

WATER QUALITY MANAGEMENT PLAN
Revision 2.0

NURSERY GROWERS ASSOCIATION
LOS ANGELES COUNTY
IRRIGATED LANDS GROUP

July 8, 2009

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CWIL Order No. R4-2005-0080

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LIST OF COMMONLY USED ACRONYMS

ABC	ABC Laboratories
AMR	Annual Monitoring Report
BMPQ	Best Management Practice Questionnaire
CAC	County Agricultural Commissioners
CCRWQCB	Central Coast Regional Water Quality Control Board
COC	Chain of Custody; Constituent of Concern
CRG	CRG Marine Laboratories
CWIL	Conditional Waiver Irrigated Lands
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
DPR	Department of Pesticide Regulations
GPS	Global Positioning System
gal/acre	Gallons per Acre
IPM	Integrated Pest Management
LAILG	Los Angeles County Irrigated Lands Group
LARWQCB	Los Angeles Regional Water Quality Control Board
lb/acre	Pounds per Acre
MDL	Method Detection Limit
MRP	Method Reporting Limit
ng/l	Nanograms per Liter, parts per trillion
NGA	Nursery Growers Association
NOI	Notice of Intent
NTU	Nephelometric Turbidity Unit
NVILG	Noncommercial Vineyard Irrigated Lands Group
OC	Organochlorinated
OP	Organophosphorus
PBO	Piperonyl Butoxide
PGE	Pacific Gas and Electric
ppt	Parts per trillion, nanograms per liter
PUR	Pesticide Use Report
PW	PW Environmental
QA	Quality Assurance
QC	Quality Control
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
RLs	Reporting Limits
SCE	Southern California Edison
TDS	Total Dissolved Solids
TIE	Toxic Identification Evaluation
TSS	Total Suspended Solids
WQCP	Water Quality Control Plan
WQMP	Water Quality Management Plan

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WATER QUALITY MANAGEMENT PLAN
NURSERY GROWERS ASSOCIATION
LOS ANGELES COUNTY IRRIGATED LANDS GROUP

1.0 INTRODUCTION

The NGA is a non-profit association chartered in the late 1950s. The purpose of the NGA is to foster the exchange of information among California wholesale nursery growers, and to represent their best interests. The NGA developed the LAILG for compliance with the CWIL (Order No.R4-2005-0080). PW 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.

In the Los Angeles Region, irrigated crops are the dominant agricultural land use. Water quality impacts associated with agriculture can be primarily traced to discharges resulting from irrigation or storm water. These discharges typically contain pollutants that have been imported or introduced into the irrigation or storm water; 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 Region, the LARWQCB developed a CWIL as mandated by recent changes in state law and policy.

Los Angeles County covers 4,752 square miles (3,041,280 acres), and is bordered to the west by Ventura County, to the north by Kern County, to the east by San Bernardino County, to the southeast by Orange County, and to the south by the Pacific Ocean. The LAILG currently has 237 enrolled sites that comprise approximately 2,232 acres (Appendix A).

Los Angeles County is broken up into four major watersheds: the Dominguez Channel, Los Angeles River, San Gabriel River, and Santa Monica Bay. All four watersheds have impacted waterbodies that appear on the federal 303(d) list, and listed contaminants include constituents that could be related to agricultural uses. Agricultural uses are considered as potential or current contributors of nutrients, pesticides, and suspended solids to these impacted waterbodies.

On November 3, 2005 the LARWQCB adopted the CWIL within the Los Angeles Region (Order No. R4-2005-0080). The goal of this program is to protect and improve water quality, and to attain water quality objectives in the receiving water bodies. This program has been adopted in its current form for five years. As a condition of the CWIL program, dischargers are required to develop monitoring programs to assess the impacts of discharges from irrigated lands.

2.0 BACKGROUND

There are a total of 237 grower sites that are currently associated with the LAILG (Figure 1). A complete list of current group members is included in Appendix A. After communications with the LARWQCB on September 9, 2006, it was established that 16 sites would be representative sample sites for the LAILG based on their potential impacts to the surface waters of the Los Angeles Region. To the extent possible, sample sites were chosen to be representative of the group as a whole, based on various crop types, watering practices, fertilizer and pesticide use, best management practices, and site locations. Representative sampling sites were chosen so that data collected could be fairly extrapolated across the entire LAILG to depict runoff characteristics from the enrolled growers. Sites were also chosen based on ease of sampling access. Two of the original sampling locations are no longer operating growers: Valley Sod Farm (site #183) and Valley Crest Tree Company (site #182). LAILG chose two replacement sampling sites: Valley Sod Farm (#184) and Ultra Greens Nursery (#178). Both were in close vicinity and had similar operating conditions as the previous sites. In addition, LAILG added two additional sampling sites at vineyards due to the recent incorporation of the NVILG into the LAILG.

In order to minimize water use, the majority of the growers utilize either a drip irrigation or hand watering system, which produces very little to no dry season runoff. Some growers still use a sprinkler system in addition to or in replacement of hand watering and drip irrigation. Average water use ranges from approximately 4,000 gallons per month to 5,250,000 gallons per month at selected sampling sites. Fertilizer use varies at each site, ranging from approximately 1,200 pounds per year to 72,000 pounds per year. Pesticide uses and types also vary considerably. Not all sampling locations reported water use, pesticides types and amounts, and/or fertilizer use on their NOIs. A detailed description of each of the sampling sites and field monitoring results was previously presented in the MRP, dated January 31, 2007, and the AMRs, dated February 29, 2008, and February 27, 2009.

As reported in the AMRs, water quality benchmarks established in the CWIL were exceeded at sampling sites enrolled in the LAILG program. This WQMP is designed to do the following: identify the possible sources of water quality exceedances and evaluate ways to track and evaluate them in future monitoring events; estimate the concentration and load of wastes in discharges; identify and evaluate BMP practices that may reduce impacts to water quality; develop and implement a training and education program to facilitate BMP implementation at enrolled sites; set a timeline for the implementation of specific BMPs at sampling sites with known exceedances; determine priority areas within the LAILG group and set timelines for the implementation of BMPs in these areas; and to establish a plan to evaluate the effectiveness of BMP implementation.

3.0 SAMPLING EVENTS

Both rain totals and storm intensity were monitored throughout the duration of the program in order to evaluate when to initiate sampling events. The MRP stated that a rain total of 0.5 inches would be used as a trigger to initiate sampling activities; however, during field monitoring events and site reconnaissance, LAILG determined that rainfall intensity and duration was a better indicator for the successful sampling of most sites.

While visiting sites to collect storm water samples, often times the rain would stop for extended periods of time. Since the majority of growers only had enough runoff to collect a sample if it was still raining at the site at the time of sample collection, waiting at sites for rain to recommence was a common occurrence. Instantaneous flow rates of runoff water from sample sites were recorded where possible; however, this flow fluctuated greatly depending on the current intensity of rainfall. Thus, only approximate data on the amount of runoff flow coming from each site was able to be collected. Samples and field readings were only collected at the main discharge point for each site. If multiple discharge points were present, samples and field monitoring was conducted at the point with the highest volume amount of runoff flow. Sustained runoff at the sample sites was generally not encountered after the storm had passed.

Rainfall amounts, storm intensity, and storm patterns were monitored using www.accuweather.com, www.weather.com, www.wunderground.com, and <http://cdec.water.ca.gov/misc/RealPrecip.html>. Rainfall information from specific storm events has been kept on file, and is available upon request.

Tables from the AMR and additional analytical results and field monitoring data from 2008 are presented in Tables 1-7, and laboratory analytical results and COCs are included in Appendix B.

4.0 METHODOLOGY BEHIND SAMPLE SITE EVALUATION

In order to evaluate each sampling site, and consequently the LAILG as a collective whole, growers were grouped into various use categories based on their size, runoff types, irrigation rate in water used per acre per month, and fertilizer application rate per acre per year. These parameters were chosen due to their ease of access from reported values on each sites individual NOI, in order to be able to extrapolate any observed trend throughout the entire group to set priority areas for BMP implementation. PURs for each sampling site were also evaluated in depth, however this data is not available for all the sites enrolled in the program and thus can only be evaluated on a site-by-site basis. Each sampling site was divided into basic subgroups, and laboratory analytical results and field monitoring parameters collected thus far were compared to operational practices to evaluate if there was any correlation between data from runoff results and basic site use patterns.

Due to widely varied laboratory analytical results and field monitoring data both at individual sampling sites and across the sampling group as a whole, numerical values of exceedances above CWIL benchmarks were not evaluated. Instead, sites were evaluated from a qualitative standpoint, in regards to whether or not the site had an exceedance or elevated level in any of the following seven basic categories at any time during the monitoring program: nutrients, total dissolved solids, total suspended solids, chlorinated pesticides, organophosphate pesticides, pyrethroid pesticides, and toxicity. Nutrients could potentially be related to fertilizer use, total dissolved solids could potentially be related to fertilizer and pesticide use, total suspended solids are related to sediment runoff, and toxicity could be potentially related to all of the above.

In order to evaluate current BMPs at facilities that are enrolled as representative sampling sites, a questionnaire was developed and submitted to personnel at each sampling site. Answers from the questionnaire were then correlated to results and observations from monitoring, in order to help guide the initial BMPs to be implemented at the sampling sites. The questionnaire was designed to facilitate use throughout the whole group in order to track BMP utilization and implementation. An updated questionnaire was developed in order to overcome shortcomings realized during the submittal of the original BMPQ, and is included in Appendix C. The questionnaire will ultimately be presented to all growers enrolled in the LAILG, as outlined in Section 8.

Estimated loading rates at each sampling site were based on measurements and laboratory analytical samples collected in the field. Due to time constraints and the variability of runoff amounts with respect to storm intensity, duration, and runoff types (ie. sheet flow or channel flow) these loading rates only present a snapshot of what is occurring at the site at the exact time of sampling. It was not practical to observe each site for the duration of the storm to evaluate the exact amount of total runoff that occurred from each site. Field observations indicated that the velocity and cross sectional area of the runoff at each site was highly variable upon the intensity of the storm at the time of measurement. Due to this variability, calculations of total loads are not presented in this report, as they would not accurately depict each site. Data presented should be looked at in a qualitative manner, or as an estimate of quantitative values. It is also worth noting that samples are collected from runoff at only one point of each site, and many sites have more than one spot that overland flow leaves their property. An in depth analysis of the potential loading rates for each site does not appear feasible at this time.

PURs for each sampling site were received and evaluated by LAILG. Pesticides listed for each individual site were cross-referenced to the active ingredient using the MeisterPro Website, and compared to the list of laboratory analytical compounds analyzed as outlined in the QAPP for the group. Many applied pesticides had different trade names, but utilized the same active ingredient. The active ingredients used at each site were then correlated to laboratory analytical data collected during sampling events. Although pesticide use, amounts applied, and size of area treated for each site was presented in the PURs, the actual application point on each property was not specified. Pesticides were generally used on sections of each nursery, and were not applied across the whole site. As runoff was encountered that only stemmed from a portion of each

nursery, it is not possible to tell if pesticides were applied in that general area or exact spot. For this reason, the pesticide use pattern was evaluated as if pesticides were applied universally throughout the property, even though universal application was not generally utilized.

5.0 SUMMARY OF SAMPLING SITE EVALUATION

A general evaluation for sampling sites is presented below. As there is only a limited amount of data collected to date, summaries are not meant to represent trends seen during the program implementation. Summaries are what has been preliminarily observed, and represent what will be continued to be evaluated when additional data is collected. Site characteristics for the entire enrolled LAILG are presented on Table 8. A comparison of general operational practices and elevated levels of constituents at sampling sites is presented on Table 9. Table 10 presents the various groupings that sampling sites fell under. Graphs 1 and 2 present the lack of operational trends for various sized growers in regards to irrigation and fertilizer use reported on NOIs throughout the entire LAILG. Graph 3 presents the elevated levels of constituents of concern at sampling sites in relation to size for laboratory analytical results and field monitoring data collected during sampling events.

5.1 SIZE

The total size of each site was evaluated with respect to laboratory analytical results and field monitoring data to determine if there was any relation between size and CWIL exceedances seen during this program. The entire LAILG was broken into three basic size groups: less than 2.5 acres (small), 2.5 to less than 5.0 acres (medium), and 5.0 and greater acres (large). The cutoff points for the groups were chosen to break the entire LAILG into approximately equal sizes. Currently there are 73 growers enrolled in the small group, 83 growers enrolled in the medium group, and 81 growers enrolled in the large group. As the sampling sites were chosen to represent the group as a whole, this should make future comparisons of laboratory analytical results and field monitoring data to the rest of the LAILG enrolled members easier. Two sampling sites fell under the small grower group, six fell under the medium grower group, and eight fell under the large grower group.

