0.91
13	22.5	1.4	0.28
14	24.0	1.4	0.03
15	25.3	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	0
PVC Delimiter (Area=12.6cm <sup>2</sup> )	9
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	2
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	688
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R1 Date: 6/13/19 Crew: KH JP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	7.5	21P	69P	79P	78P	10A	4	0	0	0	✓
AB	6	37P	84P	85P	97P	0A					
B	5-6	0A	74P	84P	104P	0P	12	6	4	0	
BC	5	70P	70P	66P	75P	0P					
C	5-3	5P	55P	65P	83P	0A	12	0	2	4	
CD	6	20A	52P	63P	63P	0P					
D	5	17P	52P	58P	58P	65P	3	2	8	0	
DE	5	20A	33P	48P	35P	15P					
E	4-7	0A	37P	36P	37P	10P	17	13	6	16	
EF	5	0P	20P	45P	45P	25P					
F	4	0P	35P	34P	22P	0P	4	0	6	0	✓
FG	5	50P	109P	98P	85P	0P					
G	4	0P	8P	88P	54P	0A	14	5	1	4	
GH	4.5	0P	69P	90P	6P	39P					
H	4.5	0P	10P	17P	0A	0A	17	17	17	17	
HI	2-7	0A	21P	24P	6P	0P					
I	2-8	0A	28P	46P	44P	0P	17	4	17	8	
IJ	3-25	0A	8P	21P	21P	0P					
J	2-7	0P	35P	35P	35P	0P	7	3	10	5	
JK	6-2	0A	55P	68A	61A	0A					
K	9	0P	65P	81P	90P	0P	8	8	9	9	✓

Partial channel  
Dominant chord  
is too swift  
for wading

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** JUNE 2019

**Site ID:** R2

**Date/Time:** 6/13/19 0920

**Crew Members:** KH, JP, AW

---

**Latitude/Longitude:** 34.33937, -119.29725

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**

pH: 8.06 pH units    EC: 955  $\mu\text{S/cm}$

DO: 8.59 mg/L    SC: 1.004  $\mu\text{S/cm}$

DO: 94.0 %    Salinity: 0.5 ppt

Water Temp: 19.6 °C

Flow (from discharge measurement): 20.5 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.5	0	0
2	4.0	1.5	0.10
3	6.0	1.7	0.08
4	8.0	2.25	0.39
5	10.0	2.4	0.66
6	12.0	2.1	0.92
7	14.0	1.8	1.06
8	16.0	1.4	1.05
9	18.0	1.4	0.75
10	20.0	1.1	0.59
11	22.0	1.0	0.24
12	24.0	1.1	0.22
13	26.0	0.0	0.0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	1
PVC Delimiter (Area=12.6cm <sup>2</sup> )	7
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	3
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	574
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R2 Date: 6/12/19 Crew: KH, JP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	6.7	OA	37P	40P	47P	OA	11	4	14	2	✓
AB	5	5P	30P	50P	56P	OP					
B	5.5	OP	11P	58P	50P	30P <sup>30P</sup>	6	2	14	3	
BC	3.8	OA	50P	50P	65P	OP					
C	4	OP	OP	52P	63P	18P	15	10	3	4	
CD	5	OA	32P	31P	42P	23P					
D	6	4A	36P	42P	51P	OP	17	17	11	15	
DE	11	OA	30P	40P	15P	OA					
E	8.5	OA	54P	70P	70P	OA	17	4	4	6	
EF	8	OA	57P	72P	77P	OP					
F	5.5	OA	59P	69P	67P	OP	9	6	7	3	✓
FG	7	OA	45A	72P	55P	OA					
G	8	OA	DRY	49P	45P	OP	13	10	7	4	
GH	8	OA	5P	OP	45P	30P					
H	8.5	INACCESS	5A	37P	39P	OA	7	6	2	3	
HI	6.5	OA	2P	26P	13P	5P					
I	9.5	OP	30P	20P	32P	OP	12	0	0	0	
II	10.5	15P	24P	31P	24P	OA					
J	13	OA	21P	46P	20P	5P	11	0	0	1	
JK	13.5	OP	36P	10P	27A	2P					
K	16	OA	41A	46A	41A	OA	0	0	7	2	✓

(Non-damast channels wet but no algae without plant effluent)

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JUNE 2019  
 Site ID: R3  
 Date/Time: 6/12/19 12:45  
 Crew Members: KH, JP, AW  
 Latitude/Longitude: 34.54584 -119.29978  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.06 pH units EC: 971  $\mu\text{S}/\text{cm}$   
 DO: 10.35 mg/L SC: 1,020  $\mu\text{S}/\text{cm}$   
 DO: 122.4 % Salinity: 0.5 ppt  
 Water Temp: 22.5 °C  
 Flow (from discharge measurement): 20.0 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.5	0	0
2	4.5	0.5	0.03
3	5.5	1.35	0.79
4	6.5	1.3	1.05
5	7.5	1.4	1.95
6	8.5	1.4	1.95
7	9.5	1.4	2.06
8	10.5	1.2	2.15
9	11.5	0.95	2.53
10	12.5	0.65	2.80
11	13.5	0.7	0.64
12	14.5	0.4	1.68
13	15.5	0.6	0.81
14	16.5	0.25	0.01
15	18.5	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	2
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	1
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	440
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R3 Date: 6/12/19 Crew: RH, JP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm <sup>cm</sup> /ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	9	OP	25P	35P	43P	OA	6	2	13	2	✓
AB	11	OA	15P	40P	20P	OA					
B	9	OA	25P	35P	30P	OA	11	2	12	2	
BC	10.5	OA	30P	30P	22P	20P					
C	12.5	OA	31P	29P	34P	OP	6	1	14	5	
CD	11	OA	5P	46P	46P	OA					
D	10	OA	23P	63P	61P	OA	8	0	15	2	
DE	9	OA	8A	41P	64P	OP					
E	9	OA	24P	38P	60P	55P	10	1	12	10	
EF	8	OA	40P	48P	54P	OA					
F	7	OA	40P	69P	63P	OP	10	4	12	1	✓
FG	6	3P	50P	49P	62A	OA					
G	6	OA	10P	52P	54P	OP	8	4	14	4	
GH	5	OP	OP	50P	27P	OA					
H	5	5A	50P	<del>65P</del>	50P	10P	6	10	17	8	
HI	4.8	OP	25P	40P	40P	OP					
I	4.7	INACCESS	29P	45P	40P	22P	11	7	17	6	
IJ	3.4	INACCESS	25P	57P	34A	30A					
J	5	5P	46P	26P	26P	4A	14	6	16	10	
JK	5	OP	22P	40P	35P	OA					
K	7.5	OP	2P	33P	33P	7P	15	2	11	5	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** June 2019

**Site ID:** R4

**Date/Time:** 6/12/19 0755

**Crew Members:** KH, JP, AW

---

**Latitude/Longitude:** 34.37997 -119.30861

**Flow (circle one):**  Flowing / Ponded / Dry

**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** Bedman 255 #2151 (slow to stabilize)

**January—December Monthly In Situ Measurements:**

pH: 7.37 pH units EC: 077  $\mu\text{S}/\text{cm}$

DO: 6.87 mg/L SC: 974  $\mu\text{S}/\text{cm}$

DO: 76.6 % Salinity: 0.5 ppt

Water Temp: 19.7 °C

Flow (from discharge measurement): 14.6 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	<del>11</del> 11	0	0
2	13	0.4	0.02
3	15	0.5	0.07
4	17	0.65	0.06
5	19	0.55	0.07
6	21	0.45	0.07
7	23	0.45	0.04
8	25	0.7	0.35
9	27	0.5	0.19
10	29	0.7	0.87
11	31	0.7	1.52
12	33	0.7	1.91
13	35	0.6	1.40
14	37	0.6	0.44
15	39	0.5	0.84
16	41	0.6	1.16
17	43	0.4	0.70
18	45	0.7	0.92
19	47	0.2	1.6
20	49	1.3	0.28

2) 49.7 | 1.4 | 0.33

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	5
PVC Delimiter (Area=12.6cm <sup>2</sup> )	6
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	380
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R4 Date: 6/12/19 Crew: KN, JP

Transect	Wetted <sup>m</sup> Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	10	OP	29P	22P	32P	8P	Ø17	152	13	0	✓
AB	12	2A	24P	26P	33P	0A					
B	14	0A	15P	30P	52P	0A	11	1	9	1	
BC	12	OP	14P	34P	49P	29P					
C	11	0A	10P	39P	50P	OP	6	4	8	1	
CD	11	0A	24P	38P	19P	20A					
D	9	OP	27P	53P	57P	0A	5	10	13	2	
DE	8	0A	36P	55P	74P	8A					
E	8	0A	45P	30P	40P	OP	16	1	9	14	
EF	5	40P	57P	36P	18P	OP					
F	7	6P	10P	20P	10P	OP	2	3	5	6	✓
FG	9	OP	2P	15P	29P	OP					
G	10	OP	13P	20P	27P	OP	8	3	1	0	
GH	10	OP	17P	16P	25P	OP					
H	10	OP	38P	OP	22P	45P	16	4	2	0	
HI	11	OP	16P	11P	15P	OP					
I	10	OP	29P	24P	17P	OP	5	4	1	2	
IJ	9	OP	34P	39P	38P	OP					
J	8.5	0A	34P	40P	34P	OP	16	1	0	0	
JK	9	OP	25P	29P	15P	OP					
K	7.5	OP	24P	30P	40P	0A	9	0	2	1	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** JUNE 2019

**Site ID:** SA

**Date/Time:** 6/12/19 10:00

**Crew Members:** KH JP AW

---

**Latitude/Longitude:** 34.38081 -119.30735

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** Field dups for chemistry and chlorophyll a

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.5	0.00	0
2	6.0	0.70	0
3	7.5	0.60	0.12
4	9.0	0.50	0.17
5	10.5	0.45	0.26
6	12.0	0.35	0.35
7	13.5	0.40	0.21
8	15.0	0.40	0.21
9	16.5	0.30	0.17
10	18.1	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**

pH: 7.79 pH units    EC: 1303 μS/cm

DO: 9.87 mg/L    SC: 1407 μS/cm

DO: 110.5 %    Salinity: 0.7 ppt

Water Temp: 21.1 °C

Flow (from discharge measurement): 0.93 cfs

**May—September: Algae Collection for Chlorophyll a**

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	1
PVC Delimiter (Area=12.6cm <sup>2</sup> )	10
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	408
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	25

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll a (filters—algae):

dup  
0  
10  
1  
11  
320  
25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: SA Date: 6/12/19 Crew: KH, JP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	6.5	OP	20A	6A	4P	0A	17	17	17	17	✓
AB	4	4A	15A	15A	24P	0A					
B	5	0A	45A	47P	7P	0P	17	17	17	17	
BC	2.9	0A	15P	33P	10P	0P					
C	4.75	OP	12P	5P	5P	0A	17	12	14	15	
CD	5.8	0A	10P	5P	7P	0A					
D	8.5	0A	10P	DRY	3P	0A	11	14	10	11	
DE	8	OP	5P	OP	7P	0A					
E	6.2	10P	10P	16P	15P	0A	9	0	10	1	
EF	6	0A	18P	15P	25P	OP					
F	7	OP	13P	12P	16P	0A	3	5	2	1	✓
FG	9	OP	10P	9P	10P	OP					
G	8	0A	14P	10P	10P	OP	2	0	2	7	8
GH	9	0A	16P	15P	5P	OP					
H	6	OP	25P	15P	10P	OP	0	3	11	4	
HI	8	20P	10P	15P	15P	OP					
I	6	OP	5P	11P	24P	0A	1	13	14	1	
J	6	10A	15P	17P	20P	0A					
J	6	OP	20P	20P	24P	0A	3	14	16	8	
JK	7	OP	8P	10P	16P	0A					
K	5	OP	5P	4P	15P	0A	0	8	7	5	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** JUNE 2019

**Site ID:** TMDL-CL

**Date/Time:** 6/13/19 0745

**Crew Members:** KH, JP, AW

---

**Latitude/Longitude:** 34.34208 -119.28637

**Flow (circle one):** Flowing Ponded / Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**

pH: 8.05 pH units    EC: 3,322  $\mu\text{S}/\text{cm}$

DO: 8.51 mg/L    SC: 3,750  $\mu\text{S}/\text{cm}$

DO: 93.0 %    Salinity: 2.0 ppt

Water Temp: 19.0 °C

Flow (from discharge measurement): 0.16 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.5	0	0
2	3.0	0.3	-0.03
3	3.5	0.4	0.02
4	4.0	0.5	0.00
5	4.5	0.4	0.35
6	5.0	0.4	0.21
7	5.5	0.4	0.13
8	6.0	0.3	0.00
9	6.5	0.3	0.07
10	7.0	0.2	0.03
11	9.0	0.0	0.00
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	572
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: CL Date: 6/13/19 Crew: KH, JP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	3.8	4P	5P	5P	9P	0P	0	0	1	1	✓
AB	3.8	0A	5P	5P	1P	0P					
B	1.5	0P	12P	24P	19P	0P	1	0	3	0	
BC	2.1	0P	1P	3P	5P	0P					
C	3.0	0P	5P	DRY	12P	0P	0	0	0	0	
CD	4.3	0P	1P	4P	<del>DRY 1P</del>	0P					
D	3.15	0P	0P	4P	7P	0P	0	0	2	0	
DE	3.8	0P	0P	DRY	10P	0P					
E	3.7	0P	2A	DRY	5P	0P	3	0	0	0	
EF	3.8	0P	0P	12P	0P	0P					
F	4.9	0P	1P	5P	0P	0P	0	0	0	0	✓
FG	5.4	3P	0P	6P	4P	0P					
G	5.1	0P	5P	8P	1P	0P	0	1	1	2	
GH	4.4	0P	6A	5P	1P	0P					
H	2.4	0A	4A	8A	6A	0P	2	0	1	1	
HI	3.0	0A	5P	5A	0P	0P					
I	6.35	0P	4A	DRY	DRY	0P	2	0	0	0	
IJ	1.9	0P	14P	11P	11P	0P					
J	4.7	0P	0P	DRY	DRY	0P	0	0	0	0	
JK	1.2	0P	18P	15P	9A	0P					
K	2.05	0P	7P	8P	4P	0P	10	4	0	3	✓

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# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

## Ventura River Algae TMDL—Estuary Details

**Site ID:** TMDL-Est  
**Event ID (Month Year):** JULY 2019      **Date:** 7/11/19 1225  
**Crew Members:** KH MC, JIM  
**Weather (circle one):** Clear / Partly Cloudy / Overcast / Rainy / Foggy      **Ocean Inlet (circle one):** Open / Restricted / Closed *closed west, open restricted east*  
**Direction of Tide:** Ebb / Flood / Slack / N/A      **Time of Low Tide:** 10:53      **Time of High Tide:** 17:39  
**Wind Strength:** Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind      **Wind Direction:** Blowing From / To S  
**Notes (e.g. homeless, wildlife, dogs, swimming/recreation):** Est changed shape again. west end been closed causing water to backup to kelps that connect the east + sides through the connectors. Gull + cormorants in area ~ 100. East end open ocean.

## TRANSECT 1

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**  
**Monthly (Jan—Dec):**  
 pH: 8.42 pH units      EC: 2740 μS/cm      Water Temp: 23.7 °C  
 DO: 14.9 mg/L      SC: 2810 μS/cm  
 DO: 178.2%      Salinity: 1.50 ppt

**Water Samples Collected (check box)**  
**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**  
**Monthly Water (Jan—Dec):**  
 Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:   
**Dry Season Algae (May—Sep):**  
 Chlorophyll a (phytoplankton):   
 Volume filtered per sample: \_\_\_\_\_

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: 1242	End Time: 1247
Start Latitude: 34.27586	Start Longitude: -119.30950	
End Latitude: 34.27608	End Longitude: -119.30945	
PVC Latitude:	PVC Longitude:	

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd													
No. Crosshairs with Macroalgae Present	1	3	4	49	7	6	15	10	13	7	0	0	0	0
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	49										49			

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## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: 7/11/19 Crew: KH, MC, JM

### TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward					Start Time: <u>1305</u>					End Time: <u>1310</u>				
Start Latitude: <u>34.27576</u>					Start Longitude: <u>-119.30914</u>									
End Latitude: <u>34.27597</u>					End Longitude: <u>-119.30899</u>									
PVC Latitude:					PVC Longitude:									
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3	—————→		
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	26	36	31	9	38	13	17	22	0	5	0	0	25	36
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	49	—————→									49	—————→		

### TRANSECT 3

197/490 61/106

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward					Start Time: <u>1332</u>					End Time: <u>1338</u>				
Start Latitude: <u>34.27589</u>					Start Longitude: <u>-119.30798</u>									
End Latitude: <u>34.27568</u>					End Longitude: <u>-119.30798</u>									
PVC Latitude:					PVC Longitude:									
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	4.7	8.4	9.8	14.7	16.2	17.6	26	27.7	28.7	29.8				
Water Depth (must be ≤ 0.3 m)											0.3	—————→		
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	21	22	0	1	0	0	8	0	0	3	0	0	1	1
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	49	—————→									49	—————→		

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2019  
 Site ID: R1  
 Date/Time: 7/11/19 1020  
 Crew Members: KH, MC, JM  
 Latitude/Longitude: 34.28046 -119.30853  
 Flow (circle one): Flowing Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Moved Anupstream due to ocean influence. H-K on previously inaccessible dominant channel (water level too high and overhead vegetation)

**January—December Monthly In Situ Measurements:**  
 pH: 8.03 pH units EC: 1126  $\mu\text{S}/\text{cm}$   
 DO: 8.38 mg/L SC: 1236  $\mu\text{S}/\text{cm}$   
 DO: 93.3 % Salinity: 0.6 ppt  
 Water Temp: 20.3 °C  
 Flow (from discharge measurement): 18-20 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.00	0	0
2	5.00	0.40	0.74
3	5.80	0.40	1.06
4	6.00	0	0
5	<del>7.90</del>	0	0
6	8.00	1.00	0.40
7	10.00	1.30	1.09
8	12.00	1.20	1.15
9	14.00	1.40	1.00
10	16.00	1.25	1.07
11	18.00	1.10	1.02
12	20.00	1.20	0.99
13	22.00	1.30	0.62
14	24.00	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	7
PVC Delimiter (Area=12.6cm <sup>2</sup> )	4
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	452
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

**Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)**

Site: R1 Date: 7/11/19 Crew: KH MC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	6.3	0A	65A	(73P)	(87P)	(85P)	16	4	7	8	✓
AB	6	0A	60A	75A	87A	100P					
B	6	35A	51A	(69P)	(74P)	(0P)	10	10	17	8	
BC	4.75	0A	(25P)	71A	70A	(74P)					
C	4.5	0A	49A	55A	(47P)	(50P)	16	17	13	2	
CD	4.8	0A	(55P)	(50P)	(30P)	(5P)					
D	4.8	0A	2A	(35P)	(43P)	(0P)	17	16	12	17	
DE	5	(0P)	26A	(34P)	32A	(0P)					
E	4.6	10A	35A	(37P)	30A	(10P)	10	0	3	0	
EF	4.8	0A	(105P)	(85P)	<del>78P</del>	(0P)					
F	4.5	(0P)	(35P)	92A	65A	(0P)	9	<del>3</del>	11	17	✓
FG	4	0A	37A	70A	55A	42A					
G	4.1	0A	69A	80A	58A	0A	17	4	7	2	
GH	2.85	0A	37A	60A	48A	21A					
H	3.45	0A	25A	55A	54A	30A	17	17	17	12	
HI	2.3	0A	64A	65A	68A	3A					
I	3.3	Inaccess	35A	45A	40A	23A	17	17	17	17	
II	2.4	(0P)	40A	35A	44A	30A					
J	2.9	0A	15A	27A	35A	45A	17	17	17	17	
JK	2.5	0A	40A	35A	35A	25A					
K	1.6	15A	30A	35A	25A	15A	17	17	17	17	✓

Macroalgal  
different than  
May 2019

31/104

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2019  
 Site ID: R2  
 Date/Time: 7/11/19 0750  
 Crew Members: KH MC JM  
 Latitude/Longitude: 34-33937 -119-29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): New arrangement going in next to established camp. Occupants seem friendly and interested in what we were doing

**January—December Monthly In Situ Measurements:**  
 pH: 7.59 pH units EC: 942  $\mu\text{S/cm}$   
 DO: 7.85 mg/L SC: 1061  $\mu\text{S/cm}$   
 DO: 85.2 % Salinity: 0.5 ppt  
 Water Temp: 19.1 °C  
 Flow (from discharge measurement): 17.7 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.00	0	0
2	4.00	1.40	0.12
3	6.00	1.40	0.25
4	8.00	1.90	0.34
5	10.00	2.40	0.65
6	12.00	1.90	0.84
7	14.00	1.60	1.04
8	16.00	1.20	1.05
9	18.00	1.10	0.78
10	20.00	0.90	0.60
11	22.00	0.90	0.24
12	24.00	0.90	0.01
13	25.30	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	642
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 2 of 2

### Ventura River Algae TMDL Transect Measurements (for percent cover, May-September)

Site: R2 Date: 7/11/19 Crew: KH MC

Transect	Wetted <sup>m</sup> Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	7	OA	32P	36P	59P	OA	13	11	17	4	✓
AB	6.5	OP	12P	65P	55P	OP					
B	5.2	OA	20P	48P	55P	15P	12	10	17	11	
BC	4.4	OA	1P	77P	53P	47P					
C	5.7	OP	25P	28P	30P	12P	17	17	8	16	
CD	5	OA	18P	33P	45P	17P					
D	5	IA	42P	36P	33P	4P	17	17	17	17	
DE	9	OA	25P	78P	7P	OP					
E	9	OA	70P	66P	59P	15P	17	7	16	14	
EF	6	OA	66P	66P	80P	74P					
F	6.5	50P	63P	56P	47P	10P	15	5	10	7	✓
FG	8	OP	65A	77A	62P	10P					
G	8	OA	37P	56P	42P	1P	17	5	17	9	
GH	7.5	INACCESS	2P	24P	35P	1P					
H	7	OP	2P	DRY	<del>49P</del> <sup>56P</sup>	26P	17	17	17	17	
HI	6.5	OA	15P	32P	31P	OA					
I	7	40A	26P	23P	23P	OP	17	17	12	13	
II	7	OA	50P	39P	26A	OP					
J	7.5	OA	60A	49A	70A	OP	17	17	17	17	
JK	7	OA	33A	45P	42P	0 <del>42P</del>					
K	6	OA	34A	45P	39A	OP	17	17	17	17	✓

Handley  
camps in  
violet

77  
/103

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2019

Site ID: R3

Date/Time: 7/10/19 11:00

Crew Members: KH JM MC

---

Latitude/Longitude: 34-34584 -119-29978

Flow (circle one): Flowing / Ponded / Dry

Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To S

Photos (check):  Upstream  Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

**January—December Monthly *In Situ* Measurements:**

pH: 8.08 pH units EC: 932  $\mu\text{S}/\text{cm}$

DO: 9.32 mg/L SC: 1044  $\mu\text{S}/\text{cm}$

DO: 101.5 % Salinity: 0.50 ppt

Water Temp: 19.4 °C

Flow (from discharge measurement): 18.3 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0	0
2	4.5	0.40	0.07
3	5.5	1.30	0.80
4	6.5	1.20	1.75
5	7.5	1.20	1.84
6	8.5	1.20	2.10
7	9.5	1.10	2.41
8	10.5	1.10	2.63
9	11.5	0.95	1.24
10	12.5	0.90	2.09
11	13.5	0.80	1.39
12	14.5	0.50	0.62
13	15.5	0.50	-0.07
14	16.5	0.30	0.75
15	17.2	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	7
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	520
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R3 Date: 7/10/19 Crew: KH, MC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	10	OP	12P	35P	35P	OP	10	5	14	2	✓
AB	9	OA	25P	35P	27P	OP					
B	9.5	OP	28P	21P	17P	OP	8	7	11	2	
BC	11.5	OA	36P	17P	25P	OP					
C	12	OA	26A	30P	30P	OP	5	6	17	15	
CD	11	OA	24P	45P	37P	OP					
D	9	OA	9P	58P	62P	OP	9	5	17	2	
DE	9	20A	20P	41P	45P	OP					
E	12.5	OP	29P	33P	48P	48P	4	6	15	1	
EF	6.5	OA	33P	54P	57P	12P					
F	5.7	3P	32P	51P	40P	20P	10	10	17	7	✓
FG	6	OA	10P	40P	45P	45P					
G	5	3P	40P	47P	59P	5P	10	17	17	6	
GH	5.5	20A	50P	58P	42P	1P					
H	4	1A	36P	40P	45P	1P	9	9	12	4	
HI	4.7	10A	11P	40P	30P	OP					
I	4.5	6P	22P	30P	40P	25P	7	15	7	4	
II	5	OP	20P	6P	37P	5P					
J	7	OP	16P	25P	35P	OP	9	5	10	13	
JK	7	6P	18P	31P	<del>27P</del> 5P	OP					
K	9	OP	21P	45P	26P	5P	10	8	7	7	✓

93  
105

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 07 2019  
 Site ID: R4  
 Date/Time: 7/10/19 0755  
 Crew Members: RH, MC, JM  
 Latitude/Longitude: 34.37997 -119.30861  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.08 pH units EC: 870  $\mu\text{S}/\text{cm}$   
 DO: 7.5 mg/L SC: 990  $\mu\text{S}/\text{cm}$   
 DO: 76.5 % Salinity: 0.5 ppt  
 Water Temp: 18.7 °C  
 Flow (from discharge measurement): 14.4 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	16.00	0.20	0.0
2	17.00	0.20	-0.09
3	19.00	0.60	-0.01
4	21.00	0.40	0.10
5	23.00	0.20	0.84
6	25.00	0.30	1.13
7	27.00	0.40	1.67
8	29.00	0.70	1.05
9	31.00	0.60	1.33
10	33.00	0.70	0.33
11	35.00	0.60	0.58
12	37.00	0.30	1.23
13	39.00	0.40	1.44
14	41.00	0.60	0.35
15	43.00	0.50	1.80
16	45.00	0.50	1.33
17	47.00	0.60	1.18
18	49.00	0.20	1.19
19	51.00	0.40	0.07
20	53.00	0.60	0.10
	55.00	0.0	0.0

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	7
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	446
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R4 Date: 7/10/19 Crew: R4, MC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	11	OP	29P	17P	25P	OP	10	4	4	4	✓
AB	11	OP	19P	16P	32P	OP					
B	13.5	OP	10P	40P	44P	OP	11	17	12	7	
BC	11.5	OP	10P	43P	41P	OP					
C	8.5	OA	8P	40P	55P	OP	11	4	10	5	
CD	11.5	OA	5P	26P	57P	OA					
D	8	OP	19P	47P	45P	OA	10	14	15	4	
DE	7	OA	46P	76P	61P	OP					
E	7	OP	46P	58P	44P	OP	17	5	15	15	
EF	5	OA	50P	50P	30P	OP					
F	6	OA	25P	25P	8P	OP	4	1	1	6	✓
FG	9	OP	1P	20P	31P	OP					
G	9	OP	12P	18P	25P	OP	7	1	3	0	
GH	9.5	OP	15P	20P	24P	OP					
H	9	OP	20P	15P	22P	27P	13	0	4	1	
HI	10.5	OA	25P	7P	10P	OP					
I	10.5	OA	25P	35P	14P	4P	5	0	0	3	
IJ	8.5	OP	30P	35P	23P	OP					
J	9.5	OP	24P	26P	20P	OP	11	0	4	6	
JK	8	OP	23P	31P	30P	OP					
K	7	OA	26P	24P	14P	OP	0	0	1	2	✓

95  
105

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2019

Site ID: SA

Date/Time: 7/10/19 0935

Crew Members: KU MC JM

---

Latitude/Longitude: 34-38081 -119-30735

Flow (circle one): Flowing / Poned / Dry

Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

Wind Direction: Blowing (circle one) From / To \_\_\_\_\_

Photos (check):  Upstream  Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.5	0	0
2	5.0	0.30	0.07
3	6.0	0.60	0.09
4	7.0	0.50	0.14
5	8.0	0.65	0.23
6	9.0	0.60	0.36
7	10.0	0.60	0.20
8	11.0	0.50	0.06
9	12.0	0.50	-0.01
10	14.1	0	0
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**

pH: 7.84 pH units EC: 1327  $\mu\text{S}/\text{cm}$

DO: 9.77 mg/L SC: 1476  $\mu\text{S}/\text{cm}$

DO: 106.5 % Salinity: 0.70 ppt

Water Temp: 19.7 °C

Flow (from discharge measurement): 0.66 cfs

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	<del>0</del>
PVC Delimiter (Area=12.6cm <sup>2</sup> )	11
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	<del>0</del>
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	525
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

**Samples Collected (check box)**

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: SA Date: 7/10/19 Crew: KH, MC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	5	OP	15P	15A	6P	OA	17	17	17	17	✓
AB	5	OP	43P	54P	26A	OA					
B	3-25	OP	25P	27P	21P	OA	17	17	10	17	
BC	4-1	OP	5P	17P	DRY	OP					
C	6-8	1P	24P	DRY	OA	OP	17	17	17	17	
CD	8-5	OP	5P	OA	6P	OP					
D	6	OP	10P	10P	10P	OP	6	5	3	7	
DE	5	OP	5P	10P	5P	OP					
E	5	OP	5P	3P	8P	OP	4	4	1	3	
EF	8	OP	5P	5P	5P	OP					
F	8	OP	10P	5P	2P	OA	1	8	17	9	✓
FG	7	OP	12P	8P	6P	OP					
G	6	6P	15P	10P	8P	OP	0	3	7	5	
GH	8	25P	40P	7P	5P	20A					
H	6	1P	1P	5P	22P	OP	0	15	13	3	
HI	5	OP	5P	10P	14P	OP					
I	5-3	1P	10P	15P	19P	OP	4	17	17	8	
IJ	5-5	OP	5P	5P	16P	OP					
J	5	OP	4P	3P	15P	OP	0	7	4	8	
JK	5	OP	5P	8P	8P	OP					
K	7	OP	7P	18P	20P	OP	5	0	10	7	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): JULY 2019  
 Site ID: CL  
 Date/Time: 7/10/19 1255  
 Crew Members: KH, MC, JM  
 Latitude/Longitude: 34-34208 -119-28637  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To E  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.25 pH units EC: 4267  $\mu\text{S}/\text{cm}$   
 DO: 137.9 mg/L SC: 3798  $\mu\text{S}/\text{cm}$   
 DO: 10.07 % Salinity: 2.00 ppt  
 Water Temp: 31.5 °C  
 Flow (from discharge measurement): 0.10 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	9.60	0	0
2	10.10	0.20	0.21
3	10.40	0.20	0.80
4	10.70	0.20	0.37
5	11.00	0.20	-0.02
6	11.30	0.20	0.29
7	11.60	0	0
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 100m

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	8
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	399
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: CL Date: 7/10/19 Crew: KH, MC

Transect	Wetted Width <sup>m</sup> (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in) <sup>cm</sup>					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	3-7	OP	70P	OP	OP	OP	0	0	0	0	✓
AB	2-2	OP	12P	6P	2P	OP					
B	1.5	OP	12P	20P	27P	25P	4	7	4	4	
BC	2.5	OP	3P	OP	4P	OP					
C	4	OP	DRY	DRY	9P	10P	0	0	0	1	
CD	4.2	OP	3P	3P	6P	5P					
D	1.5	OP	7P	7P	4P	OP	0	2	11	1	
DE	1-1	OP	2P	6P	4P	OP					
E	2-3	OP	8P	3P	1P	OP	0	4	8	6	
EF	1-3	OP	6P	4P 5P	4P	OP					
F	3-3	OP	OP	4P	5P	OP	0	0	0	0	✓
FG	4	OP	OP	1P	2P	OP					
G	3.6	OP	4P	4P	2P	OP	0	3	5	0	
GH	2.4	OA	6P	5P	2P	OP					
H	2-75	OP	5P	5P	OP	OP	1	0	0	1	
HI	1-5	1P	10P	7P	6P	OP					
I	2.4	IA	5P	10P	5P	OP	2	0	0	0	
IJ	1-6	OP	12P	11P	9P	OP					
J	1-4	OP	10P	13P	9P	OP	17	6	2	8	
JK	2-05	OP	1P	5P	4P	OP					
K	4-9	OP	5P	DRY	DRY	OP	7	0	0	1	✓

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## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

### Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): AUGUST 2019

Date: 8/14/19 1340

Crew Members: KH MC AW

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 1025 Time of High Tide: 1025

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

1530 Wind Direction: Blowing From / To S

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): clean + birds in area ~50 mostly gulls from open east end. West end closed

Horseshoe shaped estuary at west end more algae than east end

### TRANSECT 1

#### In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.62 pH units <sup>CO<sub>2</sub></sup> 8.62 EC: 9830 μS/cm Water Temp: 24.4 °C

DO: 14.91 mg/L SC: 9940 μS/cm

DO: 181.2 % Salinity: 5.6 ppt

#### Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton):

Volume filtered per sample: \_\_\_\_\_

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>1345</u>	End Time: <u>1354</u>
Start Latitude: <u>34.27542</u>	Start Longitude: <u>-119.30747</u>	
End Latitude: <u>34.27520</u>	End Longitude: <u>-119.30765</u>	
PVC Latitude:	PVC Longitude:	

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>5.4</u>	<u>6.9</u>	<u>9.6</u>	<u>12.3</u>	<u>17.3</u>	<u>18.2</u>	<u>20.3</u>	<u>22.4</u>	<u>23.9</u>	<u>28.6</u>				
Water Depth (must be ≤ 0.3 m)											<u>0.3</u>			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>3</sup> Int <sup>3</sup> Des Dd	Frsh <sup>6</sup> Int <sup>10</sup> Des Dd	Frsh <sup>2</sup> Int <sup>2</sup> Des Dd	Frsh <sup>2</sup> Int Des Dd	Frsh <sup>14</sup> Int <sup>3</sup> Des Dd	Frsh <sup>10</sup> Int Des Dd	Frsh <sup>2</sup> Int <sup>2</sup> Des Dd	Frsh <sup>19</sup> Int Des Dd	Frsh <sup>14</sup> Int Des Dd	Frsh <sup>6</sup> Int <sup>1</sup> Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>39</u>	<u>16</u>	<u>4</u>	<u>2</u>	<u>17</u>	<u>10</u>	<u>14</u>	<u>19</u>	<u>14</u>	<u>7</u>	<u>4</u>	<u>5</u>	<u>0</u>	<u>0</u>
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	<u>49</u>										<u>49</u>			

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## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: 8/14/19 Crew: KH, MC, AW

### TRANSECT 2

*west end*

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1407</u>					End Time: <u>1418</u>							
Start Latitude: <u>34.27588</u>		Start Longitude: <u>-119.30904</u>												
End Latitude: <u>34.27564</u>		End Longitude: <u>-119.30923</u>												
PVC Latitude:		PVC Longitude:												
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>5.4</u>	<u>6.9</u>	<u>9.6</u>	<u>12.3</u>	<u>17.3</u>	<u>18.2</u>	<u>20.3</u>	<u>22.4</u>	<u>23.9</u>	<u>28.6</u>				
Water Depth (must be ≤ 0.3 m)														
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>31</sup> Int Des Dd	Frsh <sup>47</sup> Int Des Dd	Frsh <sup>48</sup> Int Des Dd	Frsh <sup>33</sup> Int <sup>14</sup> Des Dd <sup>2</sup>	Frsh <sup>48</sup> Int Des Dd	Frsh <sup>47</sup> Int Des Dd	Frsh <sup>24</sup> Int Des Dd	Frsh <sup>25</sup> Int <sup>24</sup> Des Dd	Frsh <sup>25</sup> Int <sup>24</sup> Des Dd	Frsh <sup>31</sup> Int <sup>18</sup> Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh <sup>43</sup> Int <sup>6</sup> Des Dd	Frsh <sup>44</sup> Int <sup>3</sup> Des Dd
No. Crosshairs with Macroalgae Present	<u>40</u>	<u>47</u>	<u>48</u>	<u>49</u>	<u>48</u>	<u>47</u>	<u>24</u>	<u>16</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	<u>49</u>	—————→									<u>49</u>	—————→		

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### TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1421</u>					End Time: <u>1427</u>							
Start Latitude: <u>34.27579</u>		Start Longitude: <u>-119.30943</u>												
End Latitude: <u>34.27606</u>		End Longitude: <u>-119.30948</u>												
PVC Latitude:		PVC Longitude:												
	<b>MACROALGAE—LAND BASED</b>										<b>FLOATING MACROALGAE</b>			
Quadrat	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>5.4</u>	<u>6.9</u>	<u>9.6</u>	<u>12.3</u>	<u>17.3</u>	<u>18.2</u>	<u>20.3</u>	<u>22.4</u>	<u>23.9</u>	<u>28.6</u>				
Water Depth (must be ≤ 0.3 m)														
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	3Frsh <sup>3</sup> Int <sup>1</sup> Des Dd	Frsh <sup>4</sup> Int Des Dd	Frsh <sup>4</sup> Int Des Dd	Frsh <sup>6</sup> Int Des Dd	Frsh <sup>30</sup> Int Des <sup>2</sup> Dd <sup>3</sup>	Frsh <sup>26</sup> Int Des Dd	Frsh <sup>2</sup> Int Des Dd	Frsh <sup>47</sup> Int Des <sup>1</sup> Dd	Frsh <sup>46</sup> Int Des Dd	Frsh <sup>47</sup> Int Des <sup>2</sup> Dd	Frsh <sup>1</sup> Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>3</u>	<u>4</u>	<del>4</del> <u>4</u>	<u>6</u>	<u>32</u>	<u>26</u>	<u>2</u>	<u>48</u>	<u>46</u>	<u>49</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	<u>49</u>	—————→									<u>49</u>	—————→		

