

MONITORING AND REPORTING PLAN

Version 2.0

LARWQCB Order No. R4-2016-0143

Prepared for:



1521 I Street
Sacramento, CA 95814

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Prepared by:



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ACRONYMS

ABC	Aquatic Bioassay and Consulting Laboratories, Inc.
ALB	Aquatic Life Benchmark
AMR	Annual Monitoring Report
BMP	Best Management Practice
COC	Chain of Custody
CWIL	Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands
EPA	United States Environmental Protection Agency
GPS	Global Positioning System
LAILG	Los Angeles Irrigated Lands Group
LARWQCB	Los Angeles Regional Water Quality Control Board
MDL	Method Detection Limit
MRP	Monitoring and Reporting Plan
NGA	Nursery Growers Association
OC	Organochlorinated Pesticides
OP	Organophosphate Pesticides
PacRL	Pacific Ridgeline
PP	Pyrethroid Pesticides
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TUc	Toxicity concentration in toxicity units
Weck	Weck Laboratories, Inc.
WMA	Watershed Management Area
WQBs	Water Quality Benchmarks
WQMP	Water Quality Management Plan

MONITORING AND REPORTING PLAN
NURSERY GROWERS ASSOCIATION
LOS ANGELES IRRIGATED LANDS GROUP

1.0 PROJECT PERSONNEL

Mrs. Ariana McCray is the Project Manager and primary contact for the LAILG. Pacific Ridgeline (PacRL) was contracted to assist the LAILG with the requirements of the CWIL. Mr. Bryn Home is the point of contact for the program and the Quality Assurance (QA) Officer, and Mr. Scott Jordan is the Field Supervisor. The following is a list of contact information:

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Nursery Growers Association (NGA) is responsible for organizing and managing the administrative aspect of the LAILG, while PacRL manages the technical aspect of the LAILG. The NGA allowed growers that grew things besides nursery stock to join the LAILG for the purposes of the Waiver program only. The NGA assisted the individual participants in completing and submitting the required enroll forms and collects all fees associated with the program. PacRL developed the required Quality Assurance Project Plan (QAPP) and this Monitoring Reporting Plan (MRP), on behalf of the LAILG. PacRL is also responsible for field monitoring and sampling at the selected sites for the LAILG, and all additional reporting, including Water Quality Management Plans (WQMP) and Annual Monitoring Reports (AMR).

The LAILG selected Weck Laboratories, Inc. (Weck) to complete the required laboratory analytical testing, and Aquatic Bioassay and Consulting Laboratories, Inc (ABC) to complete the toxicity testing for the group. Weck and ABC are both certified by the California Environmental Laboratory Accreditation Program, and their certification numbers are 1132 and 1907, respectively. Mr. Chris Samatmanakit of Weck is the Laboratory Project Manager for this waiver program, and Alan Ching is the QA officer. Mr. Scott Johnson of ABC is the Laboratory Project Manager for this waiver program, and Michael Machuzak is the QA officer. The contact information for Weck and ABC is:

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2.0 INTRODUCTION

The NGA is a non-profit association chartered in the late 1950s. The purpose of NGA is to foster and encourage the growth and development of quality nursery stock and to promote all matters that pertain to the best interests of the wholesale nursery growers. NGA developed the LAILG for compliance with the CWIL, which currently consists of Order #R4-2016-0143. PacRL was contracted by NGA to manage the technical aspect of the LAILG.

The LARWQCB is a State of California Agency that regulates water quality within the coastal watershed of Ventura and Los Angeles Counties under the authorities of the Federal Clean Water Act and State Porter Cologne Water Quality Control Act. The area under the jurisdiction of the LARWQCB is known as the Los Angeles Region.

Water quality impacts associated with agriculture can be primarily traced to discharges resulting from irrigation or stormwater. These discharges may contain pollutants that have been imported or introduced into the irrigation or stormwater; in addition, irrigation practices can mobilize and or concentrate some pollutants. In order to mitigate these potentially polluted discharges from impacting the beneficial uses of water bodies within the Los Angeles Region, the LARWQCB adopted a CWIL (Order No. R4-2005-0080) on November 3, 2005, as mandated by state law and policy.

On October 7, 2010, the LARWQCB adopted a second CWIL for the Los Angeles Region (Order No. R4-2010-0186). Order R4-2010-0186 was extended for six months under Order R4-2015-0202. Order R4-2016-0134, adopted on April 14, 2016, slightly revised the program and extended water quality monitoring throughout the Los Angeles Region for an additional four years.

The LAILG has members within the Dominguez Channel LA/Long Beach Harbors Water Management Area (WMA), the Los Angeles River Watershed, the San Gabriel River Watershed, the Santa Monica Bay WMA, and the eastern portion of the Santa Clara River Watershed. All five Watersheds and WMAs have impacted waterbodies that appear on the Federal 303(d) list, and listed contaminants include constituents that could be related to agricultural uses. Annual Monitoring Reports (AMRs) submitted by the LAILG during each CWIL term have reported runoff water quality that exceeded established Water Quality Benchmarks (WQBs), and could be attributing to the waterbody impacts.

Agriculture in the City of Los Angeles mostly consists of smaller parcel sizes located in urban environments, specifically under power lines. The LAILG was initially formed to assist growers of nursery stock with compliance with the CWIL, but has since expanded to include any grower in the Los Angeles Region who wishes to be part of the group. Refer to Table 1 and Table 2 for crop type and acreage information specific to the LAILG throughout each watershed.

Table 1 LAILG Distribution and Crop Type, Total Acres

# Enrolled Growers	Total Acreage Mapped												TOTAL ACRES	% TOTAL
	TOTAL ACRES	Color Plants	Cutflower	General Ornamental	Greenhouse	Multiple	Orchard	Row Crop	Sod	Vineyard	Unknown			
6	Santa Clara River Watershed ¹	0.00	0.00	9.50	0.00	890.00	0.00	0.00	0.00	39.00	0.35	938.85	24.76%	
31	Santa Monica Bay WMA	0.00	0.00	44.97	3.89	132.50	9.92	0.00	0.00	159.53	3.38	354.19	9.34%	
142	Los Angeles River Watershed	13.80	1.00	520.03	3.91	2.00	2.50	9.50	16.50	5.80	154.72	729.76	19.25%	
54	Dominguez Channel LA/Long Beach Harbor WMA	57.09	5.00	110.72	6.50	4.75	2.02	1.00	0.00	0.00	35.24	222.32	5.86%	
58	San Gabriel River Watershed*	20.00	3.80	251.05	0.00	1,212.34	0.00	9.55	0.00	0.00	49.38	1,546.12	40.78%	
291	% TOTAL	2.40%	0.26%	24.70%	0.38%	59.13%	0.38%	0.53%	0.44%	5.39%	6.41%			

* California State Polytechnical University of Pomona accounts for 1,200 of the total acres in the San Gabriel River Watershed
 ! Golden Oaks Ranch accounts for 890 of the total acres in the Santa Clara River Watershed

Table 2 LAILG Distribution and Crop Type, Irrigated Acres

# Enrolled Growers	Irrigated Acreage Mapped												IRRIGATED ACRES	% TOTAL
	IRRIGATED ACRES	Color Plants	Cutflower	General Ornamental	Greenhouse	Multiple	Orchard	Row Crop	Sod	Vineyard	Unknown			
6	Santa Clara River Watershed ¹	0.00	0.00	7.75	0.00	70.00	0.00	0.00	0.00	6.50	0.35	84.60	6.89%	
31	Santa Monica Bay WMA	0.00	0.00	31.08	1.20	30.00	5.00	0.00	0.00	68.16	2.63	138.07	11.25%	
142	Los Angeles River Watershed	9.30	0.28	316.24	3.91	1.89	1.00	8.00	16.50	3.75	149.83	510.70	41.62%	
54	Dominguez Channel LA/Long Beach Harbor WMA	36.68	4.25	77.61	1.75	3.00	2.02	1.00	0.00	0.00	33.99	160.30	13.06%	
58	San Gabriel River Watershed*	14.50	1.70	182.52	0.00	79.34	0.00	6.15	0.00	0.00	49.28	333.49	27.18%	
291	% TOTAL	4.93%	0.51%	50.13%	0.56%	15.01%	0.65%	1.23%	1.34%	6.39%	19.24%			

2.1 PROGRAM HISTORY

During the first Waiver period, LAILG collected samples from sixteen sampling locations during two sampling events each dry season and two sampling events each wet season. The program existed in this state for the entirety of the 2007 and 2008 monitoring years, and a working WQMP was submitted to the LARWQCB on July 8, 2009. The LAILG placed the program on hold at this time due to financial constraints from growers abandoning the program and a lack of enforcement by the LARWQCB.

LAILG reinstated the program briefly before the new Waiver, and one round of reduced sampling occurred in March of 2011. Following the release of the second Waiver, LAILG prepared a revised MRP and QAPP to address updated requirements. The new MRP presented a reduced sampling schedule in order to offset costs associated with the lack of growers enrolling in the Waiver program.

Water quality monitoring data collected during each Waiver period exceeded applicable Water Quality Benchmarks and necessitated the generation of a WQMP. LAILG prepared a Water Quality Management Plan, Version 1.1, dated July 26, 2013, which outlined steps LAILG would take to implement, track, and evaluate additional BMPs throughout the group. Updates to the original plan were submitted on August 21, 2015 and May 10, 2017 that outlined progress towards the original goals of the WQMP goals. The most recent WQMP, Version 2.1, was submitted on September 27, 2019.

LAILG has been operating under the MRP developed for the previous CWIL during the current waiver period. LAILG has continued to operate under the basic parameters of the MRP and WQMP developed for Order R4-2010-0186, with the goal of gathering enough information to properly apply the WQMP methodology to develop a new MRP for Order R4-2016-0134. During this interim sampling period, LAILG focused sampling efforts to address locations where previous samples had been collected and WQB exceedances had been observed.

3.0 OPERATIONAL GROUPING

In the Los Angeles Region, LAILG members vary from country-wide growing operations to small, less than one acre growers. In order to properly represent all members enrolled in the LAILG, members were broken into various groups based on operational information and land use patterns. This was done in order to separate and sample both small growers and large institutional growers to determine the potential water quality impacts between growers who are substantially different in both growing practices and corporate practices.

3.1 GENERAL METHODOLOGY

LAILG used grower information to evaluate the potential impact of facilities based on their operational practices, including how much material (fertilizer, pesticides, irrigation water, etc.) members used on a per acre basis. The general hypothesis of the LAILG is that larger operations, based on sales, total company size, and shipping patterns, will show more intense fertilizer and pesticide use patterns, corresponding to an increased risk of contaminants leaving the property. This is partially because the quality of nursery stock expected from larger growers selling to retail operations are higher than smaller growers selling for standard landscaping operations.

In order to determine these operational practices, LAILG submitted a General Questionnaire to each grower. The questionnaire requested the following information: gross sales for an operator, company-wide; crop type; total irrigated acreage operated by company, including acreage both inside and outside LA County; shipping patterns; total fertilizer use and formulation, per parcel per year; total pesticide/herbicide/fungicide applications, per parcel per year; irrigation use per year; fertilizer application practices; and, irrigation practices. A copy of the general information questionnaire is included in Appendix A.

Utilizing the information gathered in the General Questionnaire, LAILG applied the matrix in Table 3 to sort all growers into the following groups: large operation, medium operation, small operation, micro operation, and unknown. A separate vineyard category may be added in the future.

Table 3 Grouping Matrix

<u>Total Operating Acres</u> <u>(irrigated)</u>		<u>Gross Revenue</u>		<u>Shipping Reach</u>	
0	< 5 Acres	0	≤ \$50k		(cumulative)
2	5 ≤ Acres < 10	2	\$50k < \$ ≤ \$200k	1	Intra company
4	10 ≤ Acres < 25	4	\$200k < \$ ≤ \$1M	1	Northern California
6	25 ≤ Acres < 100	6	\$1M < \$ ≤ \$5M	1	Interstate
8	Acres ≥ 100	8	\$ > 5M		

Growers that scored a 11 to 19 are considered large operations, growers that scored 6 to 10 are considered medium operations, growers that scored a 1 to 5 are considered small operations, and

growers that scored a 0 are considered a micro operation. Members who have not reported information are considered unknown.

3.2 GROUPING RESULTS

The current grouping status by irrigated acres and crop type is summarized in Table 4 for all enrolled growers. As of the date of this report, approximately 69% of the enrolled growers have been grouped, accounting for approximately 80% of the irrigated lands. The raw data used for grouping is kept secret for privacy.