In general, it appears that growers that utilize a larger amount of land for growing purposes tended to have more qualitative exceedances than smaller sites. Based on the evaluation of laboratory analytical and field monitoring data in the seven subgroups outlined in section 4.0, small growers had elevated levels averaged 2.5 times per sample (5 elevations; 2 samples), medium growers elevated levels averaged 2.7 times per sample (27 elevations; 10 samples), and large growers elevated levels averaged 3.3 times per sample (88 elevations; 27 samples).

5.2 FIELD PARAMETERS

Field measurements of estimated irrigation and storm water flow rates leaving individual sampling sites are presented on Table 11.

Instantaneous flow rates of runoff water during recorded irrigation and rain events varied greatly depending on individual site settings, storm intensity at the time of sampling, and the duration of the storm prior to sampling. Irrigation runoff was not consistently encountered in the group. This was anticipated from the beginning of the program, since it is not cost effective for growers to over water when utilizing municipal water. However irrigated runoff samples were collected from eight sites to date. Observed irrigated runoff rates ranged from approximately 0.017 to 62.2 gallons per minute. The duration of irrigated runoff time was not widely observed, but prolonged runoff was not encountered during site visits.

Storm water runoff was encountered at least once at all 16 sample sites. Storm water runoff rates ranged from approximately 0.07 to 100 gallons per minute, depending on the individual sites. The duration of storm water runoff time was not widely observed, but a number of sites could only be sampled if it was consistently raining and the ground had previously been saturated. Runoff rates also varied at individual sampling sites during rain events by as much as 970 percent (site #168).

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water from any of the sites sampled in the group. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Ten of the sixteen sampling sites had readings of TSS above 100 mg/L. Although field readings of turbidity and TSS were relatively high, the relatively low flows of runoff in comparison to the watershed as a whole do not appear to be great enough to potentially impact receiving waters after dilution in storm drains. However, a goal of reducing turbidity and TSS has been set for the group as part of the WQMP, as particulate matter can also carry constituents of concern off the sites.

5.3 IRRIGATION

Hand watering and drip systems were the most commonly used types of irrigation used by sampling sites. Irrigation use was converted to gallons used per acre for each site for comparison purposes. For evaluation, growers were broken into three general groups: low water use (<35,000 gal/acre/month), medium water use (35,000 – 70,000 gal/acre/month), and high water use (>70,000 gal/acre/month). A total of 163 growers reported numerical values for irrigation use on their NOIs. The cutoff points for the groups were chosen to break the entire LAILG into approximately equal sizes. There are 43 growers in the low water use group, 57 growers in the medium use group, and 63 growers in the high water use group; 74 growers did not report water use on their NOIs. As the sampling sites were chosen to represent the group as a whole, this should make future comparisons of laboratory analytical results and field monitoring data to the

rest of the LAILG enrolled members easier. Six sampling sites fell under the low water use group, three fell under the medium water use group, and five fell under the high water use group. Two sites utilize reclaimed water and information regarding the total volume of water used during irrigation was not available.

Irrigation intensity varied significantly between the sites, and a correlation between the general types of plants grown, site size, fertilizer use, site exceedances, and irrigation intensity was not readily apparent. To date, there is also no apparent correlation between individual site irrigation intensity and sampling site exceedances.

Irrigated runoff from sampling sites was more dependent on individual site topography than on irrigation intensity. Irrigated runoff was sampled at two of the low water use sites (33% of sites), one of the medium water use sites (33% of sites), three of the high water use sites (60% of sites), and both of the sites with unknown water use (100% of sites). However, in general, the larger sites, independent of actual irrigation intensity, tended to be more likely to have irrigated runoff during the dry season. No dry season irrigation runoff was collected from the small grower group, one site had irrigated runoff in the medium grower group (17% of sites), and seven sites had irrigated runoff in the large grower group (88% of sites). Large sites generally utilize more irrigation water to cover the extra acreage, but the corresponding irrigation intensity per acre at sites was not necessarily higher. Future trends of irrigated runoff at each individual sampling site and sites within these subgroups will be evaluated to ascertain if a correlation exists between reported irrigation use and runoff from the property.

5.4 PESTICIDES

Data on the physical properties and the environmental persistence of pesticides was referenced from the Exttoxnet Website.

The frequency of pesticide application and the number of pesticides used varied significantly between sites. The number of compounds reported on PURs as being used in the previous year at individual sampling sites ranged from 0 to 47. A total of 103 different compounds were reported as being used throughout all the sampling sites (Table 12). The majority of compounds that are reported on PURs were not included in the laboratory analytical program outlined in the CWIL. Of the 103 different applied compounds, 10 were included in the laboratory analytical program: Deltamethrin, Diazinon, Cyfluthrin, Chlorpyrifos, Malathion, Fluvalinate, Permethrin, λ -Cyhalothrin, Bifenthrin, and Danitol. All 10 of these pesticides were reported in at least one sample collected from the group. Legacy Pesticides such as DDT and derivatives, Chlordane and derivatives, and Aldrin were detected in runoff samples. The EPA has banned all these pesticides from use. In addition, Dicofol, Dichlorvos, Dimethoate, Cypermethrin, and Prallethrin were all detected in trace amounts in runoff samples. As these compounds were not reported as being used on PURs and were detected at low levels, they are most likely from past applications.

OP pesticides of concern detected in runoff samples were Chlorpyrifos, Diazinon, and Malathion. According to PURs, Chlorpyrifos was applied at three sites, Diazinon was applied at one site, and Malathion was applied at seven sites. Chlorpyrifos and Diazinon were detected above CWIL limits at two sites, and concentrations of Malathion were detected at four sites.

Both Diazinon and Chlorpyrifos have a low to medium solubility in water, and have average half-lives of 14 to 28 days and 60 to 120 days in soil, respectively. Malathion is soluble in water, and has an average half-life of 1 to 25 days in soil and less than a week in water. All three compounds have been reported to have a low bioaccumulation potential, but exhibit a high toxicity to aquatic organisms. In general these compounds have a higher runoff potential than Pyrethroid pesticides, as they can be transported in water easier due to their high solubility and lower absorption coefficient to soil. Evaluation of PURs for sites #4 and #19 (Table 13) indicate there might be a correlation between application times and laboratory analytical results for Chlorpyrifos and Malathion. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Pyrethroid pesticides detected in runoff samples were Deltamethrin, Cyfluthrin, Fluvalinate, Permethrin, λ -Cyhalothrin, Bifenthrin, and Danitol. In addition, Cypermethrin and Prallethrin were detected in trace amounts once each; these pesticides were not reported as being used on any PURs. According to PURs, Deltamethrin was applied at three sites, Cyfluthrin was applied at six sites, Fluvalinate was applied at four sites, Permethrin was applied at two sites, λ -Cyhalothrin was applied at three sites, Bifenthrin was applied at six sites, and Danitol was applied at four sites. Deltamethrin was detected at two sites, Cyfluthrin was detected above RLs at seven sites, Fluvalinate was detected at five sites, Permethrin was detected at four sites, λ -Cyhalothrin was detected at three sites, Bifenthrin was detected above RLs at ten sites, and Danitol was detected at seven sites. To date, numerical guidelines for the majority of Pyrethroid pesticides have not been established, with the exception of Permethrin. The US EPA has set an Aquatic Life benchmark for Permethrin at 19.5 ng/L. This benchmark was exceeded at four sites.

Pyrethroid pesticides as a group all have very low to no solubility in water, and have low half-lives. The majority of Pyrethroid pesticides have half-lives in the order of days to weeks, although under certain conditions may have half-lives up to eight months. Pyrethroids are not readily soluble in water, and have a high adsorption coefficient to soils. All compounds have been reported to have a low bioaccumulation potential, but exhibit high to very high toxicity to aquatic organisms. As Pyrethroid pesticides have not been shown to have a definite chronic effect on mammals and are relatively non persistent in the environment, their high acute toxicity to aquatic organisms is the largest concern as they have the potential to adversely affect aquatic ecosystems. Evaluations of PURs for sites have not indicated that there is a correlation between application times and laboratory analytical results for Pyrethroid pesticides (Table 14). However, additional data needs to be collected in order to evaluate if such a relationship exists.

Several Pyrethroid pesticides have been detected at relatively high levels at sites that did not report them as being used on PURs. Currently the source of these pesticides are unknown, and additional evaluation will be conducted over the course of the program to evaluate if the compounds are associated with a source other than historical pesticide application. It is possible that the transportation of plants between nurseries is also contributing to this phenomenon.

Exceedances of banned Legacy Pesticides detected at sites originated from previous land uses. These compounds have elevated half-lives; DDT has been shown to have a half-life of between 2 to 15 years. These compounds have a very low solubility in water, and a high adsorption coefficient to soils. These characteristics indicate that exceedances due to Legacy Pesticides stem from soil particles with the compounds attached to them leaving the site. As such, sites that historically used these pesticides and had relatively high reported values of TSS and turbidity from site erosion were anticipated to have the largest potential to transport these compounds off site. Laboratory analytical results for OC pesticides were compared to values of turbidity and TSS in concurrent samples (Table 15) to evaluate if there was a preliminary correlation between the two reported values. To date there have not been a sufficient amount of samples collected from sites with Legacy Pesticide exceedances to see a significant correlation between the sets of data. This trend will be tracked in future sampling events. A goal of reducing turbidity and TSS has been set for the group as part of the WQMP.

Approximated instantaneous loading rates in $\mu\text{g}/\text{min}$ for pesticides detected at sites is presented on Table 16. These loading rates were only presented for current and future comparison purposes. There are too many uncontrollable variables in the program, such as the nature of runoff characteristics, individual site settings, and storm irregularity to evaluate potential loading rates with any degree of certainty.

PURs from individual sampling sites were obtained for the evaluation of possible correlation between the use reports and individual site exceedances. To date this data has not shown any significant trends at each sampling site. PURs for every site enrolled within the LAILG are not readily available, making any extrapolation of results and BMP effectiveness from individual sampling sites to the entire group as a whole difficult. Pesticide use varied month to month within each site, and only a small fraction of compounds used at sites are included in the laboratory analytical program. PURs are also limiting in the fact that while they report the amount of pesticide utilized each month, they do not present the areas of crops that growers apply the pesticides, making individual site evaluation difficult. Due to these obstacles and the number of variables to consider when evaluating pesticide use, pesticide application data from PURs does not appear to be feasible to evaluate throughout the group as a whole. Instead a general plan for the inclusion of pesticide BMPs, regardless of site use patterns, throughout the group appears to be more practicable.

5.5 FERTILIZER APPLICATION

Fertilizer was applied as topdress at 14 of the sites, in irrigation water at 7 of the sites, and as slow release in potting soil at 11 of the sites. Most sites used more than one type of application procedure. The percentage of each type of fertilizer application at individual sites was not widely reported on NOIs, and could not be evaluated. Fertilizer use was converted to dry pounds used per acre per year for each site for comparison purposes. For future evaluation, the LAILG was broken into three general groups: low fertilizer use (<400 lb/acre/year), medium fertilizer use (400 – 1,000 lb/acre/year), and high fertilizer use (>1,000 lb/acre/year). A total of 203 growers reported numerical values for fertilizer use on their NOIs. Cutoff points for the groups were chosen to break the entire LAILG into approximately equal sizes. There are 68 growers in the low fertilizer use group, 68 growers in the medium fertilizer use group, and 67 growers in the high fertilizer use group; 34 growers did not report fertilizer use on their NOIs. As the sampling sites were chosen to represent the group as a whole, this should make future comparisons of laboratory analytical results and field-monitoring data to the rest of the LAILG enrolled members easier. Two sampling sites fell under the low fertilizer use group, six fell under the medium fertilizer use group, and eight fell under the high fertilizer use group.

Fertilizer use varied significantly between the sites, and a correlation between the general types of plants grown, site size, irrigation intensity, site exceedances and fertilizer use was not readily apparent. To date, there is no apparent correlation between individual site fertilizer use and sampling site exceedances for nutrients.

CWIL exceedances stemming from fertilizer use at sampling sites was more dependent on individual site topography than on fertilization intensity. Fertilizer based exceedances (Nitrogen and Sulfate) were reported at one of the low fertilizer use sites (50% of sites), three of the medium fertilizer use sites (50% of sites), and four of the high fertilizer use sites (50% of sites). However, in general, the larger sites, independent of the intensity of fertilizer use, tended to be more likely to have fertilizer based CWIL exceedances during the wet and dry season. These sites utilize more fertilizer due to their larger size, but the corresponding fertilizer use per acre was not necessarily higher. No fertilizer-based exceedances were reported in the small grower group, one site had fertilizer based exceedances in the medium grower group (17% of sites), and seven sites had fertilizer based exceedances in the large grower group (88% of sites). Future trends of fertilizer application amounts and observed exceedances at each individual site and sites within these subgroups will be evaluated to determine if a solid correlation exists between reported fertilizer use and exceedance in runoff from the property.