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): AUG 2019  
 Site ID: R1  
 Date/Time: 8/15/19 1040  
 Crew Members: KH JF BJ  
 Latitude/Longitude: 34.28046 -119.30853  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From S To S  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): At least ~4 piles of debris - camping gear/banks/clothes near A on trail. Toilet drain also used in vcs

**January—December Monthly In Situ Measurements:**  
 pH: 8.09 pH units EC: 1196  $\mu\text{S}/\text{cm}$   
 DO: 7.96 mg/L SC: 1300  $\mu\text{S}/\text{cm}$   
 DO: 88.8 % Salinity: 0.7 ppt  
 Water Temp: 20-8 °C  
 Flow (from discharge measurement): 11.8 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.5	0	0
2	5.5	0.4	0.27
3	6.0	0.4	0.6
4	6.2	0	0
5	8.3	0	0
6	9.0	1.0	0.42
7	11.0	1.1	0.58
8	13.0	1.2	0.94
9	15.0	1.2	0.81
10	17.0	1.1	1.08
11	19.0	1.0	0.75
12	21.0	1.2	0.53
13	23.0	1.25	0.16
14	25.0	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 50

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	0
PVC Delimiter (Area=12.6cm <sup>2</sup> )	3
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	8
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	592
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

### Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R1 Date: 8/15/19 Crew: CH, TP, BT

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	4.75	0A	(24P)	70A	66A	8A	1	5	6	0	✓
AB	4.7	0A	41A	54A	50A	0A					
B	5.15	0A	45A	54A	(17P)	11A	17	17	17	17	
BC	4.8	0A	40A	42A	423A	(5P)					
C	6.5	0A	(33P)	31A	<del>5132P</del>	(3P)	5	1	4	0	
CD	5	10A	32A	32A	34A	4A					
D	5	60A	82A	85A	64A	2A	9	3	8	1	
DE	5	0A	80A	70A	(61P)	27A					
E	4.4	0A	51A	65A	55A	6A	13	3	3	1	
EF	3.75	0A	65A	76A	(45P)	34A					
F	3	23A	57A	(65P)	66A	(2P)	11	2	0	1	✓
FG	2.25	14A	42A	(47P)	(43P)	16A					
G	2.35	40A	70A	65A	(50P)	6A	17	17	17	16	
GH	1.9	0A	40A	0A	20A	7A					
H	3	20A	40A	47A	41A	(36P)	16	16	17	17	
HI	2.55	0A	40A	28A	(35P)	30A					
I	2	(10P)	45A	36A	25A	(20P)	17	17	10	14	
J	2	0A	50A	45A	18A	13A					
J	8.5	10A	34A	(52P)	(65P)	(7P)	4	11	16	9	
JK	9.4	0A	41A	80A	(99P)	11A (MISS)					
K	8	0A	48A	103A	10000P	25P	17	17	17	16	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): AUG 2019  
 Site ID: R2  
 Date/Time: 8/15/19 0820  
 Crew Members: KH, JK, MB, RS  
 Latitude/Longitude: 34-33937, -119-29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To S  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.84 pH units EC: 1023  $\mu\text{S}/\text{cm}$   
 DO: 8.25 mg/L SC: 1125  $\mu\text{S}/\text{cm}$   
 DO: 91.7 % Salinity: 0.6 ppt  
 Water Temp: 20.2 °C  
 Flow (from discharge measurement): 13.0 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.0	$\emptyset$	$\emptyset$
2	3.5	1.0	$\emptyset$
3	5.0	1.5	0.06
4	7.0	1.5	0.13
5	9.0	2.1	0.26
6	11.0	2.3	0.44
7	13.0	1.9	0.90
8	15.0	1.45	0.75
9	17.0	1.05	0.50
10	19.0	1.05	0.52
11	21.0	0.9	0.56
12	23.0	0.8	0.31
13	25.0	0.6	-0.04
14	26.1	$\emptyset$	$\emptyset$
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	2
PVC Delimiter (Area=12.6cm <sup>2</sup> )	3
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	6
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	556
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

### Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R2 Date: 8/15/19 Crew: KH, JF, BT

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	6	OA	35A	(20P)	50A	OA	6	14	17	6	✓
AB	5	OA	30A	45A	49A	OA					
B	5.25	OA	5A	48A	51A	15A	7	5	17	8	
BC	3.1	OA	24A	57A	46A	3A					
C	4	1A	(0P)	(6P)	44A	29A	17	16	4	14	
CD	5.1	OA	30A	29A	45A	20A					
D	5	OA	30A	(16P)	(32P)	6A	17	9	6	16	
DE	8	OA	30A	8A	(26P)	(3P)					
E	10.2	OA	58A	(73P)	(15P)	(2P)	16	8	3	10	
EF	8	OA	62A	72A	(42P)	OA					
F	8	OA	61A	57A	(46P)	OA	16	2	6	5	✓
FG	6.5	OA	43A	69A	69A	6A					
G	7.5	OA	36A	(58P)	44A	(3P)	11	7	10	4	
GH	6.8	INACCESS	25A	40A	(16P)	(0P)					
H	8	INACCESS	DRY	OA	(29P)	(2P)	17	17	10	16	
HI	7	7A	24A	31A	34A	OA					
I	6.5	OA	17A	(15P)	24A	(0P)	17	17	17	16	
J	6.25	5A	45A	25A	(47P)	35A					
J	6.5	6A	45A	44A	68A	(4P)	17	17	17	17	
JK	6.5	OA	30A	30A	42A	OA					
K	5.5	OA	31A	37A	37A	OA	17	17	17	17	✓

(Camp)  
part of plot in use next to stream  
clear channels remain from 2012 to bank on ground

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): AUG 2019

Site ID: R3

Date/Time: 8/11/19 1130

Crew Members: KH, MC, AW

Latitude/Longitude: 34-34584 -119-29978

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From To S

Photos (check):  Upstream  Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

**January—December Monthly *In Situ* Measurements:**

pH: 8.32 pH units EC: 963  $\mu\text{S}/\text{cm}$

DO: 9.45 mg/L SC: 1056  $\mu\text{S}/\text{cm}$

DO: 105.7 % Salinity: 0.5 ppt

Water Temp: 20.4 °C

Flow (from discharge measurement): 12 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	5.5	$\emptyset$	$\emptyset$
2	6.5	0.9	0.10
3	7.5	1.1	0.53
4	8.5	1.1	1.62
5	9.5	1.0	1.89
6	10.5	1.5	1.73
7	11.5	0.9	2.10
8	12.5	0.9	1.18
9	13.5	0.65	1.86
10	14.5	0.45	1.67
11	15.5	0.35	1.13
12	16.5	0.3	1.58
13	18.7	$\emptyset$	$\emptyset$
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	3
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	4
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	429
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R3 Date: 8/14/19 Crew: PH, MC, AW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	6.5	OP	19P	30P	(35A)	(8A)	6	4	7	0	✓
AB	11	(0A)	16P	31P	(20A)	(5A)					
B	9.5	(0A)	(19A)	23P	(21A)	(5A)	5	6	7	1	
BC	11.7	(0A)	(23A)	(6A)	(11A)	(5A)					
C	11	(0A)	(25A)	(22A)	(22A)	OP	NR	NR	NR	NR	
CD	9	(0A)	(24A)	(41A)	(35A)	(12A)					
D	8.7	(0A)	8P	(54A)	(60A)	2P	8	4	14	1	
DE	7.4	(0A)	15P	34P	(42A)	(10A)					
E	8	(0A)	24P	(38A)	40P	(42A)	2	4	9	0	
EF	7	OP	(25A)	(48A)	47P	OP					
F	6-35	(10A)	(27A)	(38A)	(40A)	(15A)	8	8	17	5	✓
FG	5-85	OP	2P	25P	(30A)	(5A)					
G	4.9	(0A)	(35A)	(30A)	30P	(40A)	14	9	17	15	
GH	4.7	(0A)	(10A)	(20A)	(17A)	(0A)					
H	4.7	(0A)	(35A)	(30A)	(31A)	2P	14	12	17	11	
HI	3.9	(9A)	44P	40P	(20A)	(0A)					
I	5.5	OP	18P	28P	30P	(12A)	17	7	12	7	
IJ	7.5	OP	(24A)	45P	(25A)	(20A)					
J	7.5	OP	17P	32P	35P	(5A)	12	1	9	9	
JK	7	OP	19P	35P	13P	OP					
K	6.5	(23A)	(14A)	25P	(35A)	(0A)	6	7	17	9	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** AUG 2019  
**Site ID:** TMDL-R4  
**Date/Time:** 8/14/19 0800  
**Crew Members:** KH, MC, AW  


---

**Latitude/Longitude:** 34.37997 -119.30861  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.38 pH units EC: 903  $\mu\text{S}/\text{cm}$   
 DO: 6.46 mg/L SC: 1.018  $\mu\text{S}/\text{cm}$   
 DO: 70.1 % Salinity: 0.5 ppt  
 Water Temp: 19.1 °C  
 Flow (from discharge measurement): 7.5 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	15.0	0	0
2	16.0	0.25	0.02
3	18.0	0.35	0.34
4	20.0	0.25	0.33
5	23.0	0.20	0.45
6	26.0	0.35	0.59
7	29.0	0.30	0.99
8	32.0	0.60	0.87
9	35.0	0.20	0.71
10	38.0	0.40	0.66
11	41.0	0.35	0.55
12	44.0	0.40	0.78
13	47.0	0.40	0.23
14	50.0	0.65	0.33
15	53.0	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
**Reach Length** (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): 150

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	0
PVC Delimiter (Area=12.6cm <sup>2</sup> )	1
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	4
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	404
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

### Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: 24 Date: 8/14/19 Crew: KH, MC

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	9	17P	20P	(3A)	17P	3P	14	1	07	0	✓
AB	11.5	2P	14P	14P	(31A)	(2A)					
B	12.5	0P	10P	19P	(39A)	(5A)	8	0	6	5	
BC	11.5	0P	2P	24P	(39A)	(5A)					
C	9	(5A)	0P	(39A)	(35A)	(2A)	8	0	11	1	
CD	11.2	(0A)	0P	34P	(55A)	(10A)					
D	8	0P	16P	50P	38P	(9A)	8	17	8	0	
DE	8.5	(0A)	24P	42P	(51A)	(40A)					
E	8	0P	42P	60P	69P	20P	17	8	16	17	
EF	6	0P	50P	DRY	25P	(8A)					
F	3-3	(20A)	56P	35P	20P	(8A)	17	17	1	8	✓
FG	8	0P	3P	13P	23P	24P					
G	11	0P	8P	14P	24P	3P	12	1	2	0	
GH	9.5	0P	4P	11P	16P	10P					
H	10	(0A)	25P	(13A)	(11A)	5P	14	0	0	3	
HI	10.5	(0A)	24P	(5A)	4P	(1A)					
I	9.5	0P	20P	30P	20P	0P	8	3	0	1	
U	8	0P	24P	(4A)	23P	(5A)					
J	8.5	0P	15P	(15A)	23P	(5A)	7	0	4	4	
JK	7.5	0P	21P	10P	11P	1P					
K	10	(0A)	24P	10P	15P	(0A)	0	0	0	0	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): AUG 2019

Site ID: SA

Date/Time: 8/14/19 0930

Crew Members: KH MC AW

Latitude/Longitude: 34-38081 -119-30735

Flow (circle one): Flowing / Poned / Dry

Wind Strength:  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

Wind Direction: Blowing (circle one) From / To W

Photos (check):  Upstream  Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):

**January—December Monthly *In Situ* Measurements:**

pH: 7.37 pH units EC: 909  $\mu\text{S}/\text{cm}$

DO: 2.49 mg/L SC: 1057  $\mu\text{S}/\text{cm}$

DO: 26.2 % Salinity: 0.5 ppt

Water Temp: 12.7 °C

Flow (from discharge measurement): <0.01 cfs

**Samples Collected (check box)**

January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4	0	0
2	4.5	0.4	-0.03
3	5	0.3	-0.05
4	6	0.35	-0.01
5	7	0.4	0
6	8	0.4	0
7	9	0.5	0
8	10	0.5	-0.03
9	11.5	0	0
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	7
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	0
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	398
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

**Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)**

Site: 8/17/19 SA Date: 8/17/19 Crew: KH, MC, AW

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/Downstream
A	4.15	OA	16A	22A	25A	12A	17	17	17	17	✓
AB	3.5	OA	10P	21A	21P	OP					
B	4	OA	10A	6A	OP	2A	17	17	17	17	
BC	2.45	OA	17A	12P	9P	OP					
C	1.5	1A	4A	3P	OP	OP	17	16	17	14	
CD	5.5	OP	14P	OP	OA	OP					
D	6	OP	2P	1P	5P	OA	3	0	2	1	
DE	6.5	OA	1P	1P	1P	OA					
E	7	OP	5P	2P	1P	OP	1	16	17	7	
EF	6	5P	8P	4P	2P	OP					
F	6	10A	4P	4P	4P	OP	0	2	7	6	✓
FG	5.5	OA	55P	12P	2P	OP					
G	5	1P	OP	OP	16P	OP	0	16	15	0	
GH	4.5	OP	4P	6P	12P	OA					
H	5	OA	2P	10P	10P	OA	4	17	17	15	
HI	5	1P	DRY	OP	11P	OP					
I	2.55	OP	OP	2P	15P	OP	0	9	8	8	
J	4	OP	5P	5P	4P	OP					
J	4.05	OP	5P	15P	19P	OA	5	0	5	5	
JK	4	OP	5P	15P	16P	10P					
K	3.3	10P	10P	13P	5P	OP	0	0	7	6	✓

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# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 2

## Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): SEPTEMBER 2019

Date: 9/19 1320

Crew Members: KH, AW, SP

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 1340 Time of High Tide: 0833/1930

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To S

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): Est n some shape as Aug '19 Paddleboarder in estuary 2 people fishing. 100's of gulls in air + on water. Transects 1+2 were east (closed) end of estuary. Transect 3 on east (restricted) end.

Berm open at east end along rip rap.

### TRANSECT 1

#### In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec): (2) 8.22 2715 2454  
 pH: 8.03 pH units (3) 8.23 EC: 2950  $\mu\text{S}/\text{cm}$  Water Temp: 22.9  $^{\circ}\text{C}$   
 DO: 10.30 mg/L SC: 2990  $\mu\text{S}/\text{cm}$   
 DO: 120.6 % Salinity: 1.5 ppt

#### Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:

Dry Season Algae (May—Sep):

Chlorophyll a (phytoplankton):   
 Volume filtered per sample: \_\_\_\_\_

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	Start Time: <u>1320</u>	End Time: <u>1328</u>
Start Latitude: <u>34.27592</u>	Start Longitude: <u>-119.30902</u>	
End Latitude: <u>34.27571</u>	End Longitude: <u>-119.30920</u>	
PVC Latitude:	PVC Longitude:	

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>0.7</u>	<u>7.1</u>	<u>8.9</u>	<u>13.3</u>	<u>17.4</u>	<u>20.7</u>	<u>23.8</u>	<u>25.3</u>	<u>26.7</u>	<u>28.2</u>				
Water Depth (must be $\leq 0.3$ m)											<u>0.3</u>			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>41</sup> Int <sup>6</sup> Des Dd	Frsh <sup>44</sup> Int <sup>5</sup> Des Dd	Frsh <sup>49</sup> Int Des Dd	Frsh <sup>47</sup> Int <sup>2</sup> Des Dd	Frsh <sup>41</sup> Int <sup>5</sup> Des Dd <sup>3</sup>	Frsh <sup>38</sup> Int <sup>5</sup> Des Dd <sup>6</sup>	Frsh <sup>39</sup> Int <sup>10</sup> Des Dd	Frsh <sup>33</sup> Int <sup>6</sup> Des Dd	Frsh <sup>39</sup> Int <sup>8</sup> Des Dd	Frsh <sup>27</sup> Int <sup>22</sup> Des Dd	Frsh <sup>49</sup> Int Des Dd	Frsh <sup>49</sup> Int Des Dd	Frsh Int Des Dd	Frsh Int Des Dd
No. Crosshairs with Macroalgae Present	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>47</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>	<u>49</u>
No. Crosshairs with Macroalgae Absent	<u>0</u>										<u>0</u>			
Crosshair Total (must equal 49)	<u>49</u>										<u>49</u>			

488  
490

100 196  
196

WEST  
END

## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 2 of 2

Ventura River Algae TMDL— Estuary Transect Measurements Date: 9/9/19 Crew: KH, AW, SP

WEST END

### TRANSECT 2

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1349</u>				End Time: <u>1355</u>			
Start Latitude: <u>34.27582</u>		Start Longitude: <u>-119.30946</u>							
End Latitude: <u>34.27608</u>		End Longitude: <u>-119.30944</u>							
PVC Latitude:		PVC Longitude:							

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>0.7</u>	<u>7.1</u>	<u>8.9</u>	<u>13.3</u>	<u>17.4</u>	<u>20.7</u>	<u>23.8</u>	<u>25.3</u>	<u>26.7</u>	<u>28.2</u>				
Water Depth (must be ≤ 0.3 m)											<u>0.3</u>			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>4</sup> Int Des Dd	Frsh <sup>4</sup> Int Des Dd	Frsh <sup>1</sup> Int Des Dd	Frsh <sup>38</sup> Int <sup>2</sup> Des Dd	Frsh <sup>42</sup> Int <sup>7</sup> Des Dd	Frsh <sup>40</sup> Int <sup>9</sup> Des Dd	Frsh <sup>5</sup> Int <sup>43</sup> Des Dd	Frsh <sup>23</sup> Int <sup>24</sup> Des Dd	Frsh <sup>42</sup> Int Des Dd	Frsh <sup>30</sup> Int <sup>16</sup> Des Dd	Frsh Int Des Dd	Frsh Int Des Dd	Frsh <sup>49</sup> Int Des Dd	Frsh <sup>49</sup> Int Des Dd
No. Crosshairs with Macroalgae Present	<u>0</u>	<u>4</u>	<u>1</u>	<u>39</u>	<u>49</u>	<u>49</u>	<u>48</u>	<u>47</u>	<u>42</u>	<u>46</u>	<u>0</u>	<u>0</u>	<u>49</u>	<u>49</u>
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	<u>49</u>	—————→									<u>49</u>	—————→		

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EAST END

### TRANSECT 3

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward		Start Time: <u>1400</u>				End Time: <u>1407</u>			
Start Latitude: <u>34.27538</u>		Start Longitude: <u>-119.30752</u>							
End Latitude: <u>34.27514</u>		End Longitude: <u>-119.30762</u>							
PVC Latitude:		PVC Longitude:							

Quadrat	MACROALGAE—LAND BASED										FLOATING MACROALGAE			
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
Distance (m)	<u>0.7</u>	<u>7.1</u>	<u>8.9</u>	<u>13.3</u>	<u>17.4</u>	<u>20.7</u>	<u>23.8</u>	<u>25.3</u>	<u>26.7</u>	<u>28.2</u>				
Water Depth (must be ≤ 0.3 m)											<u>0.3</u>			
Condition [Frsh=Fresh, Int=Intermediate, Des=Dessicated, Dd=Dead]	Frsh <sup>36</sup> Int <sup>4</sup> Des Dd	Frsh <sup>12</sup> Int <sup>3</sup> Des Dd	Frsh <sup>8</sup> Int <sup>5</sup> Des Dd	Frsh <sup>14</sup> Int <sup>9</sup> Des Dd	Frsh <sup>21</sup> Int Des Dd	Frsh Int Des Dd <sup>1</sup>	Frsh <sup>3</sup> Int <sup>2</sup> Des Dd	Frsh <sup>1</sup> Int Des Dd <sup>2</sup>	Frsh <sup>10</sup> Int Des Dd	Frsh <sup>8</sup> Int Des Dd	Frsh <sup>48</sup> Int Des Dd	Frsh <sup>47</sup> Int Des Dd	Frsh <sup>1</sup> Int Des Dd	Frsh <sup>1</sup> Int Des Dd
No. Crosshairs with Macroalgae Present	<u>40</u>	<u>15</u>	<u>13</u>	<u>22</u>	<u>21</u>	<u>1</u>	<u>5</u>	<u>3</u>	<u>10</u>	<u>8</u>	<u>48</u>	<u>47</u>	<u>1</u>	<u>1</u>
No. Crosshairs with Macroalgae Absent														
Crosshair Total (must equal 49)	<u>49</u>	—————→									<u>49</u>	—————→		

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SEPT 2019  
 Site ID: R1  
 Date/Time: 9/11/19 1050  
 Crew Members: KH, BJ, SP  
 Latitude/Longitude: 34-28046 -119-30853  
 Flow (circle one): Flowing / Poned / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Mon doing laundry in river

**January—December Monthly In Situ Measurements:**  
 pH: 8.26 pH units EC: 1171  $\mu\text{S}/\text{cm}$   
 DO: 8.02 mg/L SC: 1285  $\mu\text{S}/\text{cm}$   
 DO: 88.9 % Salinity: 0.6 ppt  
 Water Temp: 20.4 °C  
 Flow (from discharge measurement): 8.54 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.5	0	0
2	5.0	0.4	0.21
3	7.0	0	0
4	9.6	0	0
5	9.8	1.0	0.39
6	10.0	1.1	0.46
7	11.6	1.2	0.51
8	13.0	1.1	0.73
9	14.5	1.3	0.66
10	16.0	1.3	0.54
11	17.5	1.2	0.65
12	19.0	1.1	0.49
13	20.5	1.1	0.43
14	22.0	1.25	0.26
15	23.5	1.25	0.15
16	25.2	0	0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	2
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	5
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	526
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R1 Date: 9/11/19 Crew: KH, BJ, SP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	4.9	45A	60A	70A	71A	168A	4	2	4	1	✓
AB	4.6	0A	48A	49A	51A	0A					
B	5.2	35A	40A	22A	34A	0A	17	17	7	17	
BC	4.7	0A	45A	50A	29A	20A					
C	3.6	0A	34A	32A	19A	0A	17	11	7	15	
CD	3.53	0A	25A	25A	36A	0A					
D	4.8	0A	10A	35A	35A	0A	10	2	5	5	
DE	4.25	24A	31A	29A	38A	0A					
E	6	0A	72A	66A	63A	0A	11	0	5	0	
EF	5.7	0A	90A	91A	75A	0A					
F	4.5	0A	85A	79A	65A	0A	11	6	12	2	✓
FG	4.5	0A	45A	71A	61A	0A					
G	4.5	0A	50A	61A	57A	0A	13	3	7	4	
GH	4.15	10A	76A	78A	53A	37A					
H	3.85	0A	85A	67A	53A	45A	16	2	8	2	
HI	3.1	0A	51A	52A	44A	0A					
I	3.1	0A	27A	37A	36A	0A	17	17	17	15	
IJ	2.5	20A	65A	61A	47A	3A					
J	2.75	0A	52A	43A	48A	0A	17	17	17	17	
JK	3.15	7A	27A	16A	11A	0A					
K	2.65	23A	38A	32A	23A	0A	17	17	17	17	✓

laundry being washed

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SEPT 2019  
 Site ID: R2  
 Date/Time: 9/11/19 0845  
 Crew Members: KH, BJ, SP  
 Latitude/Longitude: 34.35937 -119.29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Homeless camp/structure at ~ E-GH

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3	0	0
2	4.5	1.4	-0.05
3	6.0	1.4	0.07
4	7.5	2.0	0.06
5	9.0	2.0	0.19
6	10.5	2.4	0.39
7	12.0	1.8	0.54
8	13.5	1.6	0.71
9	15.0	1.45	0.57
10	16.5	1.1	0.52
11	18.0	1.1	0.66
12	19.5	0.9	0.44
13	21.0	0.8	0.40
14	22.5	0.8	0.17
15	24.0	0.8	0.02
16	26.0	0	0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.08 pH units EC: 996  $\mu\text{S}/\text{cm}$   
 DO: 8.12 mg/L SC: 1113  $\mu\text{S}/\text{cm}$   
 DO: 89.0 % Salinity: 0.6 ppt  
 Water Temp: 19.5 °C  
 Flow (from discharge measurement): 9.85 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	4
PVC Delimiter (Area=12.6cm <sup>2</sup> )	5
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	2
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	434
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R2 Date: 9/11/19 Crew: RH, BJ, SP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in) <sup>cm</sup>					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	6.5	0A	20A	53A	53A	0A	5	12	11	6	✓
AB	4	4A	30A	50A	46A	0A					
B	5.5	0A	17A	38A	43A	0A	9	8	17	6	
BC	4.2	0A	35A	52A	41A	0A					
C	3.2	0A	DRY	40A	33A	0A	17	13	15	16	
CD	4.5	0A	OP	54A	33A	0A					
D	5.5	5A	10A	30A	OP	0A	17	12	10	14	
DE	7.0	0A	2A	3A	0A	0A					
E	7.5	0A	20A	26A	24A	0A	17	9	17	17	
EF	10.0	0A	57A	70A	20A	0A					
F	6.5	2A	64A	67A	64A	2A	17	4	5	3	✓
FG	7	10A	75A	69A	83A	0A					
G	8.5	0A	64A	64A	28A	0A	5	4	10	0	
GH	8.5	0A	66A	81A	42A	OP					
H	7	0A	25A	60A	31A	0A	3	1	7	4	
HI	7	0A	50A	49A	36A	0A					
I	8.5	0A	0A	42A	5A	0A	17	6	9	14	
II	5.5	0A	11A	28A	39A	0A					
J	7	3A	19A	32A	29A	0A	3	1	1	4	
JK	7	3A	15A	0A	22A	0A					
K	7	0A	49A	19A	12A	0A	4	8	8	5	✓

v. strong stink  
 urine & latrine  
 smell  
 3 chickens  
 latrine next to creek  
 + horseshoe pit  
 camp where just  
 a chair was last  
 week

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SEPT 2019  
 Site ID: R3  
 Date/Time: 9/9/19 1105  
 Crew Members: KH, AW, SP  
 Latitude/Longitude: 34.34584 -119.29978  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To S  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.04 pH units EC: 945  $\mu\text{S}/\text{cm}$   
 DO: 10.34 mg/L SC: 1,049  $\mu\text{S}/\text{cm}$   
 DO: 115.1 % Salinity: 0.5 ppt  
 Water Temp: 19.8 °C  
 Flow (from discharge measurement): 8.34 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.8	0	0
2	5.0	0.5	-0.07
3	7	1.15	0.2
4	8	1.0	1.17
5	9	1.10	1.37
6	10	1.15	1.55
7	11	0.8	1.67
8	12	0.65	1.68
9	13	0.30	1.77
10	14	0.50	0.43
11	15	0.25	1.12
12	17	$\emptyset$	$\emptyset$
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	3
PVC Delimiter (Area=12.6cm <sup>2</sup> )	3
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	5
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	477
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R3 Date: 9/9/19 Crew: KH, AW, SP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in)					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	Upstream/ Downstream
A	7	OP	14P	32A	20A	0A	2	1	3	0	✓
AB	8-5	0A	19A	23P	20A	0A					
B	10	0A	25A	20A	8A	0A	3	1	8	2	
BC	10	0A	24A	20A	18A	OP					
C	9	0A	21A	28A	28A	0A	1	2	12	3	
CD	9.5	0A	24P	46A	47A	OP					
D	7	5A	19A	33A	44A	0A	1	0	9	5	
DE	7	0A	26A	26A	34A	OP					
E	6-5	OP	30A	<del>5130A</del>	53A	OP	3	4	6	2	
EF	5	20A	39A	3A	40A	0A					
F	4.5	0A	6P	39A	18P	0A	6	4	5	4	✓
FG	4.7	2A	31A	42A	39A	1A					
G	7-1	0A	0A	10A	41A	0A	17	17	17	17	
GH	3-5	0A	25A	34A	30A	OP					
H	4-25	10A	25A	16A	30A	0A	15	6	17	12	
HI	5	OP	22A	21A	34P	0A					
I	6	0A	16A	33A	6A	0A	5	2	3	6	
II	6-5	0A	24A	35P	18A	0A					
J	7	0A	13A	33P	26P	OP	2	3	6	1	
JK	5	13P	26A	8P	35A	0A					
K	7	OP	DRY	33A	17A	0A	0	2	6	5	✓

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# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): SEPT 2019  
 Site ID: R4  
 Date/Time: 9/9/19 0840  
 Crew Members: KN, AW, SP  
 Latitude/Longitude: 34.37997 -119.30861  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	19.3	0.4	-0.06
2	21.0	0.6	0.32
3	23.0	0.3	0.37
4	25.0	0.2	0.72
5	27.0	0.2	0.28
6	29.0	0.4	1.22
7	31.0	0.3	0.76
8	33.0	0.35	1.21
9	35.0	0.35	0.72
10	37.0	0.40	0.46
11	39.0	0.40	0.73
12	41.0	0.50	0.99
13	43.0	0.40	0.82
14	45.0	0.20	0.97
15	47.0	0.20	0.47
16	49.0	0.20	-0.13
17	51.0	0.20	-0.11
18	54.0	0.20	0.21
19	56.0	0.20	0.27
20	58.0	<del>0.20</del>	<del>0.27</del>

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**  
 pH: 7.35 pH units EC: 900  $\mu\text{S/cm}$   
 DO: 6.24 mg/L SC: 1,015  $\mu\text{S/cm}$   
 DO: 67.9 % Salinity: 0.5 ppt  
 Water Temp: 19.4 °C  
 Flow (from discharge measurement): 7.02 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	7
PVC Delimiter (Area=12.6cm <sup>2</sup> )	<del>8</del>
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	4
Other (Area= )	
Number of Transects Sampled (0-11)	11
Composite Volume (mL)	432
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	25

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 2 of 2

Ventura River Algae TMDL Transect Measurements (for percent cover, May—September)

Site: R4 Date: 9/19 Crew: KH, AW, SP

Transect	Wetted Width (ft)	Macroalgae Presence/Absence (P/A) and Water Depth (mm/ft/in) <sup>cm</sup>					Densimeter (0-17) Count covered dots				Photo (✓ when Taken)
		Left Bank	Left Center	Center	Right Center	Right Bank	Center Left	Center Upstream	Center Right	Center Downstream	
A	10.0	2P	20P	15P	204A	0A	3	2	1	1	✓
AB	10.75	0P	14P	18P	16P	0A					
B	7	0P	10A	36A	37P	0A	0	0	8	7	
BC	11	0A	0P	26P	45P	0P					
C	8.5	0P	10P	27A	55P	0A	1	2	3	0	
CD	8	0P	15P	40A	39P	0A					
D	7	0A	24P	71P	36A	0A	12	9	11	17	
DE	3.8	20P	23P	0P	46A	0A					
E	6	0P	12P	22P	8P	0P	0	1	0	2	
EF	9	0P	15P	16A	19P	1P					
F	10.5	0P	8P	12P	15P	0A	6	0	0	0	✓
FG	8.5	2A	8P	6P	14P	0P					
G	8.5	10P	26P	17P	13P	0P	0	2	0	1	
GH	7.5	8A	20P	12P	35A	2P					
H	7.5	0P	8P	16A	12P	0P	0	0	0	1	
HI	9.5	4P	0P	14P	10A	0A					
I	6	0P	35P	22P	18P	0P	0	0	0	0	
IJ	8	0A	26P	26P	11A	0P					
J	8	0P	DRY	6P	23P	2P	2	0	3	1	
JK	7	0A	18P	36A	19P	0A					
K	6.5	0A	24A	20P	28P	2P	0	0	2	0	✓

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/ 104

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** SFOY 2019  
**Site ID:** SA  
**Date/Time:** 9/9/19 1010  
**Crew Members:** KH, AW, SP  
**Latitude/Longitude:** 34.38081 -119.30735  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
Dry above c  
spring fed - ponded  
A - 80 No algae collected

**January—December Monthly In Situ Measurements:**  
 pH: 7.10 pH units EC: 894  $\mu\text{S/cm}$   
 DO: 11.55 mg/L SC: 1046  $\mu\text{S/cm}$   
 DO: 16.9 % Salinity: 0.5 ppt  
 Water Temp: 17.7 °C  
 Flow (from discharge measurement): 0.01 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	2.5		<0.01
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	





# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

## Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est

Event ID (Month Year): OCT 2019

Date/Time: 10/14/19 1515

Crew Members: KH LM

Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy

Ocean Inlet (circle one): Open / Restricted / Closed

Direction of Tide: Ebb / Flood / Slack / N/A

Time of Low Tide: 16:38 Time of High Tide: 10:03

Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind

Wind Direction: Blowing From / To W

Notes (e.g. homeless, wildlife, dogs, swimming/recreation): open estuary, v. few birds (~3)

### In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)

Monthly (Jan—Dec):

pH: 8.62 pH units <sup>8.63 cont.</sup> EC: 15540  $\mu\text{S/cm}$  Water Temp: 12  $^{\circ}\text{C}$   
 DO: 13.10 mg/L SC: 17130  $\mu\text{S/cm}$  20.5  
 DO: 154.0 % Salinity: 20.3 ppt 10.3

Photos:  Oceanward  Landward

Sample Latitude: 34.27530

Sample Longitude: -119.30759

### Water Samples Collected (check box)

[Collect at Floating Macroalgae Quadrat 1, Transect 1]

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): OCT 2019  
 Site ID: R1  
 Date/Time: 10/14/19 1330  
 Crew Members: KH, LM  
 Latitude/Longitude: 34-28194 -119-30906  
 Flow (circle one):  Flowing /  Ponded /  Dry  
 Wind Strength:  Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	5	0	0
2	7	0.25	-0.07
3	9	1.25	0.18
4	11	1.2	0.37
5	13	1.1	0.48
6	15	1.2	0.51
7	17	1.0	0.43
8	19	1.3	0.40
9	21	2.1	0.55
10	23	dry	—
11	25	0.5	0.3
12	26.6	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

### January—December Monthly *In Situ* Measurements:

pH: 8.40 pH units EC: 1143  $\mu\text{S}/\text{cm}$   
 DO: 9.04 mg/L SC: 1355  $\mu\text{S}/\text{cm}$   
 DO: 93.7 % Salinity: 0.7 ppt  
 Water Temp: 16.5 °C  
 Flow (from discharge measurement): 8.06 cfs

### Samples Collected (check box)

#### January—December Monthly Water:

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):

#### May—September Dry Season Monthly Algae:

Chlorophyll *a* (filters—algae):

### May—September: Algae Collection for Chlorophyll *a*

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

## Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1—4)

### Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): OCT 2019  
 Site ID: A2  
 Date/Time: 10/14/19 12:10  
 Crew Members: KM, LM  
 Latitude/Longitude: 34.33937, -119.29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.10	0	0
2	<del>5.0</del> 5.0	6.0	0.03
3	7	8.0	0.01
4	9	8.0	0.21
5	11	10	0.41
6	13	10	0.42
7	15	15	0.22
8	<del>17</del>	<del>18</del>	<del>0.61</del>
9	<del>19</del>	<del>21</del>	<del>0.45</del>
10	21	19	0.22
11	19	21	0.24
12	17	18	0.54
13	23	14	0.09
14	25	18	0.0
15	27	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.37 pH units    EC: 1017  $\mu\text{S/cm}$   
 DO: 10.04 mg/L    SC: 1161  $\mu\text{S/cm}$   
 DO: 107.6 %    Salinity: 0.6 ppt  
 Water Temp: 18.5 °C  
 Flow (from discharge measurement): 6.68 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m, 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

# Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1—4)

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Oct 19  
 Site ID: R3  
 Date/Time: 10/14/19 1040  
 Crew Members: KH, LM  
 Latitude/Longitude: 34.34536 -119.29927  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	3.2	0	0
2	5.0	1.0	-0.04
3	6.0	1.0	1.18
4	7.0	1.0	1.3
5	8.0	1.0	1.46
6	9.0	.9	1.58
7	10.0	.6	1.77
8	11	.6	1.65
9	12	3.5	0.77
10	14	2.5	0.25
11	15.5	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**  
 pH: 8.27 pH units EC: 865  $\mu\text{S}/\text{cm}$   
 DO: 9.46 mg/L SC: 1013  $\mu\text{S}/\text{cm}$   
 DO: 96.2 % Salinity: 0.5 ppt  
 Water Temp: 16.0 °C  
 Flow (from discharge measurement): 12.49 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

## Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1–4)

### Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Oct 2019  
 Site ID: R4  
 Date/Time: 10/14/19 0910  
 Crew Members: LM KH  
 Latitude/Longitude: 34.37997 -119.30861  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.40 pH units EC: 856  $\mu\text{S}/\text{cm}$   
 DO: 69.3 mg/L SC: 986  $\mu\text{S}/\text{cm}$   
 DO: 6.54 % Salinity: 0.5 ppt  
 Water Temp: 18.1 °C  
 Flow (from discharge measurement): 5.17 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0.0	0
2	6.0	0.4	0.07
3	8.0	0.4	0.73
4	10	0.2	0.9
5	12	0.35	0.0
6	14	0.4	1.16
7	16	0.3	0.09
8	18	0.3	0.74
9	20	0.4	0.56
10	22	0.4	0.65
11	24	0.35	0.48
12	26	0.30	0.80
13	28	0.25	0.34
14	30	0.4	0.74
15	32	0.3	0.28
16	34	0.2	0.12
17	37.3	0.15	0.31
18	42.5	0	0
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

## Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1—4)

### Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Oct 2019  
**Site ID:** San Antonio SA  
**Date/Time:** 10-14-19 1000  
**Crew Members:** LM KH  
**Latitude/Longitude:** 34.38081, -119.30735  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 7.23 pH units EC: 812  $\mu\text{S/cm}$   
 DO: 1.39 mg/L SC: 1019  $\mu\text{S/cm}$   
 DO: 13.7 % Salinity: 0.5 ppt  
 Water Temp: 14.4 °C  
 Flow (from discharge measurement): 20.01 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	



## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

### Ventura River Algae TMDL—Estuary Details

<b>Site ID:</b> <u>TMDL-Est</u>	
<b>Event ID (Month Year):</b> <u>NOV 2019</u>	<b>Date/Time:</b> <u>11/6/19 1440</u>
<b>Crew Members:</b> <u>LM &amp; KH</u>	
<b>Weather (circle one):</b> Clear / Partly Cloudy / <u>Overcast</u> / Rainy / Foggy	<b>Ocean Inlet (circle one):</b> <u>Open</u> / Restricted / Closed
<b>Direction of Tide:</b> Ebb / Flood / Slack / N/A	<b>Time of Low Tide:</b> <u>12:14</u> <b>Time of High Tide:</b> <u>17:37</u>
<b>Wind Strength:</b> Calm / Slight Breeze / <u>Moderate Breeze</u> / Strong Breeze / Windy / Strong Wind	<b>Wind Direction:</b> Blowing From/ To <u>S</u>
<b>Notes (e.g. homeless, wildlife, dogs, swimming/recreation):</b> <u>open estuary</u>	

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**

**Monthly (Jan—Dec):**

pH: 8.41 pH units      EC: 12110 μS/cm      Water Temp: 18.2 °C

DO: 13.38 mg/L      SC: 12890 μS/cm

DO: 149.6 %      Salinity: 8.0 ppt

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34.2753</u>	
Sample Longitude: <u>-119.3076</u>	

**Water Samples Collected (check box)**

**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**

**Monthly Water (Jan—Dec):**

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** NOV 2019  
**Site ID:** R1  
**Date/Time:** 11/6/19 1345  
**Crew Members:** ELL LM  
**Latitude/Longitude:** 34.28194 -119.30906  
**Flow (circle one):**  Flowing /  Ponded /  Dry  
**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
**Wind Direction: Blowing (circle one) From / To** S  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** water ~~very~~ turbid

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	24.5	0	0
2	23	0.4	0.08
3	21	1.3	0.23
4	21.9	1.0	0.39
5	17	1.1	0.46
6	15	1.3	0.53
7	12	1.4	0.46
8	11	1.25	0.36
9	9	1.1	0.39
10	5.5	0.4	0.29
11	3.8	0	0
12			
13	7.5	1.0	0.21
14	5.5-7.5	dry	
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**  
 pH: 8.24 pH units    EC: 1086  $\mu\text{S}/\text{cm}$   
 DO: 10.02 mg/L    SC: 13.39  $\mu\text{S}/\text{cm}$   
 DO: 100.7 %    Salinity: 0.7 ppt  
 Water Temp: 15.1 °C  
 Flow (from discharge measurement): 7.04 cfs

**May—September: Algae Collection for Chlorophyll *a***  
**Reach Length** (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

# Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1—4)

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): NOV 2019  
 Site ID: R2  
 Date/Time: 11/6/19 12:00  
 Crew Members: KH LM  
 Latitude/Longitude: 34.33937 -119.29725  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	5.1	0	0
2	6.0	0.75	-0.02
3	8.0	0.8	0.09
4	10.0	0.8	0.46
5	12.0	1.2	0.41
6	14.0	1.2	0.52
7	16	1.2	0.6
8	18	1.6	0.44
9	20	2.2	0.28
10	22	2.0	0.06
11	24	1.4	0.07
12	26	1.2	-0.05
13	27.5	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.13 pH units EC: 960  $\mu\text{S}/\text{cm}$   
 DO: 10.58 mg/L SC: 1115  $\mu\text{S}/\text{cm}$   
 DO: 111.4 % Salinity: 0.6 ppt  
 Water Temp: 17.7 °C  
 Flow (from discharge measurement): 7.5 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

## Ventura River Algae TMDL: River Site Field Data Sheet (Reaches 1—4)

### Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): NOV 2019  
 Site ID: R3  
 Date/Time: 11/6/19 1110  
 Crew Members: K4 LM  
 Latitude/Longitude: 34-34536 -119-29927  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.07 pH units EC: 852  $\mu\text{S}/\text{cm}$   
 DO: 10.7 mg/L SC: 1034  $\mu\text{S}/\text{cm}$   
 DO: 107.5 % Salinity: 0.5 ppt  
 Water Temp: 15.8 °C  
 Flow (from discharge measurement): 6.3 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0	0
2	5.0	0.6	0.01
3	6.0	1.0	0.34
4	7.0	1.0	1.43
5	8.0	0.9	1.15
6	9.0	0.9	0.92
7	10	0.7	1.40
8	11	0.5	1.17
9	12.5	0.3	1.47
10	15	0.15	0.51
11	15.4	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL: River Site

Event ID (Month Year): NOV 2019

Site ID: R4

Date/Time: 11/6/19 0900

Crew Members: KH, LM

Latitude/Longitude: 34.37997 -119.30861

Flow (circle one): Flowing / Ponded / Dry

Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

Wind Direction: Blowing (circle one) From / To \_\_\_\_\_

Photos (check):  Upstream  Downstream

Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	4.0	0	0
2	5.0	0.4	0.16
3	7.0	0.2	0.6
4	9.0	0.15	0.67
5	11.0	0.2	0.78
6	13	0.2	0.81
7	15	0.25	0.93
8	17	0.20	0.42
9	19	0.3	0.73
10	21	0.3	0.35
11	23	0.4	0.97
12	25	0.2	0.81
13	27	0.4	0.48
14	29	0.2	0.65
15	31	0.15	0.13
16	34	0	0
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**Measurements:**

pH: 7.47 pH units    EC: 794  $\mu$ S/cm

DO: 7.47 mg/L    SC: 919  $\mu$ S/cm

DO: 97.0 %    Salinity: 0.5 ppt

Water Temp: 18.0 °C

Flow (from discharge measurement): 4.3 cfs

**tion for Chlorophyll**

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

Chlorophyll a (filters—algae):

## Ventura River Algae TMDL: River Site

### Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): NOV 2019  
 Site ID: SA 0930  
 Date/Time: 11/6/19  
 Crew Members: KH, LM  
 Latitude/Longitude: 34.38081 -119.30735  
 Flow (circle one): Flowing  Ponded  Dry  
 Wind Strength:  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): Spring fed. No inflow  
obscure pond.

**Measurements:**

pH: 7.22 pH units    EC: 723  $\mu\text{S}/\text{cm}$   
 DO: 2.06 mg/L    SC: 1007  $\mu\text{S}/\text{cm}$   
 DO: 19.7 %    Salinity: 0.5 ppt  
 Water Temp: 13.7 °C  
 Flow (from discharge measurement): <0.01 cfs

**Samples Collected (check box)**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**Collection for Chlorophyll**

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

## Ventura River Algae TMDL Event Details

### EVENT DETAILS

Event ID (Month Year): DECEMBER 2019 Date: 12/19/19

Crew Members: A. WALLENGREN B. JONES S. PALASIK

Weather (circle): Clear / Partly Cloudy / Overcast / Showers / Rain / Other \_\_\_\_\_

Event Type (check):  Dry (<0.1" rain per day for the preceding three days)  
 Wet (days with ≥0.1" rain and the three days following)

Notes: \_\_\_\_\_

### OBSERVATION SITES (RIVER FLOW)

12/18/19 WBC

#### Ventura River at Highway 150 (Baldwin Road)

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 13 cfs) Photos Taken: Upstream /  Downstream

Notes: \_\_\_\_\_

#### Ventura River at Santa Ana Blvd

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 3 cfs) Photos Taken: Upstream /  Downstream

Notes: \_\_\_\_\_

#### Ventura River at Casitas Vista Road

Flow Status: Dry / Pondered / Flowing (Estimated Flow: 5 cfs) Photos Taken: Upstream /  Downstream

Notes: no flow west bank.

#### Additional Observation Site:

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs) Photos Taken: Upstream / Downstream

Notes: \_\_\_\_\_

### UNSAMPLED TMDL SITES

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)

Reason not sampled (if flowing): \_\_\_\_\_

Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)

Reason not sampled (if flowing): \_\_\_\_\_

Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)

Reason not sampled (if flowing): \_\_\_\_\_

Notes: \_\_\_\_\_

Site ID: \_\_\_\_\_ Time: \_\_\_\_\_ Photos Taken: Upstream / Downstream

Flow Status: Dry / Pondered / Flowing (Estimated Flow: \_\_\_\_\_ cfs)

Reason not sampled (if flowing): \_\_\_\_\_

Notes: \_\_\_\_\_

# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

## Ventura River Algae TMDL—Estuary Details

**Site ID:** TMDL-Est  
**Event ID (Month Year):** 1219 **Date/Time:** 12/19/19 1301  
**Crew Members:** BT, SP, GW  
**Weather (circle one):** Clear / Partly Cloudy / Overcast / Rainy / Foggy **Ocean Inlet (circle one):** Open / Restricted / Closed  
**Direction of Tide:** Ebb / Flood / Slack / N/A **Time of Low Tide:** 10:13 am **Time of High Tide:** 15:30 pm  
**Wind Strength:** Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind **Wind Direction:** Blowing From / To W  
**Notes (e.g. homeless, wildlife, dogs, swimming/recreation):** Seagulls

Water was placed through

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**

**Monthly (Jan—Dec):**  
 pH: 8.18 pH units      EC: N/A  $\mu\text{S/cm}$       Water Temp: 13.5 °C  
 DO: 116.94 mg/L      SC: 5100  $\mu\text{S/cm}$   
 DO: N/A %      Salinity: 2.76 ppt

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34°16'31.3"</u>	<u>34 27536</u>
Sample Longitude: <u>-119°18'27.0"</u>	<u>-119.30750</u>

**Water Samples Collected (check box)**

**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**

**Monthly Water (Jan—Dec):**  
 Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** 1219

**Site ID:** TMDL-CL

**Date/Time:** 12/19/19 7:45

**Crew Members:** R. S. M. H.  
34-342083 -119.28639

**Latitude/Longitude:** 34° 20' 36.5" -119° 17' 16.2"

**Flow (circle one):**  Flowing /  Ponded /  Dry

**Wind Strength:** WIF  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

**Wind Direction:** Blowing (circle one) From / To WIF

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** chicken, dead animal (decay)

**January—December Monthly *In Situ* Measurements:**

pH: 8.22 pH units EC: WIF  $\mu\text{S/cm}$

DO: 19.50 mg/L SC: 7540  $\mu\text{S/cm}$

DO: WIF % Salinity: 2.39 ppt

Water Temp: 16.6 °C

Flow (from discharge measurement): 0.05 cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	$\emptyset$	$\emptyset$	$\emptyset$
2	0.2	3	0.036
3	0.4	3	0.153
4	0.7	4	0.014
5	0.9	4	0.01
6	1.1	4	0.016
7	1.3	$\emptyset$	$\emptyset$
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** 1219  
**Site ID:** TMDL-K1  
**Date/Time:** 12/19/19 11:54  
**Crew Members:** BT, SP, aw  
34°28'18.9" -119°30'9.7"  
**Latitude/Longitude:** 34°10'54.8" -119°18'32.8"  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To N/A  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** homeless dog

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) <sup>cm</sup>	Velocity (ft/sec)
1	0.7	0	0
2	1.1	11	0.009
3	1.7	24	0.108
4	2.2	26	0.177
5	2.7	30	0.122
6	3.2	35	0.228
7	3.7	34	0.236
8	4.2	27	0.277
9	4.7	25	0.251
10	5.2	26	0.215
11	5.7	20	0.155
12	6.0	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January-December Monthly In Situ Measurements:**  
 pH: 9.23 pH units EC: N/A  $\mu$ S/cm  
 DO: 15.03 mg/L SC: 15.7  $\mu$ S/cm  
 DO: N/A % Salinity: 0.77 ppt  
 Water Temp: 10.5 °C  
 Flow (from discharge measurement): 8.7 cfs

**May-September: Algae Collection for Chlorophyll a**  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

**Samples Collected (check box)**  
**January-December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May-September Dry Season Monthly Algae:**  
 Chlorophyll a (filters-algae):

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll a Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 1219  
 Site ID: TMDL-122  
 Date/Time: 12/19/19 11:03  
 Crew Members: B.S. SP, aw  
34-33939 -119-29722  
 Latitude/Longitude: 34°20'21.8", -119°12'51.0"  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To N/A  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.09 pH units EC: 1212  $\mu\text{S}/\text{cm}$   
 DO: 13.85 mg/L SC: ✓  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.01 ppt  
 Water Temp: 12.4 °C  
 Flow (from discharge measurement): 9.2 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0.3	0	0
2	0.8	43	0.004
3	1.3	49	0.010
4	1.8	61	0.028
5	2.3	63	0.053
6	2.8	57	0.103
7	3.3	55	0.191
8	3.8	39	0.244
9	4.3	37	0.191
10	4.8	34	0.209
11	5.3	28	0.122
12	5.8	25	0.110
13	6.3	21	0.023
14	6.8	21	0.015
15	7.1	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width > 10 m): _____	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): 1219  
 Site ID: TMDL - R3  
 Date/Time: 12/19/19 10:12  
 Crew Members: BT, SP, GW  
34-34539 -119-29917  
 Latitude/Longitude: 34°20'43.4" -119°17'57.3"  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To N/A  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.06 pH units EC: 1139  $\mu\text{S}/\text{cm}$   
 DO: 14.42 mg/L SC: N/A  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.57 ppt  
 Water Temp: 10.9 °C  
 Flow (from discharge measurement): 8.6 cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
~~**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):~~

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0.0	0	0
2	1	15	0.186
3	1.25	33	0.320
4	1.5	32	0.371
5	1.75	35	0.351
6	2.0	29	0.410
7	2.25	30	0.489
8	2.5	26	0.452
9	2.75	24	0.396
10	3.0	11	0.304
11	3.25	15	0.186
12	3.5	13	0.244
13	4.0	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	



# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** 12/19  
**Site ID:** TMDL-124  
**Date/Time:** 12/19/19 055  
**Crew Members:** BJ, SP, AW  
34-38019 -119-30861  
**Latitude/Longitude:** 34-22-40.4, -119-18-30.9  
**Flow (circle one):**  Flowing /  Ponded /  Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To NH  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) <sup>cm</sup>	Velocity (ft/sec)
1	0	0	0
2	1	9	0.001
3	2	8	0.114
4	3	10	0.028
5	4	12	0.240
6	5	13	0.255
7	6	10	0.170
8	7	11	0.204
9	8	12	0.249
10	9	8	0.147
11	10	11	0.090
12	10.9	12	0.140
13	11.5	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**  
 pH: 7.41 pH units  EC: 1071  $\mu\text{S}/\text{cm}$   
 DO: 9.70 mg/L  SC: NH  $\mu\text{S}/\text{cm}$   
 DO: NH % Salinity: 0.53 ppt  
 Water Temp: 10.0 °C  
 Flow (from discharge measurement): 65 cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):



# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 7

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** 1219  
**Site ID:** TMDL-SIA  
**Date/Time:** 12/19/19 9:25  
**Crew Members:** BJ, SP, GW  
34.38067, -119.30750  
**Latitude/Longitude:** 34°22'50.4", -119°18'26.5"  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To N/A  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 7.71 pH units EC: 155  $\mu\text{S}/\text{cm}$   
 DO: 13.17 mg/L SC: N/A  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.77 ppt  
 Water Temp: 9.0 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
~~**May—September Dry Season Monthly Algae:**~~  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) <sup>cm</sup>	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	



# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 2

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Feb 2020  
 Site ID: TMDL-CL  
 Date/Time: 2/12/2020 0750  
 Crew Members: BJ, SP, DY  
 Latitude/Longitude: 34.34201, -119.28640  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To N/A  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.27 pH units EC: N/A  $\mu\text{S}/\text{cm}$   
 DO: 16.67 mg/L SC: 4326  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 2.29 ppt  
 Water Temp: 4.1 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0cm	0	0
2	15cm	7	0.001
3	30cm	7	0.003
4	45cm	6	0.021
5	60cm	6	0.09
6	75cm	5	0.133
7	90cm	5	-0.01
8	110cm	0	0
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Feb 2020  
 Site ID: TMDL-R4  
 Date/Time: 02/12/2020 0835  
 Crew Members: BS, SP, DY  
 Latitude/Longitude: 34.37980, -119.30846  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0 cm	0	0
2	50 cm	15	0.149
3	100 cm	22	0.29
4	150 cm	20	0.304
5	200 cm	20	0.265
6	250 cm	20	0.30
7	300 cm	17	0.417
8	350 cm	21	0.301
9	400 cm	16	0.280
10	450 cm	16	0.251
11	500 cm	11	0.274
12	550 cm	15	0.258
13	600 cm	12	0.154
14	650 cm	9	0.085
15	700 cm	11	0.083
16	750 cm	9	0.111
17	800 cm	8	0.048
18	900 cm	3	0.387
19	950 cm	5	0.147
20	1000 cm	13	-0.004

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**  
 pH: 7.60 pH units EC: N/A  $\mu$ S/cm  
 DO: 9.73 mg/L SC: 1071  $\mu$ S/cm  
 DO: N/A % Salinity: 0.53 ppt  
 Water Temp: 14.2 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

21	1050 cm	21	0.017
22	1150 cm	14	0.004
23	1250 cm	0	0

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Feb 2020

**Site ID:** TMDL-SA

**Date/Time:** 02/12/2020 09:12

**Crew Members:** BJ, SP, DY

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**Latitude/Longitude:** 34.98077, -119.3077

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** Shore guard the banks

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0cm	0	0
2	40cm	8	-0.005
3	80cm	10	0.014
4	120cm	15	0.010
5	160cm	18	0.009
6	200cm	17	0.029
7	240cm	21	0.021
8	280cm	21	0.026
9	320cm	24	0.016
10	360cm	29	0.011
11	400cm	40	0.003
12	440cm	54	0.003
13	480cm	37	-0.005
14	580cm	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**

pH: 7.98 pH units    EC: N/A μS/cm

DO: 14.75 mg/L    SC: 1631 μS/cm

DO: N/A %    Salinity: 0.83 ppt

Water Temp: 9.7 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae): N/A

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Feb 2020  
 Site ID: TMDL-R3  
 Date/Time: 02/12/2020 0945  
 Crew Members: BS, SP, DY  
 Latitude/Longitude: 34.345412, -119.299310  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.15 pH units EC: N/A  $\mu\text{S}/\text{cm}$   
 DO: 13.49 mg/L SC: 1136  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.57 ppt  
 Water Temp: 11.8 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0cm	0	0
2	25cm	9	0.128
3	50cm	23	0.188
4	75cm	35	0.302
5	100cm	39	0.464
6	125cm	39	0.499
7	150cm	35	0.581
8	175cm	33	0.654
9	200cm	32	0.691
10	225cm	31	0.411
11	250cm	23	0.377
12	275cm	23	0.657
13	300cm	17	0.103
14	325cm	10	0.039
15	350cm	9	0.147
16	380cm	0	0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width > 10 m): _____	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Feb 2020

**Site ID:** TMDL-R2

**Date/Time:** 02/12/2020 1035

**Crew Members:** BJ, SP, DY

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**Latitude/Longitude:** 34.33932, -119.29727

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) cm	Velocity (ft/sec) m
1	0	0	0
2	50	40	0.091
3	100	42	0.241
4	150	46	0.163
5	200	40	0.212
6	250	40	0.326
7	300	39	0.331
8	350	55	0.179
9	400	64	0.174
10	450	80	0.050
11	500	61	0.033
12	550	59	0.014
13	600	51	0.012
14	650	40	0.017
15	700	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly In Situ Measurements:**

pH: 8.2 pH units    EC: N/A μS/cm

DO: 13.40 mg/L    SC: 1180 μS/cm

DO: N/A %    Salinity: 0.57 ppt

Water Temp: 12.8 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae): N/A

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): _____	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Feb 2020

**Site ID:** TMDL-R1

**Date/Time:** 02/12/2020 1130

**Crew Members:** BS, SP, DY

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**Latitude/Longitude:** 34.28188, -119.30903

**Flow (circle one):**  Flowing /  Ponded /  Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To S

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	50	27	0.249
3	100	27	0.289
4	150	30	0.366
5	200	33	0.368
6	250	30	0.355
7	300	38	0.360
8	350	38	0.116
9	400	32	0.215
10	480	10	0.178
11	560	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**January—December Monthly *In Situ* Measurements:**

pH: 8.3 pH units    EC: N/A  $\mu$ S/cm

DO: 14.14 mg/L    SC: 1377  $\mu$ S/cm

DO: N/A %    Salinity: 0.69 ppt

Water Temp: 12.3 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae): N/A

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

## Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

### Ventura River Algae TMDL—Estuary Details

<b>Site ID:</b> TMDL-Est	
<b>Event ID (Month Year):</b> Feb 2020	<b>Date/Time:</b> 02/12/2020 1205
<b>Crew Members:</b> BS, SP, DY	
<b>Weather (circle one):</b> Clear / <u>Partly Cloudy</u> / Overcast / Rainy / Foggy	<b>Ocean Inlet (circle one):</b> Open / Restricted / Closed <u>East open / West closed</u>
<b>Direction of Tide:</b> <u>Ebb</u> / Flood / Slack / N/A	<b>Time of Low Tide:</b> <u>05:23</u> <b>Time of High Tide:</b> <u>11:15</u>
<b>Wind Strength:</b> Calm / <u>Slight Breeze</u> / Moderate Breeze / Strong Breeze / Windy / Strong Wind	<b>Wind Direction:</b> Blowing <u>From</u> To <u>South</u>
<b>Notes (e.g. homeless, wildlife, dogs, swimming/recreation):</b>	

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**

**Monthly (Jan—Dec):**

pH: 8.15 pH units      EC: N/A  $\mu\text{S/cm}$       Water Temp: 14.3 °C

DO: 13.11 mg/L      SC: 2999  $\mu\text{S/cm}$

DO: N/A %      Salinity: 11.13 ppt

Photos: <input checked="" type="checkbox"/> Oceanward	<input checked="" type="checkbox"/> Landward	
Sample Latitude:	<u>34.27516</u>	
Sample Longitude:	<u>-119.30762</u>	

**Water Samples Collected (check box)**

**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**

**Monthly Water (Jan—Dec):**

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** March 2020

**Site ID:** TMDL-CL

**Date/Time:** 3/19/2020 0747

**Crew Members:** BT SP DY

**Latitude/Longitude:** 34.34202, -119.28642

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To SW

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.) :** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**

pH: 8.23 pH units EC: —  $\mu$ S/cm

DO: 14.13 mg/L SC: 4356  $\mu$ S/cm

DO: — % Salinity: 2.32 ppt

Water Temp: 7.0 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.15	0.03	0.136
3	0.3	0.04	0.040
4	0.45	0.03	0.045
5	0.6	0.045	0.041
6	0.75	0.05	0.197
7	0.9	0.05	0.113
8	1.05	0.07	0.565
9	1.2	0.08	0.516
10	1.35	0.09	0.410
11	1.5	0.08	0.387
12	1.65	0.05	0.118
13	1.8	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2020  
 Site ID: TMDL-R4  
 Date/Time: 3/19/20 835  
 Crew Members: BS SP DY  
 Latitude/Longitude: 34.37984, -119.60849  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To N  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 7.24 pH units EC: \_\_\_\_\_  $\mu\text{S}/\text{cm}$   
 DO: 10.51 mg/L SC: 937  $\mu\text{S}/\text{cm}$   
 DO: \_\_\_\_\_ % Salinity: 0.46 ppt  
 Water Temp: 10.5 °C  
 Flow (from discharge measurement): NA cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):  N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	5	0
2	1.0	.28	0.309
3	2.0	.31	0.512
4	3.0	.38	0.681
5	4.0	.26	0.479
6	5.0	.33	0.427
7	6.0	.28	0.309
8	7.0	.23	0.351
9	8.0	.25	0.292
10	9.0	.17	0.409
11	10.0	.23	0.163
12	11.0	.40	0.184
13	12.0	.20	0.289
14	13.0	.17	0.065
15	13.7	0	0
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq 10$  m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** March 2020  
**Site ID:** TMDL-SA  
**Date/Time:** 3/19/20 0910  
**Crew Members:** BT SP DY  


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**Latitude/Longitude:** 34.28074, -119.30739  
**Flow (circle one):**  Flowing /  Ponded /  Dry  
**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
**Wind Direction:** Blowing (circle one) From / To \_\_\_\_\_  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 7.94 pH units    EC: \_\_\_\_\_  $\mu\text{S}/\text{cm}$   
 DO: 12.09 mg/L    SC: 16.07  $\mu\text{S}/\text{cm}$   
 DO: \_\_\_\_\_ %    Salinity: 0.82 ppt  
 Water Temp: 12.0 °C  
 Flow (from discharge measurement): NA cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
  
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.5	.18	-0.03
3	1.0	.24	0.08
4	1.5	.32	0.022
5	2.0	.38	0.032
6	2.5	.47	0.067
7	3.0	.56	0.099
8	3.5	.57	0.066
9	4.0	.34	0.041
10	4.5	.50	0.021
11	5.0	.43	0.014
12	5.5	.44	0.009
13	6.0	.37	0.007
14	6.5	.31	0.002
15	7.0	.08	-0.005
16	7.5	.09	-0.007
17	8.0	0	0
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
**Reach Length** (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2020  
 Site ID: TMDL-R3  
 Date/Time: 03/19/2020 1020  
 Crew Members: BJ SP DY  
 Latitude/Longitude: 34.34554, -119.29939  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To NW  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.18 pH units EC: \_\_\_\_\_  $\mu\text{S}/\text{cm}$   
 DO: 12.72 mg/L SC: 1020  $\mu\text{S}/\text{cm}$   
 DO: \_\_\_\_\_ % Salinity: 0.51 ppt  
 Water Temp: 11.9 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	0.7	0.185
3	1.5	0.3	0.539
4	2.25	0.16	0.801
5	3.0	0.19	0.981
6	3.75	0.27	1.006
7	4.5	0.34	0.873
8	5.25	0.38	0.737
9	6.0	0.40	0.626
*10	6.75	0.40	0.401
*11	7.50	0.48	0.352
*12	8.25	0.62	0.261
*13	9.0	0.50	0.178
*14	9.10	0	0
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

\* in middle of cutbank

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** March 2020

**Site ID:** tmdl-r2

**Date/Time:** 03/19/20 1108

**Crew Members:** BS SP DY

**Latitude/Longitude:** 34.339316, -119.24726

**Flow (circle one):**  Flowing /  Ponded /  Dry

**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Calm

**Wind Direction:** Blowing (circle one)  From / To SW

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
None

**January—December Monthly *In Situ* Measurements:**

pH: 8.18 pH units EC: —  $\mu$ S/cm

DO: — mg/L SC: 1038  $\mu$ S/cm

DO: 12.74 % Salinity: 0.52 ppt

Water Temp: 12.4 °C

Flow (from discharge measurement): — cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	.5	.29	0.046
3	1.0	.60	0.188
4	1.5	.58	0.194
5	2.0	.59	0.218
6	2.5	.56	0.295
7	3.0	.57	0.397
8	3.5	.73	0.435
9	4.0	.83	0.467
10	4.5	.90	0.542
11	5.0	.78	0.415
12	5.5	.79	0.239
13	6.0	.72	0.147
14	6.5	.66	0.017
15	7.0	.50	-0.005
16	7.5	.15	-0.021
17	7.7	0	0
18			
19			
20			

<del>Buoyant Object Method</del> (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

<del>May—September: Algae Collection for Chlorophyll <i>a</i></del>	
Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width $>$ 10 m): <u>—</u>	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): March 2020  
 Site ID: TMDL-R1  
 Date/Time: 03/19/2020 1225  
 Crew Members: DS SP DY  
 Latitude/Longitude: 34.28179 -119.30908  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To SW  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless wildlife, horses, swimming/recreation, discharge comments, etc.):  
Camps under bridge

**January—December Monthly In Situ Measurements:**  
 pH: 8.27 pH units EC: —  $\mu\text{S}/\text{cm}$   
 DO: 12.08 mg/L SC: 1300  $\mu\text{S}/\text{cm}$   
 DO: — % Salinity: 0.61 ppt  
 Water Temp: 13.3 °C  
 Flow (from discharge measurement): — cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): NA

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.5	.13	0.184
3	1.0	.30	0.1816
4	1.5	.60	0.323
5	2.0	.49	0.431
6	2.5	.51	0.579
7	3.0	.54	0.604
8	3.5	.57	0.585
9	4.0	.57	0.560
10	4.5	.55	0.622
11	5.0	.49	0.6116
12	5.5	.54	0.521
13	6.0	.9	0.650
14	6.5	.28	0.342
15	7.0	.14	0.128
16	7.25	0	0
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width > 10 m): <u>—</u>	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

## Ventura River Algae TMDL—Estuary Details

Site ID: <u>TMDL-Est</u>	
Event ID (Month Year): <u>March 2020</u>	Date/Time: <u>3/19/2020 1322</u>
Crew Members: <u>BJ, SP, DY</u>	
Weather (circle one): Clear / <u>Partly Cloudy</u> / Overcast / Rainy / Foggy	Ocean Inlet (circle one): <u>Open</u> / Restricted / <u>Closed</u>
Direction of Tide: <u>Ebb</u> / Flood / Slack / N/A	Time of Low Tide: <u>2:07pm</u> Time of High Tide: <u>7:09am</u>
Wind Strength: Calm / Slight Breeze / <u>Moderate Breeze</u> / Strong Breeze / Windy / Strong Wind	Wind Direction: Blowing From <u>SW</u> / To
Notes (e.g. homeless, wildlife, dogs, swimming/recreation): <u>homeless tent near west end</u>	

**In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)**

Monthly (Jan—Dec):

pH: 8.22 pH units      EC: \_\_\_\_\_  $\mu\text{S/cm}$       Water Temp: 15.2 °C

DO: 12.00 mg/L      SC: 1345  $\mu\text{S/cm}$

DO: \_\_\_\_\_ %      Salinity: 0.68 ppt

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34.27522</u>	
Sample Longitude: <u>-119.30750</u>	

**Water Samples Collected (check box)**

**[Collect at Floating Macroalgae Quadrat 1, Transect 1]**

Monthly Water (Jan—Dec):

Nitrogen, total and dissolved:

Phosphorus, total and dissolved:

Nitrate + Nitrite as Nitrogen:

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): \_\_\_\_\_  
 Site ID: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Crew Members: \_\_\_\_\_  
 \_\_\_\_\_  
 Latitude/Longitude: \_\_\_\_\_  
 Flow (circle one): Flowing / Poned / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To \_\_\_\_\_  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.) : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: \_\_\_\_\_ pH units EC: \_\_\_\_\_  $\mu\text{S}/\text{cm}$   
 DO: \_\_\_\_\_ mg/L SC: \_\_\_\_\_  $\mu\text{S}/\text{cm}$   
 DO: \_\_\_\_\_ % Salinity: \_\_\_\_\_ ppt  
 Water Temp: \_\_\_\_\_  $^{\circ}\text{C}$   
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus , Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** April 2020  
**Site ID:** TMDL-CL  
**Date/Time:** 4/15/2020 0745  
**Crew Members:** SP BT DY

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**Latitude/Longitude:** 34.34202, -119.28042  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To N/A  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.13 pH units    EC: —  $\mu$ S/cm  
 DO: 12.71 mg/L    SC: 493  $\mu$ S/cm  
 DO: — %    Salinity: 2.24 ppt  
 Water Temp: 11.6 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.15	3	0.064
3	0.30	5	0.044
4	0.45	6	0.028
5	0.60	8	0.025
6	0.75	5	0.191
7	0.90	6	0.363
8	1.05	10	0.166
9	1.20	8	0.244
10	1.35	6	0.211
11	1.50	4	0.039
12	1.60	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Estuary) - Page 1 of 1

## Ventura River Algae TMDL—Estuary Details

<b>Site ID:</b> <u>TMDL-Est</u>	
<b>Event ID (Month Year):</b> <u>April 2020</u>	<b>Date/Time:</b> <u>04/15/2020 1240</u>
<b>Crew Members:</b> <u>BJ SP DY</u>	
<b>Weather (circle one):</b> <input checked="" type="radio"/> Clear / <input type="radio"/> Partly Cloudy / <input type="radio"/> Overcast / <input type="radio"/> Rainy / <input type="radio"/> Foggy	<b>Ocean Inlet (circle one):</b> <input checked="" type="radio"/> Open / <input type="radio"/> Restricted / <input type="radio"/> Closed
<b>Direction of Tide:</b> <input checked="" type="radio"/> Ebb / <input type="radio"/> Flood / <input type="radio"/> Slack / <input type="radio"/> N/A	<b>Time of Low Tide:</b> <u>1151</u> <b>Time of High Tide:</b> <u>2000</u>
<b>Wind Strength:</b> <input checked="" type="radio"/> Calm / <input type="radio"/> Slight Breeze / <input type="radio"/> Moderate Breeze / <input type="radio"/> Strong Breeze / <input type="radio"/> Windy / <input type="radio"/> Strong Wind	<b>Wind Direction:</b> Blowing From <input checked="" type="radio"/> <u>SW</u> / To _____
<b>Notes (e.g. homeless, wildlife, dogs, swimming/recreation):</b> _____	

<u>In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)</u>	
<b>Monthly (Jan—Dec):</b>	
pH: <u>8.25</u> pH units	EC: _____ $\mu$ S/cm    Water Temp: <u>18.6</u> °C
DO: <u>10.84</u> mg/L	SC: <u>1262</u> $\mu$ S/cm
DO: _____ %	Salinity: <u>0.63</u> ppt
Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34.27547</u>	
Sample Longitude: <u>-119.31756</u>	

<u>Water Samples Collected (check box)</u>
<b>[Collect at Floating Macroalgae Quadrat 1, Transect 1]</b>
<b>Monthly Water (Jan—Dec):</b>
Nitrogen, total and dissolved: <input checked="" type="checkbox"/>
Phosphorus, total and dissolved: <input checked="" type="checkbox"/>
Nitrate + Nitrite as Nitrogen: <input checked="" type="checkbox"/>

7.7  
Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

Discharge Measurement  
1st Measurement = left bank (looking downstream)

Event ID (Month Year): April 2020  
 Site ID: TMDL-RI  
 Date/Time: 04/15/2020 1120  
 Crew Members: BJ SP DY  
 Latitude/Longitude: 34.28190, -119.3905  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To SW  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):  
many homeless under bridge

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.29 pH units EC: N/A  $\mu\text{S}/\text{cm}$   
 DO: 11.05 mg/L SC: 1185  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.59 ppt  
 Water Temp: 16.8 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	19	0.235
3	1.50	50	0.264
4	2.25	56	0.458
5	3.0	55	0.575
6	3.75	61	0.729
7	4.50	63	0.582
8	5.25	53	0.729
9	5.45	52	0.762
10	6.0	33	0.647
11	6.75	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): April 2020  
 Site ID: TMDL - R2  
 Date/Time: 04/15/2020 1030  
 Crew Members: SPB/DY  
 Latitude/Longitude: 34.33940, -119.29722  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength:  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To SW  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): how low up stream

**January—December Monthly In Situ Measurements:**  
 pH: 8.21 pH units EC: —  $\mu\text{S}/\text{cm}$   
 DO: 11.62 mg/L SC: 1077  $\mu\text{S}/\text{cm}$   
 DO: — % Salinity: 0.54 ppt  
 Water Temp: 15.5 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): N/A

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	50	0.024
3	1.50	56	0.156
4	2.25	56	0.226
5	3.0	57	0.468
6	3.75	70	0.523
7	4.50	93	0.517
8	5.25	83	0.384
9	6.0	80	0.182
10	6.75	54	0.034
11	7.50	0	0
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

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## Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

### Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** April 2020  
**Site ID:** TMDL-R3  
**Date/Time:** 04/15/2020 0940  
**Crew Members:** BT SP DY

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**Latitude/Longitude:** 34.34547, -119.29932  
**Flow (circle one):** Flowing / Ponded / Dry  
**Wind Strength:**  
 Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
**Wind Direction:** Blowing (circle one) From / To N  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.) :**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.19 pH units EC: —  $\mu\text{S}/\text{cm}$   
 DO: 11.58 mg/L SC: 1048  $\mu\text{S}/\text{cm}$   
 DO: — % Salinity: 0.52 ppt  
 Water Temp: 14.8 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae): MA

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	63	0.242
3	1.50	66	0.383
4	2.25	58	0.657
5	3.0	53	0.691
6	3.75	52	0.935
7	4.50	44	0.852
8	5.25	28	0.918
9	6.0	14	1.140
10	6.75	6	0.642
11	7.50	3	0.255
12	8.25	6	0.019
13	8.5	0	0
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

1245  
**Discharge Measurement**  
 1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** April 2020  
**Site ID:** TMDL-R4  
**Date/Time:** 4/15/2020 0828  
**Crew Members:** BT SP DV  
**Latitude/Longitude:** 34.37980, -119.30849  
**Flow (circle one):**  Flowing /  Ponded /  Dry  
**Wind Strength:**  Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
**Wind Direction:** Blowing (circle one) From / To  SE  
**Photos (check):**  Upstream  Downstream  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly *In Situ* Measurements:**  
 pH: 8.03 pH units EC: —  $\mu$ S/cm  
 DO: 12.04 mg/L SC: 938  $\mu$ S/cm  
 DO: — % Salinity: 0.47 ppt  
 Water Temp: 14.2 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	43	0.094
3	1.50	54	0.156
4	2.25	67	0.516
5	3.0	64	0.761
6	3.75	46	0.585
7	4.50	50	0.383
8	5.25	43	0.326
9	6.0	31	0.193
10	6.75	23	0.081
11	7.50	24	0.058
12	8.25	20	0.084
13	9.00	20	0.068
14	9.75	15	0.051
15	10.50	16	0.077
16	11.25	16	0.064
17	12.00	9	0.035
18	12.75	0	0
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** April 2020

**Site ID:** TMDL-SA

**Date/Time:** 04/15/2020 0855

**Crew Members:** SD BJ TH

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**Latitude/Longitude:** 34.38072, -119.30740