Table 4. Summary of Grouping Results

		<i>Color Plants</i>	<i>Cutflower</i>	<i>General Ornamental</i>	<i>Greenhouse</i>	<i>Multiple</i>	<i>Orchard</i>	<i>Row Crop</i>	<i>Sod</i>	<i>Vineyard</i>	<i>Unknown</i>	IRRIGATED ACRES	% TOTAL
# Enrolled Growers	Irrigated Acreage Mapped												
	IRRIGATED ACRES	60.48	6.23	618.49	5.86	184.23	8.02	15.15	16.50	77.41	233.17	1,225.54	
48	Large Group	30.50	0.00	302.76	0.00	70.00	0.00	0.00	16.50	0.00	3.50	423.26	34.54%
47	Medium Group	23.98	0.00	116.76	0.00	78.73	0.00	0.00	0.00	31.00	23.91	274.38	22.39%
76	Small Group	1.00	3.50	102.40	3.91	35.50	7.02	6.00	0.00	30.46	38.00	227.79	18.59%
30	Micro Group	5.00	2.73	18.49	0.00	0.00	1.00	3.00	0.00	6.20	9.71	46.13	3.76%
87	Unknown Group	0.00	0.00	78.08	1.95	0.00	0.00	6.15	0.00	9.75	158.05	253.98	20.72%
288	% TOTAL	4.93%	0.51%	50.47%	0.48%	15.03%	0.65%	1.24%	1.35%	6.32%	19.03%		

4.0 SAMPLING SITE METHODOLOGY

Due to logistical issues with stormwater sampling in the Los Angeles Region during storm events (traffic, timing for sample delivery), the entire group was divided into North and South Regions for sampling purposes. Interstate 5 and the 101 freeway were chosen as the dividing line, which splits the entire group and each sub group roughly in half. Sampling during each dry and wet season event will alternate between the North and South regions yearly.

In order to evaluate differences in water quality being discharged from the various member groups, LAILG proposes to randomize sampling sites in each region for each sampling event. LAILG will collect samples from one random member in each regional grouping during each sampling event, plus an additional follow up sample from a member that previously reported a WQB exceedance in historical sampling events in the region. A total of five sites will be visited each sampling event, once during the dry season and once during the wet season of each year.

Randomization for sampling sites will be conducted with random.org, by randomizing each grouping within each region for each sampling event. Records of the randomization will be kept on file. The top location in each group will be selected as the sampling site, and the second location in each group will be selected as the alternate site. The follow up sampling for a location that previously reported a WQB exceedance will be hand selected by LAILG. Once a site has been randomly chosen for sampling, it will be removed from the randomization list. If WQB exceedances are reported at a location, it will be added to the list for follow up sampling.

An alternate site was included in the randomization since many of the current locations have never been visited by LAILG personnel. It is anticipated that some chosen random location may not have sufficient runoff during rain events for sampling, due to topography or operational practices. If a site is visited during a wet season sampling event and it is apparent that there will not be sufficient runoff for sampling during the time of the visit, the alternate location will be visited and site conditions will be noted. Included in the notes will be observations on what size storm might be required in order to produce runoff at the location.

A regional map showing member locations, regional sampling boundaries, and watersheds is presented as Figure 1. Zoomed in maps presenting member groupings and the previous information is presented as Figures 1.1 through 1.4. The current grouping status in each sampling Region is summarized by crop type in Table 4 and Table 5. A list of all members in each group and each sampling region that will be used for randomization is included in Appendix B.

Table 5. Summary of North Region Grouping

		Color Plants	Cutflower	General Ornamental	Greenhouse	Multiple	Orchard	Row Crop	Sod	Vineyard	Unknown	TOTAL ACRES	% TOTAL
# Enrolled Growers	North Group - Total Irrigated Acreage												
	TOTAL IRRIGATED ACRES	1.00	1.98	371.31	3.91	148.73	1.00	2.50	16.50	6.75	134.19	687.87	
24	Large Group	0.00	0.00	216.17	0.00	70.00	0.00	0.00	16.50	0.00	0.00	302.67	44.00%
32	Medium Group	0.00	0.00	82.89	0.00	78.73	0.00	0.00	0.00	0.00	23.91	185.53	26.97%
28	Small Group	1.00	0.00	35.77	3.91	0.00	0.00	0.00	0.00	6.50	22.88	70.06	10.19%
14	Micro Group	0.00	1.98	11.39	0.00	0.00	1.00	0.00	0.00	0.00	6.66	21.03	3.06%
37	Unknown Group	0.00	0.00	25.09	0.00	0.00	0.00	2.50	0.00	0.25	80.74	108.58	15.78%
135	TOTAL	0.15%	0.29%	53.98%	0.57%	21.62%	0.15%	0.36%	2.40%	0.98%	19.51%		

Table 6. Summary of South Region Grouping

		Color Plants	Cutflower	General Ornamental	Greenhouse	Multiple	Orchard	Row Crop	Sod	Vineyard	Unknown	IRRIGATED ACRES	% TOTAL
# Enrolled Growers	South Group - Total Irrigated Acreage												
	IRRIGATED ACRES	59.48	4.25	247.18	1.95	35.50	7.02	12.65	0.00	70.66	98.98	537.67	
24	Large Group	30.50	0.00	86.59	0.00	0.00	0.00	0.00	0.00	0.00	3.50	120.59	22.43%
15	Medium Group	23.98	0.00	33.87	0.00	0.00	0.00	0.00	0.00	31.00	0.00	88.85	16.53%
48	Small Group	0.00	3.50	66.63	0.00	35.50	7.02	6.00	0.00	23.96	15.12	157.73	29.34%
16	Micro Group	5.00	0.75	7.10	0.00	0.00	0.00	3.00	0.00	6.20	3.05	25.10	4.67%
50	Unknown Group	0.00	0.00	52.99	1.95	0.00	0.00	3.65	0.00	9.50	77.31	145.40	27.04%
153	% TOTAL	11.06%	0.79%	45.97%	0.36%	6.60%	1.31%	2.35%	0.00%	13.14%	18.41%		

5.0 FIELD MONITORING AND LABORATORY ANALYTICAL METHODS

5.1 MONITORING EVENT PREPARATION

All bottles and containers required for sampling will be ordered at the beginning of each sampling season, and field log books will be organized and restocked, as necessary. Each contracted lab has a current list of all laboratory requirements, and is responsible for delivering the appropriate sampling containers, including all preservatives, during the beginning of each sampling season. Any rental equipment required for sampling will be rented prior to the day of sampling. On the day of each sampling event, all sampling containers will be verified, grouped, labeled, and loaded into coolers. Prior to departure for the sites, field personnel will confirm that all field equipment, as outlined in the field equipment checklist (Appendix C), is available and cleaned for sample and data collection. This includes the number and type of sample containers used for water collection.

In order to identify the storm events large enough to trigger wet season monitoring events, LAILG will be continually monitoring the 10-day forecast for the sampling region. Once a rain event starts, LAILG will watch rain gauges throughout greater Los Angeles to evaluate when the threshold of 0.50 inches of rain has been met. Once 0.50 inches of rain has fallen, sampling personnel will be mobilized for sample collection. If required, sampling events may be initiated on weekends as well as weekdays; however, sampling will not be performed during late nighttime hours due to safety concerns involving field crews. If 0.50 inches has fallen but the rain event has ceased, LAILG will evaluate if there is enough potential runoff to yield sufficient water for sampling based on communications with personnel in the sampling area.

5.2 FIELD SAMPLING METHODS

Although no specialized training is required, all sampling employees have received training in water sampling techniques as outlined in ASTM standard D3370 and Surface Water Ambient Monitoring Program (SWAMP) guidelines for surface water collection. Documents outlining employee training will be filed. Documents consist of the type of training, the date, the instructor, and whether the course was completed satisfactorily. Records of lab analyst training are available from the participating laboratories upon request. The Project Manager and the QA Officer will supervise training. An in-house refresher course will be undertaken prior to sampling on a yearly basis. A detailed description of field protocols and methods is presented in the QAPP.

Reasonable efforts will be made to schedule sampling events during a rain event large enough to generate runoff during the wet season, and to schedule sampling in conjunction with irrigation events in the dry season. If no surface runoff is encountered during sampling events, it will be noted on field logs. Standing water with no visible flow will not be sampled. Based on historical sampling events throughout the life of the program, it is anticipated that sites in the LAILG will have no runoff during the dry season, and sites with effective BMPs in place will not have any runoff at all. Dry sampling events will be scheduled to occur at the end of an irrigation cycle. Each site will be observed for at least one hour during the dry season to check for irrigated runoff.

Field crews will consist of two persons per crew minimum for safety purposes. Field sampling will only be conducted on weekdays during daylight hours. All field personnel involved in sample collection will be trained in SWAMP procedures, and will use proper sample collection containers and equipment. Sampling personnel will be trained on how to collect a representative sample and avoid potential sources of sample contamination. All equipment that comes into contact with samples or sampling water will be decontaminated in between sampling stations and sampling events.

Pools of water with no observable flow will not be sampled, and site conditions will be documented on the field log sheets and with photographs. A new pair of clean nitrile gloves are to be used at each individual sampling site. Sample containers will be pre-cleaned by Weck and ABC, and certified to be free of contamination according to the US EPA specifications for the appropriate methods.

Depending on the site topography, grab samples will be collected directly from concrete-lined drainage channels, dirt channels, and sheet flows directly leaving the sites. The samples will be collected by directly submerging the sample containers when applicable. Standing water with no visible flow will not be sampled. Although this is the primary method for sample collection, due to varying runoff and surface conditions this approach will not always be feasible. Site layout, configuration, and runoff conditions will influence the technique in which grab samples are collected. Complete procedures for collection of surface water samples are presented in Appendix D.

Sampling devices and sample bottles (that are not pre-sterilized and do not contain preservatives/fixing agents) will be rinsed three times with sample water prior to collecting each sample. Sterile bottles, whirl-paks, and sample bottles with preservatives will not be rinsed with sample water prior to collecting the sample. Also, sample bottles containing preservatives/fixing agents will not be used directly for sampling; a sample device will be used to collect the sample and will be transferred to the appropriate sample bottle.

While on site, field log sheets (Appendix C) will be completed to the extent possible, and a COC will be filled out prior to returning to the office. All samples will be collected and stored as outlined in the QAPP. Standard Operating Procedures (SOPs) for collection of water samples are presented in (Appendix D). Any deviations from the SOP will be documented on the field logs. Following sample collection at all sites, a COC will be completed using field log sheets, and samples will either be directly delivered to the appropriate laboratories or stored in a refrigerator until shipping or delivery. All samples that are shipped to a laboratory will be shipped in sealed coolers maintained at approximately 2-4 oC with ice or ice substitutes.

5.3 MONITORING CONSTITUENTS

Table 4 presents a listing of the required constituents to be tested under the CWIL monitoring program. The chronic toxicity testing will be conducted for the following three test species: *Pimephales promelas*, *Ceriodaphnia dubia*, and *Selenastrum capricornutum*.

After one toxicity sample has been collected and analyzed in the first year, the most sensitive species will be selected for subsequent toxicity monitoring. If toxicity testing indicates mortality or growth reduction of at least 50 percent, a Toxicity Identification Evaluation will be performed. A detailed description of monitoring constituents and toxicity testing is presented in the QAPP.

Table 7. List of Constituents for Testing

CONSTITUENT	UNITS	FIELD/LABORATORY TEST
Flow	Cubic feet per second	Field
pH	pH units	Field
Temperature	°F	Field
Dissolved Oxygen	mg/L	Field
Turbidity	NTU	Field
Total Dissolved Solids	mg/L	Laboratory
Total Suspended Solids	mg/L	Laboratory
Hardness (as CaCO ₃)	mg/L	Laboratory
Chloride	mg/L	Laboratory
Ammonia	mg/L	Laboratory
Nitrate-Nitrogen	mg/L	Laboratory
Phosphate	mg/L	Laboratory
Sulfate	mg/L	Laboratory
Total Copper	ng/L	Laboratory
Organophosphate Suite ¹	ng/L	Laboratory
Organochlorines Suite ²	ng/L	Laboratory
Toxaphene	ng/L	Laboratory
Pyrethroids	ng/L	Laboratory
Toxicity	TU _c ³	Laboratory
E.Coli	MPN/100ml	Laboratory
Trash	Observations	Field

¹ Organophosphate Suite: Bolstar, Chlorpyrifos, Demeton, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Ethoprop, Fenchlorophos, Fensulfothion, Fenthion, Malathion, Merphos, Methyl Parathion, Mevinphos, Phorate, Tetrachlorvinphos, Tokuthion, Trichloronate.