5.6 TOXICITY

TIE testing that was performed for runoff at sampling sites revealed that non-polar organics were the major source of toxicity. Non-polar organics are a class of chemical compounds that include a large number of constituents that are not covered under the laboratory testing program outlined in the CWIL, in addition to the OP, OC, and Pyrethroid pesticides. PBO addition did not reduce toxicity in samples, indicating that OP compounds did not contribute to the toxicity. However, the addition of PBO has been shown to increase the toxicity of Pyrethroid compounds (Wheeler, et. al.), which could alter results. LAILG is currently working with ABC to utilize the differential response to PBO treatment as a method of evaluating for Pyrethroid toxicity during future TIE testing procedures. Currently the cause of non-polar organic toxicity at sites is unknown, although Pyrethroid pesticides are suspected due to their documented high toxicity to aquatic organisms.

5.7 CONCLUSION

Based on data readily available on NOIs submitted by each member in the LAILG, namely site size, irrigation practices, fertilizer practices, and runoff characteristics, it appears that site size is the most influential factor in determining the potential for impacts from grower activities on waters in Los Angeles County. As such, growers were broken into four general groups for WQMP implementation at sites (in order from first to last priority): growers enrolled as sampling sites, growers with sites over five acres, growers with sites between 2.5 and 5 acres, and growers with sites less than 2.5 acres.

6.0 BMP IMPLEMENTATION GUIDELINES FOR GROUPS

6.1 ALL SITES

A number of BMPs were identified in guidance documents are both inexpensive and simple to implement at growing sites. These BMPs mainly revolve around simple housekeeping, operational practices, and proper employee training. Due to their ease of use for implementation, the following BMPs have been suggested to be implemented at all growing sites enrolled in the LAILG:

- Irrigation Management:
 - 1) Place plant types and pot sizes with similar watering needs in same watering zones.
 - 2) Regularly inspect your irrigation system for leaks, clogs, wear and tear, or other conditions that may affect performance.
 - 3) Train personnel to manage spray stakes and drip system to insure all operational ones are located inside pots.
 - 4) Manage sprinkler systems to insure minimum amount of overspray.
 - 5) Train all employees that apply irrigation water to maintain system properly.

- Pest Management:
 - 1) Avoid application of pesticides prior to forecasted rain events.
 - 2) Avoid standing water wherever possible.
 - 3) Train all employees to clean up spills immediately based on predetermine protocols or spill management plan.
 - 4) Train all employees on the basic principles of pesticide use and spill control.
- Nutrient Management:
 - 1) Avoid application of fertilizer prior to forecasted rain events.
 - 2) Train all employees to clean up spills immediately based on predetermine protocols or spill management plan.
- Erosion and Runoff Management:
 - 1) Keep soil mixing and composting areas separate from water conveyance systems.
 - 2) Inform all employees as to the location of all drainage conduits, where they drain to, and the location of stormwater and sewer system drains.
 - 3) Train all employees on the basic principles of stormwater runoff management and current regulations (including the CWIL program).
- Non-Production Areas:
 - 1) Maintain all vehicles to prevent leaks.
 - 2) Keep wash water from vehicle cleaning on property and prevent it from entering storm drains or sewer system.
 - 3) Maintain maintenance and storage areas to prevent any buildup of contaminants.
 - 4) Insure that maintenance and storage areas are covered and protected from storm events.
 - 5) Train all employees to clean up spills immediately and properly from vehicles.
 - 6) Insure that all storage tanks on site utilize a secondary containment system.
 - 7) Storage tanks should be designed and maintained to minimize spills and leaks, and to prevent run-on during storm event.
 - 8) Maintain site and keep it free from trash and debris.
 - 9) Keep outdoor garbage containers covered.
 - 10) All outhouses need to be periodically cleaned and maintained.
 - 11) Properly dispose of hazardous waste and oil.
 - 12) Train all employees to clean up prior to predicted rain events.
 - 13) Dispose of debris/dust from sweeping off truck beds to avoid contamination.
 - 14) Paved areas and spills/debris need to be cleaned up by sweeping to reduce the amount of sediment runoff.

6.2 SAMPLING SITES

Sampling sites have already begun BMP implementation. Each individual grower selected initial BMPs at their sampling site based on the ability to be immediately implemented at each site. Following the first round of BMP implementation, LAILG will work with the individual growers at sampling sites to ensure that additional BMPs, if required, are selected based on exceedances reported during sampling events at sites. Specific BMPs that are being implemented immediately and outlines for future BMP implementation are presented on a site-by-site basis in Section 10.

During the life of this program, LAILG will evaluate laboratory analytical results, field monitoring results, and site observations to determine if applied BMPs are effectively improving water quality at each sampling site. If monitoring data suggests that certain BMPs, or combinations of BMPs, are either efficient or deficient at improving water quality at the sites, LAILG will communicate these findings to the growers to help guide BMP implementation across the group as a whole. LAILG will work closely with the sampling sites to continue to design and implement BMPs until water quality benchmarks are attained.

6.3 LARGE SITES

In addition to the BMPs being implemented at all sites enrolled in the program, larger growers will be required to implement or improve at least, but not limited to, one BMP listed in each BMPQ subcategory; specifically, one irrigation BMP, one erosion and runoff management BMP, one fertilizer BMP, and one pesticide BMP. The application of one additional erosion and runoff management BMP will be allowed in lieu of one of the other categories, as sediment and runoff control should have the greatest impact on water quality. Consideration of current BMP practices will also be taken into account when determining if a larger site is complying with the additional BMP requirements.

Larger sites that reported irrigation discharge on their NOIs will also be required to implement one additional BMP in either the irrigation or erosion and runoff subcategory, depending on the cause of irrigated discharge at the site. Specifically, if irrigated discharge is due to sloped land at the site an additional runoff and erosion BMP will be implemented, and if irrigation discharge is due to watering at the site an additional irrigation BMP will be implemented.

6.4 MEDIUM SITES

In addition to the BMPs being implemented at all sites enrolled in the program, medium sized growers will be required to implement or improve at least, but not limited to, one BMP listed in the erosion and runoff management or irrigation management category, and one BMP listed in the fertilizer or pesticide management category. Consideration of current BMP practices will also be taken into account when determining if a larger site is complying with the additional BMP requirements.

Medium sites that reported irrigation discharge on their NOIs will also be required to implement one additional BMP in either the irrigation or erosion and runoff subsection, depending on the cause of irrigated discharge at the site. Specifically, if irrigated discharge is due to sloped land at the site an additional runoff and erosion BMP will be implemented, and if irrigation discharge is due to watering at the site an additional irrigation BMP will be implemented.

6.5 SMALL SITES

In addition to the BMPs being implemented at all sites enrolled in the program, small sized growers will be required to implement or improve at least, but not limited to, one BMP listed in any of the four BMP categories. Small sites that reported irrigation discharge on their NOIs will also be required to implement one additional BMP in either the irrigation or erosion and runoff subsection, depending on the cause of irrigated discharge at the site. Specifically, if irrigated discharge is due to sloped land at the site an additional runoff and erosion BMP will be implemented, and if irrigation discharge is due to watering at the site an additional irrigation BMP will be implemented.

6.6 SITE SPECIFIC CONSIDERATIONS

Due to geographical, topographical, and operational differences between growers enrolled in the program, individual growers will be choosing which of the BMPs within each subgroup they will be implementing, based on each of their individual settings. General guidelines for which BMPs growers should initiate based on various site situations will be presented during the seminars outlined in Section 8 in order to assist growers with choosing BMPs at their sites. Growers will be required to provide a written description of the activities they plan to perform and an outline on how they believe it will improve water quality at their site. BMPs that have proven to be the most effective at sampling sites will be communicated to the LAILG throughout the program in order to help guide BMP implementation as additional BMP data is collected.

6.7 RESTRICTIONS ON SITES UNDER A UTILITY EASEMENT

Currently approximately 75 percent of the sites enrolled in the LAILG lease their property under a utility easement. The majority of these easements are for properties that are operated under power lines owned by SCE. All structural BMPs need prior approval by SCE, and the following limitations are set on SCE owned land:

- Composting is not allowed.
- Fertilizer storage tanks are not allowed.
- Grade changes on the property are not allowed.
- Water collection and storage areas are not allowed.
- Water treatment on site is not allowed.
- Storage of flammable liquids or hazardous materials is not allowed.

These limitations present an obstruction for growers trying to reduce potential impacts from nursery practices on SCE owned land. Although BMP practices are limited on these lands, there are opportunities for BMP implementation. Growers who operate on SCE owned lands will be provided with a copy of *Best Management Practices: A Water Quality Field Guide for Growers, Southern California Edition*, and will be expected to adhere to guidelines set forth in this document.

7.0 WQMP IMPLEMENTATION

As outlined in Section 5 of this report, it appears that site size is the most significant factor in the potential for a grower to release pollutants to water bodies of the State. A Gantt chart outlining estimated project timelines is presented on Table 17.

7.1 SAMPLING SITES

Growers that are enrolled as sampling sites will be the first to initiate BMP implementation. Sampling sites have begun to initiate additional BMPs as of January 1, 2009; individual BMPs being implemented are listed in Section 11 on a site by site basis. Future laboratory analytical and field monitoring results will be evaluated on an individual basis in conjunction with newly implemented BMPs to determine if they are effective in reducing or eliminating water quality issues with each site. If implemented BMPs are not improving water quality, LAILG will work with individual growers to develop and implement additional BMPs, or to improve existing BMPs. Data from the evaluation BMP effectiveness at sampling sites will be communicated to growers enrolled in the LAILG in order to focus implementation towards BMPs that have proven to be the most effective at reducing water quality impacts. BMPs that have been implemented will be documented in future AMRs for the group.

7.2 GROWERS OVER FIVE ACRES

Since sites over five acres have had the most water quality issues in sampling sites, implementation of BMPs at these sites has been given the first priority throughout the entire LAILG.

Growers with sites over five acres will be attending the seminar (Section 8) by October 15, 2009. Larger growers appear to have the most widespread water quality issues (Table 9). As such, the seminar will not be directed at one aspect of growing operations or BMP implementations. BMPs to be implemented will be chosen at the seminar date. Guidelines for the implementation of specific BMPs at sites that fall in this category are presented in Section 6 and Section 10.

7.3 GROWERS FROM 2.5 TO FIVE ACRES

Growers with sites from 2.5 to 5 five acres will be attending the seminar (Section 8) by January 31, 2010. Medium sized growers appear to have water quality issues most likely associated with sediment runoff and pesticide application (Table 9). As such, the seminar will be focused at BMPs in these two general categories, although all types of BMPs will be covered. BMPs to be implemented will be chosen at the seminar date. Guidelines for the implementation of specific BMPs at sites that fall in this category are presented in Section 6 and Section 10.

7.3 GROWERS UNDER 2.5 ACRES

Growers with sites under 2.5 acres will be attending the seminar (Section 8) by May 31, 2010. Smaller sized growers appear to have water quality issues most likely associated with sediment runoff and pesticide application (Table 9). As such, the seminar will be directed at BMPs in these two general categories, although all types of BMPs will be covered. BMPs to be implemented will be chosen at the seminar date. Guidelines for the implementation of specific BMPs at sites that fall in this category are presented in Section 6 and Section 10.

8.0 BMP EDUCATION AND TRAINING

In order to properly communicate applicable BMPs available to growers, grower's individual responsibilities to be in compliance with the CWIL program, and ensure that growers receive education credits required for the CWIL program, the LAILG is developing a series of workshops to present available resources and information to individual growers. The seminars will focus on the following: an explanation of the CWIL program and its implications to individual growers; the distribution of guidance documents regarding the program, individual site mapping, and possible BMPs; presentations outlining BMP practices that are available for implementation; a small group workshop to identify individual growers current practices and possible areas for BMP implementation, including the handout and completion of the BMPQ; a hands-on workshop or tour of a nursery to present BMP implementation at actual nurseries in the field; and a final small group workshop to have growers sign off on BMPs that they will be implementing at their site, including additional training to be conducted at each facility. NOIs will also be reevaluated to insure that they reflect current operations at the site.

8.1 CWIL PROGRAM OUTLINE

The seminar will begin by explaining the CWIL program, its impact to growers in the region, and steps LAILG has been undertaking to maintain compliance with the CWIL. It will also outline findings from the program, including areas that will need to be addressed throughout the group.

8.2 PROGRAM HANDOUTS

8.2.1 BMPQ

In order to track current and planned BMP practices across the entire enrolled group, LAILG developed a BMPQ that will be presented to members of the LAILG during seminars (Appendix C). A Spanish version of the checklist will also be made available. The BMPQ was developed using recommendations outlined in: *Management Practice Checklist Update Summary Report*, *CCRWQCB*, *Water Quality Control Plan Los Angeles*, and *Best Management Practices, SCE*. In general the BMPQ was developed to be short and simple enough to encourage growers to respond encouragingly.