**Flow (circle one):**  Flowing /  Ponded /  Dry

**Wind Strength:**  
 Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To SW/NE

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**

pH: 8.10 pH units EC: —  $\mu\text{S}/\text{cm}$

DO: 11.74 mg/L SC: 1389  $\mu\text{S}/\text{cm}$

DO: — % Salinity: 0.70 ppt

Water Temp: 13.6 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	0
2	0.75	30	-0.004
3	1.50	34	0.029
4	2.25	32	0.128
5	3.0	36	0.201
6	3.75	37	0.279
7	4.50	44	0.191
8	5.25	56	0.122
9	6.0	51	0.035
10	6.75	33	-0.005
11	7.50	11	0.000
12	8.35	0	0
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method			
(Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

**Reach Length** (150 m if wetted width  $\leq$  10 m; 250 m if wetted width  $>$  10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____ )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1-4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Jan 2020  
**Site ID:** TMDL-CL  
**Date/Time:** 1-15-20 0745  
**Crew Members:** Karin Wisniewski, Brian Jones, Danielle Yaconelli  
**Latitude/Longitude:** 34.34204, -119.28643  
**Flow (circle one):**  Flowing /  Ponded /  Dry  
**Wind Strength:**  Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy  
**Wind Direction:** Blowing (circle one) From / To XX - Wind  
**Photos (check):**  Upstream  Downstream 4  
**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
Dead deer downstream

**January—December Monthly In Situ Measurements:**  
 pH: 8.12 pH units EC: N/A  $\mu\text{S}/\text{cm}$   
 DO: 14.84 mg/L SC: 4388  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 2.31 ppt  
 Water Temp: 29 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) <small>cm</small>	Velocity (ft/sec)
1	0	0	0
2	20	10	-0.008
3	40	9	0.013
4	60	9	0.008
5	80	7	0.112
6	100	6	0.181
7	120	5	0.62
8	140	0	0
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method <small>(Use only if velocity area method not possible)</small>			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width > 10 m): _____	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Jan-2020

**Site ID:** TMDL-R4

**Date/Time:** 1-15-19 0854

**Crew Members:** KW, BJ, DY

**Latitude/Longitude:** 34.37984, -119.30857

**Flow (circle one):**  Flowing /  Ponded /  Dry

**Wind Strength:**  Calm /  Light Breeze /  Moderate Breeze /  Strong Breeze /  Windy

**Wind Direction:** Blowing (circle one) From / To XX-NW

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):** \_\_\_\_\_

**January—December Monthly In Situ Measurements:**

pH: 7.64 pH units EC: N/A  $\mu$ S/cm

DO: 10.01 mg/L SC: 1060  $\mu$ S/cm

DO: N/A % Salinity: 0.53 ppt

Water Temp: 12.8 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	6	0	N/A
2	0.5	28	0.147
3	1.0	31	0.293
4	1.5	34	0.410
5	2.0	31	0.363
6	2.5	31	0.366
7	3.0	27	0.357
8	3.5	26	0.297
9	4.0	20	0.314
10	4.5	22	0.268
11	5.0	13	0.244
12	5.5	9	0.182
13	6.0	9	0.132
14	6.5	10	0.111
15	7.0	10	0.130
16	7.5	8	0.190
17	8.0	8	0.490
18	8.5	5	0.117
19	8.8	0	N/A
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Jan 2020  
 Site ID: TMDL-SA  
 Date/Time: 1-15-19, 0915  
 Crew Members: KW, BJ, DY  
 Latitude/Longitude: 34.38075, -119.30732  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To xx - None  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.09 pH units EC: N/A  $\mu\text{S}/\text{cm}$   
 DO: 14.42 mg/L SC: 1614  $\mu\text{S}/\text{cm}$   
 DO: N/A % Salinity: 0.82 ppt  
 Water Temp: 10.0 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) <small>cm</small>	Velocity (ft/sec)
1	0	0	N/A
2	0.5	17	-0.002
3	1.0	17	0.003
4	1.5	18	0.010
5	2.0	20	0.009
6	2.5	20	0.020
7	3.0	20	0.020
8	3.5	19	0.032
9	4.0	23	0.032
10	4.5	34	0.027
11	5.0	27	0.020
12	5.5	45	0.007
13	6.0	35	0.009
14	6.5	15	-0.008
15	7.0	0	N/A
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= )	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Jan 2020  
 Site ID: TMDL-R3  
 Date/Time: 1/15/20 1016  
 Crew Members: KW, BT, DX  
 Latitude/Longitude: 34.34541; -119.29935  
 Flow (circle one): Flowing / Pounded / Dry  
 Wind Strength: Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To N  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**January—December Monthly In Situ Measurements:**  
 pH: 8.12 pH units EC: N/A  $\mu$ S/cm  
 DO: 11.81 mg/L SC: 1120  $\mu$ S/cm  
 DO: N/A % Salinity: 0.56 ppt  
 Water Temp: 11.4 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft)	Velocity (ft/sec)
1	0	0	N/A
2	0.4	29	-0.008
3	0.8	39	0.156
4	1.2	43	0.484
5	1.6	38	0.729
6	2.0	37	0.754
7	2.4	36	0.544
8	2.8	27	0.532
9	3.2	17	0.390
10	3.6	15	0.664
11	4.0	11	0.138
12	4.4	0	N/A
13			
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

May—September: Algae Collection for Chlorophyll <i>a</i> Reach Length (150 m if wetted width $\leq$ 10 m; 250 m if wetted width > 10 m): _____	
Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

Event ID (Month Year): Jan 2020  
 Site ID: TMDL-R2  
 Date/Time: 1-15-19 1107  
 Crew Members: KW, BJ, DY

---

Latitude/Longitude: 34.3394, -119.29727  
 Flow (circle one): Flowing / Ponded / Dry  
 Wind Strength: Caln / Light Breeze / Moderate Breeze / Strong Breeze / Windy  
 Wind Direction: Blowing (circle one) From / To xx - none  
 Photos (check):  Upstream  Downstream  
 Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):  
Homeless ≈ 100 ft from stream (past left bank)

**January—December Monthly In Situ Measurements:**  
 pH: 8.5 pH units EC: N/A  $\mu\text{S/cm}$   
 DO: 12.40 mg/L SC: 1128  $\mu\text{S/cm}$   
 DO: N/A % Salinity: 0.56 ppt  
 Water Temp: 11.9 °C  
 Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**  
**January—December Monthly Water:**  
 Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):   
 Dissolved Phosphorus and Nitrogen (field filtered):   
**May—September Dry Season Monthly Algae:**  
 Chlorophyll *a* (filters = algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) cm	Velocity (ft/sec)
1	0	0	N/A
2	0.4	37	0.030
3	0.8	45	0.154
4	1.2	52	0.189
5	1.6	53	0.203
6	2.0	44	0.222
7	2.4	44	0.239
8	2.8	42	0.357
9	3.2	45	0.326
10	3.6	55	0.266
11	4.0	76	0.168
12	4.4	74	0.118
13	4.8	66	0.034
14	5.2	51	-0.008
15	5.6	46	-0.030
16	6.0	30	-0.018
17	6.2	0	N/A
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***  
 Reach Length (150 m if wetted width ≤ 10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area= _____)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

# Ventura River Algae TMDL Field Data Sheet (Reaches 1—4) - Page 1 of 1

## Discharge Measurement

1st Measurement = left bank (looking downstream)

**Event ID (Month Year):** Jan 2020

**Site ID:** TMDL-R1

**Date/Time:** 1/15/19 1200

**Crew Members:** KW, BJ, DY

---

**Latitude/Longitude:** 34.25209, -119.3086

**Flow (circle one):** Flowing / Ponded / Dry

**Wind Strength:**  
Calm / Light Breeze / Moderate Breeze / Strong Breeze / Windy

**Wind Direction:** Blowing (circle one) From / To N

**Photos (check):**  Upstream  Downstream

**Notes (e.g. homeless, wildlife, horses, swimming/recreation, discharge comments, etc.):**  
Homeless encampments under bridge

**January—December Monthly In Situ Measurements:**

pH: 8.26 pH units EC: N/A  $\mu\text{S/cm}$

DO: 12.48 mg/L SC: 1327  $\mu\text{S/cm}$

DO: N/A % Salinity: 0.67 ppt

Water Temp: 11.8 °C

Flow (from discharge measurement): \_\_\_\_\_ cfs

**Samples Collected (check box)**

**January—December Monthly Water:**

Total Phosphorus, Total Nitrogen, and Nitrate + Nitrite as Nitrogen (unfiltered):

Dissolved Phosphorus and Nitrogen (field filtered):

**May—September Dry Season Monthly Algae:**

Chlorophyll *a* (filters—algae):

Velocity Area Method (preferred)			
No.	Distance from Left Bank (ft)	Depth (ft) cm	Velocity (ft/sec)
1	0	0	N/A
2	0.4	26	0.384
3	0.8	34	0.373
4	1.2	31	0.403
5	1.6	32	0.403
6	2.0	37	0.415
7	2.4	42	0.401
8	2.8	41	0.417
9	3.2	40	0.251
10	3.6	31	0.362
11	4.0	33	0.284
12	4.7	13	0.303
13	5.1	0	N/A
14			
15			
16			
17			
18			
19			
20			

Buoyant Object Method (Use only if velocity area method not possible)			
	Float 1	Float 2	Float 3
Distance (ft)			
Float Time (sec)			
Float Reach Cross Section (ft)			
	Upper Section	Middle Section	Lower Section
Width			
Depth 1			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

**May—September: Algae Collection for Chlorophyll *a***

Reach Length (150 m if wetted width  $\leq$  10 m; 250 m if wetted width > 10 m): \_\_\_\_\_

Collection Device (sum # transects per Device)	Quantity
Rubber Delimiter (Area=12.6cm <sup>2</sup> )	
PVC Delimiter (Area=12.6cm <sup>2</sup> )	
Syringe Scrubber (Area=5.3cm <sup>2</sup> )	
Other (Area=)	
Number of Transects Sampled (0-11)	
Composite Volume (mL)	
Chlorophyll <i>a</i> Volume (use GF/F filter, 25 mL preferred volume)	

Ventura River Algae TMDL—Estuary Details

Site ID: TMDL-Est  
 Event ID (Month Year): Jan 2020 Date/Time: 1-15-19 1248  
 Crew Members: KW, BS, DY  
 Weather (circle one): Clear / Partly Cloudy / Overcast / Rainy / Foggy Ocean Inlet (circle one): Open / Restricted / Closed \*  
 Direction of Tide: Ebb / Flood / Slack / N/A Time of Low Tide: 19:04 Time of High Tide: 12:11  
 Wind Strength: Calm / Slight Breeze / Moderate Breeze / Strong Breeze / Windy / Strong Wind Wind Direction: Blowing From / To NW  
 Notes (e.g. homeless, wildlife, dogs, swimming/recreation): camp fire in middle of estuary

In Situ Measurements (Measure at Floating Macroalgae Quadrat 1, Transect 1)  
 Monthly (Jan—Dec):  
 pH: 8.16 pH units EC: N/A  $\mu\text{S/cm}$  Water Temp: 12.6  $^{\circ}\text{C}$   
 DO: 12.60 mg/L SC: 2645  $\mu\text{S/cm}$   
 DO: N/A % Salinity: 1.98 ppt

Photos: <input checked="" type="checkbox"/> Oceanward <input checked="" type="checkbox"/> Landward	
Sample Latitude: <u>34.27536</u>	
Sample Longitude: <u>-119.30752</u>	

Water Samples Collected (check box)  
[Collect at Floating Macroalgae Quadrat 1, Transect 1]  
 Monthly Water (Jan—Dec):  
 Nitrogen, total and dissolved:   
 Phosphorus, total and dissolved:   
 Nitrate + Nitrite as Nitrogen:

\* East side of estuary - Berm open  
 West side of estuary - Berm closed

APPENDIX F. CHAIN OF CUSTODIES AND LABORATORY REPORTS



# Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

9E10050

## Comprehensive Monitoring Program

### CHAIN-OF-CUSTODY RECORD

\_\_\_\_\_ 1 \_\_\_\_\_ OF \_\_\_\_\_ 1 \_\_\_\_\_

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORY19MA01, Project P6040555)

SAMPLING EVENT: MAY 2019

SAMPLING DATE: 5/7+8/2019

SAMPLERS: R. MAHS, E. LOMELI

#### GRAB SAMPLES

SAMPLE ID	DATE/TIME	Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen						** FIELD FILTERED	NOTES
TMDL-Est	5/8/19 13:15	X	X	X							
TMDL-R1	↓	X	X	X							
TMDL-R2	↓	X	X	X							
TMDL-R3	5/7/19 12:00	X	X	X							
TMDL-R4	↓	X	X	X							
TMDL-CL	↓	X	X	X							
TMDL-SA	5/7/19 10:10	X	X	X							
TMDL-ED	_____	X	X	X							(Note which site)

Signature: <u>W.B. Carey</u>	Signature: <u>[Signature]</u>
Print Name: <u>W.B. CAREY</u>	Print Name: <u>ALAN G.</u>
Affiliation: <u>VCWPD</u>	Affiliation: <u>WECK</u>
Date/Time Received: <u>5-10</u>	Date/Time Received: <u>5/10/19 1130</u>
Date/Time Relinquished: <u>5-10-19/1130</u>	Date/Time Relinquished: _____

Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: <u>ALAN G.</u>	Print Name: <u>JAIME GONZ</u>
Affiliation: <u>WECK</u>	Affiliation: <u>WECK LABS</u>
Date/Time Received: <u>5/10/19 1515</u>	Date/Time Received: <u>5/10/19 1515</u>
Date/Time Relinquished: <u>5/10/19 1515</u>	Date/Time Relinquished: _____

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.): Dissolved samples were field filtered 1.3°C T+013)



# Certificate of Analysis

FINAL REPORT

Work Orders: 9E10050

Report Date: 6/13/2019

Project: TMDL Study May 2019 P6040555

Received Date: 5/10/2019

Turnaround Time: Normal

Phones: (805) 658-4375

Fax: (805) 654-3350

P.O. #: WECKLABORATORYF1  
9MA01

Attn: Kelly Hahs

Billing Code:

Client: Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

EPA-UCMR #CA00211 • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 • NELAP-CA #04229CA • NELAP-OR #4047 •  
NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

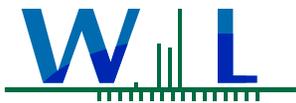
Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 5/10/19 with the Chain-of-Custody document. The samples were received in good condition, at 1.3 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:

Brandon Gee  
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

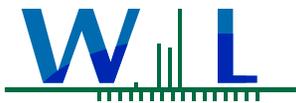
**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs, E. Lomeli	9E10050-01	Water	05/08/19 13:15	
TMDL-R1	K. Hahs, E. Lomeli	9E10050-02	Water	05/08/19 11:00	
TMDL-R2	K. Hahs, E. Lomeli	9E10050-03	Water	05/08/19 07:50	
TMDL-R3	K. Hahs, E. Lomeli	9E10050-04	Water	05/07/19 12:00	
TMDL-R4	K. Hahs, E. Lomeli	9E10050-05	Water	05/07/19 07:50	
TMDL-CL	K. Hahs, E. Lomeli	9E10050-06	Water	05/07/19 14:20	
TMDL-SA	K. Hahs, E. Lomeli	9E10050-07	Water	05/07/19 10:10	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Sample Results

Sample: TMDL-Est

Sampled: 05/08/19 13:15 by K. Hahs, E. Lomeli

9E10050-01 (Water)

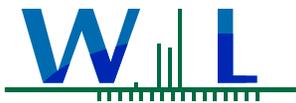
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	1.3		0.20	mg/l	1x1	05/28/19 16:24	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
Nitrogen, Total	1.5		0.20	mg/l	1x1	05/28/19 16:24	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs	
TKN	0.26	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs	
TKN, Soluble	0.12	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929	<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt	
NO2+NO3 as N	1.2	0.083	0.20	mg/l	1x1	05/28/19 16:24	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043	<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.13	0.0014	0.010	mg/l	1x1	05/30/19 15:23	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.028	0.012	0.020	mg/l	1x1	06/11/19 12:49	

Sample: TMDL-R1

Sampled: 05/08/19 11:00 by K. Hahs, E. Lomeli

9E10050-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	1.4		0.20	mg/l	1x1	05/28/19 16:25	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
Nitrogen, Total	1.5		0.20	mg/l	1x1	05/28/19 16:25	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs	
TKN	0.065	0.050	0.10	mg/l	1x1	05/21/19 15:36	J
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929	<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt	
NO2+NO3 as N	1.4	0.083	0.20	mg/l	1x1	05/28/19 16:25	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043	<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.022	0.0014	0.010	mg/l	1x1	05/30/19 15:15	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.023	0.012	0.020	mg/l	1x1	06/11/19 12:52	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Sample Results

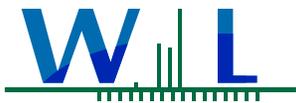
(Continued)

Sample: TMDL-R2  
9E10050-03 (Water) Sampled: 05/08/19 7:50 by K. Hahs, E. Lomeli

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs
Dissolved Nitrogen	2.0		0.20	mg/l	1x1	05/28/19 16:27	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs
Nitrogen, Total	2.0		0.20	mg/l	1x1	05/28/19 16:27	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758		<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs
TKN	0.17	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759		<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs
TKN, Soluble	0.10	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929		<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt
NO2+NO3 as N	1.8	0.083	0.20	mg/l	1x1	05/28/19 16:27	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043		<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.044	0.0014	0.010	mg/l	1x1	05/30/19 15:25	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt
Phosphorus, Dissolved	0.049	0.012	0.020	mg/l	1x1	06/11/19 12:55	

Sample: TMDL-R3  
9E10050-04 (Water) Sampled: 05/07/19 12:00 by K. Hahs, E. Lomeli

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs
Dissolved Nitrogen	1.6		0.20	mg/l	1x1	05/28/19 16:15	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs
Nitrogen, Total	1.6		0.20	mg/l	1x1	05/28/19 16:15	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758		<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs
TKN	ND	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759		<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929		<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt
NO2+NO3 as N	1.6	0.083	0.20	mg/l	1x1	05/28/19 16:15	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043		<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.0057	0.0014	0.010	mg/l	1x1	05/30/19 15:26	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	06/11/19 12:58	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Sample Results

(Continued)

Sample: TMDL-R4

Sampled: 05/07/19 7:50 by K. Hahs, E. Lomeli

9E10050-05 (Water)

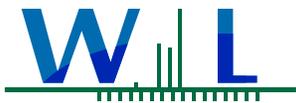
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	1.8		0.20	mg/l	1x1	05/28/19 16:19	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
Nitrogen, Total	1.8		0.20	mg/l	1x1	05/28/19 16:19	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs	
TKN	ND	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929	<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt	
NO2+NO3 as N	1.8	0.083	0.20	mg/l	1x1	05/28/19 16:19	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043	<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0054	0.0014	0.010	mg/l	1x1	05/30/19 15:19	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.012	0.012	0.020	mg/l	1x1	06/11/19 13:01	J

Sample: TMDL-CL

Sampled: 05/07/19 14:20 by K. Hahs, E. Lomeli

9E10050-06 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	0.34		0.20	mg/l	1x1	05/28/19 16:28	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
Nitrogen, Total	0.41		0.20	mg/l	1x1	05/28/19 16:28	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs	
TKN	0.41	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs	
TKN, Soluble	0.34	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929	<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt	
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	05/28/19 16:28	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043	<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0076	0.0014	0.010	mg/l	1x1	05/30/19 15:28	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.014	0.012	0.020	mg/l	1x1	06/11/19 13:03	J



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Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Sample Results

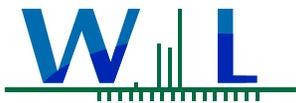
(Continued)

Sample: TMDL-SA

Sampled: 05/07/19 10:10 by K. Hahs, E. Lomeli

9E10050-07 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>1.3</b>		0.20	mg/l	1x1	05/28/19 16:29	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> mcs	
<b>Nitrogen, Total</b>	<b>1.4</b>		0.20	mg/l	1x1	05/28/19 16:29	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0758	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:30		<b>Analyst:</b> mcs	
<b>TKN</b>	<b>0.21</b>	0.050	0.10	mg/l	1x1	05/21/19 15:36	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9E0759	<b>Instr:</b> AA06		<b>Prepared:</b> 05/14/19 12:33		<b>Analyst:</b> mcs	
<b>TKN, Soluble</b>	<b>0.090</b>	0.050	0.10	mg/l	1x1	05/21/19 15:36	J
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9E0929	<b>Instr:</b> AA01		<b>Prepared:</b> 05/16/19 16:55		<b>Analyst:</b> ymt	
<b>NO2+NO3 as N</b>	<b>1.2</b>	0.083	0.20	mg/l	1x1	05/28/19 16:29	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9E1043	<b>Instr:</b> AA01		<b>Prepared:</b> 05/20/19 10:06		<b>Analyst:</b> ymt	
<b>Phosphorus as P, Total</b>	<b>0.012</b>	0.0014	0.010	mg/l	1x1	05/30/19 15:29	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F0285	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/06/19 11:24		<b>Analyst:</b> mtt	
<b>Phosphorus, Dissolved</b>	<b>ND</b>	0.012	0.020	mg/l	1x1	06/11/19 13:06	



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**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

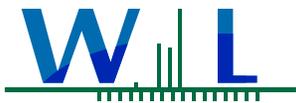
## Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9E0758 - EPA 351.2</b>											
<b>Blank (W9E0758-BLK1)</b> Prepared: 05/14/19 Analyzed: 05/21/19											
TKN	ND	0.050	0.10	mg/l							
<b>LCS (W9E0758-BS1)</b> Prepared: 05/14/19 Analyzed: 05/21/19											
TKN	0.923	0.050	0.10	mg/l	1.00		92	90-110			
<b>Matrix Spike (W9E0758-MS1)</b> Source: 9E10050-03 Prepared: 05/14/19 Analyzed: 05/21/19											
TKN	1.27	0.050	0.10	mg/l	1.00	0.168	110	90-110			
<b>Matrix Spike Dup (W9E0758-MSD1)</b> Source: 9E10050-03 Prepared: 05/14/19 Analyzed: 05/21/19											
TKN	1.18	0.050	0.10	mg/l	1.00	0.168	101	90-110	8	10	
<b>Batch: W9E0759 - EPA 351.2</b>											
<b>Blank (W9E0759-BLK1)</b> Prepared: 05/14/19 Analyzed: 05/21/19											
TKN, Soluble	ND	0.050	0.10	mg/l							
<b>LCS (W9E0759-BS1)</b> Prepared: 05/14/19 Analyzed: 05/21/19											
TKN, Soluble	0.952	0.050	0.10	mg/l	1.00		95	90-110			
<b>Matrix Spike (W9E0759-MS1)</b> Source: 9E10050-03 Prepared: 05/14/19 Analyzed: 05/21/19											
TKN, Soluble	0.988	0.050	0.10	mg/l	1.00	0.101	89	90-110			MS-01
<b>Matrix Spike Dup (W9E0759-MSD1)</b> Source: 9E10050-03 Prepared: 05/14/19 Analyzed: 05/21/19											
TKN, Soluble	1.08	0.050	0.10	mg/l	1.00	0.101	98	90-110	9	10	
<b>Batch: W9E0929 - EPA 353.2</b>											
<b>Blank (W9E0929-BLK1)</b> Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	ND	0.083	0.20	mg/l							
<b>LCS (W9E0929-BS1)</b> Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	1.04	0.083	0.20	mg/l	1.00		104	90-110			
<b>Matrix Spike (W9E0929-MS1)</b> Source: 9E10050-04 Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	3.71	0.083	0.20	mg/l	2.00	1.65	103	90-110			
<b>Matrix Spike (W9E0929-MS2)</b> Source: 9E10050-05 Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	3.83	0.083	0.20	mg/l	2.00	1.75	104	90-110			
<b>Matrix Spike Dup (W9E0929-MSD1)</b> Source: 9E10050-04 Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	3.70	0.083	0.20	mg/l	2.00	1.65	102	90-110	0.3	20	
<b>Matrix Spike Dup (W9E0929-MSD2)</b> Source: 9E10050-05 Prepared: 05/16/19 Analyzed: 05/28/19											
NO2+NO3 as N	3.84	0.083	0.20	mg/l	2.00	1.75	104	90-110	0.3	20	
<b>Batch: W9E1043 - EPA 365.1</b>											
<b>Blank (W9E1043-BLK1)</b> Prepared: 05/20/19 Analyzed: 05/30/19											
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
<b>LCS (W9E1043-BS1)</b> Prepared: 05/20/19 Analyzed: 05/30/19											
Phosphorus as P, Total	0.0500	0.0014	0.010	mg/l	0.0500		100	90-110			
<b>Matrix Spike (W9E1043-MS1)</b> Source: 9E10050-02 Prepared: 05/20/19 Analyzed: 05/30/19											
Phosphorus as P, Total	0.0735	0.0014	0.010	mg/l	0.0500	0.0221	103	90-110			
<b>Matrix Spike (W9E1043-MS2)</b> Source: 9E10050-05 Prepared: 05/20/19 Analyzed: 05/30/19											
Phosphorus as P, Total	0.0569	0.0014	0.010	mg/l	0.0500	0.00545	103	90-110			

9E10050

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WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study May 2019 P6040555

**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs

## Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

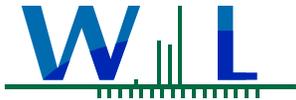
Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9E1043 - EPA 365.1 (Continued)</b>											
<b>Matrix Spike (W9E1043-MS2)</b>	<b>Source: 9E10050-05</b>			<b>Prepared: 05/20/19 Analyzed: 05/30/19</b>							
<b>Matrix Spike Dup (W9E1043-MSD1)</b>	<b>Source: 9E10050-02</b>			<b>Prepared: 05/20/19 Analyzed: 05/30/19</b>							
Phosphorus as P, Total	0.0740	0.0014	0.010	mg/l	0.0500	0.0221	104	90-110	0.7	20	
<b>Matrix Spike Dup (W9E1043-MSD2)</b>	<b>Source: 9E10050-05</b>			<b>Prepared: 05/20/19 Analyzed: 05/30/19</b>							
Phosphorus as P, Total	0.0560	0.0014	0.010	mg/l	0.0500	0.00545	101	90-110	2	20	

## Quality Control Results

(Continued)

Metals by EPA 200 Series Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9F0285 - EPA 200.7</b>											
<b>Blank (W9F0285-BLK1)</b>	<b>Source: 9E10050-01</b>			<b>Prepared: 06/06/19 Analyzed: 06/11/19</b>							
Phosphorus, Dissolved	ND	0.012	0.020	mg/l							
<b>LCS (W9F0285-BS1)</b>	<b>Source: 9E10050-01</b>			<b>Prepared: 06/06/19 Analyzed: 06/11/19</b>							
Phosphorus, Dissolved	1.02	0.012	0.020	mg/l	1.00		102	85-115			
<b>Matrix Spike (W9F0285-MS1)</b>	<b>Source: 9E10050-01</b>			<b>Prepared: 06/06/19 Analyzed: 06/11/19</b>							
Phosphorus, Dissolved	1.15	0.012	0.020	mg/l	1.00	0.0280	112	70-130			
<b>Matrix Spike Dup (W9F0285-MSD1)</b>	<b>Source: 9E10050-01</b>			<b>Prepared: 06/06/19 Analyzed: 06/11/19</b>							
Phosphorus, Dissolved	1.14	0.012	0.020	mg/l	1.00	0.0280	111	70-130	0.7	30	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

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**Reported:**  
06/13/2019 09:55

**Project Manager:** Kelly Hahs



## Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



aquatic  
bioassay &  
consulting  
laboratories, inc

July 17<sup>th</sup>, 2019

Ventura County Watershed Protection District  
Kelly Hahs  
800 S Victoria Ave  
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22<sup>nd</sup> Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,



Karin Wisenbaker  
Senior Biologist  
(805) 643-5621 ex.17

**Client: Ventura Country Watershed Protection District**  
**Project: Ventura River Algae TMDL**



**Chlorophyll a results from May 7th & 8th, 2019**

<b>Station</b>	<b>Field Replicate</b>	<b>Number of Transects Collected</b>	<b>Chlorophyll a</b>	<b>Units</b>
TMDL-R1	1	11	28	ug/cm2
TMDL-R2	1	11	7	ug/cm2
TMDL-R3	1	11	7.7	ug/cm2
TMDL-R4	1	11	10	ug/cm2
TMDL-CL	1	11	2.8	ug/cm2
TMDL-SA	1	11	12	ug/cm2
TMDL-Est	1	NA	22	ug/L







**Ventura River and Tributaries  
Algae, Eutrophic Conditions, and Nutrients TMDL  
(VR Algae TMDL)**

9F180069

**Comprehensive Monitoring Program**

**CHAIN-OF-CUSTODY RECORD**

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY19MA01, Project P6040555)

SAMPLING EVENT: JUNE 2019

SAMPLING DATE: 6/12/19 + 6/13/19

SAMPLERS: K. MAHS, J. PEREZ

**GRAB SAMPLES**

SAMPLE ID	DATE/TIME	Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen	** FIELD FILTERED		NOTES
TMDL-Est	6/13/19 13:30	X	X	X			
TMDL-R1	6/13/19 11:45	X	X	X			
TMDL-R2	6/13/19 09:20	X	X	X			
TMDL-R3	6/12/19 12:45	X	X	X			
TMDL-R4	6/12/19 07:55	X	X	X			
TMDL-CL	6/13/19 07:45	X	X	X			
TMDL-SA	6/12/19 10:00	X	X	X			
TMDL-FD	6/12/19 10:00	X	X	X			(Note which site)

Signature: <u>Emily Loveli</u>	Signature: <u>[Signature]</u>
Print Name: <u>Emily Loveli</u>	Print Name: <u>Charles Navarro</u>
Affiliation: <u>VCHPD</u>	Affiliation: <u>Water Labs</u>
Date/Time Received:	Date/Time Received: <u>6/18/19 11:48</u>
Date/Time Relinquished: <u>6/18/19 11:45</u>	Date/Time Relinquished:

Signature: <u>[Signature]</u>	Signature: <u>James Gomez</u>
Print Name: <u>Charles Navarro</u>	Print Name: <u>JAMES GOMEZ</u>
Affiliation: <u>Water Labs</u>	Affiliation: <u>Water Labs</u>
Date/Time Received: <u>6/18/19 3:30</u>	Date/Time Received: <u>6/18/19 15:30</u>
Date/Time Relinquished:	Date/Time Relinquished:

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

1.0°C FOUA



# Certificate of Analysis

FINAL REPORT

**Work Orders:** 9F18069

**Report Date:** 7/22/2019

**Project:** TMDL Study June 2019 P6040555

**Received Date:** 6/18/2019

**Turnaround Time:** Normal

**Phones:** (805) 658-4375

**Fax:** (805) 654-3350

**P.O. #:** WECKLABORATORYF1  
9MA01

**Attn:** Kelly Hahs

**Billing Code:**

**Client:** Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 •  
NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

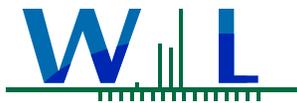
Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 6/18/19 with the Chain-of-Custody document. The samples were received in good condition, at 1.8 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:**

Brandon Gee  
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

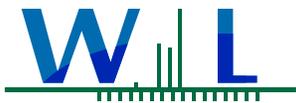
**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs, J Perez	9F18069-01	Water	06/13/19 13:30	
TMDL-R1	K. Hahs, J Perez	9F18069-02	Water	06/13/19 11:45	
TMDL-R2	K. Hahs, J Perez	9F18069-03	Water	06/13/19 09:20	
TMDL-R3	K. Hahs, J Perez	9F18069-04	Water	06/12/19 12:45	
TMDL-R4	K. Hahs, J Perez	9F18069-05	Water	06/12/19 07:55	
TMDL-CL	K. Hahs, J Perez	9F18069-06	Water	06/13/19 07:45	
TMDL-SA	K. Hahs, J Perez	9F18069-07	Water	06/12/19 10:00	
TMDL-FD	K. Hahs, J Perez	9F18069-08	Water	06/12/19 10:00	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Sample Results

Sample: TMDL-Est  
9F18069-01 (Water)

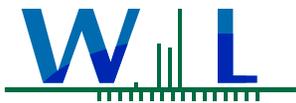
Sampled: 06/13/19 13:30 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
Dissolved Nitrogen	0.86		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
Nitrogen, Total	1.0		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
TKN	0.30	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
TKN, Soluble	0.16	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt	
NO2+NO3 as N	0.70	0.083	0.20	mg/l	1x1	06/26/19 12:11	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.016	0.0014	0.010	mg/l	1x1	07/03/19 13:56	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.027	0.012	0.020	mg/l	1x1	07/02/19 18:45	

Sample: TMDL-R1  
9F18069-02 (Water)

Sampled: 06/13/19 11:45 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.1		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
Nitrogen, Total	1.4		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
TKN	0.27	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt	
NO2+NO3 as N	1.1	0.083	0.20	mg/l	1x1	06/26/19 12:14	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.029	0.0014	0.010	mg/l	1x1	07/03/19 13:59	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.043	0.012	0.020	mg/l	1x1	07/02/19 18:48	



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Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Sample Results

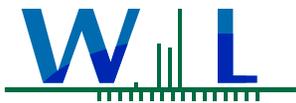
(Continued)

Sample: TMDL-R2  
9F18069-03 (Water) Sampled: 06/13/19 9:20 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38	<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.6		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35	<b>Analyst:</b> mcs	
Nitrogen, Total	1.6		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35	<b>Analyst:</b> mcs	
TKN	ND	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38	<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32	<b>Analyst:</b> ymt	
NO2+NO3 as N	1.6	0.083	0.20	mg/l	1x1	06/26/19 12:24	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.041	0.0014	0.010	mg/l	1x1	07/03/19 14:07	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.051	0.012	0.020	mg/l	1x1	07/02/19 18:51	

Sample: TMDL-R3  
9F18069-04 (Water) Sampled: 06/12/19 12:45 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38	<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.5		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35	<b>Analyst:</b> mcs	
Nitrogen, Total	1.6		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35	<b>Analyst:</b> mcs	
TKN	0.071	0.050	0.10	mg/l	1x1	07/03/19 13:17	J
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38	<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32	<b>Analyst:</b> ymt	
NO2+NO3 as N	1.5	0.083	0.20	mg/l	1x1	06/26/19 12:25	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0037	0.0014	0.010	mg/l	1x1	07/03/19 13:46	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	07/02/19 18:54	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Sample Results

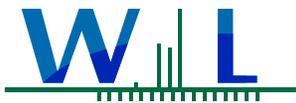
(Continued)

Sample: TMDL-R4  
9F18069-05 (Water) Sampled: 06/12/19 7:55 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.9		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
Nitrogen, Total	1.9		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
TKN	ND	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt	
NO2+NO3 as N	1.9	0.083	0.20	mg/l	1x1	06/26/19 12:31	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0043	0.0014	0.010	mg/l	1x1	07/03/19 13:54	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	07/02/19 18:57	

Sample: TMDL-CL  
9F18069-06 (Water) Sampled: 06/13/19 7:45 by K. Hahs, J Perez

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
Dissolved Nitrogen	0.46		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
Nitrogen, Total	0.45		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs	
TKN	0.45	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206	<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs	
TKN, Soluble	0.46	0.050	0.10	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt	
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	06/26/19 12:32	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145	<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0022	0.0014	0.010	mg/l	1x1	07/03/19 14:01	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324	<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	07/02/19 19:00	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Sample Results

(Continued)

Sample: TMDL-SA

Sampled: 06/12/19 10:00 by K. Hahs, J Perez

9F18069-07 (Water)

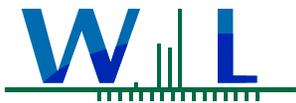
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs
METHOD ***							
Dissolved Nitrogen	0.68		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs
Nitrogen, Total	0.85		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs
TKN	0.22	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs
TKN, Soluble	0.056	0.050	0.10	mg/l	1x1	06/26/19 16:12	J
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt
NO2+NO3 as N	0.63	0.083	0.20	mg/l	1x1	06/26/19 12:33	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.025	0.0014	0.010	mg/l	1x1	07/03/19 14:03	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt
Phosphorus, Dissolved	0.038	0.012	0.020	mg/l	1x1	07/02/19 19:03	

Sample: TMDL-FD

Sampled: 06/12/19 10:00 by K. Hahs, J Perez

9F18069-08 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs
METHOD ***							
Dissolved Nitrogen	0.69		0.20	mg/l	1x1	06/26/19 16:12	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs
Nitrogen, Total	0.87		0.20	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1205		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:35		<b>Analyst:</b> mcs
TKN	0.24	0.050	0.10	mg/l	1x1	07/03/19 13:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9F1206		<b>Instr:</b> AA06		<b>Prepared:</b> 06/21/19 15:38		<b>Analyst:</b> mcs
TKN, Soluble	0.057	0.050	0.10	mg/l	1x1	06/26/19 16:12	J
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9F1136		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 14:32		<b>Analyst:</b> ymt
NO2+NO3 as N	0.63	0.083	0.20	mg/l	1x1	06/26/19 12:34	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9F1145		<b>Instr:</b> AA01		<b>Prepared:</b> 06/20/19 16:13		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.025	0.0014	0.010	mg/l	1x1	07/03/19 14:04	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9F1324		<b>Instr:</b> ICP03		<b>Prepared:</b> 06/25/19 09:43		<b>Analyst:</b> mtt
Phosphorus, Dissolved	0.024	0.012	0.020	mg/l	1x1	07/02/19 19:06	