² Organochlorine Suite: 2,4' - DDD, 2,4' - DDE, 2,4' DDT, 4,4' -DDD, 4,4' -DDE, 4,4' -DDT, Aldrin, BHC-alpha, BHC-beta, BHC-delta, BHC-gamma, Chlordane-alpha, Chlordane-gamma, Dieldrin, Endosulfan sulfate, Endosulfan-I, Endosulfan-II, Endrin, Endrin Aldehyde, Endrin Ketone.

³ Chronic Toxic Unit is the reciprocal of the sample concentration that caused no observable effect on the test organism by the end of a chronic toxicity test.

mg/l milligrams per liter
 ng/L nanograms per liter
 °F degrees Fahrenheit
 TU_c chronic toxic unit
 NTU nephelitic turbidity units

Field water quality parameters, including flow rate, pH, dissolved oxygen, electrical conductivity, turbidity, and temperature will be measured prior to collecting samples for laboratory analysis. Water quality parameters will be measured with a hand-held meter.

Specific laboratory methods for each monitoring constituent are included in the QAPP for the program.

5.4 SAMPLE HANDLING AND CHAIN OF CUSTODY

Sample custody will be traceable from the time of sample collection until results are reported. Table 8 describes the sample holding containers, sample preservation methods, and maximum holding times for each monitoring constituent.

Table 8. Sampling Method Requirements

PARAMETER	SAMPLE BOTTLE	TYPICAL SAMPLE VOLUME	PREFERRED/MAXIMUM HOLDING TIMES
Flow, pH, Temperature, Dissolved Oxygen, Turbidity, Conductivity	Field Measurements	NA	NA
Trash	Field Observation	NA	NA
Total Suspended Solids	Plastic Bottle	0.5 Liter	7 days at 4°C, dark
Total Dissolved Solids	Plastic Bottle	0.5 Liter	7 days at 4°C, dark
Hardness (as CaCO ₃)	NA	NA	10 days at 4°C, dark
Chloride	Plastic Bottle	0.25 Liter	28 days at 4°C, dark
Sulfate	Plastic Bottle	0.25 Liter	28 days at 4°C, dark
Nitrate	Plastic Bottle	0.25 Liter	28 days at 4°C, dark, preserved with H ₂ SO ₄
Phosphate	Plastic Bottle	0.25 Liter	28 days at 4°C, dark, preserved with H ₂ SO ₄
Ammonia	Plastic Bottle	0.25 Liter	28 days at 4°C, dark, preserved with H ₂ SO ₄
Organochlorine Pesticides	Amber Glass	2 Liter	7 days at 4°C, dark
Organophosphorus Pesticides	Amber Glass	2 Liter	14 days at 4°C, dark
Total Copper	Plastic Bottle	0.25 Liter	180 days, dark, preserved with HNO ₃
Pyrethroids	Amber Glass	2 Liter	21 days at 4°C, dark
Toxicity	5-gal plastic cube	10 gal	Refrigerate at 4°C send to lab immediately

Sample containers will be pre-labeled prior to field events, to the extent possible. Sample labels are labeled with a standardized sampling code to ensure that results are easily interpreted and each sample is uniquely codes. The format for sample identifications are as follows:

LAILG-NGA-(NGA ID number)-(sequentially numbered sampling event)

- The NGA number is unique to each member and will not be repeated throughout the life of the program
- The sequentially numbered sampling event will only be recorded if a physical sample is collected for the location, and will be sequential through the life of the program.
- Quality control samples will be labelled EB for Equipment Blank, FB for Field Blank, and Dup for duplicate.

When samples are transferred from one sampler to another member of the same organization or from the LAILG to Weck and/or ABC, a COC form will be used. The COC and field forms will contain the following information, at a minimum:

- Site name
- Sample ID and type
- Date
- Sample time
- Sampling personnel
- Analytical and preservative requirements

Upon sample collection in the field, all sample containers will be checked for tightness and labeling, and will be placed immediately on ice. Glass sample bottles will be placed in bubble wrap or foam to prevent breakage. The ice chest will be maintained at approximately 2-4 °C. When the ice chest has been filled, it will be labeled and sealed to be transferred for storage ro shipping. While in storage, all samples will be placed in a refrigerator maintained at 2-4 °C until the time of shipping or laboratory courier pickup. Prior to shipping, the ice chest will be secured shut with tape to prevent accidental spillage. The original COC form will accompany the shipment in a waterproof Ziploc bag, and a copy will be retained in the project file. Samples will be shipped to Weck and/or ABC according to Department of Transportation standards.

5.5 QUALITY ASSURANCE QUALITY CONTROL

Field Quality Control samples will be collected with the standard samples to verify data quality. In addition to regular samples, equipment blanks, field blanks, and field duplicates will be used to ensure data quality. The laboratory will report the results of the equipment blank, field blank, and the field duplicate along with the results of the regular field samples.

The LAILG will follow the procedures outlined by SWAMP documents to ensure the quality of the field monitoring data. Additionally, sampling teams will conduct a pre-field meeting prior to completing sampling events to review sampling protocol and site-specific considerations, to ensure the field data is most representative of actual watershed or surface water conditions. A detailed description of quality assurance quality control methods is presented in the QAPP

5.5.1 Equipment Blanks

Equipment blanks will be collected at a rate of one per 10 normal samples or every other year, whichever is greater. Equipment blanks will be collected and analyzed for all analytes of interest along with the associated environmental samples. Equipment blanks will consist of distilled blank water (contaminant free) processed through the sampling equipment prior to field use using the same procedures for environmental samples. This is used to demonstrate that equipment is free of contamination, and will help to identify anomalous sources of data.

5.5.2 Field Duplicates

Field duplicates will be collected at a rate of one per 10 normal samples or every other year, whichever is greater. Field duplicates will be collected at the same time as environmental samples, or as two grab samples collected in rapid succession, and will be analyzed along with the associated environmental samples. If the RPD of field duplicate results is greater than 25 percent and the absolute difference is greater than the Method Reporting Limit (MRL), both samples should be reanalyzed, if possible. This is used to insure the precision of sampling and analytical methodologies.

5.5.3 Field Blanks

Field blanks will be collected at a rate of one per 10 normal samples or every other year, whichever is greater. Field blanks will consist of laboratory-prepared blank water (certified contaminant free) processed through the sampling equipment in the field using the same procedures for environmental samples. This is used to demonstrate that sampling and decontamination procedures do not result in contamination of the samples and will help to identify anomalous sources of data.

Table 9 summarizes the quality control for field samples collected during the program. Laboratory Quality Assurance/Quality Control procedures are outlined in the QAPP for the program.

Table 9. Field Samples, Quality Control

Field Quality Control

LABORATORY QUALITY CONTROL	FREQUENCY	MEASUREMENT QUALITY OBJECTIVES	CORRECTIVE ACTION
Field Duplicate	10% of total project sample count	RPD<25% (n/a if native concentration of either sample<RL)	Visually inspect the samples to determine if a high RPD between results could be attributed to sample heterogeneity. For duplicate results due to matrix heterogeneity, or where ambient concentrations are below the reporting limit, qualify the results and document the heterogeneity. All failures should be communicated to the project coordinator, who in turn will follow the process detailed in the method.
Field Blanks	10% of total project sample count	<RL for target analyte	Investigate the source of contamination. Potential sources of contamination include sampling equipment, protocols, and handling. The laboratory should report evidence of field contamination as soon as possible so corrective actions can be implemented. Samples collected in the presence of field contamination should be flagged.
Equipment Blanks	10% of total project sample count	<RL for target analyte	Investigate the source of contamination. Potential sources of contamination include sampling equipment, protocols, and handling. The laboratory should report any evidence of field contamination as soon as possible so corrective actions can be implemented. Samples collected in the presence of field contamination should be flagged.

MDL Method Detection Limits
 RPD Relative Percent Difference
 RL Reporting Limit

GWQC General Water Quality Constituents
 LCS Laboratory control sample

6.0 PROJECT TASKS AND SCHEDULE

The revised sampling protocol will be initiated upon verbal or written approval from the LARWQCB. The seasons, as described in the CWIL, are the wet and the dry season. The wet season is from October 15 – May 15, and the dry season is from May 15 – October 15. As required by the Waiver, a total of two sampling events will be completed each year; one event will be completed in the wet season and one will be completed in the dry season. Wet season samples will be conducted within 24-hours of a rain event with at least 0.5 inches of rain. The first wet season sample will be collected during or after the first storm event of the wet season. Dry season samples will be collected after an irrigation event has occurred at each sampling site.

Reasonable efforts will be made to collect samples during a rainfall trigger event in the wet season and during or immediately after irrigation events in the dry season. However, due to the small amounts of water generally used by growers during their irrigation practices, it is anticipated that a number of sites in the LAILG will have no runoff during the dry season. Depending on the size of the LAILG being sampled, the soil permeability, and the size of the rain event, it is possible that stormwater runoff from these sites could be minimal. Based on LAILG's experience during the previous CWIL period, the constraints listed above generally cause runoff only to be encountered at sampling sites during rainfall periods of storm events, and extended tailwaters from sites are rarely encountered. Sampling events will not be rescheduled if there is no discernable runoff, unless there is ample evidence that a larger rain event of sufficient rainfall intensity or a larger volume irrigation event would generate enough runoff volume for sampling purposes.

Wet season sampling events will be conducted as outlined in this report, to the extent practicable. Practical restraints on wet season sampling events include, but are not limited to, the following: lab, subcontractor, and sampling site closures during weekends and holidays; sample holding times; safety of the monitoring team; and the time of storm events (day or night)

Samples collected from the first sampling event will include chronic toxicity tests for three test species: *Pimephales promelas* (fathead minnow), *Ceriodaphnia dubia* (water flea) and *Selenastrum capricornutum* (green algae). Once one toxicity sample has been collected and analyzed, the LAILG will select the most sensitive species for subsequent toxicity monitoring. Based on review of the annual monitoring reports, the Executive Officer may increase or decrease the frequency of sampling.

Table 10 shows an anticipated schedule for when monitoring will be conducted and when AMR demonstrating the monitoring results are due to the LARWQCB. AMRs will present data collected during the previous calendar year.

Table 10. Anticipated Schedule for Monitoring and Reporting

TASK	SCHEDULE	
MRP	Submitted with QAPP, November 1, 2019	
Updated QAPP	Submitted with MRP, November 1, 2019	
Conduct Monitoring	1 Dry Season Event May 15 - Oct 15, annually	1 Wet Season Event Oct. 16 - May 14, annually
Submit Annual Monitoring Report	December 15th, Annually	
Water Quality Management Plan	With AMR, December 15th, Annually	
	Final WQMP, October 31, 2020	

7.0 DATA MANAGEMENT AND REPORTING

7.1 FIELD MONITORING

During field monitoring and sampling, the LAILG will maintain and record field monitoring data (Appendix C) and required Chain of Custody (COC; Appendix C) documentation. The field monitoring records will be completed in the field, including visual inspections and observations of the conditions of the monitoring sites. Once the field monitoring is completed, the field records will be entered into a computer database immediately following completion of field activities. Handwritten copies of the field records will be filed and maintained following data entry. An Annual Monitoring Report will be submitted to the LARWQCB for approval by the Executive Officer.

7.2 ANNUAL MONITORING REPORT

The Annual Monitoring Report (AMR) will include the following components:

1. Introduction: title page, table of contents, description of group membership, updated membership list, and objectives of AMR.
2. Monitoring: location of samples collected, descriptions and photographs of sampling sites, location map of sampling sites and enrolled growers, constituents monitored and frequency, objective, and analytical methods.
3. Results and Discussion: tabulated data, summary of toxicity exceedances, summary of data to demonstrate compliance or non-compliance, comparison of data to benchmark values in the CWIL (Order No. R4-2010-0186, Appendix 2), quality control results, data interpretation.
4. Quality control data interpretation and affirmation that analyses were conducted by a certified laboratory.
5. Perjury Statement.
6. Conclusion and recommendations. Including a statement of intent to prepare a WCMP if Water Quality Benchmarks are not attained.
7. References and Appendices including, but not limited to, documentation that education requirements have been fulfilled by each member of the LAILG, copies of field data/sample log sheets, COC forms and laboratory and field quality control samples results.