The BMPQ will be distributed to growers during their training and education seminar. A portion of the seminar will be dedicated to assisting the growers with evaluating their growing areas and practices, and helping to explain the contents of the BMPQ and its application to their individual situations. Growers enrolled in the seminar will be broken into smaller groups, and a proctor will be assigned to each group to assist them in filling out the questionnaire and to answer questions regarding BMPs that are applicable to each question. The completed BMPQ will be collected at the end of the seminar for each individual grower.

8.2.2 Additional Information

LAILG will develop guidance documents to distribute to members enrolled in each seminar. The handouts will include, at a minimum: a site map, to be filled out by attendees, to familiarize growers with runoff characteristics and potential sources of pollution at their sites; explanations of specific BMPs and how they relate to growing operations and the BMPQ; a general outline on the CWIL and required compliance activities for their site; visual aids; a “tailgate” type training program for them to implement with employees in charge of nursery operations at their facility; signs to be posted at strategic points throughout the nursery, and a list of resources where growers can find further information. Elements of the handouts will be addressed during the small group workshop portions of the seminar.

8.3 PRESENTATIONS

Speakers will be selected to give presentations on water use, pesticide application, fertilizer use, and general grower practices. Presentations will be centered around various BMPs, their importance, and their implementation. Efforts will be made to keep subject matter in presentations applicable to the general growing community. Representatives from the professional community will present this portion of the seminar.

8.4 TRAINING

Each seminar will be conducted at a LAILG member's property. Properties will be chosen that have examples of BMPs already established. After presentations, members will be taken on a tour led by a member of the LAILG, to give first hand examples of BMPs and their use on the property. Hands on training on the implementation of simple BMPs will be provided.

8.5 WORKSHOPS

A portion of the seminar will be devoted to splitting attendees/participants into smaller groups in order to help with individual site evaluations. LAILG will attempt to assemble small groups that have similar operating practices. Members who operate facilities that are dissimilar to nurseries (ie. vineyards, row crops) will be placed into their own groups in order to differentiate BMPs for implementation. However, the majority of BMPs outlined in a variety of papers are applicable to all types of growers.

Representatives of the LAILG, PW Environmental, and the LARWQCB will be available to lead each group and assist with the following: completing their site plans, determining BMPs to be implemented at their site, answering questions on their BMPQ, and to provide general guidance. As part of the workshop, growers will be asked to choose the BMPs that they will be implementing on their property to comply with the WQMP. The idea of "tailgate" training sessions, to be conducted with field employees at each nursery, will be stressed, in order to disseminate information learned at the seminar to personnel that will be directly involved with BMP implementation.

Site runoff conditions reported on individual NOIs, (ie. reported stormwater discharge, irrigation and stormwater discharge, and no discharge) was not always indicative of what has been observed in the field. For this reason, during the workshop LAILG members will be given an opportunity to revise their original NOIs with a LAILG representative there to help answer any questions. Revised NOIs will be forwarded to the LARWQCB. Education credits will not be awarded by LAILG until the "tail gate" meeting sign-in sheets have been completed and the BMPs have been implemented.

9.0 BMP TRACKING

9.1 SPECIFIC BMPS

In order to evaluate the general effectiveness of BMPs being implemented at growers enrolled in the program, LAILG will examine individual BMPs being used at sites where samples are being collected. A preliminary list of implemented BMPs has already been compiled for growers enrolled as sampling sites. The remainder of growers enrolled in the LAILG will be submitting lists of BMPs to be implemented at the required seminar (Section 8), and will be verifying their implementation at a later date. A running list of BMPs being implemented throughout the group will be maintained on file by the LAILG.

Continued field monitoring results and laboratory analytical data from each sampling site will be compared to the listed BMPs in order to evaluate if individual BMPs, or groups of BMPs, are more effective at alleviating water quality issues associated with the group. BMP uses will also be evaluated in subsets of the sampling sites to evaluate their effectiveness in relation to different operational practices. A lack of runoff will also be considered as effective uses of BMPs at a site. Based on findings, LAILG will communicate the BMPs that are most effective to members, and take steps to prioritize the implementation of these BMPs during the life of the program.

9.2 GENERALIZED BMPS/BMPQ

The BMPQ was developed to track generalities for the current use of BMPs at sites, and also the types of growers that are implementing BMPs. Due to discrepancies and difficulties found in the first version of the BMPQ submitted solely to the sampling sites, a new BMPQ was developed for submittal to the group as a whole (Appendix D). The revised BMPQ will be presented to members of the LAILG during their respective workshop seminar. Grower response from the workshop seminars will be used to further refine the BMPQ, if deemed necessary. At the end of the current program, the BMPQ will be resubmitted to members of the LAILG. Results from the “before and after” BMPQ will be used to statistically evaluate BMP implementation and the performance of this WQMP throughout the program. Data will be broken into percentages of responding growers, types of growers, represented acreage, and percentages of represented acreage.

This statistical analysis will allow a way to track BMP implementation in different geographical locations, types, sizes, and operational practices of growers. WQMP and BMP data collected during the program will be reported to the LARWQCB as part of the final AMR and/or final WQMP at the end of the program. Results will be reported in a format similar to the Central Coast Regional Water Quality Control Board *Management Practice Checklist Update Summary Report*, dated June 2007.

9.3 LAILG REGULATION

Members of the LAILG will be deciding which BMPs are to be implemented on their property during the seminar outlined in Section 8. Members will not receive education credit for attending the seminar until LAILG receives documented proof that BMPs have been implemented at the various properties. Documentation shall consist of photographs (if available) and a signed affirmation that BMPs have been implemented. Representatives of the LAILG will also be conducting random visits to growers to verify that BMPs have been implemented. LAILG anticipates that random site visits will occur at approximately ten percent of the sites.

If a member of the LAILG does not participate in the implementation of this WQMP, the punishment for the grower will include removal from the LAILG. The LARWQCB will be notified of all non-responsive members.

10.0 BEST MANAGEMENT PRACTICES

BMP practices were broken into five general categories: irrigation management, nutrient management, pest management, erosion and runoff management, and non-production area management

10.1 IRRIGATION MANAGEMENT

Irrigation management is essential to reduce the amount of applied water during growing operations. Many growers apply more water than necessary for plant growth in order to assure plants are not water stressed. Inefficient irrigation systems can also compound the problem, as additional water is necessary to compensate for the lack of uniform water distribution. This excess water often generates runoff water that leaves the property. Irrigated runoff carries excess nutrients from plant leaching, dissolved pesticides, and excess sediment from erosion (which also carries non-soluble pesticides), all of which have the potential to end up in storm drains, and eventually surface waters.

Increasing irrigation efficiency at sites has multiple benefits for growers. Minimizing irrigation by matching watering habits to known plant requirements reduces the up front cost associated with purchasing water, and helps insure that applied nutrients and pesticides remain in the soil. Excess leaching of water through soil growing mediums removes nutrients that could be utilized by plants, which in turn increases the amount of fertilizer that needs to be applied for plant health. Proper management of irrigation practices and systems has the potential to reduce contaminants from leaving the site, may completely eliminate irrigated runoff from growers entirely, and in turn reduce operational costs associated with water and fertilizer use.

Five basic management goals were identified in Management Practices to Protect Water Quality that growers can implement to limit runoff and plant leaching. The ten practices listed on the BMPQ were developed to fall within one of the five basic management goals. The management goals, and corresponding management practices on the BMPQ, are as follows:

- 1) Design or retrofit your irrigation system for improved irrigation uniformity and efficiency to reduce runoff and leaching. Relates to practices 1, 2, and 3 on the BMPQ.
- 2) Regularly maintain your irrigation system so that it continues to operate efficiently. Relates to practices 6 and 7 on the BMPQ.
- 3) Regularly manage crops, crop areas, and irrigation systems to avoid applying water to non-cropped areas or applying irrigation when not needed. Relates to practices 4, 5, and 8 on the BMPQ.
- 4) Use appropriate irrigation rates and scheduling. Relates to practice 9 on the BMPQ.
- 5) Provide appropriate training for personnel involved in irrigating in a language that personnel clearly understand, and maintain records documenting training. Relates to practice 10 on the BMPQ.

10.2 NUTRIENT MANAGEMENT

Fertilizer application by growers is often intensive due to the generally high nitrogen demand required by ornamental plants, especially when turnover ratios of stock are high. While fertilizers are essential to stock production, inefficient fertilizer application can be a significant source of excess nitrogen and phosphorous in runoff water. Due to the elevated use of fertilizer in nursery crops, excess nitrogen is often lost to leaching. Nitrogen lost due to soil leaching has been reported to be as high as 50 percent of the total nitrogen applied. Nitrogen that is lost to irrigation leaching ends up in soil beneath the potted plants, where it may be eventually transported off site in irrigated runoff or during storm events. Providing the proper quantities of nutrients at the proper time, and reducing fertilizer leaching during irrigation events can help to alleviate this potential or existing issue.

Four basic management goals were identified in Management Practices to Protect Water Quality that growers can implement to limit runoff and plant leaching. The fifteen practices listed on the BMPQ were developed to fall within one of the four basic management goals. The management goals, and corresponding management practices on the BMPQ, are as follows:

- 1) Evaluate irrigation water, soils, growing media, and plant tissue to optimize plant growth and avoid over-fertilization. Relates to practices 1 through 5 on the BMPQ.
- 2) Conduct efficient fertilizer and leaching practices, including calibrating fertilizer injectors, utilizing controlled release fertilizers, and using carefully managed leaching programs. Relates to practices 6 through 11 on the BMPQ.
- 3) Avoid fertilizer material spills during all phases of transport, storage, and application. Clean up all spills immediately. Relates to practices 12 and 13 on the BMPQ.

- 4) Provide organized training sessions for personnel handling fertilizers in a language that personnel clearly understand, and maintain records documenting training. Relates to practice 14 and 15 on the BMPQ.

10.3 PEST MANAGEMENT

Pesticide use on nursery crops is often times more intensive than on other agricultural crops, as they are valued based on their visual appearance. Quarantine restrictions are also put in place to mitigate the potential for exotic pests, and these can mandate the use of potentially harmful pesticides that would not normally be used at the nursery. Compounding these issues is that many major pests attacking ornamental crops are resistant or develop resistance to one or more pesticides, causing an ever changing and growing cycle of pesticide use. Excessive pesticide use, when paired with an intensive irrigation cycle, significantly increases the likelihood of pesticides contaminating surface waters in the region. Many commonly used pesticides are known to have high toxicities to aquatic organisms, and can adversely impact aquatic ecosystems.

Nine basic management goals were identified in Management Practices to Protect Water Quality that growers can implement to limit pesticide use and decrease the likelihood of water quality related pesticide issues. The fifteen practices listed on the BMPQ were developed to fall within one of the nine basic management goals. The management goals, and corresponding management practices on the BMPQ, are as follows:

- 1) Establish an IPM program to reduce pesticide use. Relates to practices 1, 2, and 3 on the BMPQ.
- 2) Apply pesticides in a safe manner to reduce pesticide loads and potential runoff. This includes applying pesticides according to the label, following environmental hazard instructions, and checking equipment for leaks and malfunctions. Relates to practice 4 and 12 on the BMPQ.
- 3) Where feasible and appropriate, use non-chemical control tactics to reduce overall pesticide use. Relates to practices 5 and 6 on the BMPQ.
- 4) When chemical pest control is necessary, select reduced-risk pesticides to prevent contamination of ground or surface water with toxic chemicals. Relates to practices 7 and 8 on the BMPQ.
- 5) Use good sanitation and other preventative control techniques to avoid pest problems, and maintain a healthy production environment. Relates to practices 9, 10, and 11 on the BMPQ.
- 6) Avoid pesticide spills and leakage during all phases of transport, storage, and application. Relates to practices 13 and 14 on the BMPQ.
- 7) In addition to pesticides, ensure that other agriculture chemicals and household cleaning and disinfectant products potentially toxic to the environment do not contribute to runoff.

- 8) Ensure that runoff and sediment containing pesticide and other agricultural chemical residues remain on the nursery property and do not move offsite in water or wind. Relates to various practices in all aspects of the BMPQ.
- 9) Provide organized training sessions for personnel handling pesticides in a language that personnel clearly understand, and maintain records documenting training. Relates to practices 2 and 15 on the BMPQ.

10.4 EROSION AND RUNOFF MANAGEMENT

Ideally the goal for all growers should be to allow no irrigation water or sediment from storm water erosion to leave the site. While this may not be practical depending on the growers setting, careful evaluation of each site setting can yield significant reductions in water and sediment runoff. Rain or irrigation water loosens soil, and when the saturation point is reached, water begins to openly flow. This flow of excess water can carry enough energy to dislodge soil, which ends up as sediment in the runoff. Excess sediment contributes to the clogging of pipes and ditches, disrupts aquatic life, and can carry nutrients, pesticides, and other pollutants off grower sites.