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

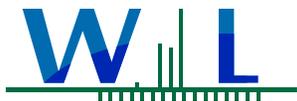
## Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9F1136 - EPA 353.2</b>											
<b>Blank (W9F1136-BLK1)</b> Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	ND	0.083	0.20	mg/l							
<b>LCS (W9F1136-BS1)</b> Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	1.04	0.083	0.20	mg/l	1.00		104	90-110			
<b>Duplicate (W9F1136-DUP1)</b> Source: 9F18091-02 Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	ND	0.083	0.20	mg/l		ND				20	
<b>Matrix Spike (W9F1136-MS1)</b> Source: 9F18069-01 Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	2.77	0.083	0.20	mg/l	2.00	0.698	104	90-110			
<b>Matrix Spike (W9F1136-MS2)</b> Source: 9F18069-02 Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	3.19	0.083	0.20	mg/l	2.00	1.13	103	90-110			
<b>Matrix Spike Dup (W9F1136-MSD1)</b> Source: 9F18069-01 Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	2.77	0.083	0.20	mg/l	2.00	0.698	104	90-110	0	20	
<b>Matrix Spike Dup (W9F1136-MSD2)</b> Source: 9F18069-02 Prepared: 06/20/19 Analyzed: 06/26/19											
NO2+NO3 as N	3.18	0.083	0.20	mg/l	2.00	1.13	102	90-110	0.3	20	
<b>Batch: W9F1145 - EPA 365.1</b>											
<b>Blank (W9F1145-BLK1)</b> Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
<b>LCS (W9F1145-BS1)</b> Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	0.0474	0.0014	0.010	mg/l	0.0500		95	90-110			
<b>Matrix Spike (W9F1145-MS1)</b> Source: 9F18069-04 Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	0.0549	0.0014	0.010	mg/l	0.0500	0.00373	102	90-110			
<b>Matrix Spike (W9F1145-MS2)</b> Source: 9F18069-05 Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	0.0542	0.0014	0.010	mg/l	0.0500	0.00434	100	90-110			
<b>Matrix Spike Dup (W9F1145-MSD1)</b> Source: 9F18069-04 Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	0.0550	0.0014	0.010	mg/l	0.0500	0.00373	103	90-110	0.2	20	
<b>Matrix Spike Dup (W9F1145-MSD2)</b> Source: 9F18069-05 Prepared: 06/20/19 Analyzed: 07/03/19											
Phosphorus as P, Total	0.0524	0.0014	0.010	mg/l	0.0500	0.00434	96	90-110	3	20	
<b>Batch: W9F1205 - EPA 351.2</b>											
<b>Blank (W9F1205-BLK1)</b> Prepared: 06/21/19 Analyzed: 07/03/19											
TKN	ND	0.050	0.10	mg/l							
<b>Blank (W9F1205-BLK2)</b> Prepared: 06/21/19 Analyzed: 07/11/19											
TKN	ND	0.050	0.10	mg/l							
<b>LCS (W9F1205-BS1)</b> Prepared: 06/21/19 Analyzed: 07/03/19											
TKN	1.01	0.050	0.10	mg/l	1.00		101	90-110			
<b>LCS (W9F1205-BS2)</b> Prepared: 06/21/19 Analyzed: 07/11/19											
TKN	0.962	0.050	0.10	mg/l	1.00		96	90-110			
<b>Matrix Spike (W9F1205-MS1)</b> Source: 9F18069-04 Prepared: 06/21/19 Analyzed: 07/03/19											
TKN	1.04	0.050	0.10	mg/l	1.00	0.0714	97	90-110			
<b>Matrix Spike (W9F1205-MS2)</b> Source: 9F18069-04 Prepared: 06/21/19 Analyzed: 07/11/19											

9F18069

Page 7 of 9



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs

## Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9F1205 - EPA 351.2 (Continued)</b>											
<b>Matrix Spike (W9F1205-MS2)</b>	<b>Source: 9F18069-04</b>				<b>Prepared: 06/21/19</b>		<b>Analyzed: 07/11/19</b>				
TKN	2.02	0.10	0.20	mg/l	2.00	ND	101	90-110			
<b>Matrix Spike Dup (W9F1205-MSD1)</b>	<b>Source: 9F18069-04</b>				<b>Prepared: 06/21/19</b>		<b>Analyzed: 07/03/19</b>				
TKN	1.06	0.050	0.10	mg/l	1.00	0.0714	99	90-110	3	10	
<b>Matrix Spike Dup (W9F1205-MSD2)</b>	<b>Source: 9F18069-04</b>				<b>Prepared: 06/21/19</b>		<b>Analyzed: 07/11/19</b>				
TKN	1.83	0.10	0.20	mg/l	2.00	ND	91	90-110	10	10	

**Batch: W9F1206 - EPA 351.2**

<b>Blank (W9F1206-BLK1)</b>											
TKN, Soluble	ND	0.050	0.10	mg/l							
<b>Prepared: 06/21/19 Analyzed: 06/26/19</b>											
<b>LCS (W9F1206-BS1)</b>											
TKN, Soluble	1.01	0.050	0.10	mg/l	1.00		101	90-110			
<b>Prepared: 06/21/19 Analyzed: 06/26/19</b>											
<b>Matrix Spike (W9F1206-MS1)</b>											
TKN, Soluble	0.877	0.050	0.10	mg/l	1.00	ND	88	90-110			MS-01
<b>Prepared: 06/21/19 Analyzed: 06/26/19</b>											
<b>Matrix Spike Dup (W9F1206-MSD1)</b>											
TKN, Soluble	1.00	0.050	0.10	mg/l	1.00	ND	100	90-110	14	10	R-02
<b>Prepared: 06/21/19 Analyzed: 06/26/19</b>											

## Quality Control Results

(Continued)

Metals by EPA 200 Series Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9F1324 - EPA 200.7</b>											
<b>Blank (W9F1324-BLK1)</b>											
Phosphorus, Dissolved	ND	0.012	0.020	mg/l							
<b>Prepared: 06/25/19 Analyzed: 07/02/19</b>											
<b>LCS (W9F1324-BS1)</b>											
Phosphorus, Dissolved	1.02	0.012	0.020	mg/l	1.00		102	85-115			
<b>Prepared: 06/25/19 Analyzed: 07/02/19</b>											
<b>Matrix Spike (W9F1324-MS1)</b>											
Phosphorus, Dissolved	1.06	0.012	0.020	mg/l	1.00	0.0270	103	70-130			
<b>Prepared: 06/25/19 Analyzed: 07/02/19</b>											
<b>Matrix Spike Dup (W9F1324-MSD1)</b>											
Phosphorus, Dissolved	1.09	0.012	0.020	mg/l	1.00	0.0270	106	70-130	3	30	
<b>Prepared: 06/25/19 Analyzed: 07/02/19</b>											



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study June 2019 P6040555

**Reported:**  
07/22/2019 08:32

**Project Manager:** Kelly Hahs



## Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
R-02	The RPD was outside of QC acceptance limits due to possible matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



aquatic  
bioassay &  
consulting  
laboratories, inc

July 17<sup>th</sup>, 2019

Ventura County Watershed Protection District  
Kelly Hahs  
800 S Victoria Ave  
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22<sup>nd</sup> Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,



Karin Wisenbaker  
Senior Biologist  
(805) 643-5621 ex.17

**Client: Ventura Country Watershed Protection District**  
**Project: Ventura River Algae TMDL**



**Chlorophyll a results from June 12th & 13th, 2019**

<b>Station</b>	<b>Field Replicate</b>	<b>Number of Transects Collected</b>	<b>Chlorophyll a</b>	<b>Units</b>
TMDL-R1	1	11	6.8	ug/cm2
TMDL-R2	1	11	23.0	ug/cm2
TMDL-R3	1	11	2.1	ug/cm2
TMDL-R4	1	11	9.1	ug/cm2
TMDL-CL	1	11	4.5	ug/cm2
TMDL-SA	1	11	19.0	ug/cm2
TMDL-SA	2	11	1.7	ug/cm2
TMDL-Est	1	NA	27	ug/L
TMDL-Est	2	NA	11	ug/L



## Cha study

<b>From:</b> Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	<b>Phone:</b> (805) 643-5621 <b>Fax:</b> (805) 643-2930 <b>Project ID:</b> VCWPD <b>Algae TMDL</b>	<b>To:</b> <b>Company:</b> Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 <b>Address:</b> <b>Phone:</b>
---	---	---

						ANALYSIS													
Sample I.D. No.	Sample Date	Time	Matrix	Composite Volume/ No.	Reps	Chl-a													
TMDL-CL	06/13/19	7:45		572		X													
TMDL-RZ	06/13/19	9:20		574		X													
TMDL-RI	06/13/19	11:45		688		X													
TMDL-EST	06/13/19	13:15		1000	1	X													
TMDL-EST	06/13/19	13:15		1000	2	X													

**Special Instructions:**

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
	06/13/19	1500		6-13-19	1500						



9616051

## Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

### Comprehensive Monitoring Program

#### CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY20MA01, Project P6040555)

SAMPLING EVENT: JULY 2019

SAMPLING DATE: 7/10 + 11/2019

SAMPLERS: M. CAPCAP, K. HAHS

#### GRAB SAMPLES

SAMPLE ID	DATE/TIME	Nutrients			Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen			NOTES
		Total Nitrogen	Dissolved Nitrogen	Dissolved Phosphorus						
TMDL-Est	7/10/19 12:25	X	X	X						
TMDL-R1	7/11/19 10:20	X	X	X						
TMDL-R2	7/11/19 07:50	X	X	X						
TMDL-R3	7/10/19 1100	X	X	X						
TMDL-R4	7/10/19 0755	X	X	X						
TMDL-CL	7/10/19 1255	X	X	X						
TMDL-SA	7/10/19 0935	X	X	X						
TMDL-FB		X	X	X						(Note which site)

Signature: <u>Emily Kowalski</u>	Signature:
Print Name: <u>Emily Kowalski</u>	Print Name:
Affiliation: <u>VC WPD</u>	Affiliation:
Date/Time Received:	Date/Time Received:
Date/Time Relinquished: <u>7/10/2019 12:00</u>	Date/Time Relinquished:
Signature: <u>Carlos Salas</u>	Signature: <u>[Signature]</u>
Print Name: <u>Carlos Salas</u>	Print Name: <u>Lester Abad Forre</u>
Affiliation: <u>Woods Tech</u>	Affiliation: <u>Creek</u>
Date/Time Received: <u>7/10/19 1200</u>	Date/Time Received: <u>7/10/19 15:05</u>
Date/Time Relinquished: <u>7/10/19 305</u>	Date/Time Relinquished:

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered



# Certificate of Analysis

FINAL REPORT

**Work Orders:** 9G16051

**Report Date:** 7/29/2019

**Project:** TMDL Study July 2019 P6040555

**Received Date:** 7/16/2019

**Turnaround Time:** Normal

**Phones:** (805) 658-4375

**Fax:** (805) 654-3350

**P.O. #:** WECKLABORATORYF2  
OMA01

**Attn:** Kelly Hahs

**Billing Code:**

**Client:** Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 •  
NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

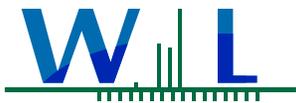
Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 7/16/19 with the Chain-of-Custody document. The samples were received in good condition, at 1.0 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:**

Brandon Gee  
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

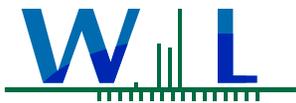
**Project Number:** TMDL Study July 2019 P6040555

**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs, M. Capcap	9G16051-01	Water	07/11/19 12:25	
TMDL-R1	K. Hahs, M. Capcap	9G16051-02	Water	07/11/19 10:20	
TMDL-R2	K. Hahs, M. Capcap	9G16051-03	Water	07/11/19 07:50	
TMDL-R3	K. Hahs, M. Capcap	9G16051-04	Water	07/10/19 11:00	
TMDL-R4	K. Hahs, M. Capcap	9G16051-05	Water	07/10/19 07:55	
TMDL-CL	K. Hahs, M. Capcap	9G16051-06	Water	07/10/19 12:55	
TMDL-SA	K. Hahs, M. Capcap	9G16051-07	Water	07/10/19 09:35	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study July 2019 P6040555

**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Sample Results

Sample: TMDL-Est  
9G16051-01 (Water)

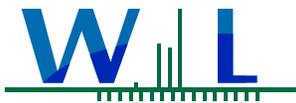
Sampled: 07/11/19 12:25 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
Dissolved Nitrogen	0.64		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
Nitrogen, Total	0.72		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
TKN	0.39	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
TKN, Soluble	0.32	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940	<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38		<b>Analyst:</b> sar	
NO2+NO3 as N	0.32	0.083	0.20	mg/l	1x1	07/18/19 13:01	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017	<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00		<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.043	0.0014	0.010	mg/l	1x1	07/22/19 17:06	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998	<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.043	0.012	0.020	mg/l	1x1	07/24/19 14:55	

Sample: TMDL-R1  
9G16051-02 (Water)

Sampled: 07/11/19 10:20 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.1		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
Nitrogen, Total	1.2		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
TKN	0.29	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
TKN, Soluble	0.22	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940	<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38		<b>Analyst:</b> sar	
NO2+NO3 as N	0.88	0.083	0.20	mg/l	1x1	07/18/19 13:02	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017	<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00		<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.075	0.0014	0.010	mg/l	1x1	07/22/19 17:08	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998	<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43		<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.079	0.012	0.020	mg/l	1x1	07/24/19 14:58	



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FINAL REPORT

**Project Number:** TMDL Study July 2019 P6040555

**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Sample Results

(Continued)

Sample: TMDL-R2

Sampled: 07/11/19 7:50 by K. Hahs, M. Capcap

9G16051-03 (Water)

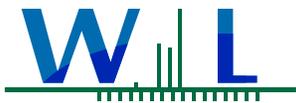
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	1.3		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
Nitrogen, Total	1.3		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
TKN	0.074	0.050	0.10	mg/l	1x1	07/22/19 12:22	J
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940		<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38	<b>Analyst:</b> sar	
NO2+NO3 as N	1.3	0.083	0.20	mg/l	1x1	07/18/19 13:03	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017		<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00	<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.048	0.0014	0.010	mg/l	1x1	07/22/19 17:09	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998		<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.057	0.012	0.020	mg/l	1x1	07/24/19 15:01	

Sample: TMDL-R3

Sampled: 07/10/19 11:00 by K. Hahs, M. Capcap

9G16051-04 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
METHOD ***							
Dissolved Nitrogen	1.2		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
Nitrogen, Total	1.2		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
TKN	ND	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
TKN, Soluble	0.087	0.050	0.10	mg/l	1x1	07/22/19 12:22	J
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940		<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38	<b>Analyst:</b> sar	
NO2+NO3 as N	1.2	0.083	0.20	mg/l	1x1	07/18/19 13:04	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017		<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00	<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.0065	0.0014	0.010	mg/l	1x1	07/22/19 17:11	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998		<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	0.015	0.012	0.020	mg/l	1x1	07/24/19 15:04	J



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**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Sample Results

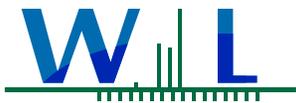
(Continued)

Sample: TMDL-R4  
9G16051-05 (Water) Sampled: 07/10/19 7:55 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
Dissolved Nitrogen	1.4		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
Nitrogen, Total	1.4		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
TKN	ND	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940		<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38	<b>Analyst:</b> sar	
NO2+NO3 as N	1.4	0.083	0.20	mg/l	1x1	07/18/19 13:05	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017		<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00	<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.0064	0.0014	0.010	mg/l	1x1	07/22/19 17:02	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998		<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	07/24/19 15:07	

Sample: TMDL-CL  
9G16051-06 (Water) Sampled: 07/10/19 12:55 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
Dissolved Nitrogen	0.45		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
Nitrogen, Total	0.46		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32	<b>Analyst:</b> mcs	
TKN	0.46	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016		<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34	<b>Analyst:</b> mcs	
TKN, Soluble	0.45	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940		<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38	<b>Analyst:</b> sar	
NO2+NO3 as N	ND	0.083	0.20	mg/l	1x1	07/18/19 13:06	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017		<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00	<b>Analyst:</b> YMT	
Phosphorus as P, Total	0.0085	0.0014	0.010	mg/l	1x1	07/22/19 17:12	J
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998		<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43	<b>Analyst:</b> mtt	
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	07/24/19 15:10	



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**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Sample Results

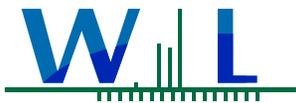
(Continued)

Sample: TMDL-SA

Sampled: 07/10/19 9:35 by K. Hahs, M. Capcap

9G16051-07 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>0.40</b>		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
<b>Nitrogen, Total</b>	<b>0.43</b>		0.20	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1015	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:32		<b>Analyst:</b> mcs	
<b>TKN</b>	<b>0.22</b>	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9G1016	<b>Instr:</b> AA06		<b>Prepared:</b> 07/18/19 13:34		<b>Analyst:</b> mcs	
<b>TKN, Soluble</b>	<b>0.19</b>	0.050	0.10	mg/l	1x1	07/22/19 12:22	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9G0940	<b>Instr:</b> AA01		<b>Prepared:</b> 07/17/19 16:38		<b>Analyst:</b> sar	
<b>NO2+NO3 as N</b>	<b>0.21</b>	0.083	0.20	mg/l	1x1	07/18/19 13:08	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9G1017	<b>Instr:</b> AA01		<b>Prepared:</b> 07/18/19 14:00		<b>Analyst:</b> YMT	
<b>Phosphorus as P, Total</b>	<b>0.042</b>	0.0014	0.010	mg/l	1x1	07/22/19 17:14	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9G0998	<b>Instr:</b> ICP03		<b>Prepared:</b> 07/18/19 10:43		<b>Analyst:</b> mtt	
<b>Phosphorus, Dissolved</b>	<b>0.047</b>	0.012	0.020	mg/l	1x1	07/24/19 15:13	



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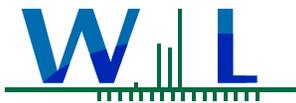
## Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9G0940 - EPA 353.2</b>											
<b>Blank (W9G0940-BLK1)</b> Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	ND	0.083	0.20	mg/l							
<b>LCS (W9G0940-BS1)</b> Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	1.01	0.083	0.20	mg/l	1.00		101	90-110			
<b>Matrix Spike (W9G0940-MS1)</b> Source: 9G15080-01 Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	2.19	0.083	0.20	mg/l	2.00	0.116	104	90-110			
<b>Matrix Spike (W9G0940-MS2)</b> Source: 9G15080-02 Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	4.87	0.083	0.20	mg/l	2.00	2.77	105	90-110			
<b>Matrix Spike Dup (W9G0940-MSD1)</b> Source: 9G15080-01 Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	2.19	0.083	0.20	mg/l	2.00	0.116	104	90-110	0	20	
<b>Matrix Spike Dup (W9G0940-MSD2)</b> Source: 9G15080-02 Prepared: 07/17/19 Analyzed: 07/18/19											
NO2+NO3 as N	4.92	0.083	0.20	mg/l	2.00	2.77	108	90-110	1	20	
<b>Batch: W9G1015 - EPA 351.2</b>											
<b>Blank (W9G1015-BLK1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
TKN	ND	0.050	0.10	mg/l							
<b>LCS (W9G1015-BS1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
TKN	1.02	0.050	0.10	mg/l	1.00		102	90-110			
<b>Matrix Spike (W9G1015-MS1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
TKN	1.08	0.050	0.10	mg/l	1.00	ND	108	90-110			
<b>Matrix Spike Dup (W9G1015-MSD1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
TKN	1.08	0.050	0.10	mg/l	1.00	ND	108	90-110	0.2	10	
<b>Batch: W9G1016 - EPA 351.2</b>											
<b>Blank (W9G1016-BLK1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
TKN, Soluble	ND	0.050	0.10	mg/l							
<b>LCS (W9G1016-BS1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
TKN, Soluble	1.01	0.050	0.10	mg/l	1.00		101	90-110			
<b>Matrix Spike (W9G1016-MS1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
TKN, Soluble	0.954	0.050	0.10	mg/l	1.00	ND	95	90-110			
<b>Matrix Spike Dup (W9G1016-MSD1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
TKN, Soluble	0.815	0.050	0.10	mg/l	1.00	ND	82	90-110	16	10	MS-01
<b>Batch: W9G1017 - EPA 365.1</b>											
<b>Blank (W9G1017-BLK1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
<b>LCS (W9G1017-BS1)</b> Prepared: 07/18/19 Analyzed: 07/22/19											
Phosphorus as P, Total	0.0481	0.0014	0.010	mg/l	0.0500		96	90-110			
<b>Matrix Spike (W9G1017-MS1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
Phosphorus as P, Total	0.0570	0.0014	0.010	mg/l	0.0500	0.00637	101	90-110			
<b>Matrix Spike Dup (W9G1017-MSD1)</b> Source: 9G16051-05 Prepared: 07/18/19 Analyzed: 07/22/19											
Phosphorus as P, Total	0.0565	0.0014	0.010	mg/l	0.0500	0.00637	100	90-110	0.9	20	

9G16051

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# Certificate of Analysis

FINAL REPORT

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**Reported:**  
07/29/2019 09:27

**Project Manager:** Kelly Hahs

## Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Batch: W9G1017 - EPA 365.1 (Continued)

Matrix Spike Dup (W9G1017-MSD1)

Source: 9G16051-05

Prepared: 07/18/19 Analyzed: 07/22/19

## Quality Control Results

(Continued)

Metals by EPA 200 Series Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Batch: W9G0998 - EPA 200.7

Blank (W9G0998-BLK1)

Prepared: 07/18/19 Analyzed: 07/24/19

Phosphorus, Dissolved ..... ND 0.012 0.020 mg/l

LCS (W9G0998-BS1)

Prepared: 07/18/19 Analyzed: 07/24/19

Phosphorus, Dissolved ..... 0.980 0.012 0.020 mg/l 1.00 98 85-115

Matrix Spike (W9G0998-MS1)

Source: 9G16051-02

Prepared: 07/18/19 Analyzed: 07/24/19

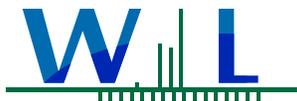
Phosphorus, Dissolved ..... 1.11 0.012 0.020 mg/l 1.00 0.0790 103 70-130

Matrix Spike Dup (W9G0998-MSD1)

Source: 9G16051-02

Prepared: 07/18/19 Analyzed: 07/24/19

Phosphorus, Dissolved ..... 1.12 0.012 0.020 mg/l 1.00 0.0790 104 70-130 0.9 30



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## Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



September 11<sup>th</sup>, 2019

Ventura County Watershed Protection District  
Kelly Hahs  
800 S Victoria Ave  
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22<sup>nd</sup> Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker  
Senior Biologist  
(805) 643-5621 ex.17

**Client: Ventura Country Watershed Protection District**  
**Project: Ventura River Algae TMDL**



**Chlorophyll a results from July 10th & 11th, 2019**

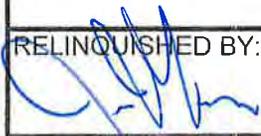
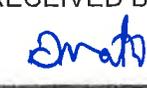
<b>Station</b>	<b>Field Replicate</b>	<b>Number of Transects Collected</b>	<b>Chlorophyll a</b>	<b>Units</b>
TMDL-R1	1	11	24.0	ug/cm2
TMDL-R2	1	11	38.0	ug/cm2
TMDL-R3	1	11	14.0	ug/cm2
TMDL-R4	1	11	15.0	ug/cm2
TMDL-CL	1	11	6.4	ug/cm2
TMDL-SA	1	11	18.0	ug/cm2
TMDL-Est	1	NA	3.0	ug/L

## Chain study

<b>From:</b> Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	<b>Phone:</b> (805) 643-5621 <b>Fax:</b> (805) 643-2930 <b>Project ID:</b> VCWPD <b>Algae TMDL</b>	<b>To: Company:</b> Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001 <b>Phone:</b>
---	---	---

Sample I.D. No.	Sample Date	Time	Matrix	Composite Volume/ No.	Reps	ANALYSIS														
						Chl-a														
R-4	7.10.19	0755		441		X														
SA	7.10.19	0935		525		X														
R-3	7.10.19	1100		520		X														
CL	7.10.19	1255		399		X														
R-2	7.11.19	0750		642		X														
R-1	7.11.19	1020		452		X														
EST	7.11.19	<del>1255</del> 1255 <sup>uh</sup>		<del>500</del> 1000		X														

**Special Instructions:**

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
	7-11-19	1430		7-11-19	1430						



# Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

9H21084

## Comprehensive Monitoring Program

### CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY20MA01, Project P6040555)

SAMPLING EVENT: AUGUST 2019

SAMPLING DATE: 8/14+15/2019

SAMPLERS: ~~XXXXXX~~ M. CAPCAP, J. FORREST

### GRAB SAMPLES

SAMPLE ID	DATE/TIME	Nutrients			Other		NOTES
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen			
TMDL-Est	8/14/19 1340	X	X	X			MC
TMDL-R1	8/15/19 1040	X	X	X			JF
TMDL-R2	↓ 0820	X	X	X			JF
TMDL-R3	8/14/19 1130	X	X	X			MC
TMDL-R4	8/14/19 0800	X	X	X			MC
TMDL-CL	<del>_____</del>	X	X	X			DRY
TMDL-SA	8/14/19 0930	X	X	X			MC
TMDL-FB	<del>_____</del>	X	X	X			(Note which site)

Signature: <u>KELLY HAYS</u>	Signature: <u>[Signature]</u>
Print Name: <u>Kelly Hays</u>	Print Name: <u>Bruce Matlock</u>
Affiliation: <u>VCPWD</u>	Affiliation: <u>Weck Labs</u>
Date/Time Received: <u>8/21/19 1335</u>	Date/Time Received: <u>8/22/19 1340</u>
Date/Time Relinquished: <u>8/21/19 1335</u>	Date/Time Relinquished: <u>8/22/19 1340</u>

Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: <u>Carlos Navarero</u>	Print Name: <u>Carlos Navarero</u>
Affiliation: <u>Weck Labs</u>	Affiliation: <u>Weck Labs</u>
Date/Time Received: <u>8/21/19 325</u>	Date/Time Received: <u>8/21/19 445</u>
Date/Time Relinquished: <u>8/21/19 325</u>	Date/Time Relinquished: <u>8/21/19 445</u>

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered

AD 8-21-19 16275 Four 1.0"

**Work Orders:** 9H21084

**Project:** TMDL Study August 2019 P6040555

**Attn:** Kelly Hahs

**Client:** Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

**Report Date:** 9/24/2019

**Received Date:** 8/21/2019

**Turnaround Time:** Normal

**Phones:** (805) 658-4375

**Fax:** (805) 654-3350

**P.O. #:** WECKLABORATORYF2  
OMA01

**Billing Code:**

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 •  
NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

Dear Kelly Hahs,

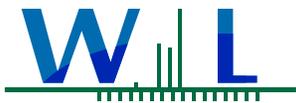
Enclosed are the results of analyses for samples received 8/21/19 with the Chain-of-Custody document. The samples were received in good condition, at 1.6 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:**



Brandon Gee  
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

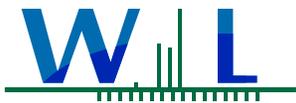
**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	K. Hahs, M. Capcap	9H21084-01	Water	08/21/19 13:40	
TMDL-R1	K. Hahs, M. Capcap	9H21084-02	Water	08/21/19 10:40	
TMDL-R2	K. Hahs, M. Capcap	9H21084-03	Water	08/21/19 08:20	
TMDL-R3	K. Hahs, M. Capcap	9H21084-04	Water	08/21/19 11:30	
TMDL-R4	K. Hahs, M. Capcap	9H21084-05	Water	08/21/19 08:00	
TMDL-SA	K. Hahs, M. Capcap	9H21084-06	Water	08/21/19 09:30	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Sample Results

Sample: TMDL-Est

Sampled: 08/21/19 13:40 by K. Hahs, M. Capcap

9H21084-01 (Water)

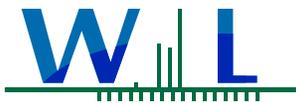
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs	
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>0.72</b>		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs	
<b>Nitrogen, Total</b>	<b>1.0</b>		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389	<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs	
<b>TKN, Soluble</b>	<b>0.31</b>	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390	<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs	
<b>TKN</b>	<b>0.61</b>	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574	<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar	
<b>NO2+NO3 as N</b>	<b>0.41</b>	0.083	0.20	mg/l	1x1	08/28/19 12:31	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343	<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt	
<b>Phosphorus as P, Total</b>	<b>0.078</b>	0.0014	0.010	mg/l	1x1	08/30/19 14:04	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429	<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM	
<b>Phosphorus, Dissolved</b>	<b>0.062</b>	0.012	0.020	mg/l	1x1	09/18/19 13:55	

Sample: TMDL-R1

Sampled: 08/21/19 10:40 by K. Hahs, M. Capcap

9H21084-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs	
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>1.1</b>		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]	<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs	
<b>Nitrogen, Total</b>	<b>1.0</b>		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389	<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs	
<b>TKN, Soluble</b>	<b>0.24</b>	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390	<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs	
<b>TKN</b>	<b>0.21</b>	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574	<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar	
<b>NO2+NO3 as N</b>	<b>0.82</b>	0.083	0.20	mg/l	1x1	08/28/19 12:33	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343	<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt	
<b>Phosphorus as P, Total</b>	<b>0.051</b>	0.0014	0.010	mg/l	1x1	08/30/19 14:06	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429	<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM	
<b>Phosphorus, Dissolved</b>	<b>0.049</b>	0.012	0.020	mg/l	1x1	09/18/19 13:58	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Sample Results

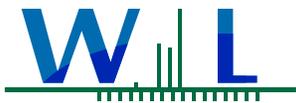
(Continued)

Sample: TMDL-R2  
9H21084-03 (Water) Sampled: 08/21/19 8:20 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
Dissolved Nitrogen	1.5		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
Nitrogen, Total	1.4		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
TKN, Soluble	0.28	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
TKN	0.16	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574		<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar
NO2+NO3 as N	1.2	0.083	0.20	mg/l	1x1	08/28/19 12:34	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343		<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.093	0.0014	0.010	mg/l	1x1	08/30/19 14:12	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429		<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM
Phosphorus, Dissolved	0.090	0.012	0.020	mg/l	1x1	09/18/19 14:00	

Sample: TMDL-R3  
9H21084-04 (Water) Sampled: 08/21/19 11:30 by K. Hahs, M. Capcap

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC METHOD ***	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
Dissolved Nitrogen	0.87		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
Nitrogen, Total	0.87		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
TKN	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574		<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar
NO2+NO3 as N	0.87	0.083	0.20	mg/l	1x1	08/28/19 12:35	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343		<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.014	0.0014	0.010	mg/l	1x1	08/30/19 13:46	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429		<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM
Phosphorus, Dissolved	0.022	0.012	0.020	mg/l	1x1	09/18/19 14:03	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Sample Results

(Continued)

Sample: TMDL-R4

Sampled: 08/21/19 8:00 by K. Hahs, M. Capcap

9H21084-05 (Water)

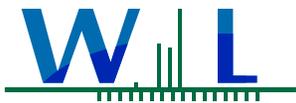
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
METHOD ***							
Dissolved Nitrogen	1.3		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
Nitrogen, Total	1.3		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
TKN	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574		<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar
NO2+NO3 as N	1.3	0.083	0.20	mg/l	1x1	08/28/19 12:36	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343		<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.012	0.0014	0.010	mg/l	1x1	08/30/19 13:50	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429		<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	09/18/19 14:06	

Sample: TMDL-SA

Sampled: 08/21/19 9:30 by K. Hahs, M. Capcap

9H21084-06 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
METHOD ***							
Dissolved Nitrogen	0.25		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
Nitrogen, Total	0.25		0.20	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0389		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:22		<b>Analyst:</b> mcs
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W9I0390		<b>Instr:</b> AA06		<b>Prepared:</b> 09/07/19 15:27		<b>Analyst:</b> mcs
TKN	ND	0.050	0.10	mg/l	1x1	09/12/19 12:17	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W9H1574		<b>Instr:</b> AA01		<b>Prepared:</b> 08/27/19 19:00		<b>Analyst:</b> sar
NO2+NO3 as N	0.25	0.083	0.20	mg/l	1x1	08/28/19 12:37	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W9H1343		<b>Instr:</b> AA01		<b>Prepared:</b> 08/23/19 10:26		<b>Analyst:</b> ymt
Phosphorus as P, Total	0.026	0.0014	0.010	mg/l	1x1	08/30/19 14:13	
<b>Metals by EPA 200 Series Methods</b>							
<b>Method:</b> EPA 200.7	<b>Batch ID:</b> W9H1429		<b>Instr:</b> ICP03		<b>Prepared:</b> 08/26/19 10:14		<b>Analyst:</b> KVM
Phosphorus, Dissolved	ND	0.012	0.020	mg/l	1x1	09/18/19 14:09	



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

**Project Number:** TMDL Study August 2019 P6040555

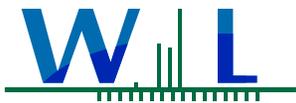
**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9H1343 - EPA 365.1</b>											
<b>Blank (W9H1343-BLK1)</b> Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
<b>LCS (W9H1343-BS1)</b> Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	0.0527	0.0014	0.010	mg/l	0.0500		105	90-110			
<b>Matrix Spike (W9H1343-MS1)</b> Source: 9H21084-04 Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	0.0630	0.0014	0.010	mg/l	0.0500	0.0145	97	90-110			
<b>Matrix Spike (W9H1343-MS2)</b> Source: 9H21084-05 Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	0.0613	0.0014	0.010	mg/l	0.0500	0.0119	99	90-110			
<b>Matrix Spike Dup (W9H1343-MSD1)</b> Source: 9H21084-04 Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	0.0662	0.0014	0.010	mg/l	0.0500	0.0145	103	90-110	5	20	
<b>Matrix Spike Dup (W9H1343-MSD2)</b> Source: 9H21084-05 Prepared: 08/23/19 Analyzed: 08/30/19											
Phosphorus as P, Total	0.0620	0.0014	0.010	mg/l	0.0500	0.0119	100	90-110	1	20	
<b>Batch: W9H1574 - EPA 353.2</b>											
<b>Blank (W9H1574-BLK1)</b> Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	ND	0.083	0.20	mg/l							
<b>LCS (W9H1574-BS1)</b> Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	0.945	0.083	0.20	mg/l	1.00		94	90-110			
<b>Matrix Spike (W9H1574-MS1)</b> Source: 9H21085-01 Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	1.99	0.083	0.20	mg/l	2.00	ND	100	90-110			
<b>Matrix Spike (W9H1574-MS2)</b> Source: 9H21085-02 Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	1.97	0.083	0.20	mg/l	2.00	ND	98	90-110			
<b>Matrix Spike Dup (W9H1574-MSD1)</b> Source: 9H21085-01 Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	1.99	0.083	0.20	mg/l	2.00	ND	100	90-110	0	20	
<b>Matrix Spike Dup (W9H1574-MSD2)</b> Source: 9H21085-02 Prepared: 08/27/19 Analyzed: 08/28/19											
NO2+NO3 as N	1.96	0.083	0.20	mg/l	2.00	ND	98	90-110	0.5	20	
<b>Batch: W9I0389 - EPA 351.2</b>											
<b>Blank (W9I0389-BLK1)</b> Prepared: 09/07/19 Analyzed: 09/12/19											
TKN, Soluble	ND	0.050	0.10	mg/l							
<b>LCS (W9I0389-BS1)</b> Prepared: 09/07/19 Analyzed: 09/12/19											
TKN, Soluble	0.898	0.050	0.10	mg/l	1.00		90	90-110			
<b>Matrix Spike (W9I0389-MS1)</b> Source: 9H21084-04 Prepared: 09/07/19 Analyzed: 09/12/19											
TKN, Soluble	0.938	0.050	0.10	mg/l	1.00	ND	94	90-110			
<b>Matrix Spike Dup (W9I0389-MSD1)</b> Source: 9H21084-04 Prepared: 09/07/19 Analyzed: 09/12/19											
TKN, Soluble	1.00	0.050	0.10	mg/l	1.00	ND	100	90-110	7	10	
<b>Batch: W9I0390 - EPA 351.2</b>											
<b>Blank (W9I0390-BLK1)</b> Prepared: 09/07/19 Analyzed: 09/12/19											
TKN	ND	0.050	0.10	mg/l							
<b>LCS (W9I0390-BS1)</b> Prepared: 09/07/19 Analyzed: 09/12/19											
TKN	0.914	0.050	0.10	mg/l	1.00		91	90-110			



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs

## Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

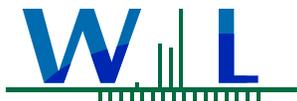
Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9I0390 - EPA 351.2 (Continued)</b>											
<b>LCS (W9I0390-BS1)</b>											
						<b>Prepared: 09/07/19 Analyzed: 09/12/19</b>					
<b>Matrix Spike (W9I0390-MS1)</b>											
						<b>Source: 9H21084-04</b>					
						<b>Prepared: 09/07/19 Analyzed: 09/12/19</b>					
TKN	1.24	0.050	0.10	mg/l	1.00	ND	124	90-110			MS-01
<b>Matrix Spike Dup (W9I0390-MSD1)</b>											
						<b>Source: 9H21084-04</b>					
						<b>Prepared: 09/07/19 Analyzed: 09/12/19</b>					
TKN	1.03	0.050	0.10	mg/l	1.00	ND	103	90-110	18	10	R-02

## Quality Control Results

(Continued)