7.3 WATER QUALITY MANAGEMENT PLAN

Until all CWIL benchmarks are met, an update to the existing Water Quality Management Plan (WQMP) will be submitted with each AMR. The entire WQMP may also be updated at times, if required. The WQMP will include the following sections:

1. Introduction: title page, table of contents, objectives of WQMP.
2. Monitoring: samples collected, location, benchmarks exceeded, and analytical methods.
3. Results and Discussion: tabulated data; summary of data to demonstrating compliance and non-compliance; evaluation of site conditions and information to determine possible source of benchmark exceedance; evaluation of time, frequency, and flow direction of contaminants; assessment of impacts of waste discharges from irrigated lands to waters of the state, list existing and possible best management practices to mitigate problem.
4. Describe a revised MRP to assess efficiency of management practices.
5. Conclusion and recommendations.
6. References and Appendices, if necessary.

7.4 CHAIN OF CUSTODY DOCUMENTATION

Upon collection of samples in the field, the Field Technician will complete standard COC documentation in the field, recording the sample identification, site location/address, sample time, and the required analytical suite. The COC documents will be maintained and kept with the samples upon transport to Weck and ABC. Once the samples are delivered to the laboratory, the LAILG will release the samples to a laboratory representative and retain a copy of the COC record. This copy will be maintained in the LAILG files.

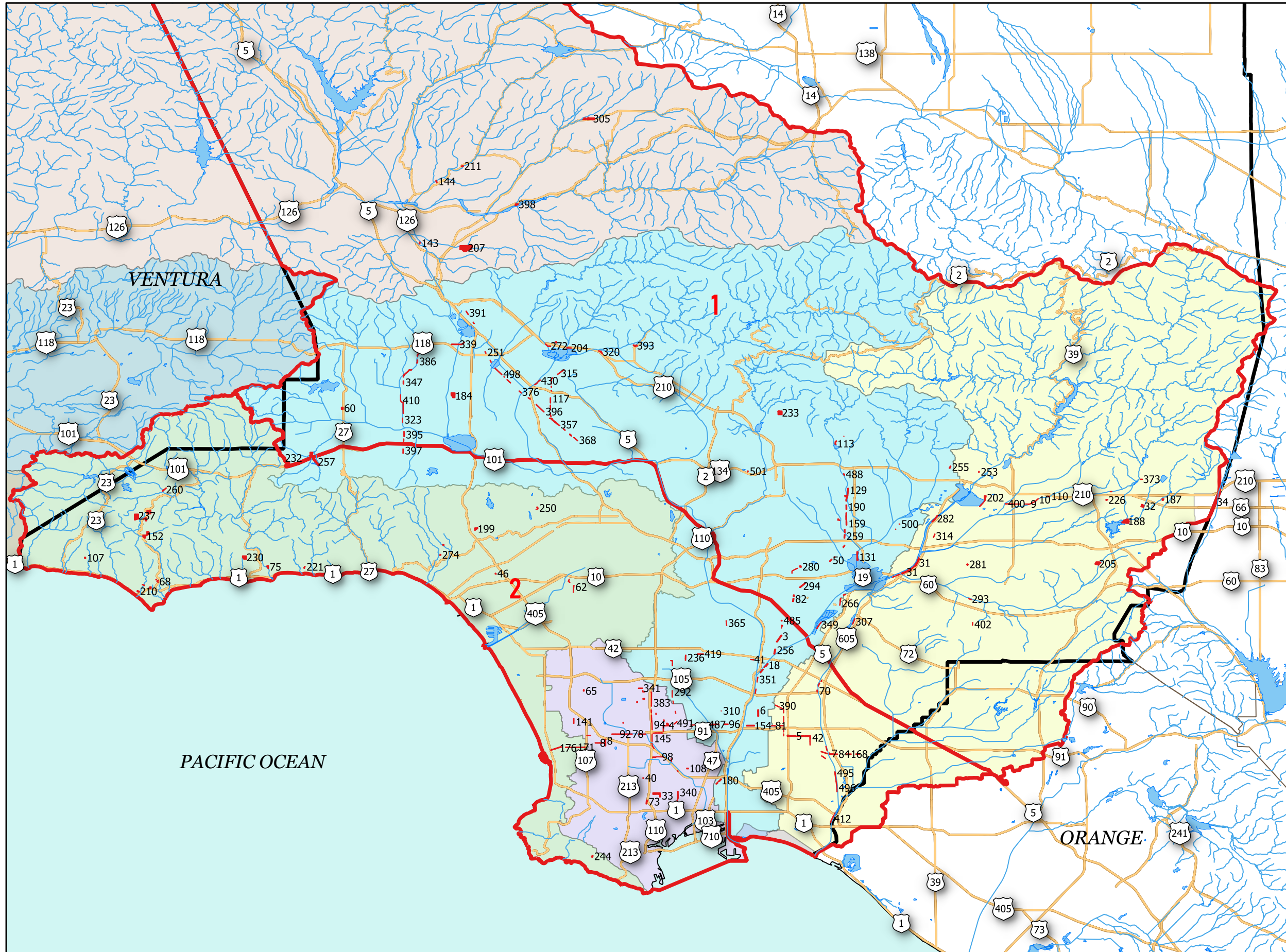
7.5 LABORATORY ANALYTICAL RESULTS

Analytical data from the laboratory will be included in the AMR. The possible quantitation limit employed for an effluent analysis will be lower than the benchmark value established for a given parameter, unless the laboratory can demonstrate that a particular benchmark limit is not attainable and obtains approval for a higher limit from the LARWQCB.

8.0 REFERENCES

- U.S. EPA 1983. *Methods for Chemical Analysis of Water and Wastes*. EPA-600/4-79-020, third edition.
- U.S. EPA 1988. *Methods for Determination of Organic Compounds in Drinking Water* (EPA-600/4-88/039).
- USEPA. 1991. *Methods for Aquatic Toxicity Identification Evaluations: Phase 1 Toxicity Characterization Procedures* (second edition). EPA-600/6-91/003.
- USEPA. 1992. *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents Phase I*. EPA-600/6-91-005.
- USEPA. 1993a. *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (fourth edition). EPA/600/4-90/027F.
- USEPA. 1993b. *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity*. EPA/600/R-92/080.
- USEPA. 1996. *Marine Toxicity Identification Evaluation (TIE) Phase I Guidance Document* (EPA/600/R-96/054).
- USEPA. 2000. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California*. 40-CFR Part 131.
- U.S. EPA 2001. *Laboratory Documentation Requirements for Data Evaluation (R9QA/004.1)*.
- USEPA. 2002. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*. Office of Water, Washington, D.C.
- “Swamp Field Methods Course.” Water Board Training Academy. CD-ROM. November 1, 2005.
- LARWQCB. 2010. *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Within the Los Angeles Region*. Order No. R4-2010-0186.
- SWRCB. 2004. *Surface Water Ambient Monitoring Program, SWAMP-Compatible Quality Assurance Project Plans*. Version 1.0.
- LARWQCB. 2010. *Monitoring and Reporting Plan Template, Waiver of Waste Discharge Requirements*, February 2011,
www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/waivers/

FIGURE 1 Los Angeles County Irrigated Lands Group
Los Angeles Sampling Regions and Watersheds



- Legend**
- Enrolled Grower and Number
 - Sampling Region 1
 - Sampling Region 2
 - LA County Boundary
 - CA State Road and Nummer
 - Water Bodies
 - Flowlines
 - LA Cities
- Watersheds**
- Callegus Creek
 - Dominguez Channel LA LB Harbor
 - Los Angels River
 - Misc. Ventura Coastal Stream
 - Santa Clara River
 - San Gabriel River
 - Santa Monica Bay
 - Ventura River

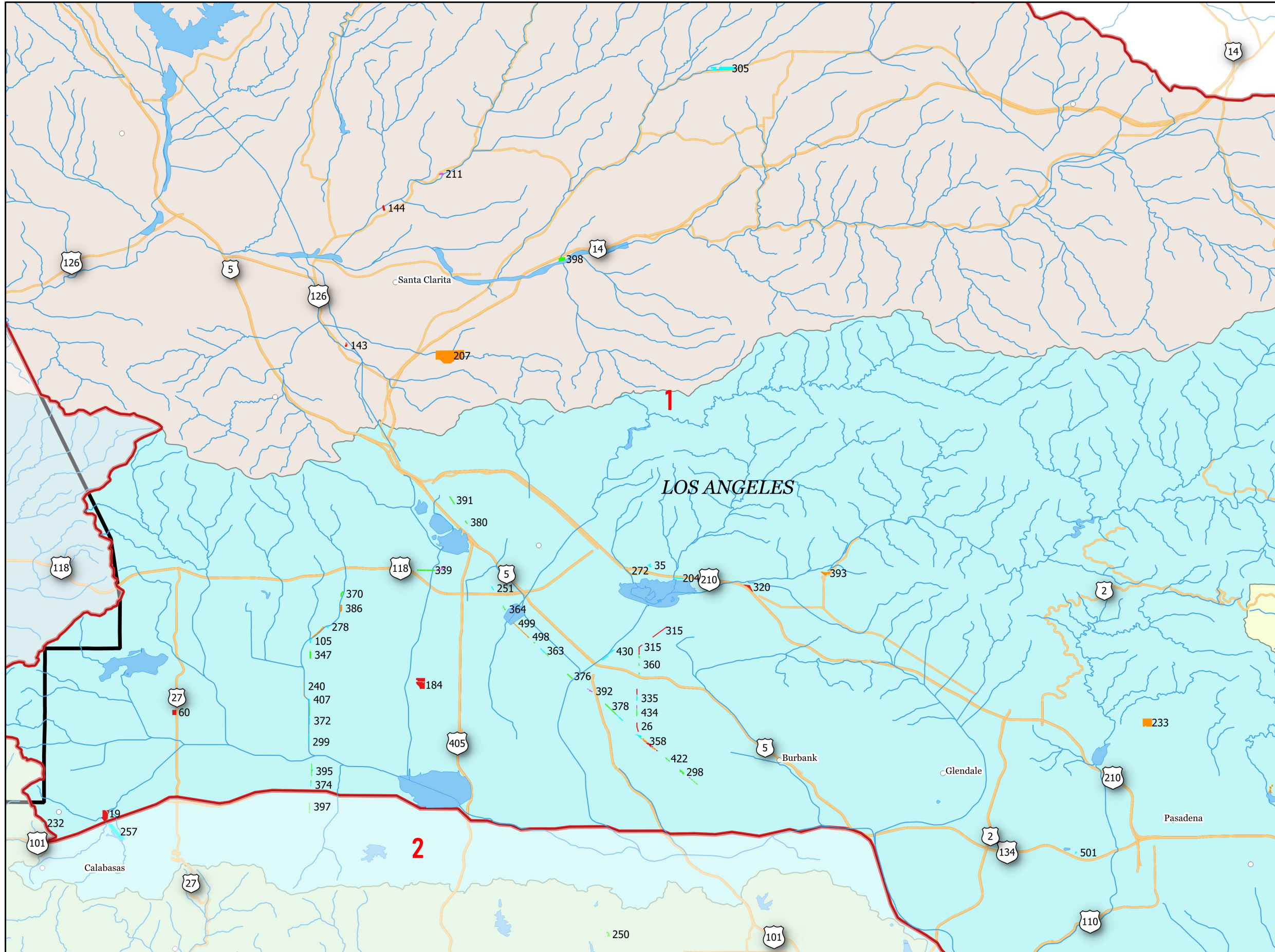


Scale: 1 Inch = 5 Miles



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FIGURE 1.1 Los Angeles County Irrigated Lands Group
Sampling Region 1, West Portion



- Legend**
- Sampling Region and Number
 - CA State Roads and Numbers
 - LA Cities
 - LA County Boundary
 - Streams
- Enrolled Growers by Group**
- Unknown (No Data)
 - Micro Growers
 - Small Growers
 - Medium Growers
 - Large Growers
- Watersheds**
- Dominguez Channel LA LB Harbor
 - Los Angeles River
 - Santa Clara River
 - San Gabriel River
 - Santa Monica Bay
 - Ventura River
 - Misc. Ventura Coastal Stream
 - Callegus Creek