Growers that generate small amounts of runoff and sediment can often utilize less capital-intensive solutions to control erosion and runoff management, such as barrier technologies, redirecting runoff channels, and using polyacrylimides or groundcover to reduce sediment load. Larger growers that generate a substantial amount of runoff many times must consider larger scale operations, such as the capture and reuse of irrigation and storm water runoff. In general, applying proper BMPs to irrigation, fertilizer, and pesticide use reduces the amount of runoff that needs to be managed and the severity of possible runoff and sediment related impacts to waterbodies.

Eight basic management goals were identified in *Management Practices to Protect Water Quality* that growers can implement to limit erosion and runoff from leaving their property. The eleven practices listed on the BMPQ were developed to fall within one of the eight basic management goals. The management goals, and corresponding management practices on the BMPQ, are as follows:

- 1) Evaluate water quality of irrigation and storm runoff to comply with water regulations and evaluate option for reuse or treatment. Sampling protocols are outlined in the MRP and QAPP.
- 2) Use practices that improve soil/media infiltration and water holding capacity to reduce soil erosion, runoff, and excessive leaching. Relates to practices 1 and 2 on the BMPQ.
- 3) Use practices that will retard movement of runoff water and sediment and keep it on the property, such as the use of vegetative buffer strips, grass-lined channels, grass swales, and constructed wetlands. Relates to practices 4 and 5 on the BMPQ.

- 4) Manage hilly, sloped areas to prevent soil erosion and increased runoff volume and velocity. This includes such practices as the use of terraces, mulch, and cover crops. Relates to practices 1, 3 and 4 on the BMPQ.
- 5) Design and manage roads to prevent erosion and contaminated runoff. Relates to practices 6 and 7 on the BMPQ.
- 6) Collect excess irrigation and storm water runoff and sediment in basins or ponds, which can also be used for recycling. Relates to practices 3 and 9 on the BMPQ.
- 7) Manage roof runoff from storms to reduce pollution and erosion, to prevent flooding, and improve drainage. Relates to practice 8 on the BMPQ.
- 8) Provide organized training session for personnel in runoff management in a language that personnel clearly understand, and maintain records documenting training. Relates to practices 10 and 11 on the BMPQ.

10.5 NON-PRODUCTION AREAS

Basic housekeeping of non-production areas can go a long way in reducing pollution sources. Areas such as walkways, loading areas, storage areas, packing sheds, offices, parking lots, and general grounds can attribute to pollution in the form of excess sediment loads from displaced dirt and debris, fuels, and sewage from unkempt restroom areas. Proper housekeeping policies are also cheap to implement and easy to enforce.

Six basic management goals were identified in Management Practices to Protect Water Quality that growers can implement for non-production areas. The fifteen practices listed on the BMPQ were developed to fall within one of the six basic management goals. The management goals, and corresponding management practices on the BMPQ, are as follows:

- 1) Ensure that all non-production areas where nursery-related activities occur do not contribute to irrigation or storm water runoff. Areas shall be periodically maintained in a manner that ensures that runoff remains on the property. Relates to practices 2 and 3 on the BMPQ.
- 2) Maintain vehicles, trucks, and tractors and their storage areas so equipment does not leak fluids into ground and surface waters. Relates to practices 1, 4, 5 and 14 on the BMPQ.
- 3) Locate and maintain fuel storage tanks so that they do not leak, spill, overflow, or leach into ground or surface water. Relates to practices 6 and 7 on the BMPQ.
- 4) Keep the nursery property free of debris and trash, which can clog storm drains and cause an unsightly mess in waters and on beaches. Relates to practices 8, 9, 11, 13 and 15 on the BMPQ.
- 5) Maintain restrooms to avoid spills and leakage of human waste into the municipal storm water or collection system. Relates to practice 10 on the BMPQ.
- 6) Provide organized training sessions in waste, sanitation, and spill management for all personnel in a language they clearly understand, and maintain records documenting training. Relates to practice 12 on the BMPQ.

11.0 INDIVIDUAL SAMPLING SITES

Site-specific information and discussions are presented below.

11.1 ABC NURSERY – NGA SITE #4

Crop Type: General Ornamental
Sub Basin: Dominguez Channel
City: Gardena
Total / Irrigated Acres: 19.2 / 15
Irrigation: Hand watering, Drip
Fertilizer / Amount: 14-6-5 / 1,200 lb per year
Observed Discharge: Storm water
Approximate sample site GPS location: N 33° 52' 55.5" W 118° 16' 06.1"

Number of samples collected to date: 1 dry season, 2 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations Nitrate and TDS (Table 2).
- Pesticides: Concentrations of Chlorpyrifos, Diazinon, Dichlorvos, Malathion, Bifenthrin, Cyfluthrin, Danitol, Deltamethrin, Fluvalinate, λ -Cyhalothrin, and Permethrin were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia, Fathead Minnow, and Selenastrum (Table 6). Follow up TIE testing revealed that non-polar organics were the source of toxicity.

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 2.1 to 12.4 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. Irrigation runoff water from this site was recorded at approximately 0.1 gallons per minute; irrigation runoff duration was not observed. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation management:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 438,000 gallons (approximately 22,820 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by a well located on-site. Hand watering and drip irrigation are the methods of irrigation at the site. The topography is relatively flat, and there was no evidence of excessive over watering at the site. Irrigation discharge has not been reported or observed, although there appears to be very minimal runoff from the washing of equipment and loading area from the impervious surface at the entry to the nursery.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 11 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 11 applied compounds, 4 were included in the laboratory analytical program outlined in the CWIL (Deltamethrin, Chlorpyrifos, Malathion, and Danitol). All 4 pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water leaving the site. In addition, Diazinon, Cyfluthrin, Fluvalinate, λ -Cyhalothrin, Dichlorvos, Permethrin, and Bifenthrin were detected. These compounds were not reported as being used in the last year on the PURs for this particulate ABC site; however they were reported as being used at other sites managed by ABC.

Fertilizer application:

Fertilizer is applied in irrigation water, as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 1,500 pounds (approximately 80 pounds per acre) of liquid and dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for nitrate and TDS in one sample.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flows collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Ten pesticides were detected above laboratory RLs in storm water runoff from the site. Of the ten detected pesticides, four were reported as being used in PURs. Evaluation of PURs (Table 12) indicates there might be a correlation between application times and laboratory analytical results for Chlorpyrifos and Malathion. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Seven pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, from nursery stock transfers from other sites associated with ABC, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Irrigation runoff and exceedances from fertilizer use were not reported at the site. The site was categorized into the large grower group, low irrigation use group and low fertilizer use group

It appears that the source of exceedances is from the north end of the property, as this is where the majority of storm water runoff is stemming from at the sampling point.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

ABC Nursery has implemented BMPs from the Irrigation Management, Erosion and Runoff Management, and Non Production Areas categories. The grower's main objectives were to reduce irrigation practices and minimize sediment runoff potential. Hand watering is aided by the use of watering wands; these devices will help minimize the amount of overpaying during watering. Sandbags have been placed on the northern fence line to slow down traveling water to minimize the amount of sediment runoff exiting the grower's facility. In addition, to limit sediment entering the main drainage channel, plants (*Equisetum*) have been placed around a section of the channel. In order to limit the accumulation of soil debris on paved areas, the grower has implemented a biweekly (Wed-Fri) mechanical sweeping regiment to clean up areas where the loading and unloading of plant material takes place. Additionally, the sweeper will operate one day before a forecasted rain event.

Generalized BMPs Implemented:

ABC Nursery has begun to implement the following generalized BMPs:

- Irrigation Management: BMPQ number 3.
- Erosion and Runoff Management: BMPQ number 4, (Sand bags, partial drainage channel vegetation)
- Non-Production Areas: BMQP number 14.

Additional BMPs:

Additional BMPs for Pest Management and Nutrient Management will be initiated, as required for the large site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented.

11.2 ACOSTA GROWERS – NGA SITE #13

Crop Type: General Ornamental
Sub Basin: San Gabriel River
City: Hacienda Heights
Total / Irrigated Acres: 4.5 Acres
Irrigation: Hand watering
Observed Discharge: Storm water
Fertilizers / Amount: 21-5-6 / 5,000 lb per year; 13-5-8 / 2,000 lb per year
Approximate sample site GPS location: N 33° 59' 50.9" W 117° 56' 56.9"

Number of samples collected to date: 0 dry season, 1 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of DDE and various Chlordanes were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia and Fathead Minnow (Table 6). Follow up TIE testing could not be completed.

Field Parameters:

Instantaneous flow rate of runoff water during the single wet season sampling event was approximately 15.6 gallons per minute. The total duration of runoff time was not observed. The instantaneous flow rate does not represent the total runoff from the site; it is only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 240,000 gallons (approximately 53,000 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering is the only method of irrigation at the site. The topography is relatively flat, and there was no evidence of excessive over watering or standing water at the site. Irrigation discharge has not been reported or observed.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 3 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 3 applied compounds, 1 was included in the laboratory analytical program outlined in the CWIL (Bifenthrin). Bifenthrin was not detected in runoff water leaving the site. Concentrations of Legacy Pesticides DDE and various Chlordanes were detected in runoff samples.

Fertilizer application:

Fertilizer is applied solely as topdress at the site. Approximately 7,000 pounds (approximately 1,556 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff sampling.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were added to potting mixtures as a solid, and appear to be applied once per year after the majority of the rain season has been completed (February). Pesticides on the PURs were not detected in the runoff sample collected in January of 2008. Legacy pesticides DDE and Chlordane were detected above CWIL limits in storm water runoff from the site. No applied pesticides that were included in the laboratory analytical report were detected during laboratory analysis. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff and exceedances from fertilizer use were not observed at the site. The site was categorized into the medium size group, medium irrigation use group, and high fertilizer use group.

The source of exceedances is from historical pesticide use. The site is planning on implementing ground cover, and future sampling results will be utilized to evaluate if there is a decrease in erosion and subsequent legacy pesticide exceedances from the implementation of this BMP.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Acosta Nursery has implemented BMPs from the Pest Management, Nutrient Management, and Erosion and Runoff Management categories. The growers main objectives were to modify spraying techniques, limit nutrient loading potential, and minimize runoff. The grower is enforcing a no spraying policy for herbicides and pesticides one week prior to a forecasted rain event. Application of dry fertilizer will no longer be applied in a general broadcast method; instead it will be applied directly to intended containers. The grower has covered driveways with gravel to limit the amount of silt runoff, and helps to contain stormwater on the site.

Generalized BMPs Implemented:

Acosta Nursery has begun to implement the following generalized BMPS:

- Pest Management: BMQP number 7.
- Nutrient Management: BMQP number 16.
- Erosion and Runoff Management: BMQP number 7.

Additional BMPs:

All required BMPs for the medium sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

11.3 BOETHING TREELAND FARMS – NGA SITE #19

Crop Type: Trees, General Ornamental
Sub Basin: Los Angeles River
City: Woodland Hills
Total / Irrigated Acres: 32 / 21 Acres
Irrigation: Sprinkler, Hand Watering, and Trickle
Observed Discharge: Irrigation and Storm water
Fertilizer / Amount: 23-6-12 / 37,395 lbs
Approximate sample site GPS location: N 34° 09' 51.1" W 118° 38' 2.07"

Number of samples collected to date: 2 dry season, 3 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Chloride, Nitrate, Sulfate, and TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of DDT, DDE, Chlordane, Diazinon, Malathion, Chlorpyrifos, Bifenthrin, Cyfluthrin, Danitol, Fluvalinate, and Permethrin were detected above laboratory RLs in runoff samples (Table 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia (Table 6). Follow up TIE testing revealed that non-polar organics were the source of toxicity.

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 0.79 to 1.30 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. Irrigation runoff water from this site peaked at approximately 49.82 gallons per minute, and the irrigation runoff duration was observed to tail off for approximately 30 minutes. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 1,720,000 gallons (approximately 53,766 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering, drip systems, and sprinkler systems are the methods of irrigation at the site. Irrigation water runs off when using the sprinkler system and hand watering occurs on the northern, sloped land of the property. The sprinkler system irrigates approximately 1 of the 32 acres on the property. Sustained runoff from the sprinkler system is not observed; runoff tails off almost immediately after the sprinkler system automatically shuts down.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 42 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 42 applied compounds, 7 were included in the laboratory analytical program outlined in the CWIL (Permethrin, Chlorpyrifos, Malathion, Fluvalinate, Danitol, Cyfluthrin, and λ -Cyhalothrin). Five of the 7 pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water leaving the site. In addition, Diazinon and Bifenthrin were detected once each during sampling events. These compounds were not reported as being used in the last year on PURs. Concentrations of historical Legacy Pesticides DDT and Chlordane were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied as topdress to plants over a year old, and as slow release incorporated into the potting soil to all plants. Approximately 37,395 pounds (approximately 1,170 pounds per acre) of slow release fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for nitrate in two of the three samples, and TDS in all three samples. The single sulfate exceedance could be from either fertilizer application or pesticide application.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were mainly diluted in water and applied as a solution. Seven pesticides were detected above laboratory RLs in storm water runoff from the site. Of the seven detected pesticides, five were reported as being used in PURs. Evaluation of PURs (Tables 12 and 13) indicates there might be a correlation between application times and laboratory analytical results for Malathion, Cyfluthrin, Danitol, Fluvalinate, and Permethrin during wet season water sampling. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Two pesticides not reported as being used in PURs were detected in storm water runoff at the site. Both Diazinon and Bifenthrin were reported as less than or equal to 15 ppt during one sampling event. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, from nursery stock transfers, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Legacy Pesticides DDT and Chlordanes were detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was observed at the site, mainly stemming from the use of a sprinkler system on approximately one acre of the property. The site is currently working to alleviate the problem. Exceedances from fertilizer use were also observed both during irrigation events and during storm water runoff. The site was categorized into the large group, medium water use group, and high fertilizer use group.