Metals by EPA 200 Series Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W9H1429 - EPA 200.7</b>											
<b>Blank (W9H1429-BLK1)</b>											
						<b>Prepared: 08/26/19 Analyzed: 09/18/19</b>					
Phosphorus, Dissolved	ND	0.012	0.020	mg/l							
<b>LCS (W9H1429-BS1)</b>											
						<b>Prepared: 08/26/19 Analyzed: 09/18/19</b>					
Phosphorus, Dissolved	0.993	0.012	0.020	mg/l	1.00		99	85-115			
<b>Matrix Spike (W9H1429-MS1)</b>											
						<b>Source: 9H21084-01</b>					
						<b>Prepared: 08/26/19 Analyzed: 09/18/19</b>					
Phosphorus, Dissolved	1.11	0.012	0.020	mg/l	1.00	0.0620	105	70-130			
<b>Matrix Spike Dup (W9H1429-MSD1)</b>											
						<b>Source: 9H21084-01</b>					
						<b>Prepared: 08/26/19 Analyzed: 09/18/19</b>					
Phosphorus, Dissolved	1.11	0.012	0.020	mg/l	1.00	0.0620	105	70-130	0.09	30	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study August 2019 P6040555

**Reported:**  
09/24/2019 09:19

**Project Manager:** Kelly Hahs



## Notes and Definitions

Item	Definition
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
R-02	The RPD was outside of QC acceptance limits due to possible matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ) and Detection Limit for Reporting (DLR)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



September 11<sup>th</sup>, 2019

Ventura County Watershed Protection District  
Kelly Hahs  
800 S Victoria Ave  
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22<sup>nd</sup> Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker  
Senior Biologist  
(805) 643-5621 ex.17

**Client: Ventura Country Watershed Protection District**  
**Project: Ventura River Algae TMDL**



**Chlorophyll a results from August 14th & 15th, 2019**

<b>Station</b>	<b>Field Replicate</b>	<b>Number of Transects Collected</b>	<b>Chlorophyll a</b>	<b>Units</b>
TMDL-R1	1	11	8.4	ug/cm2
TMDL-R2	1	11	8.0	ug/cm2
TMDL-R3	1	11	3.8	ug/cm2
TMDL-R4	1	11	4.2	ug/cm2
TMDL-CL	1	0	DRY	ug/cm2
TMDL-SA	1	11	5.2	ug/cm2
TMDL-Est	1	NA	6.0	ug/L







971115

## Ventura River and Tributaries Algae, Eutrophic Conditions, and Nutrients TMDL (VR Algae TMDL)

### Comprehensive Monitoring Program

#### CHAIN-OF-CUSTODY RECORD

1 OF 1

CLIENT: Ventura County Watershed Protection District (Master Agreement WECKLABORATORYFY20MA01, Project P6040555)

SAMPLING EVENT: SEPTEMBER 2019

SAMPLING DATE: 9/9/19 + 9/11/19

SAMPLERS: Shelby Palasik

#### GRAB SAMPLES

SAMPLE ID	DATE/TIME	Nutrients			Notes
		Total Nitrogen, Total Phosphorus	Dissolved Nitrogen, Dissolved Phosphorus **	Nitrate + Nitrite as Nitrogen	
TMDL-Est	9/9/19 13:20	X	X	X	
TMDL-R1	9/11/19 10:50	X	X	X	
TMDL-R2	↓ 08:45	X	X	X	
TMDL-R3	9/9/19 11:05	X	X	X	
TMDL-R4	↓ 08:40	X	X	X	
<del>TMDL-GL</del>		<del>X</del>	<del>X</del>	<del>X</del>	DRY
TMDL-SA	9/9/19 10:10	X	X	X	Dyat C
<del>TMDL-FD</del>		<del>X</del>	<del>X</del>	<del>X</del>	(Note which site)

Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: <u>KELLY HAHS</u>	Print Name: <u>B. Markovitch</u>
Affiliation: <u>VCWRD</u>	Affiliation: <u>Weck Labs</u>
Date/Time Received: <u>9/11/19 1352</u>	Date/Time Received: <u>9/11/19 1350</u>
Date/Time Relinquished: <u>9/11/19 1352</u>	Date/Time Relinquished: <u>9/11/19 1620</u>
Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Print Name: <u>ALLAN G</u>	Print Name: <u>LESTER ABAD</u>
Affiliation: <u>WECK LABS</u>	Affiliation: <u>WECK LABS</u>
Date/Time Received: <u>9/11/19 1620</u>	Date/Time Received: <u>9-11-19 17:50</u>
Date/Time Relinquished: <u>9/11/19 1750</u>	Date/Time Relinquished: <u>116° F0231</u>

Miscellaneous Notes (Hazardous Materials, Quick turn-around time, etc.):

Dissolved samples were field filtered



# Certificate of Analysis

FINAL REPORT

**Work Orders:** 911115

**Project:** TMDL Study September 2019 P6040555

**Attn:** Kelly Hahs

**Client:** Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

**Report Date:** 10/25/2019

**Received Date:** 9/11/2019

**Turnaround Time:** Normal

**Phones:** (805) 658-4375

**Fax:** (805) 654-3350

**P.O. #:** WECKLABORATORYF2  
OMA01

**Billing Code:**

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO 17025 #L2457.01 • LACSD #10143 •  
NELAP-CA #04229CA • NELAP-OR #4047 • NJ-DEP #CA015 • NV-DEP #NAC 445A • SCAQMD #93LA1006

*This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.*

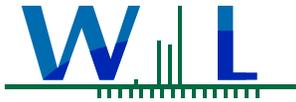
Dear Kelly Hahs,

Enclosed are the results of analyses for samples received 9/11/19 with the Chain-of-Custody document. The samples were received in good condition, at 1.6 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

**Reviewed by:**

Brandon Gee  
Operations Manager/Senior PM





WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

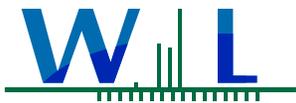
**Project Number:** TMDL Study September 2019 P6040555

**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs

## Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
TMDL-Est	Shelby Palasik	9I11115-01	Water	09/11/19 13:20	
TMDL-R1	Shelby Palasik	9I11115-02	Water	09/11/19 10:50	
TMDL-R2	Shelby Palasik	9I11115-03	Water	09/11/19 08:45	
TMDL-R3	Shelby Palasik	9I11115-04	Water	09/11/19 11:05	
TMDL-R4	Shelby Palasik	9I11115-05	Water	09/11/19 08:40	
TMDL-SA	Shelby Palasik	9I11115-06	Water	09/11/19 10:10	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study September 2019 P6040555

**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs

## Sample Results

Sample: TMDL-Est

Sampled: 09/11/19 13:20 by Shelby Palasik

911115-01 (Water)

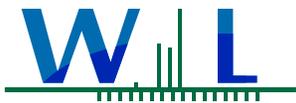
Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:42		<b>Analyst:</b> YMT
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>0.74</b>		0.20	mg/l	1x1	10/02/19 16:36	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40		<b>Analyst:</b> YMT
<b>Nitrogen, Total</b>	<b>1.1</b>		0.20	mg/l	1x1	10/02/19 16:11	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40		<b>Analyst:</b> YMT
<b>TKN</b>	<b>0.79</b>	0.050	0.10	mg/l	1x1	10/02/19 16:11	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42		<b>Analyst:</b> YMT
<b>TKN, Soluble</b>	<b>0.42</b>	0.050	0.10	mg/l	1x1	10/02/19 16:36	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25		<b>Analyst:</b> sar
<b>NO2+NO3 as N</b>	<b>0.32</b>	0.083	0.20	mg/l	1x1	09/20/19 17:04	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46		<b>Analyst:</b> ymt
<b>Phosphorus as P, Total</b>	<b>0.10</b>	0.0014	0.010	mg/l	1x1	09/20/19 12:47	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14		<b>Analyst:</b> sar
<b>Phosphorus, Dissolved</b>	<b>0.033</b>	0.0014	0.010	mg/l	1x1	09/27/19 12:39	

Sample: TMDL-R1

Sampled: 09/11/19 10:50 by Shelby Palasik

911115-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:42		<b>Analyst:</b> YMT
METHOD ***							
<b>Dissolved Nitrogen</b>	<b>0.79</b>		0.20	mg/l	1x1	10/02/19 16:38	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40		<b>Analyst:</b> YMT
<b>Nitrogen, Total</b>	<b>0.93</b>		0.20	mg/l	1x1	10/02/19 16:13	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40		<b>Analyst:</b> YMT
<b>TKN</b>	<b>0.24</b>	0.050	0.10	mg/l	1x1	10/02/19 16:13	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42		<b>Analyst:</b> YMT
<b>TKN, Soluble</b>	<b>0.096</b>	0.050	0.10	mg/l	1x1	10/02/19 16:38	J
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25		<b>Analyst:</b> sar
<b>NO2+NO3 as N</b>	<b>0.69</b>	0.083	0.20	mg/l	1x1	09/20/19 17:05	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46		<b>Analyst:</b> ymt
<b>Phosphorus as P, Total</b>	<b>0.059</b>	0.0014	0.010	mg/l	1x1	09/20/19 12:49	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14		<b>Analyst:</b> sar
<b>Phosphorus, Dissolved</b>	<b>0.052</b>	0.0014	0.010	mg/l	1x1	09/27/19 12:40	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study September 2019 P6040555

**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs

## Sample Results

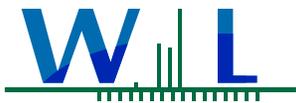
(Continued)

Sample: TMDL-R2  
911115-03 (Water) Sampled: 09/11/19 8:45 by Shelby Palasik

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
METHOD ***							
Dissolved Nitrogen	1.1		0.20	mg/l	1x1	10/02/19 16:41	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
Nitrogen, Total	1.4		0.20	mg/l	1x1	10/02/19 16:16	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
TKN	0.31	0.050	0.10	mg/l	1x1	10/02/19 16:16	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	10/02/19 16:41	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25	<b>Analyst:</b> sar	
NO2+NO3 as N	1.1	0.083	0.20	mg/l	1x1	09/20/19 17:06	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.094	0.0014	0.010	mg/l	1x1	09/20/19 12:50	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14	<b>Analyst:</b> sar	
Phosphorus, Dissolved	0.087	0.0014	0.010	mg/l	1x1	09/27/19 12:42	

Sample: TMDL-R3  
911115-04 (Water) Sampled: 09/11/19 11:05 by Shelby Palasik

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
METHOD ***							
Dissolved Nitrogen	0.78		0.20	mg/l	1x1	10/02/19 16:43	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
Nitrogen, Total	0.85		0.20	mg/l	1x1	10/02/19 16:18	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
TKN	0.069	0.050	0.10	mg/l	1x1	10/02/19 16:18	J
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	10/02/19 16:43	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25	<b>Analyst:</b> sar	
NO2+NO3 as N	0.78	0.083	0.20	mg/l	1x1	09/20/19 17:07	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0065	0.0014	0.010	mg/l	1x1	09/20/19 12:52	J
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14	<b>Analyst:</b> sar	
Phosphorus, Dissolved	0.0045	0.0014	0.010	mg/l	1x1	09/27/19 12:46	J



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study September 2019 P6040555

**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs

## Sample Results

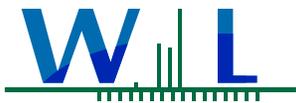
(Continued)

Sample: TMDL-R4  
911115-05 (Water) Sampled: 09/11/19 8:40 by Shelby Palasik

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 10/07/19 10:10	<b>Analyst:</b> ymt	
METHOD ***							
Dissolved Nitrogen	1.2		0.20	mg/l	1x1	10/08/19 12:00	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
Nitrogen, Total	1.4		0.20	mg/l	1x1	10/02/19 16:31	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
TKN	0.20	0.050	0.10	mg/l	1x1	10/02/19 16:31	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	10/02/19 16:06	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25	<b>Analyst:</b> sar	
NO2+NO3 as N	1.2	0.083	0.20	mg/l	1x1	09/20/19 17:08	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.0065	0.0014	0.010	mg/l	1x1	09/20/19 12:43	J
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14	<b>Analyst:</b> sar	
Phosphorus, Dissolved	0.0039	0.0014	0.010	mg/l	1x1	09/27/19 12:33	J

Sample: TMDL-SA  
911115-06 (Water) Sampled: 09/11/19 10:10 by Shelby Palasik

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
<b>Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods</b>							
<b>Method:</b> *** DEFAULT SPECIFIC	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
METHOD ***							
Dissolved Nitrogen	0.22		0.20	mg/l	1x1	10/02/19 16:44	
<b>Method:</b> _Various	<b>Batch ID:</b> [CALC]		<b>Instr:</b> [CALC]		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
Nitrogen, Total	0.31		0.20	mg/l	1x1	10/02/19 16:19	
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911781		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:40	<b>Analyst:</b> YMT	
TKN	0.091	0.050	0.10	mg/l	1x1	10/02/19 16:19	J
<b>Method:</b> EPA 351.2	<b>Batch ID:</b> W911782		<b>Instr:</b> AA06		<b>Prepared:</b> 09/30/19 18:42	<b>Analyst:</b> YMT	
TKN, Soluble	ND	0.050	0.10	mg/l	1x1	10/02/19 16:44	
<b>Method:</b> EPA 353.2	<b>Batch ID:</b> W910963		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 11:25	<b>Analyst:</b> sar	
NO2+NO3 as N	0.22	0.083	0.20	mg/l	1x1	09/20/19 17:09	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911016		<b>Instr:</b> AA01		<b>Prepared:</b> 09/17/19 16:46	<b>Analyst:</b> ymt	
Phosphorus as P, Total	0.058	0.0014	0.010	mg/l	1x1	09/20/19 12:53	
<b>Method:</b> EPA 365.1	<b>Batch ID:</b> W911506		<b>Instr:</b> AA01		<b>Prepared:</b> 09/25/19 13:14	<b>Analyst:</b> sar	
Phosphorus, Dissolved	0.014	0.0014	0.010	mg/l	1x1	09/27/19 12:44	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study September 2019 P6040555

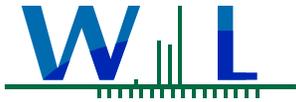
**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs

## Quality Control Results

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W910963 - EPA 353.2</b>											
<b>Blank (W910963-BLK1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	ND	0.050	0.050	mg/l							
<b>LCS (W910963-BS1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	0.915	0.050	0.050	mg/l	1.00		92	90-110			
<b>Matrix Spike (W910963-MS1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	1.90	0.050	0.050	mg/l	2.00	ND	95	90-110			
<b>Matrix Spike (W910963-MS2)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	1.91	0.050	0.050	mg/l	2.00	ND	96	90-110			
<b>Matrix Spike Dup (W910963-MSD1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	1.90	0.050	0.050	mg/l	2.00	ND	95	90-110	0	20	
<b>Matrix Spike Dup (W910963-MSD2)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
NO2+NO3 as N	1.91	0.050	0.050	mg/l	2.00	ND	96	90-110	0	20	
<b>Batch: W911016 - EPA 365.1</b>											
<b>Blank (W911016-BLK1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
Phosphorus as P, Total	ND	0.0014	0.010	mg/l							
<b>LCS (W911016-BS1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
Phosphorus as P, Total	0.0496	0.0014	0.010	mg/l	0.0500		99	90-110			
<b>Matrix Spike (W911016-MS1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
Phosphorus as P, Total	0.0580	0.0014	0.010	mg/l	0.0500	0.00652	103	90-110			
<b>Matrix Spike Dup (W911016-MSD1)</b>					<b>Prepared: 09/17/19 Analyzed: 09/20/19</b>						
Phosphorus as P, Total	0.0582	0.0014	0.010	mg/l	0.0500	0.00652	103	90-110	0.3	20	
<b>Batch: W911506 - EPA 365.1</b>											
<b>Blank (W911506-BLK1)</b>					<b>Prepared: 09/25/19 Analyzed: 09/27/19</b>						
Phosphorus, Dissolved	0.00413	0.0014	0.010	mg/l							J
<b>LCS (W911506-BS1)</b>					<b>Prepared: 09/25/19 Analyzed: 09/27/19</b>						
Phosphorus, Dissolved	0.0507	0.0014	0.010	mg/l	0.0500		101	90-110			
<b>Matrix Spike (W911506-MS1)</b>					<b>Prepared: 09/25/19 Analyzed: 09/27/19</b>						
Phosphorus, Dissolved	0.0586	0.0014	0.010	mg/l	0.0500	0.00389	109	90-110			
<b>Matrix Spike Dup (W911506-MSD1)</b>					<b>Prepared: 09/25/19 Analyzed: 09/27/19</b>						
Phosphorus, Dissolved	0.0610	0.0014	0.010	mg/l	0.0500	0.00389	114	90-110	4	20	MS-01
<b>Batch: W911781 - EPA 351.2</b>											
<b>Blank (W911781-BLK1)</b>					<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>						
TKN	ND	0.050	0.10	mg/l							
<b>LCS (W911781-BS1)</b>					<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>						
TKN	0.949	0.050	0.10	mg/l	1.00		95	90-110			
<b>Matrix Spike (W911781-MS1)</b>					<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>						
TKN	1.21	0.050	0.10	mg/l	1.00	0.197	101	90-110			
<b>Matrix Spike Dup (W911781-MSD1)</b>					<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>						
TKN	1.10	0.050	0.10	mg/l	1.00	0.197	90	90-110	10	10	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

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**Reported:**  
10/25/2019 09:00

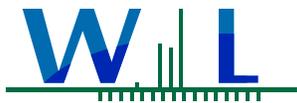
**Project Manager:** Kelly Hahs

## Quality Control Results

(Continued)

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
<b>Batch: W911781 - EPA 351.2 (Continued)</b>											
<b>Matrix Spike Dup (W911781-MSD1)</b>	<b>Source: 9111115-05</b>			<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>							
TKN, Soluble	ND	0.050	0.10	mg/l							
<b>Batch: W911782 - EPA 351.2</b>											
<b>Blank (W911782-BLK1)</b>	<b>Source: 9111115-05</b>			<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>							
TKN, Soluble	0.993	0.050	0.10	mg/l	1.00	ND	99	90-110			
<b>LCS (W911782-BS1)</b>	<b>Source: 9111115-05</b>			<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>							
TKN, Soluble	1.10	0.050	0.10	mg/l	1.00	ND	110	90-110			
<b>Matrix Spike Dup (W911782-MSD1)</b>	<b>Source: 9111115-05</b>			<b>Prepared: 09/30/19 Analyzed: 10/02/19</b>							
TKN, Soluble	1.10	0.050	0.10	mg/l	1.00	ND	110	90-110	0.1	10	



WECK LABORATORIES, INC.

Ventura County Watershed Protection District  
800 South Victoria Avenue  
Ventura, CA 93009

# Certificate of Analysis

FINAL REPORT

**Project Number:** TMDL Study September 2019 P6040555

**Reported:**  
10/25/2019 09:00

**Project Manager:** Kelly Hahs



## Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
TIC	Tentatively Identified Compound (TIC) using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California State Water Resources Control Board (SWRCB)

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



September 26<sup>th</sup>, 2019

Ventura County Watershed Protection District  
Kelly Hahs  
800 S Victoria Ave  
Ventura, CA 93009

Dear Ms. Hahs:

Aquatic Bioassay & Consulting Laboratories is pleased to provide you with the enclosed chlorophyll-a data report for the Ventura River Algae TMDL. Chlorophyll- a analyses are conducted under guidelines prescribed in *Standard Methods for the Examination of Water and Wastewater* (APHA, 22<sup>nd</sup> Edition), Section SM 10200 H.

Please contact me with any questions or issues you may have regarding this report.

Sincerely,

Karin Wisenbaker  
Senior Biologist  
(805) 643-5621 ex.17

**Client: Ventura Country Watershed Protection District**  
**Project: Ventura River Algae TMDL**



**Chlorophyll a results from September 9th & 11th, 2019**

<b>Station</b>	<b>Field Replicate</b>	<b>Number of Transects Collected</b>	<b>Chlorophyll a</b>	<b>Units</b>
TMDL-R1	1	11	5.6	ug/cm2
TMDL-R2	1	11	14.0	ug/cm2
TMDL-R3	1	11	9.8	ug/cm2
TMDL-R4	1	11	3.3	ug/cm2
TMDL-CL	1	0	DRY	ug/cm2
TMDL-SA	1	0	DRY	ug/cm2
TMDL-Est	1	NA	7.0	ug/L

19090729  
Chain of Custody

<b>From:</b> Aquatic Bioassay and Consulting Labs. 29 N. Olive St. Ventura, CA 93001	<b>Phone:</b> (805) 643-5621 <b>Fax:</b> (805) 643-2930 <b>Project ID:</b> VCWPD TMDL	<b>To: Company:</b> Silver State Analytical Laboratories <b>Address:</b> 1135 Financial Blvd Reno, NV 89502 <b>Phone:</b> (775) 857-2400
--	---	---

Sample I.D. No.	Sample Date	Time	Matrix	Volume/No.	Filter Volume (mL)	Composite Volume (mL)	Area (cm <sup>2</sup> )	ANALYSIS					
								Chl-a					
TMDL-R4	9-Sep-19	8:40	FW	1-petri	25	432	109.4	X					
TMDL-R3	9-Sep-19	11:05	FW	1-petri	25	477	102.1	X					
TMDL-R2	11-Sep-19	8:45	FW	1-petri	25	434	124.0	X					
TMDL-R1	11-Sep-19	10:50	FW	1-petri	25	526	102.1	X					
TMDL-Est	9-Sep-19	13:20	FW	1-petri	500	1000	N/A	X					

**Special Instructions:** Please email report to: [karin@aquaticbioassay.com](mailto:karin@aquaticbioassay.com); No hard copy required  
 Please return cooler to Aquatic Bioassay

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:	RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
	9/12/19	1330		9/13/19	1435						



February 13, 2020

Karin Wisenbaker  
Aquatic Bioassay & Consulting Laboratories, Inc.  
29 N. Olive Street  
Ventura, CA 93001

Project Name: Ventura River Algae TMDL  
Physis Project ID: 2001003-001

Dear Karin,

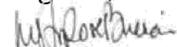
Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 1/16/2020. A total of 15 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Phosphorus by SM 4500-P E
Total Dissolved Phosphorus by SM 4500-P E
Nitrite as N by SM 4500-NO <sub>2</sub> B
Nitrate as N by SM 4500-NO <sub>3</sub> E
Subcontract
Total Kjeldahl Nitrogen (Field Filtered) by EPA 351.2
Total Kjeldahl Nitrogen by EPA 351.2

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,



Misty Mercier

714 602-5320  
Extension 202  
mistymercier@physislabs.com

## PROJECT SAMPLE LIST

Rincon Consultants

PHYSIS Project ID: 2001003-001

Ventura River Algae TMDL

Total Samples: 15

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
70153	TMDL-CL	Total	1/15/2020	7:45	Liquid	Not Specified
70154	TMDL-CL	Field Filtered	1/15/2020	7:45	Liquid	Not Specified
70155	TMDL_R4	Total	1/15/2020	8:54	Liquid	Not Specified
70156	TMDL_R4	Field Filtered	1/15/2020	8:54	Liquid	Not Specified
70157	TMDL_SA	Total	1/15/2020	9:15	Liquid	Not Specified
70158	TMDL_SA	Field Filtered	1/15/2020	9:15	Liquid	Not Specified
70159	TMDL_R3	Total	1/15/2020	10:16	Liquid	Not Specified
70160	TMDL_R3	Field Filtered	1/15/2020	10:16	Liquid	Not Specified
70161	TMDL_R2	Total	1/15/2020	11:07	Liquid	Not Specified
70162	TMDL_R2	Field Filtered	1/15/2020	11:07	Liquid	Not Specified
70163	TMDL_R1	Total	1/15/2020	12:00	Liquid	Not Specified
70164	TMDL_R1	Field Filtered	1/15/2020	12:00	Liquid	Not Specified
70165	TMDL_Est	Total	1/15/2020	12:48	Liquid	Not Specified
70166	TMDL_Est	Field Filtered	1/15/2020	12:48	Liquid	Not Specified
70167	TMDL_FB	Field Filtered	1/15/2020	7:45	Liquid	Not Specified

## ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

## QUALITY ASSURANCE SUMMARY

**LABORATORY BATCH:** Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

**PROCEDURAL BLANK:** Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

**ACCURACY:** Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

**PRECISION:** Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

**BLANK SPIKES:** BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

**MATRIX SPIKES:** MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

**CERTIFIED REFERENCE MATERIALS:** CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

**LABORATORY CONTROL MATERIAL:** LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

**LABORATORY CONTROL SPIKES:** LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

**SURROGATES:** A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

**HOLDING TIME:** Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

**SAMPLE STORAGE/RETENTION:** In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

**TOTAL/DISSOLVED FRACTION:** In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

## PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

# PHYSIS

**PANALYTICAL**  
**REPORT**

TERRA    RAGLA    AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 70153-R1</b>	<b>TMDL-CL Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 7:45</b>		<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0193	0.016	0.02	NA	J	C-47088	21-Jan-20	22-Jan-20 10:00
<b>Sample ID: 70154-R1</b>	<b>TMDL-CL Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 7:45</b>		<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO3 E	mg/L	ND	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00
<b>Sample ID: 70155-R1</b>	<b>TMDL_R4 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 8:54</b>		<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00
<b>Sample ID: 70156-R1</b>	<b>TMDL_R4 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 8:54</b>		<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO3 E	mg/L	1.17	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00
<b>Sample ID: 70157-R1</b>	<b>TMDL_SA Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 9:15</b>		<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0523	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00
<b>Sample ID: 70158-R1</b>	<b>TMDL_SA Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 9:15</b>		<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO3 E	mg/L	0.197	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0489	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00
<b>Sample ID: 70159-R1</b>	<b>TMDL_R3 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Jan-20 10:16</b>		<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed	
<b>Sample ID: 70160-R1</b>	<b>TMDL_R3 Field Filtered</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 10:16</b>	<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.982	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00	
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10	
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00	
<b>Sample ID: 70161-R1</b>	<b>TMDL_R2 Total</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 11:07</b>	<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00	
<b>Sample ID: 70162-R1</b>	<b>TMDL_R2 Field Filtered</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 11:07</b>	<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.968	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00	
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10	
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00	
<b>Sample ID: 70163-R1</b>	<b>TMDL_R1 Total</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 12:00</b>	<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0258	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00	
<b>Sample ID: 70164-R1</b>	<b>TMDL_R1 Field Filtered</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 12:00</b>	<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.03	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00	
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10	
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00	
<b>Sample ID: 70165-R1</b>	<b>TMDL_Est Total</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 12:48</b>	<b>Received: 16-Jan-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.033	0.016	0.02	NA		C-47088	21-Jan-20	22-Jan-20 10:00	
<b>Sample ID: 70166-R1</b>	<b>TMDL_Est Field Filtered</b>		<b>Matrix: Liquid</b>						<b>Dilution Factor: 1</b>	<b>Sampled: 15-Jan-20 12:48</b>	<b>Received: 16-Jan-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.929	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00	
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10	
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0195	0.016	0.03	NA	J	C-47090	21-Jan-20	22-Jan-20 12:00	

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 70167-R1</b>	<b>TMDL_FB Field Filtered</b>		<b>Matrix: Liquid</b>		<b>Dilution Factor: 1</b>		<b>Sampled: 15-Jan-20 7:45</b>		<b>Received: 16-Jan-20</b>	
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	ND	0.01	0.02	NA		C-47101	17-Jan-20	11-Feb-20 15:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47087	17-Jan-20	17-Jan-20 7:10
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47090	21-Jan-20	22-Jan-20 12:00

# PHYSICS

# QUALITY CONTROL

# REPORT

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CA ELAP #2769

## Conventionals

## QUALITY CONTROL REPORT

SAMPLE ID	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	ACCURACY %	LIMITS	PRECISION %	LIMITS	QA CODE
<b>Nitrate as N</b>		<b>Method: SM 4500-NO<sub>3</sub> E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 17-Jan-20</b>		<b>Analyzed: 11-Feb-20</b>		
70152-B1	QAQC Procedural Blank	C-47101	ND	0.01	0.02	mg/L						
70152-BS1	QAQC Procedural Blank	C-47101	0.452	0.01	0.02	mg/L	0.5	0	90	68 - 135%	PASS	
70152-BS2	QAQC Procedural Blank	C-47101	0.455	0.01	0.02	mg/L	0.5	0	91	68 - 135%	PASS	1 25 PASS
70154-MS1	TMDL-CL	C-47101	0.481	0.01	0.02	mg/L	0.5	0	96	80 - 120%	PASS	25
70154-MS2	TMDL-CL	C-47101	0.467	0.01	0.02	mg/L	0.5	0	93	80 - 120%	PASS	3 25 PASS
70154-R2	TMDL-CL	C-47101	ND	0.01	0.02	mg/L						0 25 PASS
<b>Nitrite as N</b>		<b>Method: SM 4500-NO<sub>2</sub> B</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 17-Jan-20</b>		<b>Analyzed: 17-Jan-20</b>		
70152-B1	QAQC Procedural Blank	C-47087	ND	0.01	0.02	mg/L						
70152-BS1	QAQC Procedural Blank	C-47087	0.0463	0.01	0.02	mg/L	0.05	0	93	49 - 120%	PASS	
70152-BS2	QAQC Procedural Blank	C-47087	0.0467	0.01	0.02	mg/L	0.05	0	93	49 - 120%	PASS	0 25 PASS
70154-MS1	TMDL-CL	C-47087	0.0416	0.01	0.02	mg/L	0.05	0	83	80 - 120%	PASS	25
70154-MS2	TMDL-CL	C-47087	0.0422	0.01	0.02	mg/L	0.05	0	84	80 - 120%	PASS	1 25 PASS
70154-R2	TMDL-CL	C-47087	ND	0.01	0.02	mg/L						0 25 PASS
<b>Total Dissolved Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 21-Jan-20</b>		<b>Analyzed: 22-Jan-20</b>		
70152-B1	QAQC Procedural Blank	C-47090	ND	0.016	0.03	mg/L						
70152-BS1	QAQC Procedural Blank	C-47090	0.311	0.016	0.03	mg/L	0.3	0	104	86 - 118%	PASS	
70152-BS2	QAQC Procedural Blank	C-47090	0.313	0.016	0.03	mg/L	0.3	0	104	86 - 118%	PASS	0 25 PASS
70154-MS1	TMDL-CL	C-47090	0.326	0.016	0.03	mg/L	0.3	0	109	80 - 120%	PASS	25
70154-MS2	TMDL-CL	C-47090	0.327	0.016	0.03	mg/L	0.3	0	109	80 - 120%	PASS	0 25 PASS
70154-R2	TMDL-CL	C-47090	ND	0.016	0.03	mg/L						0 25 PASS
<b>Total Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 21-Jan-20</b>		<b>Analyzed: 22-Jan-20</b>		
70152-B1	QAQC Procedural Blank	C-47088	ND	0.016	0.02	mg/L						
70152-BS1	QAQC Procedural Blank	C-47088	0.313	0.016	0.02	mg/L	0.3	0	104	73 - 131%	PASS	
70152-BS2	QAQC Procedural Blank	C-47088	0.304	0.016	0.02	mg/L	0.3	0	101	73 - 131%	PASS	3 25 PASS
70157-MS1	TMDL_SA	C-47088	0.346	0.016	0.02	mg/L	0.3	0.0521	98	80 - 120%	PASS	25
70157-MS2	TMDL_SA	C-47088	0.359	0.016	0.02	mg/L	0.3	0.0521	102	80 - 120%	PASS	4 25 PASS
70157-R2	TMDL_SA	C-47088	0.0518	0.016	0.02	mg/L						1 25 PASS

# **SUBCONTRACT**

# **REPORT**

PHYSICS

TERRA AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



## Enthalpy Analytical, LLC

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info-sc@enthalpy.com



Client: PHYSIS Environmental Laboratories, Inc.  
Address: 1904 E. Wright Circle  
Anaheim, CA 92806

Attn: Misty Mercier

Comments: 2001003-001

Lab Request: 424291  
Report Date: 02/07/2020  
Date Received: 01/30/2020  
Client ID: 13622

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

---

### **Sample #    Client Sample ID**

424291-001	TMDL-CL
424291-002	TMDL-CL
424291-003	TMDL_R4
424291-004	TMDL_R4
424291-005	TMDL_SA
424291-006	TMDL_SA
424291-007	TMDL_R3
424291-008	TMDL_R3
424291-009	TMDL_R2
424291-010	TMDL_R2
424291-011	TMDL_R1
424291-012	TMDL_R1
424291-013	TMDL_Est
424291-014	TMDL_Est
424291-015	TMDL_FB

---

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

---

Report Review performed by: Lisa Nguyen, PM

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 45 days from date received.

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<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 07:45	<b>Site:</b>	
<b>Sample #:</b> <u>424291-001</u>	<b>Client Sample #:</b> TMDL-CL	<b>Sample Type:</b>

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.575</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 07:45	<b>Site:</b>	
<b>Sample #:</b> <u>424291-002</u>	<b>Client Sample #:</b> TMDL-CL	<b>Sample Type:</b>

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.624</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 08:54	<b>Site:</b>	
<b>Sample #:</b> <u>424291-003</u>	<b>Client Sample #:</b> TMDL_R4	<b>Sample Type:</b>

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.410</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 08:54	<b>Site:</b>	
<b>Sample #:</b> <u>424291-004</u>	<b>Client Sample #:</b> TMDL_R4	<b>Sample Type:</b>

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.358 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP J	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 09:15	<b>Site:</b>	
<b>Sample #:</b> <u>424291-005</u>	<b>Client Sample #:</b> TMDL_SA	<b>Sample Type:</b>

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.400</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 09:15	<b>Site:</b>	
<b>Sample #:</b> <u>424291-006</u>	<b>Client Sample #:</b> TMDL_SA	<b>Sample Type:</b>

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.403</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP	

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 10:16	<b>Site:</b>	
<b>Sample #:</b> <u>424291-007</u>	<b>Client Sample #:</b> TMDL_R3	<b>Sample Type:</b>

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes	
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214230		
<b>Total Kjeldahl Nitrogen</b>	<b>0.251 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP J	

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 10:16      **Site:**  
**Sample #:** 424291-008      **Client Sample #:** TMDL\_R3      **Sample Type:**

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214230	
<b>Total Kjeldahl Nitrogen</b>	<b>0.506</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 11:07      **Site:**  
**Sample #:** 424291-009      **Client Sample #:** TMDL\_R2      **Sample Type:**

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214230	
<b>Total Kjeldahl Nitrogen</b>	<b>0.285 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP      J

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 11:07      **Site:**  
**Sample #:** 424291-010      **Client Sample #:** TMDL\_R2      **Sample Type:**

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214230	
<b>Total Kjeldahl Nitrogen</b>	<b>0.298 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP      J

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 12:00      **Site:**  
**Sample #:** 424291-011      **Client Sample #:** TMDL\_R1      **Sample Type:**

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214231	
<b>Total Kjeldahl Nitrogen</b>	<b>0.342 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP      J

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 12:00      **Site:**  
**Sample #:** 424291-012      **Client Sample #:** TMDL\_R1      **Sample Type:**

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214231	
<b>Total Kjeldahl Nitrogen</b>	<b>0.369 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP      J

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 12:48      **Site:**  
**Sample #:** 424291-013      **Client Sample #:** TMDL\_Est      **Sample Type:**

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214231	
<b>Total Kjeldahl Nitrogen</b>	<b>0.604</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP

**Matrix:** Water      **Client:** PHYSIS Environmental Laboratories, Inc.      **Collector:** Client  
**Sampled:** 01/15/2020 12:48      **Site:**  
**Sample #:** 424291-014      **Client Sample #:** TMDL\_Est      **Sample Type:**

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2      Prep Method: Method							QCBatchID: QC1214231	
<b>Total Kjeldahl Nitrogen</b>	<b>0.387 J</b>	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP      J

<b>Matrix:</b> Water	<b>Client:</b> PHYSIS Environmental Laboratories, Inc.	<b>Collector:</b> Client
<b>Sampled:</b> 01/15/2020 07:45	<b>Site:</b>	
<b>Sample #:</b> <u>424291-015</u>	<b>Client Sample #:</b> TMDL_FB	<b>Sample Type:</b>

**Notes:** FIELD FILTERED

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed By	Notes
Method: EPA 351.2	Prep Method: Method						QCBatchID: QC1214231	
Total Kjeldahl Nitrogen	ND	1	0.052	0.4	mg/L	02/05/20	02/06/20	TP

<b>QCBatchID:</b> <u>QC1214230</u>	<b>Analyst:</b> trinh	<b>Method:</b> EPA 351.2
<b>Matrix:</b> Water	<b>Analyzed:</b> 02/06/2020	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	MDL	RDL	Notes
<b>QC1214230MB1</b>					
Total Kjeldahl Nitrogen	ND	mg/L	0.052	0.4	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1214230LCS1, QC1214230LCSD1</b>											
Total Kjeldahl Nitrogen	2.5	2.5	2.6	2.5	mg/L	104	100	4	90-110	20	

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1214230MS1, QC1214230MSD1</b>												
Total Kjeldahl Nitrogen	0.575	12.5	12.5	15	14	mg/L	115	107	6.9	90-110	20	M

<b>QCBatchID:</b> <u>QC1214231</u>	<b>Analyst:</b> trinh	<b>Method:</b> EPA 351.2
<b>Matrix:</b> Water	<b>Analyzed:</b> 02/06/2020	<b>Instrument:</b> CHEM (group)

**Blank Summary**

Analyte	Blank Result	Units	MDL	RDL	Notes
<b>QC1214231MB1</b>					
Total Kjeldahl Nitrogen	ND	mg/L	0.052	0.4	

**Lab Control Spike/ Lab Control Spike Duplicate Summary**

Analyte	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD	RPD	%Rec	RPD	
<b>QC1214231LCS1, QC1214231LCSD1</b>											
Total Kjeldahl Nitrogen	2.5	2.5	2.4	2.4	mg/L	96	96	0	90-110	20	

**Matrix Spike/Matrix Spike Duplicate Summary**

Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries			Limits		Notes
		MS	MSD	MS	MSD		MS	MSD	RPD	%Rec	RPD	
<b>QC1214231MS1, QC1214231MSD1</b>												
Total Kjeldahl Nitrogen	0.604	12.5	12.5	13	12	mg/L	99	91	8.0	90-110	20	<b>Source: 424291-013</b>