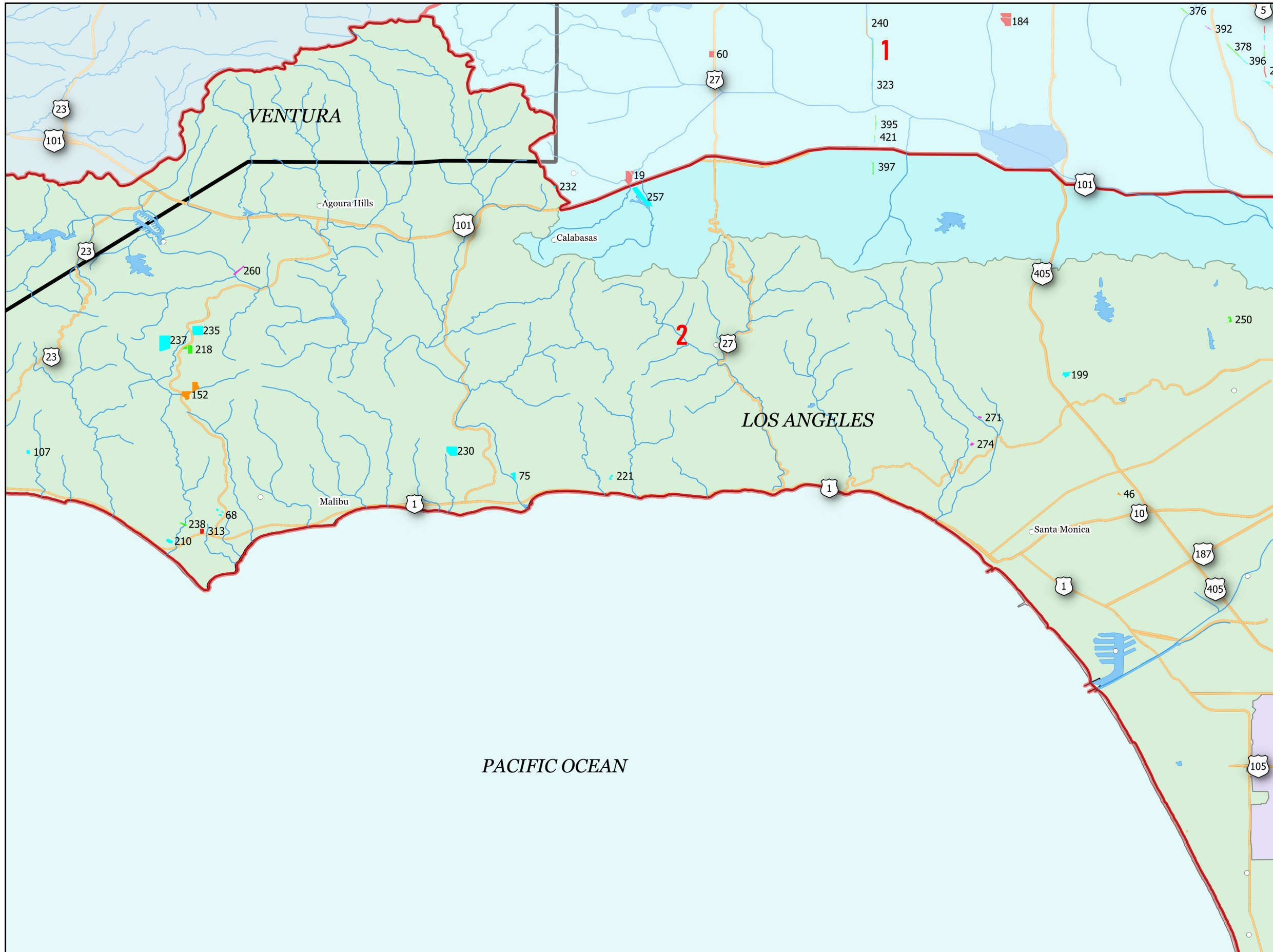
Scale: 1 Inch = 2.5 Miles

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FIGURE 1.3 Los Angeles County Irrigated Lands Group
Sampling Region 2, West Portion



Legend

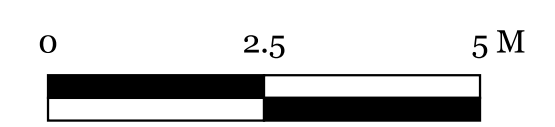
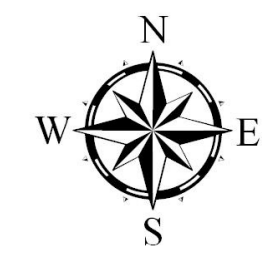
- Sampling Region and Number
- LA Cities
- Streams
- CA State Roads and Numbers
- LA County Boundary

Enrolled Growers by Group

- Unknown (No Data)
- Micro Growers
- Small Growers
- Medium Growers
- Large Growers

Watersheds

- Dominguez Channel LA LB Harbor
- Los Angeles River
- Santa Clara River
- San Gabriel River
- Santa Monica Bay
- Ventura River
- Misc. Ventura Coastal Stream
- Callegus Creek

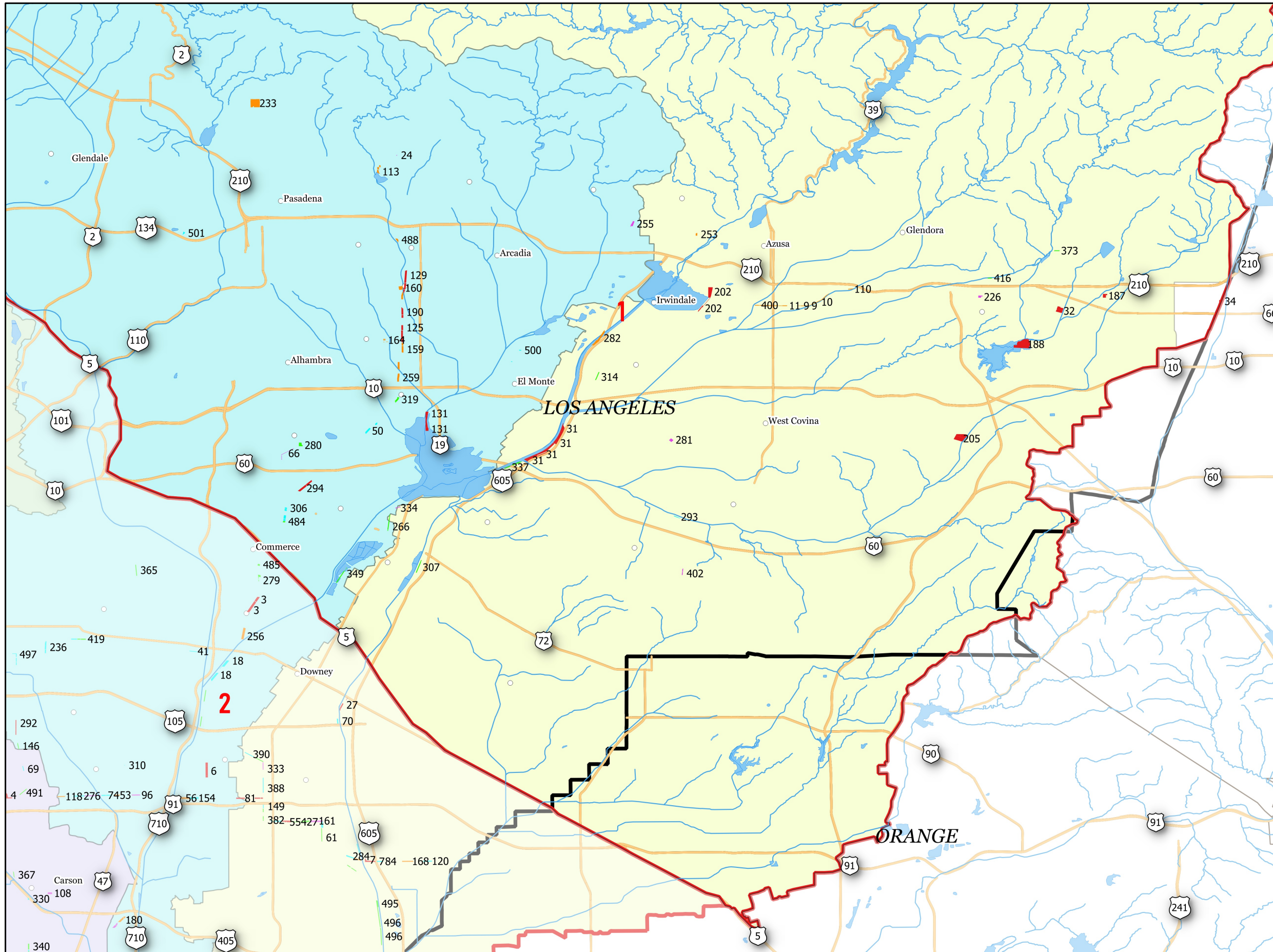


Scale: 1 Inch = 2.5 Miles



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FIGURE 1.2 Los Angeles County Irrigated Lands Group
Sampling Region 1, East Portion



Legend

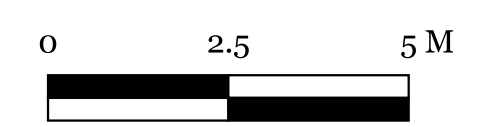
- Sampling Region and Number
- LA Cities
- Streams
- CA State Roads and Numbers
- LA County Boundary

Enrolled Growers by Group

- Unknown (No Data)
- Micro Growers
- Small Growers
- Medium Growers
- Large Growers

Watersheds

- Dominguez Channel LA LB Harbor
- Los Angeles River
- Santa Clara River
- San Gabriel River
- Santa Monica Bay
- Ventura River
- Misc. Ventura Coastal Stream
- Callegus Creek



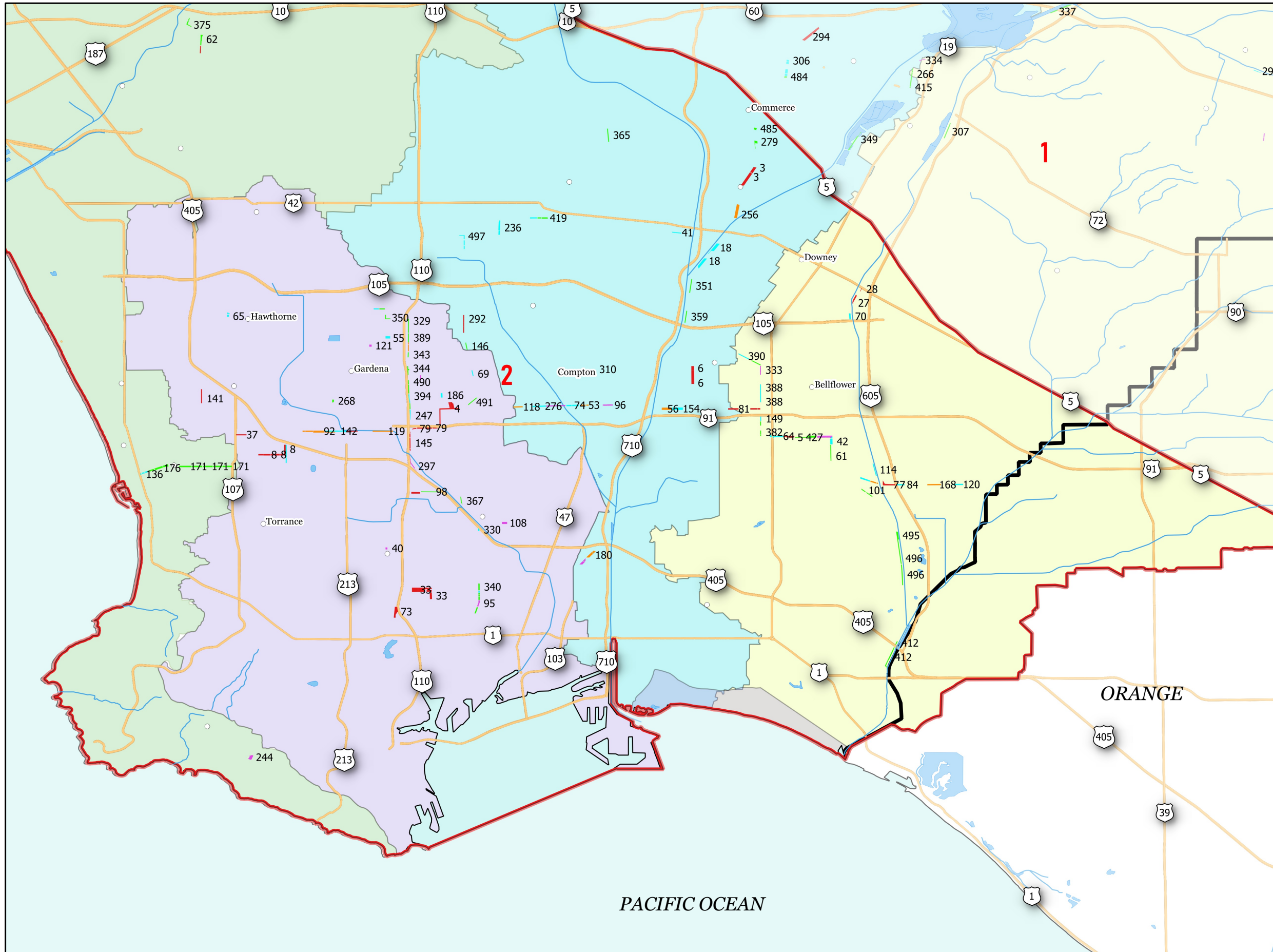
Scale: 1 Inch = 2.5 Miles

Prepared by:

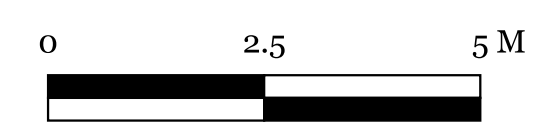
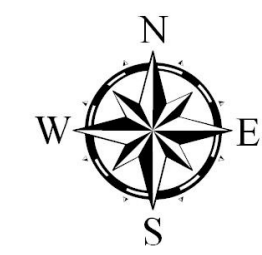
Pacific Ridgeline

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FIGURE 1.4 Los Angeles County Irrigated Lands Group
Sampling Region 2, East Portion



- Legend**
- Sampling Region and Number
 - LA Cities
 - Streams
 - CA State Roads and Numbers
 - LA County Boundary
- Enrolled Growers by Group**
- Unknown (No Data)
 - Micro Growers
 - Small Growers
 - Medium Growers
 - Large Growers
- Watersheds**
- Dominguez Channel LA LB Harbor
 - Los Angeles River
 - Santa Clara River
 - San Gabriel River
 - Santa Monica Bay
 - Ventura River
 - Misc. Ventura Coastal Stream
 - Callegus Creek



Scale: 1 Inch = 2.5 Miles



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APPENDIX A

General Information Questionnaire

General Operational Questionnaire

NGA LAILG Member Number : _____

COMPANY: _____ Facility: _____

Filled out by: _____ Title: _____

Email: _____ Phone: _____

Instructions

Please fill out one questionnaire for *EACH FACILITY* that you have enrolled.