It appears that the source of exceedances is from the eastern-sloped edge of the property, as this is where the majority of irrigation and storm water runoff is stemming from at the sampling point.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Boething Treeland Farm has implemented BMPs outlined in the Erosion and Runoff Management section. Due to the varied topography of the site, the grower's main objective was to limit the amount of sediment running off site. Sediment traps were installed in the four drainage culverts located throughout the site. Sediment traps include the use of straw wattles, poly-gravel bags and jute netting, and sand bags. In addition, all drainage culverts and sediment traps are maintained on a monthly basis and after each rain event.

Generalized BMPs Implemented:

Boething Treeland Farm has begun to implement the following generalized BMPS:

- Erosion and Runoff Management: BMQP number 4 (Sand bags/straw wattles, jute netting, and polyacrylamide) and 9.

Additional BMPs:

Additional BMPs for Irrigation Management, Pest Management, and Nutrient Management will be initiated, as required for the large site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented.

11.4 CARLOS SOTO, JR. – NGA SITE #25

Crop Type: General Ornamental

Sub Basin: Dominguez Channel

City: Gardena

Total / Irrigated Acres: 3.5 Acres

Irrigation: Sprinkler, hand watering

Fertilizers / Amount: 20-9-9 / 2,000 lb per year

Observed Discharge: Storm water

Approximate sample site GPS location: N 33° 53' 6" W 118° 17' 6"

Number of samples collected to date: 0 dry season, 1 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of Chlordane, Cyfluthrin, Cypermethrin, Danitol, and λ -Cyhalothrin, were detected above laboratory RLs in runoff samples (Table 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia (Table 6). Follow up TIE testing revealed that non-polar organics were the source of toxicity.

Field Parameters:

The instantaneous flow rate of runoff water during the single recorded rain event was approximately 155 gallons per minute. The duration of runoff time was not observed. Irrigation runoff water from this site was not observed. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 4,000 gallons (approximately 1,143 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering and sprinklers are used for irrigation at the site, although the sprinkler system is not consistently used. The topography is relatively flat, and there was no evidence of excessive over watering or standing water at the site. Irrigation discharge has not been reported or observed.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 10 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 10 applied compounds, 2 were included in the laboratory analytical program outlined in the CWIL (Cyfluthrin, and Malathion). One of the two pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water leaving the site (Cyfluthrin). In addition, Cypermethrin, Danitol, and λ -Cyhalothrin were detected during the single sampling events. These compounds were not reported as being used in the last year on

PURs. Concentrations of the historical Legacy Pesticide Chlordane were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied in irrigation water and as topdress, depending on plant conditions. Approximately 2,000 pounds (approximately 571 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Discussion:

Irrigation water and storm water was only observed once leaving the property during site visits, during a very heavy rain after the site was saturated. As the site is relatively flat, it is anticipated that a storm event large enough to completely saturate the soil across the entire site would be required to generate runoff. The site was categorized into the medium size group, low irrigation use group, and medium fertilizer use group.

Three pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, newly applied pesticides not reported on previous NOIs, from nursery stock transfers, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

The Legacy Pesticide Chlordane was detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Carlos Soto, Jr. will begin to implement BMPs after the first LAILG seminar.

Required BMPs:

One BMP for Irrigation Management or Erosion and Runoff Management, and one Pest Management or Nutrient Management will be initiated, as required for the medium sized site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented.

11.5 COINER NURSERY – NGA SITE #31

Crop Type: General Ornamental
Sub Basin: San Gabriel River
City: La Puente
Total / Irrigated Acres: 62 Acres
Irrigation: Drip, sprinkler, hand watering
Fertilizers / Amount: 15-15-15 / 16,000 lb per year
Discharge: Storm water
Approximate sample site GPS location: N 33° 3' 0" W 118° 0' 14.4"

Number of samples collected to date: 1 dry season, 1 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of DDE, Chlordane, Bifenthrin Cyfluthrin, Danitol, Fenvalerate, and λ -Cyhalothrin, were detected above laboratory RLs in runoff samples (Table 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia (Table 6). Follow up TIE testing revealed that non-polar organics were the source of toxicity.

Field Parameters:

The instantaneous flow rate of runoff water during the single recorded rain event was approximately 313 gallons per minute. The duration of runoff time was not observed. Irrigation runoff water from this site was recorded at approximately 19.6 gallons per minute. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 13,000 gallons of additional irrigation water are used per month during the dry season, with the rest being supplied with reclaimed water. Non-reclaimed irrigation water is supplied by a well located on-site. Hand watering, drip systems, and sprinklers are used for irrigation at the site. The topography is relatively flat, and all excess irrigation water is channeled through ditches into holding ponds located on site. Irrigation water does not leave the property.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 14 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 14 applied compounds, 3 were included in the laboratory analytical program outlined in the CWIL (Danitol, Chlorpyrifos, and Malathion). One of the three pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water leaving the site (Danitol). In addition, Bifenthrin Cyfluthrin, Fenvalerate, and λ -Cyhalothrin were detected during sampling events. These compounds were not reported as being used in the last year on PURs. Concentrations of the historical Legacy Pesticides DDE and Chlordanes were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied in irrigation water, as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 16,000 pounds (approximately 258 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Discussion:

Irrigation water and storm water was observed leaving the property during site visits. Site water use is unknown, as the site reclaims and reuses irrigation and storm water. The site was categorized into the large size group and low fertilizer use group

Three pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, newly applied pesticides not reported on previous NOIs, from nursery stock transfers, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

The Legacy Pesticide Chlordane was detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

The site uses a series of ditches to channel irrigation and storm water into two separate holding ponds, where the collected water is reused for irrigation. There are several large drainage pipes at the corner of the property that would drain into the San Gabriel River in the case of flooding at the property. It appears that the site is located in a flood plain, and the holding pond on the eastern edge of the property would have to overflow in order for a large amount of storm water to leave the site. The holding pond has not been observed over approximately five percent capacity during site visits.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Coiner Nursery will begin to implement BMPs after the first LAILG seminar.

Required BMPs:

One BMP from Irrigation Management, Erosion and Runoff Management, Pest Management, and Nutrient Management will be initiated, as required for the large sized site group, by October 15, 2009. One additional Irrigation Management or Erosion and Runoff Management BMP will also be initiated, as the site reported irrigation runoff on its NOI. BMPs required universally throughout the LAILG will be initiated by October 15, if not previously implemented.

11.6 G. HERNANDEZ - NEW WESTGROWERS – NGA SITE #53

Crop Type: General Ornamental

Sub Basin: Los Angeles River

City: Compton

Total / Irrigated Acres: 3.5 Acres

Irrigation: Hand water and Sprinkler

Fertilizers / Amount: 20-5-5 / 2,000 lb per year

Discharge: Storm water

Approximate sample site GPS location: N 33° 52' 51.1" W 118° 12' 56.3"

Number of samples collected to date: 0 dry season, 2 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of Bifenthrin and Prallethrin were detected above laboratory RLs in runoff samples (Table 3-5).
- Toxicity Exceedances: None (Table 6).

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 1.50 to 4.78 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 100,000 gallons (approximately 28,571 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering is the only method of irrigation at the site. The topography is relatively flat, there was no evidence of excessive over watering, and minimal standing water was encountered at the site. Irrigation discharge has not been reported or observed.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported no pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Although Bifenthrin and Prallethrin were not reported as being used in the last year on PURs, they were detected in the one sample collected from the site.

Fertilizer application:

Fertilizer is solely applied as topdress. Approximately 2,000 pounds (approximately 571 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

No pesticides were reported as being applied at the site on PURs. Two pesticides not reported as being used in PURs (Bifenthrin and Prallethrin) were detected above laboratory RLs in storm water runoff at the site. Both Bifenthrin and Prallethrin were reported as less than or equal to 8 ppt during one sampling event. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, or from nursery stock transfers from other sites associated with New Westgrowers. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Irrigation runoff and fertilizer exceedances were not observed or reported at the site. The site was categorized into the medium size group, low irrigation use group, and medium fertilizer use group.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

New Westgrowers has implemented BMPs from the Erosion and Runoff Management and Non-Production Areas categories. The grower's main objective is to minimize the amount of sediment runoff. All water bearing channels on the site will be redirected to a central channel and that will be lined with vegetation. In addition, to limit the accumulation of sediment in potential runoff, all paved areas will be swept regularly.

Generalized BMPs Implemented:

Hernandez New Westgrowers has implemented the following generalized BMPs:

- Erosion and Runoff Management: BMPQ number 4.
- Non-Production Areas: BMPQ number 14.

Additional BMPs:

One BMP from the Pest Management or Nutrient Management categories will be initiated, as required for the medium sized site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented.

11.7 H&H NURSERY OF LAKEWOOD – NGA SITE #64

Crop Type: General Ornamental
Sub Basin: San Gabriel River
City: Lakewood
Total / Irrigated Acres: 5 / 2.5 Acres
Irrigation: Hand watering
Fertilizers / Amount: 8-3-2 / 8,700 lb per year
Observed Discharge: Storm water
Approximate sample site GPS location: N 33° 52' 05.9" W 118° 08' 32.3"

Number of samples collected to date: 0 dry season, 1 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of Bifenthrin, Cyfluthrin, and Danitol were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was observed for Ceriodaphnia reproduction (Table 6). Follow up TIE testing could not be completed.

Field Parameters:

Instantaneous flow rate of runoff water during the recorded rain event was not monitored due to access constraints. The duration of runoff time was not observed.

Field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 14,700 gallons (approximately 5,880 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply.

Hand watering is the primary method of irrigation at the site. The topography is relatively flat, and there was no evidence of excessive over watering. The majority of the site has a gravel covering to help with infiltration. Irrigation discharge has not been reported.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 8 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). None of the 8 applied compounds were included in the laboratory analytical program outlined in the CWIL. Although Bifenthrin, Cyfluthrin, and Danitol were not reported as being used in the last year on PURs, they were detected in the one sample collected from the site.

Fertilizer application:

Fertilizer is applied as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 8,700 pounds (approximately 3,480 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Discussion:

No pesticides that were included in the laboratory analysis suite were reported as being applied at the site on PURs. Three pesticides not reported as being used in PURs (Bifenthrin, Cyfluthrin, and Danitol) were detected above laboratory RLs in storm water runoff at the site. All three pesticides were reported as less than or equal to 30.2 ppt during the single sampling event. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, newly applied pesticides not reported on previous NOIs, or from nursery stock transfers from other sites. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Irrigation runoff and fertilizer exceedances were not observed or reported at the site. The site was categorized into the medium size group, low irrigation use group, and high fertilizer use group.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

H&H Nursery has implemented BMPs for the Pest Management, Erosion and Runoff Management, and Non-Production Areas categories. The grower's main objectives were to limit the amount of pesticide and sediment runoff. Application of pesticides will be coordinated with weather reports and not be applied prior to rain events. To limit the accumulation of sediment and potential runoff all paved areas will be swept regularly, and catch basins will be enlarged.

Generalized BMPs Implemented:

H&H Nursery has implemented the following generalized BMPs:

- Pest Management: BMPQ number 7.
- Erosion and Runoff Management: BMPQ number 9.
- Non-Production Areas: BMPQ numbers 8 and 14.

Additional BMPs:

All required BMPs for the medium sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

11.8 M. DOWNARD – RAINBOW GARDEN NURSERY – NGA SITE #109

Crop Type: General Ornamental / Color plants

Sub Basin: San Gabriel River

City: Glendora

Irrigated Acres: 3.5 Acres

Total / Irrigation: Drip, Hand watering

Fertilizers / Amount: 25-5-5 / 5,000 lb per year

Observed Discharge: Storm water

Approximate sample site GPS location: N 34° 07' 4.8" W 117° 52' 22.8"

Number of samples collected to date: 0 dry season, 1 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticides: Concentrations of Chlorpyrifos and Diazinon were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: None (Table 6).