# Data Qualifiers and Definitions

## Qualifiers

<b>A</b>	See Report Comments.
<b>B</b>	Analyte was present in an associated method blank.
<b>B1</b>	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
<b>BQ1</b>	No valid test replicates. Sample Toxicity is possible. Best result was reported.
<b>BQ2</b>	No valid test replicates.
<b>BQ3</b>	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
<b>BQ4</b>	Minor Dissolved Oxygen loss was observed in the blank water check, however, the LCS was within criteria, validating the batch.
<b>BQ5</b>	Minor Dissolved Oxygen loss was observed in the blank water check.
<b>C</b>	Possible laboratory contamination.
<b>D</b>	RPD was not within control limits. The sample data was reported without further clarification.
<b>D1</b>	Lesser amount of sample was used due to insufficient amount of sample supplied.
<b>D2</b>	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
<b>D3</b>	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
<b>DW</b>	Sample result is calculated on a dry weigh basis.
<b>E</b>	Concentration is estimated because it exceeds the quantification limits of the method.
<b>I</b>	The sample was read outside of the method required incubation period.
<b>IR</b>	Inconclusive Result. Legionella is present, however, there is possible non-specific agglutination preventing specific identification.
<b>J</b>	Reported value is estimated
<b>L</b>	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
<b>L2</b>	LCS did not meet recovery criteria, however, the MS and/or MSD met LCS recovery criteria, validating the batch.
<b>M</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
<b>M1</b>	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
<b>M2</b>	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
<b>N1</b>	Sample chromatography does not match the specified TPH standard pattern.
<b>NC</b>	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
<b>P</b>	Sample was received without proper preservation according to EPA guidelines.
<b>P1</b>	Temperature of sample storage refrigerator was out of acceptance limits.
<b>P2</b>	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
<b>P3</b>	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
<b>Q1</b>	Analyte Calibration Verification exceeds criteria. The result is estimated.
<b>Q2</b>	Analyte calibration was not verified and the result was estimated.
<b>Q3</b>	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
<b>S</b>	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
<b>S1</b>	The associated surrogate recovery was out of control limits; result is estimated.
<b>S2</b>	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
<b>S3</b>	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
<b>T</b>	Sample was extracted/analyzed past the holding time.
<b>T1</b>	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
<b>T2</b>	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
<b>T3</b>	Sample received and analyzed out of hold time per client's request.
<b>T4</b>	Sample was analyzed out of hold time per client's request.
<b>T5</b>	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
<b>T6</b>	Hold time is indeterminable due to unspecified sampling time.
<b>T7</b>	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

## Definitions

<b>DF</b>	Dilution Factor
<b>MDL</b>	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
<b>ND</b>	Analyte was not detected or was less than the detection limit.
<b>NR</b>	Not Reported. See Report Comments.
<b>RDL</b>	Reporting Detection Limit
<b>TIC</b>	Tentatively Identified Compounds



# Chain of Custody

## Physis Project ID: 2001003-001

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

424291

Physis SOS Number: 2001003		PO Number:	Sampled by:			
Turnaround Time	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH: _____ Business Days	Type of ice used:	<input type="checkbox"/> BLUE <input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY			
Report Format	<input checked="" type="checkbox"/> PDF/EDD <input type="checkbox"/> SWAMP EDD <input type="checkbox"/> CEDEN EDD <input type="checkbox"/> Other EDD: _____	Shipped via:	<input type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input checked="" type="checkbox"/> Client <input type="checkbox"/> Physis <input type="checkbox"/> Other: _____			
Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-CL	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	7:45:00 AM	Liquid	1
TMDL-CL	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	7:45:00 AM	Liquid	1
TMDL_R4	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	8:54:00 AM	Liquid	1
TMDL_R4	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	8:54:00 AM	Liquid	1
TMDL_SA	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	9:15:00 AM	Liquid	1
TMDL_SA	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	9:15:00 AM	Liquid	1
TMDL_R3	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	10:16:00 AM	Liquid	1

Relinquished: Print: SEASAR NWADIKWE Date: 1/30/20 Print: Elizabeth Ramirez Date: 1/30/20  
 Org: Physis Sign: [Signature] Time: 16:32 Org: Sign: [Signature] Time: 16:32  
 Relinquished: Print: \_\_\_\_\_ Date: \_\_\_\_\_ Print: \_\_\_\_\_ Date: \_\_\_\_\_  
 Org: Sign: \_\_\_\_\_ Time: \_\_\_\_\_ Org: Sign: \_\_\_\_\_ Time: \_\_\_\_\_



# Chain of Custody

## Physis Project ID: 2001003-001

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wright Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL_R3	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	10:16:00 AM	Liquid	1
TMDL_R2	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	11:07:00 AM	Liquid	1
TMDL_R2	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	11:07:00 AM	Liquid	1
TMDL_R1	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	12:00:00 PM	Liquid	1
TMDL_R1	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	12:00:00 PM	Liquid	1
TMDL_Est	Total	Total Kjeldahl Nitrogen (EPA 351.2)	1/15/2020	12:48:00 PM	Liquid	1
TMDL_Est	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	12:48:00 PM	Liquid	1
TMDL_FB	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	1/15/2020	7:45:00 AM	Liquid	1

Notes/Comments:

### Report Down to the MDL

**Please Report EPA 351.2 Required QA Frequency and Acceptance Ranges.**

**Please Contact Lisa Nguyen or Dan Chavez if any Questions.**

Relinquished: Print: <u>CEASAR NWADIKE</u> Date: <u>1/30/20</u>	Received By: Print: <u>Elizabeth Ramirez</u> Date: <u>1/30/20</u>
Org: Physis Sign: <u>Amada</u> Time: <u>16:32</u>	Org: Sign: <u>[Signature]</u> Time: <u>16:32</u>
Relinquished: Print: _____ Date: _____	Received By: Print: _____ Date: _____
Org: Sign: _____ Time: _____	Org: Sign: _____ Time: _____

2.3/1.8



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Physis Project: 2001003-001  
 Date Received: 1/30/20 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 2.3 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 1.8 #2: 1.0 #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

**Section 5 Explanations/Comments**  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By: [Signature] Date: 1/30/20

**CHAIN OF  
CUSTODY**

**P H A S I S**

TERRA FUTURE AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



# Sample Receipt Summary

Client: Rincon Consultants Date Received: 1/16/2020 Received By: RGH Inspected By: RGH

Courier:		Cooler:		Temperature:	
<input type="checkbox"/> Physis	<input type="checkbox"/> FEDEX	<input checked="" type="checkbox"/> UPS	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box
Start	End	Total #: 2		<input type="checkbox"/> BLUE	<input checked="" type="checkbox"/> WET
		<input type="checkbox"/> Other:		<input type="checkbox"/> DRY	<input type="checkbox"/> None
				3.6°C	

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out.....Yes
2. All sample containers arrived intact.....Yes
3. All samples listed on COC(s) are present.....Yes
4. Information on containers consistent with information on COC(s).....Yes
5. Correct containers and volume for all analyses indicated.....Yes
6. All samples received within method holding time.....Yes
7. Correct preservation used for all analyses indicated.....Yes
8. Name of sampler included on COC(s).....No

Notes:



March 13, 2020

Karin Wisenbaker  
Aquatic Bioassay & Consulting Laboratories, Inc.  
29 N. Olive Street  
Ventura, CA 93001

Project Name: Ventura River Algae TMDL  
Physis Project ID: 2001003-002

Dear Karin,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 2/13/2020. A total of 14 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Phosphorus by SM 4500-P E
Total Dissolved Phosphorus by SM 4500-P E
Nitrite as N by SM 4500-NO <sub>2</sub> B
Nitrate as N by SM 4500-NO <sub>3</sub> E
Subcontract
Total Kjeldahl Nitrogen (Field Filtered) by EPA 351.2
Total Kjeldahl Nitrogen by EPA 351.2

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Misty Mercier  
714 602-5320  
Extension 202  
mistymercier@physislabs.com

## PROJECT SAMPLE LIST

Aquatic Bioassay & Consulting Laboratories, Inc.

PHYSIS Project ID: 2001003-002

Ventura River Algae TMDL

Total Samples: 14

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
70995	TMDL-CL	Total	2/12/2020	7:50	Liquid	Not Specified
70996	TMDL-CL	Field Filtered	2/12/2020	7:50	Liquid	Not Specified
70997	TMDL-R4	Total	2/12/2020	8:35	Liquid	Not Specified
70998	TMDL-R4	Field Filtered	2/12/2020	8:35	Liquid	Not Specified
70999	TMDL-SA	Total	2/12/2020	9:00	Liquid	Not Specified
71000	TMDL-SA	Field Filtered	2/12/2020	9:00	Liquid	Not Specified
71001	TMDL-R3	Total	2/12/2020	9:45	Liquid	Not Specified
71002	TMDL-R3	Field Filtered	2/12/2020	9:45	Liquid	Not Specified
71003	TMDL-R2	Total	2/12/2020	10:35	Liquid	Not Specified
71004	TMDL-R2	Field Filtered	2/12/2020	10:35	Liquid	Not Specified
71005	TMDL-R1	Total	2/12/2020	11:30	Liquid	Not Specified
71006	TMDL-R1	Field Filtered	2/12/2020	11:30	Liquid	Not Specified
71007	TMDL-Est	Total	2/12/2020	12:05	Liquid	Not Specified
71008	TMDL-Est	Field Filtered	2/12/2020	12:05	Liquid	Not Specified

## ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

## QUALITY ASSURANCE SUMMARY

**LABORATORY BATCH:** Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

**PROCEDURAL BLANK:** Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

**ACCURACY:** Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

**PRECISION:** Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

**BLANK SPIKES:** BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

**MATRIX SPIKES:** MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

**CERTIFIED REFERENCE MATERIALS:** CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

**LABORATORY CONTROL MATERIAL:** LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

**LABORATORY CONTROL SPIKES:** LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

**SURROGATES:** A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

**HOLDING TIME:** Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

**SAMPLE STORAGE/RETENTION:** In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

**TOTAL/DISSOLVED FRACTION:** In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

## PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

# PHYSIS

**PANALYTICAL**  
**REPORT**

TERRA    RAGLA    AURA

ENVIRONMENTAL LABORATORIES, INC.

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## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 70995-R1</b>	<b>TMDL-CL Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 7:50</b>	<b>Received: 13-Feb-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0267	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 70996-R1</b>	<b>TMDL-CL Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 7:50</b>	<b>Received: 13-Feb-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	ND	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 70997-R1</b>	<b>TMDL-R4 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 8:35</b>	<b>Received: 13-Feb-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0356	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 70998-R1</b>	<b>TMDL-R4 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 8:35</b>	<b>Received: 13-Feb-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	1.62	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 70999-R1</b>	<b>TMDL-SA Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 9:00</b>	<b>Received: 13-Feb-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0448	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 71000-R1</b>	<b>TMDL-SA Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 9:00</b>	<b>Received: 13-Feb-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.413	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 71001-R1</b>	<b>TMDL-R3 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 9:45</b>	<b>Received: 13-Feb-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0208	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 71002-R1</b>	<b>TMDL-R3 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 9:45</b>		<b>Received: 13-Feb-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.29	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 71003-R1</b>	<b>TMDL-R2 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 10:35</b>		<b>Received: 13-Feb-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0561	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 71004-R1</b>	<b>TMDL-R2 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 10:35</b>		<b>Received: 13-Feb-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.68	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0306	0.016	0.03	NA		C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 71005-R1</b>	<b>TMDL-R1 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 11:30</b>		<b>Received: 13-Feb-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0555	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 71006-R1</b>	<b>TMDL-R1 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 11:30</b>		<b>Received: 13-Feb-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.36	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0181	0.016	0.03	NA	J	C-47127	04-Mar-20	06-Mar-20 9:00
<b>Sample ID: 71007-R1</b>	<b>TMDL-Est Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 12:05</b>		<b>Received: 13-Feb-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0527	0.016	0.02	NA		C-47114	21-Feb-20	02-Mar-20 15:00
<b>Sample ID: 71008-R1</b>	<b>TMDL-Est Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 12-Feb-20 12:05</b>		<b>Received: 13-Feb-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.752	0.01	0.02	NA		C-47132	14-Feb-20	10-Mar-20 16:30
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47104	14-Feb-20	14-Feb-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0165	0.016	0.03	NA	J	C-47127	04-Mar-20	06-Mar-20 9:00

# PHYSICS

# QUALITY CONTROL

# REPORT

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CA ELAP #2769

## Conventionals

## QUALITY CONTROL REPORT

SAMPLE ID	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	ACCURACY %	LIMITS	PRECISION %	LIMITS	QA CODE
<b>Nitrate as N</b>		<b>Method: SM 4500-NO<sub>3</sub> E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 14-Feb-20</b>		<b>Analyzed: 10-Mar-20</b>		
70994-B1	QAQC Procedural Blank	C-47132	ND	0.01	0.02	mg/L						
70994-BS1	QAQC Procedural Blank	C-47132	0.519	0.01	0.02	mg/L	0.5	0	104	68 - 135%	PASS	
70994-BS2	QAQC Procedural Blank	C-47132	0.524	0.01	0.02	mg/L	0.5	0	105	68 - 135%	PASS	1 25 PASS
70996-MS1	TMDL-CL	C-47132	0.549	0.01	0.02	mg/L	0.5	0	110	80 - 120%	PASS	25
70996-MS2	TMDL-CL	C-47132	0.549	0.01	0.02	mg/L	0.5	0	110	80 - 120%	PASS	0 25 PASS
70996-R2	TMDL-CL	C-47132	ND	0.01	0.02	mg/L						0 25 PASS
<b>Nitrite as N</b>		<b>Method: SM 4500-NO<sub>2</sub> B</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 14-Feb-20</b>		<b>Analyzed: 14-Feb-20</b>		
70994-B1	QAQC Procedural Blank	C-47104	ND	0.01	0.02	mg/L						
70994-BS1	QAQC Procedural Blank	C-47104	0.0465	0.01	0.02	mg/L	0.05	0	93	49 - 120%	PASS	
70994-BS2	QAQC Procedural Blank	C-47104	0.0471	0.01	0.02	mg/L	0.05	0	94	49 - 120%	PASS	1 25 PASS
71008-MS1	TMDL-Est	C-47104	0.0485	0.01	0.02	mg/L	0.05	0	97	80 - 120%	PASS	25
71008-MS2	TMDL-Est	C-47104	0.049	0.01	0.02	mg/L	0.05	0	98	80 - 120%	PASS	1 25 PASS
71008-R2	TMDL-Est	C-47104	ND	0.01	0.02	mg/L						0 25 PASS
<b>Total Dissolved Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 04-Mar-20</b>		<b>Analyzed: 06-Mar-20</b>		
70994-B1	QAQC Procedural Blank	C-47127	ND	0.016	0.03	mg/L						
70994-BS1	QAQC Procedural Blank	C-47127	0.301	0.016	0.03	mg/L	0.3	0	100	86 - 118%	PASS	
70994-BS2	QAQC Procedural Blank	C-47127	0.309	0.016	0.03	mg/L	0.3	0	103	86 - 118%	PASS	3 25 PASS
70998-MS1	TMDL-R4	C-47127	0.309	0.016	0.03	mg/L	0.3	0	103	80 - 120%	PASS	25
70998-MS2	TMDL-R4	C-47127	0.316	0.016	0.03	mg/L	0.3	0	105	80 - 120%	PASS	2 25 PASS
70998-R2	TMDL-R4	C-47127	ND	0.016	0.03	mg/L						0 25 PASS
<b>Total Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 21-Feb-20</b>		<b>Analyzed: 02-Mar-20</b>		
70994-B1	QAQC Procedural Blank	C-47114	ND	0.016	0.02	mg/L						
70994-BS1	QAQC Procedural Blank	C-47114	0.311	0.016	0.02	mg/L	0.3	0	104	73 - 131%	PASS	
70994-BS2	QAQC Procedural Blank	C-47114	0.301	0.016	0.02	mg/L	0.3	0	100	73 - 131%	PASS	4 25 PASS
71007-MS1	TMDL-Est	C-47114	0.35	0.016	0.02	mg/L	0.3	0.0523	99	80 - 120%	PASS	25
71007-MS2	TMDL-Est	C-47114	0.358	0.016	0.02	mg/L	0.3	0.0523	102	80 - 120%	PASS	3 25 PASS
71007-R2	TMDL-Est	C-47114	0.0518	0.016	0.02	mg/L						2 25 PASS

# SUBCONTRACT

# REPORT



TERRA R AG A AURA  
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931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 424832  
Report Level: II  
Report Date: 02/26/2020

**Analytical Report** *prepared for:*

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Location: 2001003-002

*Authorized for release by:*

\_\_\_\_\_  
Lisa Nguyen, Project Manager  
ext 10323  
[lisa.nguyen@enthalpy.com](mailto:lisa.nguyen@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.



## Sample Summary

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Lab Job #: 424832  
Location: 2001003-002  
Date Received: 02/14/20

Sample ID	Lab ID	Collected	Matrix
TMDL-CL	424832-001	02/12/20 07:50	Water
TMDL-CL FIELD FILTERED	424832-002	02/12/20 07:50	Water
TMDL-R4	424832-003	02/12/20 08:35	Water
TMDL-R4 FIELD FILTERED	424832-004	02/12/20 08:35	Water
TMDL-SA	424832-005	02/12/20 09:00	Water
TMDL-SA FIELD FILTERED	424832-006	02/12/20 09:00	Water
TMDL-R3	424832-007	02/12/20 09:45	Water
TMDL-R3 FIELD FILTERED	424832-008	02/12/20 09:45	Water
TMDL-R2	424832-009	02/12/20 10:35	Water
TMDL-R2 FIELD FILTERED	424832-010	02/12/20 10:35	Water
TMDL-R1	424832-011	02/12/20 11:30	Water
TMDL-R1 FIELD FILTERED	424832-012	02/12/20 11:30	Water
TMDL-EST	424832-013	02/12/20 12:05	Water
TMDL-EST FIELD FILTERED	424832-014	02/12/20 12:05	Water



# Chain of Custody

## Physis Project ID: 2001003-002

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wright Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

424832

Physis SOS Number:	2001003	PO Number:	Sampled by:			
Turnaround Time	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH:	Type of ice used:	<input type="checkbox"/> BLUE <input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY			
Report Format	<input checked="" type="checkbox"/> PDF/EDD <input type="checkbox"/> SWAMP EDD <input type="checkbox"/> CEDEN EDD <input type="checkbox"/> Other EDD:	Shipped via:	<input type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input checked="" type="checkbox"/> Physis <input type="checkbox"/> Client <input type="checkbox"/> Other:			
Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-CL	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	7:50:00 AM	Liquid	1
TMDL-LCL	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	7:50:00 AM	Liquid	1
TMDL-R4	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	8:35:00 AM	Liquid	1
TMDL-R4	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	8:35:00 AM	Liquid	1
TMDL-SA	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	9:00:00 AM	Liquid	1
TMDL-SA	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	9:00:00 AM	Liquid	1
TMDL-R3	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	9:45:00 AM	Liquid	1

Relinquished: Print: Misty Mercier Date: 02/14/2020 Received By: Print: Elizabeth Ramirez Date: 2/14/20  
 Org: Physis Sign: [Signature] Time: 15:25 Org: [Signature] Time: 15:25  
 Relinquished: Print: \_\_\_\_\_ Date: \_\_\_\_\_ Received By: Print: \_\_\_\_\_ Date: \_\_\_\_\_  
 Org: \_\_\_\_\_ Sign: \_\_\_\_\_ Org: \_\_\_\_\_ Sign: \_\_\_\_\_ Time: \_\_\_\_\_



# Chain of Custody

## Physis Project ID: 2001003-002

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-R3	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	9:45:00 AM	Liquid	1
TMDL-R2	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	10:35:00 AM	Liquid	1
TMDL-R2	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	10:35:00 AM	Liquid	1
TMDL-R1	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	11:30:00 AM	Liquid	1
TMDL-R1	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	11:30:00 AM	Liquid	1
TMDL-Est	Total	Total Kjeldahl Nitrogen (EPA 351.2)	2/12/2020	12:05:00 PM	Liquid	1
TMDL-Est	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	2/12/2020	12:05:00 PM	Liquid	1

Notes/Comments:

### Report Down to the MDL

**Please Report EPA 351.2 Required QA Frequency and Acceptance Ranges.**  
**Please Contact Lisa Nguyen or Dan Chavez if any Questions.**

Relinquished: Print: <u>MOYNBA NOM</u>	Date: <u>02/14/2020</u>	Received By: Print: <u>Elizabeth Ramirez</u>	Date: <u>2/14/20</u>
Org: Physis Sign: <u>[Signature]</u>	Time: <u>15:25</u>	Org: Sign: <u>[Signature]</u>	Time: <u>15:25</u>
Relinquished: Print: _____	Date: _____	Received By: Print: _____	Date: _____
Org: Sign: _____	Time: _____	Org: Sign: _____	Time: _____



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Physis Project: 2001003-002  
 Date Received: 2/14/20 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 4.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 0.5 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

**Section 5 Explanations/Comments**  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By: [Signature] Date: 2/14/20

## Analysis Results for 424832

Misty Mercier  
 PHYSIS Environmental Laboratories  
 1904 E. Wright Circle  
 Anaheim, CA 92806

Lab Job #: 424832  
 Location: 2001003-002  
 Date Received: 02/14/20

**Sample ID: TMDL-CL**                      **Lab ID: 424832-001**                      **Collected: 02/12/20 07:50**  
**Matrix: Water**

424832-001 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2										
Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.25	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

**Sample ID: TMDL-CL FIELD FILTERED**                      **Lab ID: 424832-002**                      **Collected: 02/12/20 07:50**  
**Matrix: Water**

424832-002 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2										
Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.32	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

**Sample ID: TMDL-R4**                      **Lab ID: 424832-003**                      **Collected: 02/12/20 08:35**  
**Matrix: Water**

424832-003 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2										
Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.28	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

**Sample ID: TMDL-R4 FIELD FILTERED**                      **Lab ID: 424832-004**                      **Collected: 02/12/20 08:35**  
**Matrix: Water**

424832-004 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2										
Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.21	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

## Analysis Results for 424832

<b>Sample ID:</b> TMDL-SA	<b>Lab ID:</b> 424832-005	<b>Collected:</b> 02/12/20 09:00
	<b>Matrix:</b> Water	

424832-005 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.19	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-SA FIELD FILTERED	<b>Lab ID:</b> 424832-006	<b>Collected:</b> 02/12/20 09:00
	<b>Matrix:</b> Water	

424832-006 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.27	J	mg/L	0.40	0.052	1	242407	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-R3	<b>Lab ID:</b> 424832-007	<b>Collected:</b> 02/12/20 09:45
	<b>Matrix:</b> Water	

424832-007 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.36	J	mg/L	0.40	0.052	1	242408	02/19/20	02/25/20	ATP

<b>Sample ID:</b> TMDL-R3 FIELD FILTERED	<b>Lab ID:</b> 424832-008	<b>Collected:</b> 02/12/20 09:45
	<b>Matrix:</b> Water	

424832-008 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.20	J	mg/L	0.40	0.052	1	242408	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-R2	<b>Lab ID:</b> 424832-009	<b>Collected:</b> 02/12/20 10:35
	<b>Matrix:</b> Water	

424832-009 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.47		mg/L	0.40	0.052	1	242408	02/19/20	02/19/20	ATP

## Analysis Results for 424832

<b>Sample ID:</b> TMDL-R2 FIELD FILTERED	<b>Lab ID:</b> 424832-010 <b>Matrix:</b> Water	<b>Collected:</b> 02/12/20 10:35
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424832-010 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.37	J	mg/L	0.40	0.052	1	242408	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-R1	<b>Lab ID:</b> 424832-011 <b>Matrix:</b> Water	<b>Collected:</b> 02/12/20 11:30
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424832-011 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.39	J	mg/L	0.40	0.052	1	242408	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-R1 FIELD FILTERED	<b>Lab ID:</b> 424832-012 <b>Matrix:</b> Water	<b>Collected:</b> 02/12/20 11:30
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424832-012 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.34	J	mg/L	0.40	0.052	1	242408	02/19/20	02/19/20	ATP

<b>Sample ID:</b> TMDL-EST	<b>Lab ID:</b> 424832-013 <b>Matrix:</b> Water	<b>Collected:</b> 02/12/20 12:05
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424832-013 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.087	J	mg/L	0.40	0.052	1	242408	02/19/20	02/25/20	ATP

<b>Sample ID:</b> TMDL-EST FIELD FILTERED	<b>Lab ID:</b> 424832-014 <b>Matrix:</b> Water	<b>Collected:</b> 02/12/20 12:05
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424832-014 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.083	J	mg/L	0.40	0.052	1	242408	02/19/20	02/25/20	ATP

## Analysis Results for 424832

J Estimated value

## Batch QC

<b>Type: Blank</b>	<b>Lab ID: QC860327</b>	<b>Batch: 242408</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860327 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.40	0.052	02/19/20	02/19/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC860328</b>	<b>Batch: 242408</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860328 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.580	2.500	mg/L	103%		90-110

<b>Type: Matrix Spike</b>	<b>Lab ID: QC860329</b>	<b>Batch: 242408</b>
<b>Matrix (Source ID): Water (424832-014)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860329 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	13.70	0.08300	12.50	mg/L	109%		90-110	2.5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC860330</b>	<b>Batch: 242408</b>
<b>Matrix (Source ID): Water (424832-014)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860330 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	Lim	DF
Nitrogen, Total Kjeldahl	14.90	0.08300	12.50	mg/L	119%	*	90-110	8	20	2.5

<b>Type: Blank</b>	<b>Lab ID: QC860323</b>	<b>Batch: 242407</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860323 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.40	0.052	02/19/20	02/19/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC860324</b>	<b>Batch: 242407</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860324 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.460	2.500	mg/L	98%		90-110

## Batch QC

<b>Type: Matrix Spike</b>	<b>Lab ID: QC860325</b>	<b>Batch: 242407</b>
<b>Matrix (Source ID): Water (424831-011)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860325 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	22.60	9.500	12.50	mg/L	105%		90-110	5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC860326</b>	<b>Batch: 242407</b>
<b>Matrix (Source ID): Water (424831-011)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC860326 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Nitrogen, Total Kjeldahl	22.50	9.500	12.50	mg/L	104%		90-110	0	20	5

\* Value is outside QC limits  
 ND Not Detected

**CHAIN OF  
CUSTODY**

**P H A S I S**

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ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

2001003-002

**From:** Aquatic Bioassay and Consulting Labs.  
29 N. Olive St.  
Ventura, CA 93001

**Phone:** (805) 643-5621  
**Fax:** (805) 643-2930  
**Project ID:** Ventura River AlgaeTMDL

**To:** **Company:** PHYSIS  
**Address:** 1904 E Wright Circle  
Anaheim, CA 92806  
**Phone:** (714) 335-5793

Sample I.D. No.	Sample Date	Time	Matrix	Volume/ No.	Reps	ANALYSIS					Comments
						Nitrate / Nitrite Field Filtered (SM 4500 NO3 E / SM 4500 NO2 B)	Total Phosphorous (SM 4500-P E)	Dissolved Phosphorous (SM 4500-P E)	Total TKN (EPA 351.2)	Dissolved TKN (EPA 351.2)	
TMDL-CL	2/12/20	0750	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R4	2/12/20	0835	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-SA	2/12/20	0900	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R3	2/12/20	0945	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R2	2/12/20	1035	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R1	2/12/20	1130	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-Est	2/12/20	1205	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
Equipment Blank			Water	2-250 mL, pl; 1-250 mL, gl.			N/A		N/A		gh

**Notes:** Total/dissolved phosphorous and total/dissolved TKN preserved with H<sub>2</sub>SO<sub>4</sub>; Email report to karin@aquaticbioassay.com and kbtralik@rinconconsultants.com

<b>RELINQUISHED BY</b> Name: Brianna Jones Signature: <i>[Signature]</i> Date: 2-12-2020 Time: 1330	<b>RECEIVED BY</b> Name: Richard Hanken Signature: <i>[Signature]</i> Date: 2/13/20 Time: 1030	<b>RELINQUISHED BY</b> Name: Signature: Date: Time:	<b>RECEIVED BY</b> Name: Signature: Date: Time:
--	---	--	--

# Sample Receipt Summary

Client:  Date Received:  Received By:  Inspected By:

Courier:		Cooler:		Temperature:	
<input type="checkbox"/> Physis	<input type="checkbox"/> FEDEX	<input checked="" type="checkbox"/> UPS	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box
Start <input type="text"/>	End <input type="text"/>	Total #: <input type="text" value="2"/>		<input type="checkbox"/> BLUE	<input checked="" type="checkbox"/> WET
<input type="checkbox"/> Other: <input type="text"/>		<input type="checkbox"/> Other: <input type="text"/>		<input type="checkbox"/> DRY	<input type="checkbox"/> None
				<input type="text" value="0.5"/> °C	

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out.....Yes
2. All sample containers arrived intact.....Yes
3. All samples listed on COC(s) are present.....Yes
4. Information on containers consistent with information on COC(s).....Yes
5. Correct containers and volume for all analyses indicated.....Yes
6. All samples received within method holding time.....Yes
7. Correct preservation used for all analyses indicated.....Yes
8. Name of sampler included on COC(s).....No

Notes:



April 23, 2020

Karin Wisenbaker  
Aquatic Bioassay & Consulting Laboratories, Inc.  
29 N. Olive Street  
Ventura, CA 93001

Project Name: Ventura River Algae TMDL  
Physis Project ID: 2001003-003

Dear Karin,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 3/20/2020. A total of 14 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Phosphorus by SM 4500-P E
Total Dissolved Phosphorus by SM 4500-P E
Nitrite as N by SM 4500-NO <sub>2</sub> B
Nitrate as N by SM 4500-NO <sub>3</sub> E
Subcontract
Total Kjeldahl Nitrogen (Field Filtered) by EPA 351.2
Total Kjeldahl Nitrogen by EPA 351.2

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Misty Mercier  
714 602-5320  
Extension 202  
mistymercier@physislabs.com

## PROJECT SAMPLE LIST

Aquatic Bioassay & Consulting Laboratories, Inc.  
 Ventura River Algae TMDL

PHYSIS Project ID: 2001003-003  
 Total Samples: 14

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
72266	TMDL-CL	Total	3/19/2020	7:47	Liquid	Not Specified
72267	TMDL-CL	Field Filtered	3/19/2020	7:47	Liquid	Not Specified
72268	TMDL-R4	Total	3/19/2020	8:35	Liquid	Not Specified
72269	TMDL-R4	Field Filtered	3/19/2020	8:35	Liquid	Not Specified
72270	TMDL-SA	Total	3/19/2020	9:10	Liquid	Not Specified
72271	TMDL-SA	Field Filtered	3/19/2020	9:10	Liquid	Not Specified
72272	TMDL-R3	Total	3/19/2020	10:20	Liquid	Not Specified
72273	TMDL-R3	Field Filtered	3/19/2020	10:20	Liquid	Not Specified
72274	TMDL-R2	Total	3/19/2020	11:08	Liquid	Not Specified
72275	TMDL-R2	Field Filtered	3/19/2020	11:08	Liquid	Not Specified
72276	TMDL-R1	Total	3/19/2020	12:25	Liquid	Not Specified
72277	TMDL-R1	Field Filtered	3/19/2020	12:25	Liquid	Not Specified
72278	TMDL-Est	Total	3/19/2020	13:22	Liquid	Not Specified
72279	TMDL-Est	Field Filtered	3/19/2020	13:22	Liquid	Not Specified

## ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

## QUALITY ASSURANCE SUMMARY

**LABORATORY BATCH:** Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

**PROCEDURAL BLANK:** Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

**ACCURACY:** Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

**PRECISION:** Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

**BLANK SPIKES:** BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

**MATRIX SPIKES:** MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

**CERTIFIED REFERENCE MATERIALS:** CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

**LABORATORY CONTROL MATERIAL:** LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

**LABORATORY CONTROL SPIKES:** LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

**SURROGATES:** A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

**HOLDING TIME:** Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

**SAMPLE STORAGE/RETENTION:** In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

**TOTAL/DISSOLVED FRACTION:** In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

## PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

# PHYSIS

**PANALYTICAL**  
**REPORT**

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ENVIRONMENTAL LABORATORIES, INC.

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## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 72266-R1</b>	<b>TMDL-CL Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 7:47</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0737	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72267-R1</b>	<b>TMDL-CL Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 7:47</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.299	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO2 B	mg/L	0.0112	0.01	0.02	NA	J	C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0739	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72268-R1</b>	<b>TMDL-R4 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 8:35</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.233	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72269-R1</b>	<b>TMDL-R4 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 8:35</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.953	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72270-R1</b>	<b>TMDL-SA Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 9:10</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0589	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72271-R1</b>	<b>TMDL-SA Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 9:10</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.496	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0329	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72272-R1</b>	<b>TMDL-R3 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 10:20</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.161	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 72273-R1</b>	<b>TMDL-R3 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 10:20</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.886	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72274-R1</b>	<b>TMDL-R2 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 11:08</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.125	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72275-R1</b>	<b>TMDL-R2 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 11:08</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.03	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72276-R1</b>	<b>TMDL-R1 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 12:25</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.0659	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72277-R1</b>	<b>TMDL-R1 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 12:25</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.92	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49017	15-Apr-20	16-Apr-20 13:00
<b>Sample ID: 72278-R1</b>	<b>TMDL-Est Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 13:22</b>	<b>Received: 20-Mar-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.119	0.016	0.02	NA		C-49014	13-Apr-20	14-Apr-20 13:00
<b>Sample ID: 72279-R1</b>	<b>TMDL-Est Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 19-Mar-20 13:22</b>	<b>Received: 20-Mar-20</b>	
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.865	0.01	0.02	NA		C-47155	20-Mar-20	01-Apr-20 11:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-47143	20-Mar-20	20-Mar-20 15:15
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0222	0.016	0.03	NA	J	C-49017	15-Apr-20	16-Apr-20 13:00

# PHYSICS

# QUALITY CONTROL

# REPORT

TERRA FUSION AQUA AURA  
ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



Innovative Solutions for Nature

1904 E. Wright Circle, Anaheim CA 92806

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www.physislabs.com

info@physislabs.com

CA ELAP #2769

## Conventionals

## QUALITY CONTROL REPORT

SAMPLE ID	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	ACCURACY %	LIMITS	PRECISION %	LIMITS	QA CODE
<b>Nitrate as N</b>		<b>Method: SM 4500-NO<sub>3</sub> E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 20-Mar-20</b>		<b>Analyzed: 01-Apr-20</b>		
72265-B1	QAQC Procedural Blank	C-47155	ND	0.01	0.02	mg/L						
72265-BS1	QAQC Procedural Blank	C-47155	0.532	0.01	0.02	mg/L	0.5	0	106	68 - 135%	PASS	
72265-BS2	QAQC Procedural Blank	C-47155	0.529	0.01	0.02	mg/L	0.5	0	106	68 - 135%	PASS	0 25 PASS
72267-MS1	TMDL-CL	C-47155	0.824	0.01	0.02	mg/L	0.5	0.3	105	80 - 120%	PASS	25
72267-MS2	TMDL-CL	C-47155	0.83	0.01	0.02	mg/L	0.5	0.3	106	80 - 120%	PASS	1 25 PASS
72267-R2	TMDL-CL	C-47155	0.302	0.01	0.02	mg/L						1 25 PASS
<b>Nitrite as N</b>		<b>Method: SM 4500-NO<sub>2</sub> B</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 20-Mar-20</b>		<b>Analyzed: 20-Mar-20</b>		
72265-B1	QAQC Procedural Blank	C-47143	ND	0.01	0.02	mg/L						
72265-BS1	QAQC Procedural Blank	C-47143	0.0501	0.01	0.02	mg/L	0.05	0	100	49 - 120%	PASS	
72265-BS2	QAQC Procedural Blank	C-47143	0.0499	0.01	0.02	mg/L	0.05	0	100	49 - 120%	PASS	0 25 PASS
72267-MS1	TMDL-CL	C-47143	0.053	0.01	0.02	mg/L	0.05	0.011	84	80 - 120%	PASS	25
72267-MS2	TMDL-CL	C-47143	0.0537	0.01	0.02	mg/L	0.05	0.011	85	80 - 120%	PASS	1 25 PASS
72267-R2	TMDL-CL	C-47143	0.0107	0.01	0.02	mg/L						5 25 PASS J
<b>Total Dissolved Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 15-Apr-20</b>		<b>Analyzed: 16-Apr-20</b>		
72265-B1	QAQC Procedural Blank	C-49017	ND	0.016	0.03	mg/L						
72265-BS1	QAQC Procedural Blank	C-49017	0.301	0.016	0.03	mg/L	0.3	0	100	86 - 118%	PASS	
72265-BS2	QAQC Procedural Blank	C-49017	0.293	0.016	0.03	mg/L	0.3	0	98	86 - 118%	PASS	2 25 PASS
72267-MS1	TMDL-CL	C-49017	0.358	0.016	0.03	mg/L	0.3	0.0695	96	80 - 120%	PASS	25
72267-MS2	TMDL-CL	C-49017	0.343	0.016	0.03	mg/L	0.3	0.0695	91	80 - 120%	PASS	5 25 PASS
72267-R2	TMDL-CL	C-49017	0.065	0.016	0.03	mg/L						13 25 PASS
<b>Total Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 13-Apr-20</b>		<b>Analyzed: 14-Apr-20</b>		
72265-B1	QAQC Procedural Blank	C-49014	ND	0.016	0.02	mg/L						
72265-BS1	QAQC Procedural Blank	C-49014	0.292	0.016	0.02	mg/L	0.3	0	97	73 - 131%	PASS	
72265-BS2	QAQC Procedural Blank	C-49014	0.29	0.016	0.02	mg/L	0.3	0	97	73 - 131%	PASS	0 25 PASS
72266-MS1	TMDL-CL	C-49014	0.353	0.016	0.02	mg/L	0.3	0.0708	94	80 - 120%	PASS	25
72266-MS2	TMDL-CL	C-49014	0.357	0.016	0.02	mg/L	0.3	0.0708	95	80 - 120%	PASS	1 25 PASS
72266-R2	TMDL-CL	C-49014	0.0678	0.016	0.02	mg/L						8 25 PASS

# **SUBCONTRACT**

# **REPORT**

PHYSICS

TERRA AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



Enthalpy Analytical  
931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 426411  
Report Level: II  
Report Date: 04/17/2020

**Analytical Report** *prepared for:*

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Location: 2001003-003

*Authorized for release by:*

\_\_\_\_\_  
Lisa Nguyen, Project Manager  
ext 10323  
[lisa.nguyen@enthalpy.com](mailto:lisa.nguyen@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.