THIS QUESTIONNAIRE IS REQUIRED TO BE COMPLETED FOR ENROLLMENT

Part I: General Company

1. What is your primary crop? Circle ONE.

Color / Bedding Plant

Vineyard

Orchard

Box Tree & Shrub

Greenhouse

Farm / Row Crop

Retail w/Production

2. What are your company yearly Gross crop sales? CIRCLE ONE.

Less than \$50,000 per year

Between \$50,000 and \$200,000 per year

Between \$200,000 and \$1,000,000 per year

Between \$1,000,000 and \$5,000,000 per year

Over \$5,000,000 per year

3. How many TOTAL IRRIGATED ACRES do you operate in the United States?

_____ Acres

Part II: General Company

4. How many agricultural facilities does your company operate in the United States?

_____ Facilities

5. Do you ship out of state? Please circle below

YES

NO

6. Do you move material between facilities? (Only applies if you have more than one facility)

YES

NO

Only Have One Facility

7. Do you ship material (either sales or intracompany transfer) north of Santa Barbara?

YES

NO

8. Please review your pesticide use reports. How many applications have occurred in the previous 12 months? How many different pesticides/herbicides/fungicides were used?

_____ # Applications

_____ # Different Chemicals

9. What methods do you use to apply pesticides? Please break down into percentages.

_____% Spray

_____% Drench/Sprenc

_____% Other (specify below)

Part III: General Fertilizer

10.

Please review your fertilizer application records and/or nutrient management plans. List all formulations (solid and liquid) applied during the previous 12 months. We will calculate total Nitrogen (N) and total Phosphorus (P) from this information. Use one line for each formulation

If you do not wish to supply your formulations and would prefer to calculate pounds of N and P on your own, please see attached fertilizer worksheet.

Attach extra sheets if needed

	SOLID or LIQUID Formulations	N-P-K	QTY applied Pounds (Solid) or Gallons (Liquid)
Ex.	solid	<u>17 - 8 - 8</u>	2000 lbs
Ex.	liquid	<u>10 - 10 - 10</u>	1000 gallons
		<u>- - -</u>	
		<u>- - -</u>	
		<u>- - -</u>	
		<u>- - -</u>	
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		<u>- - -</u>	

11. What methods do you use to apply fertilizer? Please break down into percentages.

____% Topdress

____% Liquid Feed as Needed, Dosatron

____% Fertigation

____% Soil Incorporation

____% Broadcast

Part IV: General Irrigation

12. What methods of irrigation do you use? Please break down into percentages.

- ____% Drip
- ____% Overhead Sprinkler
- ____% Hand Water
- ____% Furrow

13. Please review your water use. How much water did you apply during the previous 12 months? Depending on your supply this may be in gallons, hundred cubic feet, etc...please include your unit of measurement!

We applied _____(number) _____(Unit of measurement)

14. Do you recycle water in your facility?

YES

NO

15. Do you use reclaimed water?

YES

NO

16. Where do you get your water? Please break down into percentages.

- ____% City/Municipal/Private Water Company
- ____% Off-site well
- ____% Well on site

THANK YOU! RETURN THIS QUESTIONNAIRE TO NGA WITHIN 30 DAYS TO COMPLETE YOUR ENROLLMENT!

**Please keep a copy of this form for your files on-site.

APPENDIX B

Member Grouping Results

Large Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
3	ABC Nursery, Inc.	Large	GO	LA	S
4	ABC Nursery, Inc.	Large	GO	D	S
5	ABC Nursery, Inc.	Large	GO	SG	S
6	ABC Nursery, Inc.	Large	GO	LA	S
7	ABC Nursery, Inc.	Large	GO	SG	S
8	ABC Nursery, Inc.	Large	GO	D	S
19	Boething Treeland Farms, Inc.	Large	GO	LA	N
26	Moon Valley Nurseries	Large	GO	LA	N
27	Certified Plant Growers, Inc.	Large	C	SG	S
28	Certified Plant Growers, Inc.	Large	C	SG	S
31	Moon Valley Nurseries	Large	GO	SG	N
32	Moon Valley Nurseries	Large	GO	SG	N
33	Color Spot Nurseries, Inc.	Large	C	D	S
34	Corey Nursery Co.	Large	GO	SG	N
37	Moon Valley Nurseries / Lucky Plants Nursery	Large	IP	D	S
60	Green Thumb Nursery	Large	GO	LA	N
73	International Plant Growers, Inc.	Large	C	D	S
78	Centeno's Nursery & Landscaping	Large	GO	D	S
79	Centeno's Nursery & Landscaping	Large	GO	D	S
81	Centeno's Nursery & Landscaping	Large	GO	SG	S
117	Nick's Nursery	Large	GO	LA	N
125	Norman's Nursery, Inc.	Large	GO	LA	N
129	Norman's Nursery, Inc.	Large	GO	LA	N
131	Norman's Nursery, Inc. (Army Corp Of Engineers)	Large	GO	LA	N

Large Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
132	Norman's Nursery, Inc.	Large	GO	LA	N
141	Performance Nursery, Inc.	Large	GO	D	S
143	Green Landscape Nursery	Large	GO	SC	N
144	Green Landscape Nursery	Large	GO	SC	N
145	Centeno's Nursery & Landscaping	Large	GO	D	S
151	Rainforest Flora Inc.	Large	GH	D	S
184	Valley Sod Farm, Inc.	Large	S	LA	N
187	West Covina Wholesale Nursery	Large	GO	SG	N
188	West Covina Wholesale Nursery	Large	GO	SG	N
190	West Covina Wholesale Nursery	Large	GO	LA	N
200	C&S Nursery, Inc.	Large	GO	SM	S
202	El Nativo Growers, Inc.	Large	GO	SG	N
205	California State Polytechnic University	Large	M	SG	N
267	Jackson Shrub Supply, Inc.	Large	GO	LA	N
286	Moon Valley Nurseries / LB Palm Growers	Large	GO	SG	S
289	MB Landscaping & Nursery	Large	GO	D	S
290	MB Landscaping & Nursery	Large	GO	D	S
292	MB Landscaping & Nursery	Large	GO	LA	S
294	Moon Valley Nurseries / Premium Trees, LLC	Large	GO	LA	N
313	Moon Valley Nurseries / Pacific View Nursery	Large	GO	SM	S
315	San Antonio Nursery Corp	Large	GO	LA	N

Large Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
320	Brightview Tree Company	Large	GO	LA	N
381	Centeno's Nursery & Landscaping	Large	IP	D	S
428	MB Landscaping & Nursery	Large	GO	D	S
486	MB Landscaping & Nursery	Large	GO	SG	S
489	Jackson Shrub Supply, Inc.	Large	GO	LA	N

IP In Progress

Watersheds

- D Dominguez Channel LA/Long Beach Harbors WMA
- LA Los Angeles River Watershed
- SC Santa Clara River Watershed
- SG San Gabriel River Watershed
- SM Santa Monica WMA
- SA Santa Ana River Watershed (Located in the Santa Ana Region)

Crop Types

- F Cutflower
- GO Ornamental
- C Color Plants
- V Vineyard
- GH Greenhouse
- O Orchard
- S Sod
- M Multiple
- R Row Crop

Medium Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
9	Acosta Growers Inc.	Medium	GO	SG	N
10	Acosta Growers Inc.	Medium	GO	SG	N
11	Acosta Growers Inc.	Medium	GO	SG	N
45	Shima Nursery	Medium	GO	LA	N
46	FK Nursery, Inc.	Medium	GO	SM	S
53	New West Growers, Inc.	Medium	GO	LA	S
54	New West Growers, Inc.	Medium	GO	LA	S
56	Ricardo's Nursery	Medium	GO	LA	S
91	Kobata Growers, Inc.	Medium	GO	D	S
92	Kobata Growers, Inc.	Medium	C	D	S
110	Glendora Gardens	Medium	M	SG	N
113	Magic Growers, Inc.	Medium	GO	LA	N
118	C Stars Nursery, Inc.	Medium	C	LA	S
119	C Stars Nursery, Inc.	Medium	C	D	S
152	Rancho Escondido Vineyard	Medium	V	SM	S
158	Sakaida Nursery, Inc.	Medium	GO	LA	N
159	Sakaida Nursery, Inc.	Medium	GO	LA	N
160	Sakaida Nursery, Inc.	Medium	GO	LA	N
164	San Gabriel Nursery & Florist	Medium	M	LA	N
168	SY Nursery, Inc.	Medium	GO	SG	S
180	Gomez Growers (United Plant Growers/Gomez Growers)	Medium	C	LA	S
207	Golden Oak Ranch	Medium	M	SC	N
233	Nuccio's Nursery, Inc.	Medium	GO	LA	N
239	California Nurseries	Medium	GO	LA	N
240	California Nurseries	Medium	GO	LA	N
253	Landscape Warehouse Nursery & Supply	Medium	GO	SG	N
256	Pro Growers, Inc.	Medium	GO	LA	S
258	Shima Nursery	Medium	GO	LA	N
259	Shima Nursery	Medium	GO	LA	N
272	Paramount Nursery	Medium	GO	LA	N
282	Garden View Inc.	Medium	GO	SG	N
285	Rusack Vineyard/Kangaru Enterprises, LLC	Medium	V	SM	S

Medium Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
296	Gomez Growers (United Plant Growers/Gomez Growers)	Medium	C	SG	S
355	Green House Nurseries, Inc.	Medium	IP	LA	N
356	Green Set, Inc.	Medium	IP	LA	N
357	Green Set, Inc.	Medium	IP	LA	N
358	Green Set, Inc.	Medium	IP	LA	N
383	Miyako Bonsai Nursery	Medium	C	D	S
385	New View Landscape, Inc./Green View Nursery	Medium	GO	LA	N
386	New View Landscape, Inc./Green View Nursery	Medium	GO	LA	N
393	Senna Tree Company	Medium	IP	LA	N
400	Acosta Growers Inc.	Medium	GO	SG	N
403	San Gabriel Nursery & Florist	Medium	IP	LA	N
410	California Nurseries	Medium	GO	LA	N
488	Landscape Warehouse Nursery & Supply	Medium	IP	LA	N
498	California Nurseries	Medium	IP	LA	N
499	California Nurseries	Medium	IP	LA	N

IP In Progress

Watersheds

- D Dominguez Channel LA/Long Beach Harbors WMA
- LA Los Angeles River Watershed
- SC Santa Clara River Watershed
- SG San Gabriel River Watershed
- SM Santa Monica WMA
- SA Santa Ana River Watershed (Located in the Santa Ana Region)

Crop Types

- F Cutflower
- GO Ornamental
- C Color Plants
- V Vineyard
- GH Greenhouse
- O Orchard
- S Sod
- M Multiple
- R Row Crop