Field Parameters:

Instantaneous flow rate of runoff water during the recorded rain event was approximately 39.27 gallons per minute. The duration of runoff time was not observed. The instantaneous flow rate does not represent the total runoff from the site; it is only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 230,000 gallons (approximately 66,470 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering is the primary method of irrigation at the site. The topography is relatively flat, and there was no evidence of excessive over watering. The majority of the site has a gravel covering to help with infiltration. Irrigation discharge has not been reported or observed.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 12 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 12 applied compounds, 4 were included in the laboratory analytical program outlined in the CWIL (Bifenthrin, Cyfluthrin, Diazinon, and Malathion). One of the 4 pesticides reported as being used at the site that was included in the laboratory analytical program was detected in runoff water leaving the site. In addition, Chlorpyrifos was detected in the one sample collected. This compound was not reported as being used in the last year on PURs.

Fertilizer application:

Fertilizer is applied in irrigation water, and as topdress, depending on plant conditions. Approximately 2,000 pounds (approximately 571 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Two pesticides were detected above laboratory RLs in storm water runoff from the site. One of the two detected pesticides (Diazinon) was reported as being used in PURs. PURs did not report the date of application for Diazinon. Additional data and a more complete PUR need to be collected in order to evaluate if there is a relationship between the time pesticides are applied to pesticide results in runoff water.

One pesticide not reported as being used in PURs was detected in storm water runoff at the site (Chlorpyrifos). Chlorpyrifos was detected above limitations set in the CWIL. The detected pesticide could possibly be from historical pesticide use, from nursery stock transfers from other sites associated with Rainbow Gardens, or from issues with pesticide storage. Currently the source of this pesticide is unknown, and will be evaluated further with future data.

Irrigation runoff and exceedances from fertilizer use were not observed at the site. The site was categorized into the medium size group, medium irrigation use group, and medium fertilizer use group. The single runoff sample was able to be collected when a corner of the property partially flooded after a substantial amount of rain. The site is currently covered in gravel to limit sediment runoff from the site.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Rainbow Nursery has implemented BMPs for the Pest Management category. The grower's main objective was to limit the amount of pesticide runoff. Initiating an Integrated Pest Management Program has allowed for the isolation of specific pests and performing spot spraying, reducing the amount of pesticides use at the site. Weed cloth, mulch, and gravel has been applied to the site to minimize the potential for runoff.

Generalized BMPs Implemented:

M Downard-Rainbow Nursery has implemented the following generalized BMPs:

- Pest Management: BMPQ number 1.
- Erosion and Runoff Management: BMPQ number 1 and 7.

Additional BMPs:

All required BMPs for the medium sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

11.9 NORMAN'S NURSERY – BROADWAY SOUTH – NGA SITE #124

Crop Type: General Ornamental

Sub Basin: Los Angeles River

City: San Gabriel

Total / Irrigated Acres: 10.4 Acres

Irrigation: Drip, Hand watering

Fertilizers / Amount: 23-6-12 / 7,000 lb per year

Discharge: Occasional Irrigation, Storm water

Approximate sample site GPS location: N 34° 05' 56.9" W 118° 04' 56.0"

Number of samples collected to date: 1 dry season, 3 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Nitrate and TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of DDD, DDE, DDT, various Chlordane, Dicofol, Bifenthrin, Cyfluthrin, Danitol, Deltamethrin, Fluvalinate, λ -Cyhalothrin, Esfenvalerate, Fenvalerate, and Permethrin were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was observed for Ceriodaphnia and Selenastrum (Table 6). Follow up sampling did not report sufficient mortality to initiate TIE testing.

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 12.54 to 52.85 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. LAILG observed irrigation runoff water leaving the site during one visit but runoff stopped during the visit, and the total irrigation flow off the site was estimated to be approximately 75 gallons. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and to the NOI submitted to the LARWQCB, approximately 991,100 gallons (approximately 95,298 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering and drip systems are used for irrigation at the site. The topography is relatively flat, there was no evidence of excessive over watering, and minimal standing water was encountered at the site. Irrigation discharge was observed during one site visit due to hand watering on the corner of the property.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 18 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 18 applied compounds, 4 were included in the laboratory analytical program outlined in the CWIL (Bifenthrin, Danitol, Fluvalinate, and Deltamethrin). All 4 pesticides reported as being used at

the site that were included in the laboratory analytical program were detected in runoff water leaving the site. In addition, Dicofol, Cyfluthrin, λ -Cyhalothrin, Esfenvalerate, Fenvalerate, and Permethrin were detected during sampling. These compound were not reported as being used in the last year on PURs. Concentrations of historical Legacy Pesticides such as DDD, DDE, DDT, and variations of Chlordane were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied in irrigation water, as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 6,000 pounds (approximately 577 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for Nitrate in all four samples, and TDS in two out of four samples.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Seven pesticides were detected above laboratory RLs in storm water runoff from the site. Of the seven detected pesticides, four were reported as being used in PURs. Evaluation of PURs (Table 12 and 13) do not indicate any preliminary correlation between application times and laboratory analytical results for the detected pesticides. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Four pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, from nursery stock transfers from other sites associated with Norman's Nursery, from newly applied pesticides not reported on previous NOIs, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Legacy Pesticides DDE, DDD, DDT and variations of Chlordanes were detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was observed once at the site, which came from too much hand watering on one corner of the northern property. Exceedances from fertilizer use were also observed both during irrigation events and during storm water runoff. The site was categorized into the large size group, high water use group, and medium fertilizer use group. The source of exceedances appears to be across the whole site, as irrigation ditches collect water from the majority of the southern property prior to discharge.

BMP Questionnaire

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Norman's Nursery, Broadway South has implemented BMPs for the Irrigation Management, Nutrient Management, and Erosion and Runoff Management categories. The grower's main objectives were to lower the amount of irrigation water and fertilizer used, and to limit the amount of sediment runoff. Water usage at the site will be lowered when possible. In addition, periodic monitoring of the entire irrigation system will be conducted to insure high efficiency. Fertilizer nutrients added to watering system will be lowered and monitored, lowering the potential for higher nutrient runoff rates. Culverts surrounding the site will be inspected, resized, and periodically maintained for storm events. Sand bags will be placed in culverts to slow the speed of runoff travel to trap additional sediment.

Generalized BMPs Implemented:

Norman's Nursery has implemented the following generalized BMPs:

- Irrigation Management: BMPQ numbers 1 and 6.
- Nutrient Management: BMPQ number 5.
- Erosion and Runoff Management: BMPQ numbers 4 and 9.

Additional BMPs:

One additional BMP for the Pest Management category will be initiated, as required for the large site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented.

11.10 NORMANS NURSERY – ROSEMEAD – NGA SITE #130

Crop Type: Trees / General Ornamental
Sub Basin: Los Angeles River
City: South El Monte
Total / Irrigated Acres: 16.56 Acres
Irrigation: Drip, Hand watering
Fertilizers / Amount: 23-6-12 / 34,000 lb per year
Discharge: Irrigation and storm water
Approximate sample site GPS location: N 34° 01' 59.3" W 118° 03' 54.8"

Number of samples collected to date: 1 dry season, 3 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Chloride, Nitrate, and TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of DDD, DDE, DDT, Dicofol, Bifenthrin, Cyfluthrin, Danitol, Fenvalerate, Fluvalinate, λ -Cyhalothrin, and Permethrin were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was observed for Selenastrum (Table 6). Follow up TIE testing during the dry season was not conducted, as additional runoff was not encountered during subsequent site visits. Toxicity was not reported in the wet season sample.

Field Parameters:

There is an underground sump that turns on to purge out excess collected irrigation water, and this sump pumps water into Whittier Narrows at the west edge of the property. When the pump is activated by a float switch in the collection area; flows out of the discharge line average out to be approximately 4.25 gallons per minute for the duration of pumping, regardless of the season. The complete duration of runoff times was not observed. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 2,450,000 gallons (approximately 147,947 gallons per acre) of reclaimed municipal irrigation water are used per month during the dry season. Hand watering and drip systems are used for irrigation at the site. The topography is relatively flat, and excess irrigation water is collected through dirt channels.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 14 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 14 applied compounds, 2 were included in the laboratory analytical program outlined in the CWIL (Deltamethrin and λ -Cyhalothrin). λ -Cyhalothrin was detected in minute amounts in runoff water leaving the site. However, Dicofol, Bifenthrin, Cyfluthrin, Danitol, Fluvalinate, Fenvalerate, and Permethrin were detected during sampling. These compounds were not reported as being used in the PURs. Concentrations of historical Legacy Pesticides such as DDD, DDE, and DDT, were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied in irrigation water, as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 34,000 pounds (approximately 2,053 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for Nitrate and TDS in two of the three samples. The exceedance of chlorine is suspected to stem from the use of reclaimed water at the site.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Seven pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, pesticide use from nursery stock transfers from other sites associated with Norman's Nursery, from newly applied pesticides not reported on previous NOIs, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Legacy Pesticides DDE, DDD, and DDT were detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was observed at the site, which emanated from a sump pump. Excess irrigation water was collected and diverted in ditches to a tank, where the pump transferred water when the tank was full through a PVC pipe to Whittier Narrows on the North edge of the property. Exceedances from fertilizer use were also observed both during irrigation events and during storm water runoff. The site was categorized into the large size group, high irrigation use group, and high fertilizer use group.

The source of exceedances are assumed to be across the entire property, as irrigation ditches collect water from the majority the site prior to discharge through the PVC line.

BMP Questionnaire

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

Norman's Nursery, Rosemead has implemented BMPs for the Irrigation Management, Nutrient Management, and Erosion and Runoff Management categories. The grower's main objectives were to lower the amount of irrigation water and fertilizer used, and to limit the amount of sediment runoff. Water usage at the site will be lowered when possible. In addition, monitoring of all drip irrigation lines will be conducted to insure proper utilization. Fertilizer nutrients added to watering system will be lowered and monitored, lowering the potential for higher nutrient runoff rates. Culverts surrounding the site will be inspected, resized, and periodically maintained for storm events. Sand bags will be placed in culverts to slow the speed of runoff travel to trap additional sediment.

Generalized BMPs Implemented:

Norman's Nursery has begun to implement the following BMPs:

- Irrigation Management: BMPQ numbers 1 and 6.
- Nutrient Management: BMPQ number 5
- Erosion and Runoff Management: BMPQ number 4 and 9.

Additional BMPs:

One additional BMP for the Pest Management category will be initiated, as required for the large site group, by October 15, 2009. BMPs required universally throughout the LAILG will be initiated by October 15, if not previously implemented.

11.11 R. WILSON – COLORAMA – NGA SITE #150

Crop Type: Color Plants

Sub Basin: San Gabriel River

City: Azusa

Total / Irrigated Acres: 35 / 26 Acres

Irrigation: Drip, Ebb and Flow, Hand watering

Fertilizers / Amount: 8.4-2.7-4.2 / 15,150 lb per year

Observed Discharge: Storm water and Irrigation

Approximate sample site GPS location: N 34° 08' 27.3" W 117° 55' 33.8"

Number of samples collected to date: 1 dry season, 2 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of ammonia, nitrate, and TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of Aldrin, Bifenthrin, Esfenvalerate, Fluvalinate, Fenvalerate, λ-Cyhalothrin, and Permethrin were detected above laboratory RLs in runoff samples (Table 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia and Selenastrum (Table 6). Follow up TIE testing could not be completed.

Field Parameters:

Instantaneous flow rate of runoff water during the recorded rain event was ranged from approximately 3.95 to 50.58 gallons per minute. The duration of runoff time was not observed, however the end of the runoff was witnessed shortly after the storm passed. Irrigation runoff

water from this site was approximately 2.51 gallons per minute during irrigation. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

The amount of water used at the site for irrigation is unknown, since irrigated using reclaimed and recycled water. Hand watering, drip systems, and ebb and flow systems are used for irrigation at the site. Storm water and irrigation water is collected at the lowest part of the property, treated, and reused throughout the nursery. Approximately 20 of the 26 irrigated acres are incorporated into the irrigation recycling system. The remaining six areas have a compacted gravel surface, and excess irrigation runoff flows into a storm drain. Sustained runoff from this portion of the property is not observed; runoff tails off almost immediately after irrigation ceases.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 46 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 46 applied compounds, 5 were included in the laboratory analytical program outlined in the CWIL (Cyfluthrin, Fluvalinate, λ -Cyhalothrin, Permethrin and Bifenthrin). Four of the 5 pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water. In addition, Esfenvalerate, and Fenvalerate, were detected during sampling. These compounds were not reported as being used in the last year on PURs. Concentration of the legacy pesticide Aldrin was also detected in runoff samples.