## Sample Summary

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Lab Job #: 426411  
Location: 2001003-003  
Date Received: 03/25/20

Sample ID	Lab ID	Collected	Matrix
TMDL-CL (TOTAL)	426411-001	03/19/20 07:47	Water
TMDL-CL (FIELD FILTERED)	426411-002	03/19/20 07:47	Water
TMDL-R4 (TOTAL)	426411-003	03/19/20 08:35	Water
TMDL-R4 (FIELD FILTERED)	426411-004	03/19/20 08:35	Water
TMDL-SA (TOTAL)	426411-005	03/19/20 09:10	Water
TMDL-SA (FIELD FILTERED)	426411-006	03/19/20 09:10	Water
TMDL-R3 (TOTAL)	426411-007	03/19/20 10:20	Water
TMDL-R3 (FIELD FILTERED)	426411-008	03/19/20 10:20	Water
TMDL-R2 (TOTAL)	426411-009	03/19/20 11:08	Water
TMDL-R2 (FIELD FILTERED)	426411-010	03/19/20 11:08	Water
TMDL-R1 (TOTAL)	426411-011	03/19/20 12:25	Water
TMDL-R1 (FIELD FILTERED)	426411-012	03/19/20 12:25	Water
TMDL-EST (TOTAL)	426411-013	03/19/20 13:22	Water
TMDL-EST (FIELD FILTERED)	426411-014	03/19/20 13:22	Water

# Chain of Custody

## Physis Project ID: 2001003-003

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

426411

Physis SOS Number:	2001003	PO Number:	
Turnaround Time	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH: _____ Business Days	Type of ice used:	<input type="checkbox"/> BLUE <input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY
Report Format	<input checked="" type="checkbox"/> PDF/EDD <input type="checkbox"/> SWAMP EDD <input type="checkbox"/> CEDEN EDD <input type="checkbox"/> Other EDD: _____	Shipped via:	<input type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input checked="" type="checkbox"/> Physis <input type="checkbox"/> Other: _____

Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-CL	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	7:47:00 AM	Liquid	1
TMDL-CL	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	7:47:00 AM	Liquid	1
TMDL-R4	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	8:35:00 AM	Liquid	1
TMDL-R4	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	8:35:00 AM	Liquid	1
TMDL-SA	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	9:10:00 AM	Liquid	1
TMDL-SA	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	9:10:00 AM	Liquid	1
TMDL-R3	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	10:20:00 AM	Liquid	1

Relinquished:	Print: <u>CEDAR NWADIKUR</u>	Date: <u>3/25/20</u>	Received By:	Print: <u>FERNANDO Dwy</u>	Date: <u>3/25/20</u>
Org: Physis	Sign: _____	Time: <u>1401</u>	Org: <u>EN</u>	Sign: _____	Time: <u>1412</u>
Relinquished:	Print: _____	Date: _____	Received By:	Print: _____	Date: _____
Org: _____	Sign: _____	Time: _____	Org: _____	Sign: _____	Time: _____

# Chain of Custody

## Physis Project ID: 2001003-003

From: Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

To: Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-R3	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	10:20:00 AM	Liquid	1
TMDL-R2	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	11:08:00 AM	Liquid	1
TMDL-R2	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	11:08:00 AM	Liquid	1
TMDL-R1	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	12:25:00 PM	Liquid	1
TMDL-R1	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	12:25:00 PM	Liquid	1
TMDL-Est	Total	Total Kjeldahl Nitrogen (EPA 351.2)	3/19/2020	1:22:00 PM	Liquid	1
TMDL-Est	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	3/19/2020	1:22:00 PM	Liquid	1

Notes/Comments:

**Report Down to the MDL**

Relinquished: Print: <u>CEBAR NWADIKIE</u> Date: <u>3/25/20</u>	Received By: Print: <u>Fernando Dora</u> Date: <u>3/25/20</u>
Org: Physis Sign: <u>[Signature]</u> Time: <u>1401</u>	Org: <u>ER</u> Sign: <u>[Signature]</u> Time: <u>1412</u>
Relinquished: Print: _____ Date: _____	Received By: Print: _____ Date: _____
Org: _____ Sign: _____ Time: _____	Org: _____ Sign: _____ Time: _____



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Physis Project: \_\_\_\_\_  
 Date Received: 03/25/20 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 5.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 0.6 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

**Section 5 Explanations/Comments**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By:  Date: 3/25/20



## Analysis Results for 426411

<b>Sample ID:</b> TMDL-SA (FIELD FILTERED)	<b>Lab ID:</b> 426411-006 <b>Matrix:</b> Water	<b>Collected:</b> 03/19/20 09:10
---	---	----------------------------------

426411-006 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.26	J	mg/L	0.40	0.052	1	244072	04/16/20	04/17/20	ATP

<b>Sample ID:</b> TMDL-R3 (TOTAL)	<b>Lab ID:</b> 426411-007 <b>Matrix:</b> Water	<b>Collected:</b> 03/19/20 10:20
--------------------------------------	---	----------------------------------

426411-007 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.30	J	mg/L	0.40	0.052	1	244072	04/16/20	04/17/20	ATP

<b>Sample ID:</b> TMDL-R3 (FIELD FILTERED)	<b>Lab ID:</b> 426411-008 <b>Matrix:</b> Water	<b>Collected:</b> 03/19/20 10:20
---	---	----------------------------------

426411-008 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.15	J	mg/L	0.40	0.052	1	244072	04/16/20	04/17/20	ATP

<b>Sample ID:</b> TMDL-R2 (TOTAL)	<b>Lab ID:</b> 426411-009 <b>Matrix:</b> Water	<b>Collected:</b> 03/19/20 11:08
--------------------------------------	---	----------------------------------

426411-009 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.21	J	mg/L	0.40	0.052	1	244072	04/16/20	04/17/20	ATP

<b>Sample ID:</b> TMDL-R2 (FIELD FILTERED)	<b>Lab ID:</b> 426411-010 <b>Matrix:</b> Water	<b>Collected:</b> 03/19/20 11:08
---	---	----------------------------------

426411-010 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.13	J	mg/L	0.40	0.052	1	244072	04/16/20	04/17/20	ATP

## Analysis Results for 426411

<b>Sample ID: TMDL-R1 (TOTAL)</b>	<b>Lab ID: 426411-011</b>	<b>Collected: 03/19/20 12:25</b>
	<b>Matrix: Water</b>	

426411-011 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.26	J	mg/L	0.40	0.052	1	244073	04/16/20	04/17/20	ATP

<b>Sample ID: TMDL-R1 (FIELD FILTERED)</b>	<b>Lab ID: 426411-012</b>	<b>Collected: 03/19/20 12:25</b>
	<b>Matrix: Water</b>	

426411-012 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.15	J	mg/L	0.40	0.052	1	244073	04/16/20	04/17/20	ATP

<b>Sample ID: TMDL-EST (TOTAL)</b>	<b>Lab ID: 426411-013</b>	<b>Collected: 03/19/20 13:22</b>
	<b>Matrix: Water</b>	

426411-013 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.29	J	mg/L	0.40	0.052	1	244073	04/16/20	04/17/20	ATP

<b>Sample ID: TMDL-EST (FIELD FILTERED)</b>	<b>Lab ID: 426411-014</b>	<b>Collected: 03/19/20 13:22</b>
	<b>Matrix: Water</b>	

426411-014 Analyte	Result	Qual	Units	RL	MDL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2 Prep Method: METHOD										
Nitrogen, Total Kjeldahl	0.13	J	mg/L	0.40	0.052	1	244073	04/16/20	04/17/20	ATP

J Estimated value

## Batch QC

<b>Type: Blank</b>	<b>Lab ID: QC864232</b>	<b>Batch: 244072</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864232 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.40	0.052	04/16/20	04/17/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC864233</b>	<b>Batch: 244072</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864233 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.530	2.500	mg/L	101%		90-110

<b>Type: Matrix Spike</b>	<b>Lab ID: QC864234</b>	<b>Batch: 244072</b>
<b>Matrix (Source ID): Water (426411-001)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864234 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	12.90	1.060	12.50	mg/L	95%		90-110	2.5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC864235</b>	<b>Batch: 244072</b>
<b>Matrix (Source ID): Water (426411-001)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864235 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	Lim	DF
Nitrogen, Total Kjeldahl	12.80	1.060	12.50	mg/L	94%		90-110	1	20	2.5

<b>Type: Blank</b>	<b>Lab ID: QC864236</b>	<b>Batch: 244073</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864236 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.40	0.052	04/16/20	04/17/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC864237</b>	<b>Batch: 244073</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864237 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.560	2.500	mg/L	102%		90-110

## Batch QC

<b>Type: Matrix Spike</b>	<b>Lab ID: QC864238</b>	<b>Batch: 244073</b>
<b>Matrix (Source ID): Water (426411-013)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864238 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	13.80	0.2870	12.50	mg/L	108%		90-110	2.5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC864239</b>	<b>Batch: 244073</b>
<b>Matrix (Source ID): Water (426411-013)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC864239 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	Lim	DF
Nitrogen, Total Kjeldahl	13.90	0.2870	12.50	mg/L	109%		90-110	1	20	2.5

ND Not Detected

**CHAIN OF  
CUSTODY**

**P H A S I S**

TERRA FUTURE AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

2001003-003

**From:** Aquatic Bioassay  
and Consulting Labs.  
29 N. Olive St.  
Ventura, CA 93001

**Phone:** (805) 643-5621  
**Fax:** (805) 643-2930  
**Project ID:** Ventura River  
AlgaeTMDL

**To:** **Company:** PHYSIS  
**Address:** 1904 E Wright Circle  
Anaheim, CA 92806  
**Phone:** (714) 335-5793

## ANALYSIS

Sample I.D. No.	Sample Date	Time	Matrix	Volume/ No.	Reps	Nitrate / Nitrite, Field Filtered (SM 4500 NO3 E / SM 4500 NO2 B)	Total Phosphorous (SM 4500-P E)	Dissolved Phosphorous, Field Filtered (SM 4500-P E)	Total TKN (EPA 351.2)	Dissolved TKN (EPA 351.2) Field Filtered	Comments
TMDL-CL	3/19/2020	7:47	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R4	3/19/2020	8:35	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-SA	3/19/2020	9:10	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R3	3/19/2020	10:20	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R2	3/19/2020	11:08	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R1	3/19/2020	12:25	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-Est	3/19/2020	13:22	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	

**Notes:** Total/dissolved phosphorous and total/dissolved TKN preserved with H<sub>2</sub>SO<sub>4</sub>; Email report to karin@aquaticbioassay.com and kbtrialk@rinconconsultants.co

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Name: Brianna Jones	Name: Richard Hanken	Name:	Name:
Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	Signature:	Signature:
Date: 3/19/2020 Time: 1420	Date: 3/20/20 Time: 922	Date:	Date:
		Time:	Time:

# Sample Receipt Summary

Client:  Date Received:  Received By:  Inspected By:

Courier:		Cooler:		Temperature:	
<input type="checkbox"/> Physis	<input type="checkbox"/> FEDEX	<input checked="" type="checkbox"/> UPS	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box
Start <input type="text"/>	End <input type="text"/>	Other: <input type="text"/>		Total #:	<input type="text" value="2"/>
		<input type="checkbox"/> Other: <input type="text"/>			<input type="checkbox"/> BLUE
				<input checked="" type="checkbox"/> WET	<input type="checkbox"/> DRY
				<input type="checkbox"/> None	<input type="text" value="1.4"/> °C

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out.....Yes
2. All sample containers arrived intact.....Yes
3. All samples listed on COC(s) are present.....Yes
4. Information on containers consistent with information on COC(s).....No; see notes below
5. Correct containers and volume for all analyses indicated.....Yes
6. All samples received within method holding time.....Yes
7. Correct preservation used for all analyses indicated.....Yes
8. Name of sampler included on COC(s).....No

Notes:

Dissolved TKN Bottle - TMDL-R4 Sampled 3/19/20 at 8:35 - so we logged it in to match the COC for Sample ID(s) TMDL-R4 (Field Filtered).  
 Dissolved TKN Bottle - TMDL-R4 Sampled 3/19/20 at 10:20 - so we logged it in to match the COC for Sample ID(s) TMDL-R3 (Field Filtered).  
 Dissolved Nitrate/Nitrite bottle - TMDL-RA Sampled 3/19/20 at 8:35 - so we logged it in to match the COC for Sample ID(s) TMDL-R4 (Field Filtered).  
 Dissolved Nitrate/Nitrite bottle - TMDL-R4 Sampled 3/19/20 at 10:20 - so we logged it in to match the COC for Sample ID(s) TMDL-R3 (Field Filtered).



May 13, 2020

Karin Wisenbaker  
Aquatic Bioassay & Consulting Laboratories, Inc.  
29 N. Olive Street  
Ventura, CA 93001

Project Name: Ventura River Algae TMDL  
Physis Project ID: 2001003-004

Dear Karin,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 4/16/2020. A total of 14 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Conventionals
Total Phosphorus by SM 4500-P E
Total Dissolved Phosphorus by SM 4500-P E
Nitrite as N by SM 4500-NO <sub>2</sub> B
Nitrate as N by SM 4500-NO <sub>3</sub> E
Subcontract
Total Kjeldahl Nitrogen (Field Filtered) by EPA 351.2
Total Kjeldahl Nitrogen by EPA 351.2

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Misty Mercier

714 602-5320

Extension 202

mistymercier@physislabs.com

## PROJECT SAMPLE LIST

Aquatic Bioassay & Consulting Laboratories, Inc.

PHYSIS Project ID: 2001003-004

Ventura River Algae TMDL

Total Samples: 14

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
72678	TMDL-CL	Total	4/15/2020	7:45	Liquid	Not Specified
72679	TMDL-CL	Field Filtered	4/15/2020	7:45	Liquid	Not Specified
72680	TMDL-R4	Total	4/15/2020	8:28	Liquid	Not Specified
72681	TMDL-R4	Field Filtered	4/15/2020	8:28	Liquid	Not Specified
72682	TMDL-SA	Total	4/15/2020	8:55	Liquid	Not Specified
72683	TMDL-SA	Field Filtered	4/15/2020	8:55	Liquid	Not Specified
72684	TMDL-R3	Total	4/15/2020	9:40	Liquid	Not Specified
72685	TMDL-R3	Field Filtered	4/15/2020	9:40	Liquid	Not Specified
72686	TMDL-R2	Total	4/15/2020	10:30	Liquid	Not Specified
72687	TMDL-R2	Field Filtered	4/15/2020	10:30	Liquid	Not Specified
72688	TMDL-R1	Total	4/15/2020	11:20	Liquid	Not Specified
72689	TMDL-R1	Field Filtered	4/15/2020	11:20	Liquid	Not Specified
72690	TMDL-Est	Total	4/15/2020	12:40	Liquid	Not Specified
72691	TMDL-Est	Field Filtered	4/15/2020	12:40	Liquid	Not Specified

## ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

## QUALITY ASSURANCE SUMMARY

**LABORATORY BATCH:** Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

**PROCEDURAL BLANK:** Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

**ACCURACY:** Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

**PRECISION:** Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

**BLANK SPIKES:** BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

**MATRIX SPIKES:** MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

**CERTIFIED REFERENCE MATERIALS:** CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

**LABORATORY CONTROL MATERIAL:** LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

**LABORATORY CONTROL SPIKES:** LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

**SURROGATES:** A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

**HOLDING TIME:** Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

**SAMPLE STORAGE/RETENTION:** In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

**TOTAL/DISSOLVED FRACTION:** In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

## PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

# PHYSIS

# **PANALYTICAL**

# **REPORT**

TERRA AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 72678-R1</b>	<b>TMDL-CL Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 7:45</b>	<b>Received: 16-Apr-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72679-R1</b>	<b>TMDL-CL Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 7:45</b>	<b>Received: 16-Apr-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.0182	0.01	0.02	NA	J	C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72680-R1</b>	<b>TMDL-R4 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 8:28</b>	<b>Received: 16-Apr-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72681-R1</b>	<b>TMDL-R4 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 8:28</b>	<b>Received: 16-Apr-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.797	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	ND	0.016	0.03	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72682-R1</b>	<b>TMDL-SA Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 8:55</b>	<b>Received: 16-Apr-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.045	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72683-R1</b>	<b>TMDL-SA Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 8:55</b>	<b>Received: 16-Apr-20</b>	
Nitrate as N	SM 4500-NO3 E	mg/L	0.938	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO2 B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0393	0.016	0.03	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72684-R1</b>	<b>TMDL-R3 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 9:40</b>	<b>Received: 16-Apr-20</b>	
Total Phosphorus	SM 4500-P E	mg/L	0.024	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00

## Conventionals

ANALYTE	Method	Units	RESULT	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 72685-R1</b>	<b>TMDL-R3 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 9:40</b>		<b>Received: 16-Apr-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.873	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0179	0.016	0.03	NA	J	C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72686-R1</b>	<b>TMDL-R2 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 10:30</b>		<b>Received: 16-Apr-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0372	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72687-R1</b>	<b>TMDL-R2 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 10:30</b>		<b>Received: 16-Apr-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	1.16	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0258	0.016	0.03	NA	J	C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72688-R1</b>	<b>TMDL-R1 Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 11:20</b>		<b>Received: 16-Apr-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0454	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72689-R1</b>	<b>TMDL-R1 Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 11:20</b>		<b>Received: 16-Apr-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.974	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0258	0.016	0.03	NA	J	C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72690-R1</b>	<b>TMDL-Est Total</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 12:40</b>		<b>Received: 16-Apr-20</b>
Total Phosphorus	SM 4500-P E	mg/L	0.0935	0.016	0.02	NA		C-49048	12-May-20	12-May-20 15:00
<b>Sample ID: 72691-R1</b>	<b>TMDL-Est Field Filtered</b>		<b>Matrix: Liquid</b>	<b>Dilution Factor: 1</b>				<b>Sampled: 15-Apr-20 12:40</b>		<b>Received: 16-Apr-20</b>
Nitrate as N	SM 4500-NO <sub>3</sub> E	mg/L	0.959	0.01	0.02	NA		C-49032	27-Apr-20	27-Apr-20 17:00
Nitrite as N	SM 4500-NO <sub>2</sub> B	mg/L	ND	0.01	0.02	NA		C-49018	17-Apr-20	17-Apr-20 7:30
Total Dissolved Phosphorus	SM 4500-P E	mg/L	0.0345	0.016	0.03	NA		C-49048	12-May-20	12-May-20 15:00

# PHYSICS

## QUALITY CONTROL REPORT

TERRA FUSION AQUA AURA  
ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



1904 E. Wright Circle, Anaheim CA 92806

main: (714) 602-5320

fax: (714) 602-5321

www.physislabs.com

info@physislabs.com

CA ELAP #2769

## Conventionals

## QUALITY CONTROL REPORT

SAMPLE ID	BATCH ID	RESULT	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	ACCURACY %	LIMITS	PRECISION %	LIMITS	QA CODE
<b>Nitrate as N</b>		<b>Method: SM 4500-NO<sub>3</sub> E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 27-Apr-20</b>		<b>Analyzed: 27-Apr-20</b>		
72677-B1	QAQC Procedural Blank	C-49032	ND	0.01	0.02	mg/L						
72677-BS1	QAQC Procedural Blank	C-49032	0.585	0.01	0.02	mg/L	0.5	0	117	68 - 135%	PASS	
72677-BS2	QAQC Procedural Blank	C-49032	0.59	0.01	0.02	mg/L	0.5	0	118	68 - 135%	PASS	1 25 PASS
72689-MS1	TMDL-R1	C-49032	1.56	0.01	0.02	mg/L	0.5	0.989	114	80 - 120%	PASS	25
72689-MS2	TMDL-R1	C-49032	1.57	0.01	0.02	mg/L	0.5	0.989	116	80 - 120%	PASS	2 25 PASS
72689-R2	TMDL-R1	C-49032	1	0.01	0.02	mg/L						3 25 PASS
<b>Nitrite as N</b>		<b>Method: SM 4500-NO<sub>2</sub> B</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 17-Apr-20</b>		<b>Analyzed: 17-Apr-20</b>		
72677-B1	QAQC Procedural Blank	C-49018	ND	0.01	0.02	mg/L						
72677-BS1	QAQC Procedural Blank	C-49018	0.0487	0.01	0.02	mg/L	0.05	0	97	49 - 120%	PASS	
72677-BS2	QAQC Procedural Blank	C-49018	0.0489	0.01	0.02	mg/L	0.05	0	98	49 - 120%	PASS	1 25 PASS
72691-MS1	TMDL-Est	C-49018	0.0476	0.01	0.02	mg/L	0.05	0	95	80 - 120%	PASS	25
72691-MS2	TMDL-Est	C-49018	0.0476	0.01	0.02	mg/L	0.05	0	95	80 - 120%	PASS	0 25 PASS
72691-R2	TMDL-Est	C-49018	ND	0.01	0.02	mg/L						0 25 PASS
<b>Total Dissolved Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 12-May-20</b>		<b>Analyzed: 12-May-20</b>		
72677-B1	QAQC Procedural Blank	C-49048	ND	0.016	0.03	mg/L						
72677-BS1	QAQC Procedural Blank	C-49048	0.306	0.016	0.03	mg/L	0.3	0	102	86 - 118%	PASS	
72677-BS2	QAQC Procedural Blank	C-49048	0.301	0.016	0.03	mg/L	0.3	0	100	86 - 118%	PASS	2 25 PASS
72691-MS1	TMDL-Est	C-49048	0.32	0.016	0.03	mg/L	0.3	0.0351	95	80 - 120%	PASS	25
72691-MS2	TMDL-Est	C-49048	0.316	0.016	0.03	mg/L	0.3	0.0351	94	80 - 120%	PASS	1 25 PASS
72691-R2	TMDL-Est	C-49048	0.0356	0.016	0.03	mg/L						3 25 PASS
<b>Total Phosphorus</b>		<b>Method: SM 4500-P E</b>		<b>Fraction: NA</b>		<b>Dilution Factor: 1</b>		<b>Prepared: 12-May-20</b>		<b>Analyzed: 12-May-20</b>		
72677-B1	QAQC Procedural Blank	C-49048	ND	0.016	0.02	mg/L						
72677-BS1	QAQC Procedural Blank	C-49048	0.306	0.016	0.02	mg/L	0.3	0	102	73 - 131%	PASS	
72677-BS2	QAQC Procedural Blank	C-49048	0.301	0.016	0.02	mg/L	0.3	0	100	73 - 131%	PASS	2 25 PASS
72680-MS1	TMDL-R4	C-49048	0.297	0.016	0.02	mg/L	0.3	0.0087	96	80 - 120%	PASS	25
72680-MS2	TMDL-R4	C-49048	0.308	0.016	0.02	mg/L	0.3	0.0087	100	80 - 120%	PASS	4 25 PASS
72680-R2	TMDL-R4	C-49048	0.0174	0.016	0.02	mg/L						8 25 PASS J

# **SUBCONTRACT**

# **REPORT**

PHYSICS

TERRA

R

AGUA

AURA

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*



Enthalpy Analytical  
931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 427285  
Report Level: II  
Report Date: 05/01/2020

**Analytical Report** *prepared for:*

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Location: 2001003-004

*Authorized for release by:*

\_\_\_\_\_  
Lisa Nguyen, Project Manager  
ext 10323  
[lisa.nguyen@enthalpy.com](mailto:lisa.nguyen@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.



## Sample Summary

---

Misty Mercier  
PHYSIS Environmental Laboratories  
1904 E. Wright Circle  
Anaheim, CA 92806

Lab Job #: 427285  
Location: 2001003-004  
Date Received: 04/17/20

---

Sample ID	Lab ID	Collected	Matrix
TMDL-CL	427285-001	04/15/20 07:45	Water
TMDL-R4	427285-002	04/15/20 08:28	Water
TMDL-SA	427285-003	04/15/20 08:55	Water
TMDL-R3	427285-004	04/15/20 09:40	Water
TMDL-R2	427285-005	04/15/20 10:30	Water
TMDL-R1	427285-006	04/15/20 11:20	Water
TMDL-EST	427285-007	04/15/20 12:40	Water

# Chain of Custody

## Physis Project ID: 2001003-004



**From:** Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physisilabs.com

**To:** Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

427285

Physis SOS Number:	2001003	PO Number:		Sampled by:		
Turnaround Time	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> RUSH:	Business Days	<input type="checkbox"/> BLUE	<input checked="" type="checkbox"/> WET	<input type="checkbox"/> DRY
Report Format	<input checked="" type="checkbox"/> PDF/EDD	<input type="checkbox"/> SWAMP EDD	<input type="checkbox"/> CEDEN EDD	<input type="checkbox"/> FEDEX	<input type="checkbox"/> UPS	<input type="checkbox"/> USPS
	<input type="checkbox"/> Other EDD:	Shipped via:		<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Physis	<input type="checkbox"/> Other:
Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-CL	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	7:45:00 AM	Liquid	1
TMDL-CL	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	7:45:00 AM	Liquid	1
TMDL-R4	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	8:28:00 AM	Liquid	1
TMDL-R4	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	8:28:00 AM	Liquid	1
TMDL-SA	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	8:55:00 AM	Liquid	1
TMDL-SA	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	8:55:00 AM	Liquid	1
TMDL-R3	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	9:40:00 AM	Liquid	1

Relinquished:	Print: <i>MAUNGA MOM</i>	Date: 4/17/2020	Received By: <i>GA</i>	Print: <i>GA</i>	Date: 9/19/20
Org: Physis	Sign: <i>[Signature]</i>	Time: 1558	Org: <i>GA</i>	Sign: <i>[Signature]</i>	Time: 1558
Relinquished:	Print: _____	Date: _____	Received By: _____	Print: _____	Date: _____
Org: _____	Sign: _____	Time: _____	Org: _____	Sign: _____	Time: _____

# Chain of Custody

## Physis Project ID: 2001003-004



**From:** Physis Environmental Laboratories, Inc.  
 Misty Mercier  
 1904 E. Wrigth Cir.  
 Anaheim, CA 92806  
 714-605-5320 (office), 714-335-5918 (cell)  
 sc@physislabs.com

**To:** Enthalpy Analytical  
 Lisa Nguyen  
 931 W. Barkley Ave.  
 Orange, CA 92868  
 Lisa.Nguyen@enthalpy.com

Sample ID	Sample Description	Requested Analyses/Method	Sample Date	Sample Time	Matrix	# of Bottles
TMDL-R3	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	9:40:00 AM	Liquid	1
TMDL-R2	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	10:30:00 AM	Liquid	1
TMDL-R2	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	10:30:00 AM	Liquid	1
TMDL-R1	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	11:20:00 AM	Liquid	1
TMDL-R1	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	11:20:00 AM	Liquid	1
TMDL-Est	Total	Total Kjeldahl Nitrogen (EPA 351.2)	4/15/2020	12:40:00 PM	Liquid	1
TMDL-Est	Field Filtered	Total Kjeldahl Nitrogen (Field Filtered) (EPA 351.2)	4/15/2020	12:40:00 PM	Liquid	1

Notes/Comments:

### Report Down to the MDL

Relinquished:	Print: <u>Misty Mercier</u>	Date: <u>4/17/2020</u>	Received By: <u>[Signature]</u>	Print: <u>[Signature]</u>	Date: <u>4/17/20</u>
Org: Physis	Sign: <u>[Signature]</u>	Time: <u>1558</u>	Org: <u>EN</u>	Sign: <u>[Signature]</u>	Time: <u>1550</u>
Relinquished:	Print: _____	Date: _____	Received By: _____	Print: _____	Date: _____
Org: _____	Sign: _____	Time: _____	Org: _____	Sign: _____	Time: _____



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Physis Project: 2001003-004  
 Date Received: 4/17/20 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 0.7 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 0.6 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

**Section 5 Explanations/Comments**  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By: [Signature] Date: 4/17/20 4/17/20

17-APR-2020 17:00

Enthalpy Analytical - Orange

Login Number: 427285

Project: STANDARD  
 Site: 2001003-004  
 Account #: PHYSIS  
 Logged By: GCK  
 PO#:   
 Proj. Mgr: LSN  
 Rpt Level: II

Report To: PHYSIS Environmental Laboratories  
 1904 E. Wright Circle  
 Anaheim, CA 92806  
 ATTN: Misty Mercier  
 714-602-5320

Bill To: PHYSIS Environmental Laboratories, Inc.  
 1904 E. Wright Circle

Anaheim, CA 92806  
 ATTN: Misty Mercier  
 714-602-5320

Sample #	Alias	Client ID	Sampled	Ord	Recy	Hold	Die	Matrix	Loc	Analysis	COC Number
427285-001		TMDL-CL	04/15 07:45	04/17	04/17	04/17	COMMENTS:				
			05/13 04/28	Filtrate	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			05/13 04/28	Water	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			04/15	Water	EO	FILTER				Field Filtered	
				Water	EO	SDF					
427285-002		TMDL-R4	04/15 08:28	04/17	04/17	04/17	COMMENTS:				
			05/13 04/28	Filtrate	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			05/13 04/28	Water	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			04/15	Water	EO	FILTER				Field Filtered	
				Water	EO	SDF					
427285-003		TMDL-SA	04/15 08:55	04/17	04/17	04/17	COMMENTS:				
			05/13 04/28	Filtrate	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			05/13 04/28	Water	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			04/15	Water	EO	FILTER				Field Filtered	
				Water	EO	SDF					
427285-004		TMDL-R3	04/15 09:40	04/17	04/17	04/17	COMMENTS:				
			05/13 04/28	Filtrate	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			05/13 04/28	Water	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			04/15	Water	EO	FILTER				Field Filtered	
				Water	EO	SDF					
427285-005		TMDL-R2	04/15 10:30	04/17	04/17	04/17	COMMENTS:				
			05/13 04/28	Filtrate	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			05/13 04/28	Water	EO	351.2	TKN	AUTO		Dissolved TKN already field filtered.	
			04/15	Water	EO	FILTER				Field Filtered	
				Water	EO	SDF					

## Analysis Results for 427285

Misty Mercier  
 PHYSIS Environmental Laboratories  
 1904 E. Wright Circle  
 Anaheim, CA 92806

Lab Job #: 427285  
 Location: 2001003-004  
 Date Received: 04/17/20

**Sample ID: TMDL-CL                      Lab ID: 427285-001                      Collected: 04/15/20 07:45**

427285-001 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.49		mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.43		mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

**Sample ID: TMDL-R4                      Lab ID: 427285-002                      Collected: 04/15/20 08:28**

427285-002 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.18	J	mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.11	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

**Sample ID: TMDL-SA                      Lab ID: 427285-003                      Collected: 04/15/20 08:55**

427285-003 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.26	J	mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.24	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

**Sample ID: TMDL-R3                      Lab ID: 427285-004                      Collected: 04/15/20 09:40**

427285-004 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.22	J	mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.18	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

**Sample ID: TMDL-R2                      Lab ID: 427285-005                      Collected: 04/15/20 10:30**

427285-005 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.25	J	mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.21	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

## Analysis Results for 427285

<b>Sample ID: TMDL-R1</b>	<b>Lab ID: 427285-006</b>	<b>Collected: 04/15/20 11:20</b>
---------------------------	---------------------------	----------------------------------

427285-006 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	1.2		mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.13	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

<b>Sample ID: TMDL-EST</b>	<b>Lab ID: 427285-007</b>	<b>Collected: 04/15/20 12:40</b>
----------------------------	---------------------------	----------------------------------

427285-007 Analyte	Result	Qual	Units	RL	MDL	Matrix	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 351.2											
Prep Method: METHOD											
Nitrogen, Total Kjeldahl	0.23	J	mg/L	0.40	0.052	Water	1	245033	04/23/20	04/24/20	ATP
Nitrogen, Total Kjeldahl	0.17	J	mg/L	0.40	0.052	Filtrate	1	245034	04/23/20	04/24/20	ATP

J Estimated value

## Batch QC

<b>Type: Blank</b>	<b>Lab ID: QC866464</b>	<b>Batch: 245033</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866464 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.20	0.026	04/23/20	04/24/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC866465</b>	<b>Batch: 245033</b>
<b>Matrix: Water</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866465 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.440	2.500	mg/L	98%		90-110

<b>Type: Matrix Spike</b>	<b>Lab ID: QC866466</b>	<b>Batch: 245033</b>
<b>Matrix (Source ID): Water (427285-001)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866466 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	13.60	0.4860	12.50	mg/L	105%		90-110	2.5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC866467</b>	<b>Batch: 245033</b>
<b>Matrix (Source ID): Water (427285-001)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866467 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	Lim	DF
Nitrogen, Total Kjeldahl	13.50	0.4860	12.50	mg/L	104%		90-110	1	20	2.5

<b>Type: Blank</b>	<b>Lab ID: QC866468</b>	<b>Batch: 245034</b>
<b>Matrix: Filtrate</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866468 Analyte	Result	Qual	Units	RL	MDL	Prepared	Analyzed
Nitrogen, Total Kjeldahl	ND		mg/L	0.20	0.026	04/23/20	04/24/20

<b>Type: Lab Control Sample</b>	<b>Lab ID: QC866469</b>	<b>Batch: 245034</b>
<b>Matrix: Filtrate</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866469 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Nitrogen, Total Kjeldahl	2.620	2.500	mg/L	105%		90-110

## Batch QC

<b>Type: Matrix Spike</b>	<b>Lab ID: QC866470</b>	<b>Batch: 245034</b>
<b>Matrix (Source ID): Filtrate (427285-007)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866470 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Nitrogen, Total Kjeldahl	12.10	0.1730	12.50	mg/L	95%		90-110	2.5

<b>Type: Matrix Spike Duplicate</b>	<b>Lab ID: QC866471</b>	<b>Batch: 245034</b>
<b>Matrix (Source ID): Filtrate (427285-007)</b>	<b>Method: EPA 351.2</b>	<b>Prep Method: METHOD</b>

QC866471 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	Lim	DF
Nitrogen, Total Kjeldahl	12.60	0.1730	12.50	mg/L	99%		90-110	4	20	2.5

ND Not Detected

**CHAIN OF  
CUSTODY**

**P** **H** **T** **S** **S**

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ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

**From:** Aquatic Bioassay and Consulting Labs.  
29 N. Olive St.  
Ventura, CA 93001

**Phone:** (805) 643-5621  
**Fax:** (805) 643-2930  
**Project ID:** Ventura River  
**AlgaeTMDL**

**To:** **Company:** PHYSIS  
**Address:** 1904 E Wright Circle  
Anaheim, CA 92806  
**Phone:** (714) 335-5793

Sample I.D. No.	Sample Date	Time	Matrix	Volume/ No.	Reps	ANALYSIS					Comments
						Nitrate / Nitrite, Field Filtered (SM 4500 NO3 E / SM 4500 NO2 B)	Total Phosphorous (SM 4500-P E)	Dissolved Phosphorous, Field Filtered (SM 4500-P E)	Total TKN (EPA 351.2)	Dissolved TKN (EPA 351.2) Field Filtered	
TMDL-CL	04.15.2020	0745	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R4	04.15.2020	0828	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-SA	04.15.2020	0855	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R3	04.15.2020	0940	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R2	04.15.2020	1030	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-R1	04.15.2020	1120	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	
TMDL-Est	04.15.2020	1240	Water	3-250 mL, pl; 2-250 mL, gl.	1	X	X	X	X	X	

**Notes:** Total/dissolved phosphorous and total/dissolved TKN preserved with H<sub>2</sub>SO<sub>4</sub>; Email report to karin@aquaticbioassay.com and kbtralik@rinconconsultants.com

<p><b>RELINQUISHED BY</b> Name: Brianna Jones Signature: <i>Brianna Jones</i> Date: 04-15-2020 Time: 1315</p>	<p><b>RECEIVED BY</b> Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date: 4.15.20 Time: 1315</p>	<p><b>RELINQUISHED BY</b> Name: <i>[Signature]</i> Signature: <i>[Signature]</i> Date: 4.15.20 Time: 1315</p>	<p><b>RECEIVED BY</b> Name: Richard Hanken Signature: <i>[Signature]</i> Date: 4/16/20 Time: 1002</p>
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# Sample Receipt Summary

Client:  Date Received:  Received By:  Inspected By:

Courier:		Cooler:		Temperature:	
<input type="checkbox"/> Physis	<input type="checkbox"/> FEDEX	<input checked="" type="checkbox"/> UPS	<input type="checkbox"/> Client	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box
Start <input type="text"/>	End <input type="text"/>	Other: <input type="text"/>		Total #:	<input type="text" value="2"/>
		<input type="checkbox"/> Other: <input type="text"/>		<input type="checkbox"/> BLUE	<input checked="" type="checkbox"/> WET
				<input type="checkbox"/> None	<input type="text" value="2.2"/> °C

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out.....Yes
2. All sample containers arrived intact.....Yes
3. All samples listed on COC(s) are present.....Yes
4. Information on containers consistent with information on COC(s).....Yes
5. Correct containers and volume for all analyses indicated.....Yes
6. All samples received within method holding time.....Yes
7. Correct preservation used for all analyses indicated.....Yes
8. Name of sampler included on COC(s).....No

Notes:

Low Volume.