Small Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
18	AY Nursery, Inc.	Small	GO	LA	S
35	C Grows	Small	GO	LA	N
41	Esequiel Nursery	Small	GO	LA	S
42	Fausto's Nursery	Small	GO	SG	S
50	Carreon Nursery	Small	GO	LA	N
55	Moneta Nursery, Inc.	Small	M	D	S
64	H&H Nursery	Small	M	SG	S
65	Hawthorne Nursery, Inc.	Small	GO	D	S
68	Hoyt Family Vineyards	Small	V	SM	S
69	Humedo Nursery	Small	GO	D	S
70	Humedo Nursery	Small	GO	SG	S
74	Jorge's Nursery	Small	GO	LA	S
75	Bridgeman Ranch	Small	O	SM	S
82	Damas Nursery	Small	GO	LA	N
84	Cerritos Growers	Small	GO	SG	S
105	Live Art Landscapes, Inc.	Small	GH	LA	N
107	Riverview Farm/Dolphinhead Vineyard Associates	Small	V	SM	S
112	Mezcala Nursery	Small	GO	LA	S
114	Mariposa Garden	Small	GO	SG	S
120	Cerritos Nursery, LLC	Small	GO	SG	S
136	Peter's Garden Center, Inc.	Small	M	SM	S
142	Sunflower Farms	Small	F	D	S
149	Vargas Nursery	Small	GO	SG	S
154	Rolling Hills Nursery	Small	GO	LA	S
186	I.T. Nursery Inc	Small	GO	D	S
199	Moraga Vineyards	Small	V	SM	S
204	Worldwide Exotics Inc.	Small	GO	LA	N
210	Hevadu	Small	V	SM	S
221	The Malibu Vineyard	Small	V	SM	S
225	Caro's Ridge	Small	V	SM	S
230	Rancho Mar LLC	Small	M	SM	S
232	Wish Vineyard LLC	Small	V	SM	S
235	Malibu Rocky Oaks Vineyard	Small	V	SM	S
236	Amigos Nursery, LLC	Small	GO	LA	S

Small Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
237	Saddlerock Ranch / The Semler Companies Malibu	Small	M	SM	S
246	Dolin Malibu Estates	Small	V	SM	S
247	Fuku Bonsai Nursery	Small	GO	D	S
251	Kenyon Landscape	Small	GO	LA	N
257	Scarborough Farms	Small	R	LA	S
264	Ben K Bonsai Nursery	Small	GO	LA	N
270	Lucky Plants	Small	GO	D	S
276	AJ Nursery, Inc.	Small	GO	LA	S
278	Bertha's Gardens/Western Gardens	Small	GO	LA	N
283	Gardena Hills Nursery	Small	GO	D	S
284	House of Bonsai	Small	GO	SG	S
293	N.K. Nursery	Small	GO	SG	N
295	Torrance Wholesale Nursery	Small	GO	D	S
299	V&N Nursery	Small	GO	LA	N
300	Garibaldo's Nursery	Small	GO	SG	S
305	Alonso Vineyard	Small	V	SC	N
306	Mimosa Nursery	Small	GO	LA	N
310	Green Touch Nursery	Small	GO	LA	S
312	Martinez Nursery	Small	GO	SG	S
316	Saticoy Nursery	Small	GO	LA	N
323	3 Pinos Nursery	Small	GO	LA	N
325	Juan Aguirre Farming	Small	IP	LA	S
326	American Growers Plus, Inc.	Small	IP	LA	N
330	Arny's Garden	Small	IP	D	S
335	C&Y Nursery	Small	IP	LA	N
338	Classic Landscaping & Nursery	Small	IP	LA	N
345	Exotic Garden Nursery	Small	IP	LA	N
354	Green Effects Inc.	Small	GO	LA	N
363	International Environmental Corp. (Intl Palm Growers)	Small	IP	LA	N
372	Junior's Nursery	Small	IP	LA	N
374	Junior's Nursery	Small	IP	LA	N

Small Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
388	Plantasia, Inc.	Small	IP	SG	S
390	Rio Verde Nursery	Small	IP	SG	S
394	Soto Nursery	Small	O	D	S
396	Wendy's Nursery	Small	C	LA	N
399	Saticoy Nursery	Small	IP	LA	N
407	American Growers Plus, Inc.	Small	IP	LA	N
430	Classic Landscaping & Nursery	Small	IP	LA	N
438	Mi Jalisco Nursery	Small	GO	SG	S
497	Gardena Hills Nursery	Small	IP	LA	S
500	El Monte Nursery	Small	GO	LA	N
501	Annandale Nursery	Small	GO	LA	N
503	Champa Nursery	Small	GO	LA	N

IP In Progress

Watersheds

- D Dominguez Channel LA/Long Beach Harbors WMA
- LA Los Angeles River Watershed
- SC Santa Clara River Watershed
- SG San Gabriel River Watershed
- SM Santa Monica WMA
- SA Santa Ana River Watershed (Located in the Santa Ana Region)

Crop Types

- F Cutflower
- GO Ornamental
- C Color Plants
- V Vineyard
- GH Greenhouse
- O Orchard
- S Sod
- M Multiple
- R Row Crop

Micro Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
24	Calscape Growers	Micro	GO	LA	N
40	Mikamo Nursery	Micro	F	D	S
66	Hill Grove Nursery	Micro	GO	LA	N
95	Wilmington Nursery	Micro	GO	D	S
96	Ruiz Nursery	Micro	GO	LA	S
108	Marcelino Contreras	Micro	R	D	S
121	Nakayama Nursery Inc.	Micro	GO	D	S
161	Salco Growers	Micro	C	SG	S
211	Barranquilla Nursery	Micro	GO	SC	N
226	Choji Matsushita	Micro	F	SG	N
244	Clark Vineyard	Micro	V	SM	S
255	Organicado	Micro	O	LA	N
260	Triunfo Canyon Vineyards	Micro	V	SM	S
269	Rudy's Plants	Micro	C	D	S
271	Melhill Vineyard	Micro	V	SM	S
274	SAM Trust- Amalfi Vineyard	Micro	V	SM	S
281	Fairgrove Nursery	Micro	GO	SG	N
297	UVA Nursery	Micro	GO	D	S
302	Ramirez Strawberry Ranch	Micro	R	LA	S
309	Pedro Perez	Micro	GO	LA	N
333	Lam Farm	Micro	IP	SG	S

Micro Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
334	Bird of Paradise Nursery	Micro	IP	LA	N
348	Wilmington Nursery	Micro	IP	LA	N
379	Rose Lane Farms	Micro	F	LA	N
387	Aguilar Products	Micro	IP	LA	S
392	Roscoe Nursery	Micro	IP	LA	N
401	Montage Vineyards	Micro	V	SM	S
402	Fantasy Nursery	Micro	GO	SG	N
408	Bird of Paradise Nursery	Micro	IP	LA	N
423	Robles Nursery	Micro	IP	LA	N
487	Ruiz Nursery	Micro	IP	LA	S

IP In Progress

Watersheds

- D Dominguez Channel LA/Long Beach Harbors WMA
- LA Los Angeles River Watershed
- SC Santa Clara River Watershed
- SG San Gabriel River Watershed
- SM Santa Monica WMA
- SA Santa Ana River Watershed (Located in the Santa Ana Region)

Crop Types

- F Cutflower
- GO Ornamental
- C Color Plants
- V Vineyard
- GH Greenhouse
- O Orchard
- S Sod
- M Multiple
- R Row Crop

Unknown Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
61	My Hoa Farm	Unknown	R	SG	S
62	Hernandez Nursery	Unknown	GO	SM	S
94	Gardena Nursery & Landscape Maintenance	Unknown	GO	D	S
98	Jauregui Nursery, LLC	Unknown	GO	D	S
100	Jauregui Nursery, LLC	Unknown	GO	D	S
101	Jauregui Nursery, LLC	Unknown	GO	SG	S
106	LOMITA PLANT GROWERS INC. / Growers Nursery	Unknown	GO	D	S
135	Okada Nursery, Inc.	Unknown	GO	SG	S
146	Estanfor Nursery	Unknown	GO	LA	S
171	T-Y Nursery, Inc.	Unknown	GO	SM	S
176	T-Y Nursery, Inc.	Unknown	GO	SM	S
218	Cielo Farms Vineyard	Unknown	V	SM	S
229	Katharina Hahn Vineyard (Schetter Malibu)	Unknown	V	LA	S
238	Zuma Canyon Orchids	Unknown	GH	SM	S
250	Greene-Lania Vineyard	Unknown	V	SM	S
266	Girasol Nursery	Unknown	GO	LA	N
268	K. Yuge Nursery	Unknown	GH	D	S
279	Castaneda Nursery	Unknown	GO	LA	S
280	Castaneda Nursery	Unknown	GO	LA	N
298	Vineland Growers Nursery	Unknown	GO	LA	N
307	Hana Star Farms, Inc	Unknown	R	SG	N
314	Plascencia Nursery	Unknown	GO	SG	N
319	Sunshine Food & Nursery	Unknown	GO	LA	N
324	90-90 Nursery	Unknown	IP	LA	N
327	American Sprinkler & Cardanali Nursery	Unknown	IP	LA	N
329	RJ's Demolition and Disposal	Unknown	IP	D	S
331	Lorenzo Sanchez Nursery	Unknown	IP	LA	N
332	Ben-Chetrit, Shimon/Ramy's Nursery	Unknown	IP	LA	N
337	Arturo Carbajal Nursery (Gonzalez Nursery)	Unknown	IP	SG	N
339	Daniel Velazquez Nursery	Unknown	IP	LA	N

Unknown Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
340	David's Nursery	Unknown	IP	D	S
341	Eden Nursery	Unknown	IP	D	S
342	El Bajio Nursery	Unknown	IP	LA	N
343	El Castillo Nursery	Unknown	IP	D	S
344	Environmental Arts	Unknown	IP	D	S
346	F&A Nursery	Unknown	IP	LA	S
347	Four Seasons Wholesale Nursery	Unknown	IP	LA	N
349	F&A Nursery	Unknown	IP	LA	N
350	Gil Hernandez Nursery	Unknown	IP	D	S
351	Gomez Calderon Nursery	Unknown	IP	LA	S
352	Grace Farms	Unknown	IP	D	S
353	Grace Farms	Unknown	IP	D	S
359	La Escondida Nursery (Growing Nursery)	Unknown	IP	LA	S
360	El Dorado Nursery	Unknown	IP	LA	N
361	Green Spot Nursery	Unknown	IP	LA	N
364	Isaac Ortega Nursery	Unknown	IP	LA	N
365	Isaias Gonzalez Nursery	Unknown	IP	LA	S
366	James T. Jung Nursery	Unknown	IP	D	S
367	Javier's Nursery	Unknown	IP	D	S
368	Jesus & Juan Munoz Nursery	Unknown	IP	LA	N
369	Rafael Macias	Unknown	IP	LA	N
370	Jose Vasquez Nursery	Unknown	IP	LA	N
371	Juan Aguilar Nursery	Unknown	IP	LA	S
373	Juarez Nursery	Unknown	IP	SG	N
375	First Image Nursery	Unknown	IP	SM	S
376	La Cienega Nursery	Unknown	IP	LA	N
377	Lopez Nursery	Unknown	IP	LA	N
378	Los Pinos Nursery	Unknown	IP	LA	N
380	Macias Nursery	Unknown	IP	LA	N
382	Victor's Nursery	Unknown	IP	SG	S
384	Jose Munoz Nursery	Unknown	IP	SG	N
389	Ramirez Nursery	Unknown	IP	D	S
391	RJ's Demolition and Disposal	Unknown	IP	LA	N
395	Tops Landscape Co.	Unknown	IP	LA	N
397	Nick Williams Nursery	Unknown	IP	LA	S
398	David Garcia Nursery	Unknown	IP	SC	N
412	Jauregui Nursery, LLC	Unknown	GO	SG	S
415	Girasol Nursery	Unknown	IP	LA	N
416	Clifford Sussman Nursery	Unknown	IP	SG	N

Unknown Group

NGA #	OWNER/ TENANT	GROUPING	CROP TYPE	Watershed	Sampling Region
418	RJ's Demolition and Disposal	Unknown	IP	LA	S
419	RJ's Demolition and Disposal	Unknown	IP	LA	S
421	Tops Landscape Co.	Unknown	IP	LA	N
422	Green Valley Growers Wholesale Nursery / Ventura Nursery	Unknown	IP	LA	N
425	Ramon Ramirez Nursery	Unknown	IP	D	S
427	R&A Nursery	Unknown	IP	SG	S
432	Cosentino's	Unknown	IP	SM	S
434	Robert Arreola	Unknown	IP	LA	N
484	Castaneda Nursery	Unknown	V	LA	N
485	Castaneda Nursery	Unknown	V	LA	S
490	Jauregui Nursery, LLC	Unknown	IP	D	S
491	Jauregui Nursery, LLC	Unknown	IP	D	S
493	Jauregui Nursery, LLC	Unknown	IP	SG	S
494	Jauregui Nursery, LLC	Unknown	IP	SG	S
495	Jauregui Nursery, LLC	Unknown	IP	SG	S
496	Jauregui Nursery, LLC	Unknown	IP	SG	S
506	Fuji Bonsai Nursery, LLC	Unknown	GO	LA	N

IP In Progress

Watersheds

- D Dominguez Channel LA/Long Beach Harbors WMA
- LA Los Angeles River Watershed
- SC Santa Clara River Watershed
- SG San Gabriel River Watershed
- SM Santa Monica WMA
- SA Santa Ana River Watershed (Located in the Santa Ana Region)

Crop Types

- F Cutflower
- GO Ornamental
- C Color Plants
- V Vineyard
- GH Greenhouse
- O Orchard
- S Sod
- M Multiple
- R Row Crop

APPENDIX C

Field Documents

FIELD EQUIPMENT CHECKLIST

SITE: _____

CLIENT CONTACT/PHONE NUMBER: _____

REGULATOR/PHONE NUMBER: _____

- ___ **Copies of MRP, QAPP and NOI**
- ___ **Proper number of sample container, including extras. Also bubble wrap and zip locks for containers.**
- ___ **Proper labels, including extras**
- ___ **Field Log Sheets/Field Folders**
- ___ **COC Forms**
- ___ **Safety equipment and first aid kit, including rain gear**
- ___ **Field monitoring equipment**
- ___ **Nitrile gloves and Tyveks**
- ___ **Coolers and ice or artificial ice**
- ___ **Camera, phone, and watch**
- ___ **Extra pens**
- ___ **Decontamination equipment**
- ___ **Trash bags**
- ___ **Extra deionized water**
- ___ **Dipping pole and clean secondary container**
- ___ **Sheet flow sampling device**
- ___ **Peristaltic pump, plus extra batteries**
- ___ **Clean sample tubing**
- ___ **Measuring tape/measuring stick**
- ___ **other:** _____

LOS ANGELES REGION CONDITIONAL WAIVER FOR IRRIGATED LANDS

FIELD DATA SHEET

Site Name: Address:	Sampling Event: Dry Wet DATE:				
	Weather Conditions: Clear Partly Cloudy Cloudy		Light Precipitation: Light Raining		
	Crop Type: Tree Farm Greenhouse Vinyard		Sod Farm Row Crops		
	Color Plants		General Ornamentals		

General Observations

Pesticide Type: Application Time:	Motorized	Hand	Granular	Dust	Type of Irrigation: Drip Hand Sprinkler Other:
	Spray	Spray	Application	Application	
Fertilizer Type: Application Time:	Topdress	Slow	Irrigation	Mixed	(Circle all that apply)
		Release	Water		

Runoff Observations

Water color:	Clear	Light Brown	Brown	Other:	Stream Width:	(inches)
Observations	Debris	Trash	Algae	Other:	Stream Depth:	(inches)
Water Odor:	Yes	No	If Yes, describe:			

Sample Number	Location	Time (12 Hour)	Type (Circle one)	Velocity (feet per sec)	Temperature (°C)	pH	E.C. (uS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
		AM PM	Pump Grab Bucket						
		AM PM	Pump Grab Bucket						
		AM PM	Pump Grab Bucket						
		AM PM	Pump Grab Bucket						
		AM PM	Pump Grab Bucket						

Picture Numbers: _____

Sampling Personnel: _____

(print)	(sign)	(Organization)
---------	--------	----------------



Weck Laboratories, Inc.
Analytical Laboratory Services - Since 1964

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Tel. 626-336-2139 ♦ Fax 626-336-2634 ♦ www.wecklabs.com

CHAIN OF CUSTODY RECORD

STANDARD

Page 1 Of 1

CLIENT NAME:		PROJECT:	
ADDRESS:		PHONE:	
PROJECT MANAGER		FAX:	
		EMAIL:	
		SAMPLER	

SPECIAL HANDLING

Same Day Rush 150%

24 Hour Rush 100%

48-72 Hour Rush 75%

4 - 5 Day Rush 30%

Rush Extractions 50%

10 - 15 Business Days

QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

COMMENTS

ID# <small>(For Lab Use Only)</small>	DATE SAMPLED	TIME SAMPLED	SAMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT	ANALYSES REQUESTED	

RELINQUISHED BY	DATE / TIME	RECEIVED BY	SAMPLE CONDITION:	SAMPLE TYPE CODE:
			Actual Temperature:	AO=Aqueous
			Received On Ice	NA=Non Aqueous
			Preserved	SL = Sludge
			Evidence Seals Present	DW = Drinking Water
			Container Attacked	WW = Waste Water
			Preserved at Lab	RW = Rain Water
				GW = Ground Water
				SO = Soil
				SW = Solid Waste
				OL = Oil
				OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS

Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION

COC version 042707

APPENDIX D

Field Standard Operating Procedures

STANDARD OPERATING PROCEDURES SURFACE WATER SAMPLING

1.0 PREPARATION

Prior to mobilization for each sampling site, project personnel will prepare the necessary field equipment, verify proper bottle orders, and contact all necessary personnel. Due to the variability of the first wet season sampling event, the following items will be prepared two weeks prior to the start of the season:

- Order all necessary sample containers for each sampling event, and double check sample containers.
- Prepare sample labels.
- Prepare, calibrate, and decontaminate all equipment.
- Prepare and review all field logbooks, including the field log sheets.
- Review and confirm equipment checklist (Appendix A of this QAPP).
- Review SWAMP and SOP for sample collection, storage, and data collection with the sampling crew.
- Pre-select sites for each sampler, and review site specific concerns and site locations.

On the day of sampling, the following will be completed:

- Final confirmation of all equipment and laboratory sample containers.
- Verify all equipment is operating properly.
- Coordinate sample pickup with Weck and ABC.
- Conduct a final review with the sampling team of quality control procedures and specific site issues.

2.0 LABORATORY INTERACTION

Prior to each sampling season, orders will be placed with Weck and ABC for all sampling containers required for the first sampling event, along with all trip blanks, duplicates, and extra containers. All containers will be verified to have the proper preservatives for the analytical methods, if applicable, and are the proper sizes.

3.0 SAMPLE CONTAINER LABELING

All sample containers will be labeled prior to each monitoring event, to the extent possible. Extra labels will be provided in case field observations dictate a change in the sampling. All labels will contain the following information: group name, site name, sample ID, date, time, sampling personnel, preservatives (if applicable), the laboratory conducting the analysis, and the analytical requirements.

4.0 SAMPLE COLLECTION

All samples will be collected in pre-cleaned sample containers supplied by the laboratory. All secondary containers and sampling equipment will be pre cleaned. Clean nitrile gloves will be used for sample collection, and will be changed as appropriate. Field personnel will adhere to the following protocol to minimize the potential for cross contamination:

- No eating or drinking during sample collection
- Nitrile gloves will be changed for each site
- Tobacco products are prohibited near the samples and sample locations
- Personnel will avoid coughing and sneezing near open sample containers
- Samples are not to be collected near a running vehicle.

The sampling crew will also take the necessary precautions to avoid rainwater or surface drip into the sampling containers, to the extent practical.

Grab samples will be collected at the point of the greatest flow, in the center of the runoff stream, to the extent possible. The preferred method is to directly submerge the sample container, however, site-specific conditions and runoff patterns will dictate the type of grab sample collected. Grab samples will be collected directly into the appropriate containers, as outlined in the QAPP. The expected types of grab sample techniques are as follows.

a. Direct Submersion

Labeled containers will be opened, submerged approximately mid stream, be filled, and then the lid will be secured. Clean nitrile gloves will be worn at all times. The sample will be immediately put on ice, and subsequent samples will be used following the same procedure. After all samples have been collected, the COC form and the field log will be completed, and the samples will be delivered to the laboratory.

b. Intermediate Container

In the case where direct submersion is not practical, an intermediate sample container will be used. The intermediate sample container will be pre-cleaned prior to sample collection, and will be decontaminated in between sampling events. Clean nitrile gloves

will be worn at all times. The container could consist of a bucket, a dipping stick, or something that consists of the same composition as the sample containers, depending on site-specific conditions. The intermediate container will be filled through direct submersion, and the sample will be transferred to the appropriate pre-labeled sample containers as quickly as possible. Each sample container will be placed on ice after the containers have been filled. After all samples have been collected, the COC form and the field log will be completed, and the samples will be delivered to the laboratory. In the case of sheet flow from the runoff of a site, direct submersion of the intermediate container will not be possible. In this case, a collection device will be used to collect water to directly fill the sample containers.

c. Pumping

In the case where direct submersion or intermediate container sampling is not applicable, a peristaltic pump will be used. A peristaltic pump will not be used to collect samples analyzed for ammonia. The peristaltic pump will use new sample tubing, and will be properly cleaned between sampling events. Clean nitrile gloves will be worn at all times. Precautions will be used to insure that the sample tubing does not come into contact with any surfaces that are known not to be clean. One end of the tubing will be placed approximately mid-stream, in a place that will not collect suspended or settled solids. The other end of the tubing will be placed directly above the sample container to collect the appropriate amount of water. Each sample container will be placed on ice after the containers have been filled. After all samples have been collected, the COC form and the field log will be completed, and the samples will be delivered to the laboratory.

5.0 DIRECT MEASUREMENTS

Field measurements and observations will be made at each site after the appropriate amount of samples has been collected. Measurements of pH, temperature, dissolved oxygen, conductivity, and turbidity will be conducted using hand held monitoring devices that have been calibrated prior to the measurements. Flow will be monitored as outlined in Appendix C. Field observations will consist of stream odor, color, suspended materials, and other applicable information as deemed by field personnel. An example of a field monitoring log is presented in Appendix A. Measurements will be taken at approximately mid-stream when possible. All measurements and observations will be entered into a field log sheet for each site, and will be transferred to an electronic database.

6.0 FIELD PROTOCOL

Field teams will consist of one to two persons each, and will mobilize for sampling events when weather conditions are appropriate. Sampling will be completed in daylight hours. Before departing, the number and types of sample containers will be verified. The technician will mobilize to the site, and record general information on the field log sheet. After locating the proper sampling location, the appropriate number of samples and duplicates will be collected. After all samples have been collected, the COC form will be completed and direct field measurements will be collected and recorded on the field log. Field observations will also be recorded on the field log sheet. The technician will then proceed to the next designated sampling site. After all sampling sites have been completed, the samples will be delivered to the appropriate laboratory.

STANDARD OPERATING PROCEDURES FLOW MEASUREMENT

Due to the nature of surface water runoff, it is expected that all samples will be collected from flows that are less than 1.5 feet in depth. Flow measurements will be calculated using either a volumetric method or the float method, depending on site conditions.

VOLUMETRIC METHOD

If the surface runoff is free-falling, the volumetric method will be used. The entire flowing stream of water will be collected in a container of known volume, and the amount of time it takes the container to fill will be recorded with a stopwatch. This procedure will be repeated at least three times, and the times will be averaged to insure that the discharge is representative of actual site conditions. The estimated flow rate (Q) will be calculated by:

$$Q = \text{Volume of Container} / \text{Average Time to Fill Container}$$

FLOAT METHOD

If the flow is not able to be entirely collected in a container, a float and a stopwatch will be used. The float will consist of free-flowing debris in the body of water, or an object that is equivalent (plant matter, etc.). Both the width of the water body and the depth of the runoff will be measured with a tape measure. The average velocity of the flowing water will be measured by recording the time it takes the float to travel a set distance (ideally 10 feet) in at least three separate events, then averaging the time. All data will be recorded on the field log. The estimated flow rate (Q) will be calculated by:

$$Q = (f) \times (\text{Cross sectional area of stream}) \times (\text{Average Velocity})$$

*Note – f is the coefficient of friction to account for friction effects of the stream bottom. Depending on the bottom surface of the stream, the value generally ranges from 0.60-0.90. Pre-established coefficients will be used, depending on the surface (concrete, dirt, rocky, etc.).

In the event that surface flow is observed but no uniform channel exists, a flow channel will be constructed using weighted rubber tubing. The entire flowing stream of water will be diverted into the constructed flow channel and the flow will be calculated using the float method described above.