Fertilizer application:

Fertilizer is applied in irrigation water, as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 15,150 pounds (approximately 583 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for Nitrate and TDS in two of the three samples.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Four pesticides were detected above laboratory RLs in storm and irrigation water runoff from the site. All four detected pesticides were reported as being used in PURs. Evaluation of PURs (Tables 12 and 13) do not indicate any preliminary correlation between application times and laboratory analytical results for the detected pesticides. Currently the source of these pesticides is unknown, and will be evaluated further with future data. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Two pesticides not reported as being used in PURs were detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, pesticide use from nursery stock transfers from other sites associated with Colorama, from newly applied pesticides not reported on previous NOIs, or from issues with pesticide storage.

A legacy pesticide Aldrin was detected above CWIL limits in storm water runoff from the site. The source of the legacy pesticide is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was observed once at the site, which came from hand watering on approximately 3 acres of the property. Exceedances from fertilizer use were also observed both during irrigation events and during storm water runoff. Site water use is unknown, as the site reclaims and reuses irrigation and storm water. The site was categorized into the large size group and medium fertilizer use group.

The source of exceedances at the site comes from the six acres that are hand watered at the Eastern edge of the property. The remainder of the property drains to a central location, where excess water is collected, pumped to a holding pond, treated through an ozone system, and reused at the site. Eventually the operator plans on incorporating the western six acres into the recycling and reuse system.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

The majority of the site drains to the center, and a sump pump is installed that pumps water to a collection pond. The water from this pond is treated through a filtration and ozone system, and the water is reused on-site. Only a small amount of the property drains off the site.

Colorama Nursery has implemented BMPs from the Pest Management, Nutrient Management, and Erosion and Runoff Management categories. The grower's main objectives were to lower the amount of pesticides and nutrient used, and limit sediment runoff. Crops will be cycled in order to place less water intensive plants in the area of the site that has runoff. The grower will reduce the frequency of pyrethroid pesticides sprayed, supplementing pyrethroids with biopesticides when possible. To limit the amount of sediment runoff, vegetation (*Canna Tropicana*) will be planted in the main culvert exiting the site. Fertilizer injectors will be lowered to minimize the amount of nutrient in irrigation water. In order to supplement the decrease in irrigation fertilizer slow release soil fertilizer will be increased.

Generalized BMPs Implemented:

Colorama Nursery has begun to implement the following BMPs:

- Irrigation Management: BMPQ numbers 4 and 6.
- Pest Management: BMPQ numbers 4 and 5.
- Nutrient Management: BMPQ numbers 1 and 8.
- Erosion and Runoff Management: BMPQ number 4 (Drainage channels with vegetation).

Additional BMPs:

All required BMPs for the large sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

11.12 SY NURSERY, INC. – NGA SITE #168

Crop Type: General Ornamental
Sub Basin: San Gabriel River
City: Cerritos
Total / Irrigated Acres: 4.75 Acres
Irrigation: Drip, Sprinklers
Fertilizers / Amount: 21-7-6 / 6,000 lb per year
Discharge: Storm water and Irrigation
Approximate sample site GPS location: N 33° 51' 3.2" W 118° 4' 55.2"

Number of samples collected to date: 2 dry season, 2 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Nitrate and TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of DDD, DDE, DDT, various Chlordane, Dicofol, Malathion, Bifenthrin, Cyfluthrin, Cypermethrin, λ -Cyhalothrin, and Danitol were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Ceriodaphnia and Selenastrum (Table 6). Follow up sampling did not report sufficient mortality to initiate TIE testing.

Field Parameters:

Instantaneous flow rate of runoff water during a recorded rain event was approximately 0.07 gallons per minute. The duration of runoff time was not observed. LAILG observed irrigation runoff water leaving the site during two visits but runoff then slowed down to a stop when observed, and the total irrigation flow off the site was estimated to be approximately 50 gallons. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 78,500 gallons (approximately 16,562 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Drip systems and sprinklers are used for irrigation at the site. The topography is relatively flat, and all excess irrigation water is channeled through ditches and leaves the property mainly on the eastern edge into the street.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 15 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 15 applied compounds, 2 were included in the laboratory analytical program outlined in the CWIL (Bifenthrin and Malathion). Both pesticides reported as being used at the site that were included in the laboratory analytical program were detected in runoff water. In addition, Dicofol, λ -Cyhalothrin, Cypermethrin, Cyfluthrin, and Danitol and were detected during sampling. These compounds were not reported as being used in the PURs. Concentrations of historical Legacy Pesticides such as DDD, DDE, DDT and various Chlordanes were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 6,000 pounds (approximately 1,263 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for Nitrate in two of the four samples and TDS in all four samples.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were mainly diluted in water and applied as a solution. Seven pesticides were detected above laboratory RLs in storm water runoff from the site. Of the seven detected pesticides, one was reported as being used in PURs, and one was reported as being used on the NOI (Malathion). Malathion was detected in one sample, but was not reported as being used during the period of PURs that was reviewed. Evaluation of PURs (Tables 12 and 13) indicates there might be a correlation between application times and laboratory analytical results for Bifenthrin during irrigation and storm water sampling. However, additional data needs to be collected in order to evaluate if such a relationship exists.

Five pesticides not reported as being used in PURs were detected in storm water runoff at the site. Cyfluthrin, Cypermethrin, and λ -Cyhalothrin were reported as estimated (above MDLs but below RLs). The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, from nursery stock transfers from other sites associated with SY Nursery, or from issues with pesticide storage. Currently the source of these pesticides is unknown, and will be evaluated further with future data.

Legacy Pesticides DDE, DDD, DDT and Chlordanes were detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was observed at the site early in the morning during each site visit. Exceedances from fertilizer use were also observed for Nitrate during storm water sampling, and for TDS during irrigation events and during storm water runoff. The site was categorized into the medium size group, low irrigation use group, and the high fertilizer use group.

The source of exceedances appears to be across the whole site, as irrigation ditches collect water from the majority of the property prior to discharge.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Initiated BMPs:

Specific Implemented BMPs:

In 2007, after the first dry season irrigation sample was collected, SY installed a drip system on approximately 30 percent of the property. Irrigation runoff visibly decreased since this BMP was put in place. SY Nursery has implemented BMPs for the Pest Management and Erosion and Runoff Management categories. The grower's main objective was to reduce pesticide runoff.

Pesticide spraying is not conducted prior to forecasted storm events and all fertilizers, pesticides, and spray equipment are kept in enclosed storage sheds. Potting now occurs in areas that are covered and removed from possible contact with rainwater. Roads are covered in gravel, although a plan needs to be set to maintain the gravel pack.

Generalized BMPs Implemented:

SY Nursery has implemented the following BMPs:

- Erosion and Runoff Management number 5.
- Pest Management: BMPQ numbers 13 and 17.

Additional BMPs:

All required BMPs for the medium sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. One additional Irrigation Management or Erosion and Runoff Management BMP will also be initiated, as the site reported irrigation runoff on its NOI.

11.13 TY NURSERY – YARD #6 – NGA SITE #176

Crop Type: General Ornamental

Sub Basin: Santa Monica Bay

City: Redondo Beach

Total / Irrigated Acres: 2 Acres

Irrigation: Drip, Sprinkler

Fertilizers / Amount: Slow Release, 2,000 lb

Observed Discharge: Storm water

Approximate sample site GPS location: N 33° 51' 24.4" W 118° 22' 51.6"

Number of samples collected to date: 0 dry season, 1 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Concentrations of TDS exceeded water quality objectives (Table 2).
- Pesticides: Concentrations of Bifenthrin and Danitol were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: None (Table 6).

Field Parameters:

Instantaneous flow rate of runoff water during the recorded rain event was approximately 1.00 gallon per minute. The duration of runoff time was not observed. The instantaneous flow rate does not represent the total runoff from the site; it is only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and related TSS were elevated. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 255,000 gallons (approximately 127,500 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by a municipal water supply. Drip systems and sprinklers are used for irrigation at the site. The topography is mainly sloped to the middle, and all excess irrigation water is channeled through ditches into catch basins located on site. Irrigation water does not leave the property.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 28 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 28 applied compounds, 2 were included in the laboratory analytical program outlined in the CWIL (Bifenthrin and Cyfluthrin). One of the 2 pesticides reported as being used at the site that was included in the laboratory analytical program was detected in runoff water leaving the site. In addition, Danitol was detected in the one sample collected. This compound was not reported as being used in the PURs.

Fertilizer application:

Fertilizer is applied as slow release fertilizer incorporated into the potting soil. Approximately 2,000 pounds (approximately 1,000 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for TDS in the single sample collected.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Two pesticides were detected above laboratory RLs in storm water runoff from the site. Of the two detected pesticides, one was reported as being used in PURs. As only one sample has been collected from the site, evaluation of PURs (Tables 12 and 13) could not be conducted to find any correlation between application times and laboratory analytical results for the detected pesticides. Additional data needs to be collected in order to evaluate if such a relationship exists.

One pesticide not reported as being used in PURs was detected in storm water runoff at the site. The detected pesticides could possibly be from potting soil with incorporated pesticides, historical pesticide use, or from nursery stock transfers from other sites associated with TY Nursery. Currently the source of this pesticide is unknown, and will be evaluated further with future data.

Irrigation runoff was not observed at the site. Exceedances of TDS most likely from fertilizer use were observed in the one sample collected during storm water runoff. The site was categorized into the small size group, high irrigation use group, and medium fertilizer use group.

The source of exceedances was from runoff down a road going into the property. Runoff only lasted for a short period during a heavy period of rain. The site currently uses collection basins to collect irrigation and storm water from the center of the property, and has straw wattles and sand bags along the property edges of the growing area to limit storm water and sediment runoff. Storm water runoff from the site is limited to a single access road that enters the property.

BMP Questionnaire:

Catch basins are in place to collect excess run off from the property, and the boundary of the property is lined with sand bags and control measures to alleviate runoff of water and soil.

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

TY Nursery has implemented BMPs for the Erosion and Runoff Management category. The grower's main objective was to lower the amount of sediment runoff. Driveways will be paved with a base material to limit the amount of sediment leaving the sloped entrance. In addition, straw wattles will be placed on both sides of the driveway to minimize sediment runoff. The main catch basin will be expanded and maintained for storm events.

Generalized BMPs Implemented:

TY Nursery has begun to implement the following BMPs:

- Erosion and Runoff Management: BMPQ numbers 4 (Straw wattles), 6, and 9.

Additional BMPs:

All required BMPs for the small sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

11.14 VALLEY CREST TREE COMPANY – NGA SITE #182

Crop Type: Trees

Sub Basin: Los Angeles River

City: Sylmar

Total / Irrigated Acres: 16 Acres

Irrigation: Drip, Hand watering

Fertilizers / Amount: 20-9-9 / 10,000 lb per year, 38-0-0 / 2,000 lb per year, 0-45-0 / 2,000 lb per year

Observed Discharge: Storm water

Approximate sample site GPS location: N 34° 18' 56.3" W 118° 28' 49.8"

Number of samples collected to date: 0 dry season, 2 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Chloride, Nitrate, Sulfate, and TDS exceeded water quality objectives (Table 2).
- Pesticide Exceedances: Concentrations of Dimethoate and Malathion were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was observed for Ceriodaphnia and Selenastrum (Table 6). Follow up sampling did not report sufficient mortality to initiate TIE testing.

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 4.04 to 38.79 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 134,200 gallons (approximately 8,387 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. A drip system is the primary method of irrigation at the site, and there is also limited use of a sprinkler system. The site is sloped to the southeast, and there was no evidence of excessive over watering. The majority of the site has a gravel covering to help with infiltration and to control sediment runoff. Irrigation discharge has not been reported or observed.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 15 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 15 applied compounds, 3 were included in the laboratory analytical program outlined in the CWIL (Cyfluthrin, Malathion, and Fluvalinate). One of the 3 pesticides reported as being used at the site that was included in the laboratory analytical program was detected in runoff water leaving

the site. In addition, Dimethoate was detected during sampling. This compound was not reported as used on PURs.

Fertilizer application:

Fertilizer is applied as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 14,000 pounds (approximately 875 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site were observed for Nitrate and TDS in one of the two samples. The single sulfate exceedance could be from either fertilizer application or pesticide application.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Proposed BMPs:

The site is now closed, and has been replaced with an alternate sampling site with similar characteristics.

Discussion:

Pesticides used at the site were diluted in water and applied as a solution. Two pesticides were detected above laboratory RLs in storm water runoff from the site. Of the two detected pesticides, one was reported as being used in PURs. As detected pesticides were all at low levels, evaluation of PURs (Table 12 and 13) could not be conducted to find any correlation between application times and laboratory analytical results for the detected pesticides. Additional data needs to be collected in order to evaluate if such a relationship exists.

One pesticide not reported as being used in PURs was detected in storm water runoff at the site. The detected pesticide could possibly be from potting soil with incorporated pesticides, historical pesticide use, or from nursery stock transfers. Currently the source of this pesticide is unknown, and will be evaluated further with future data.

Irrigation runoff was not observed at the site. Exceedances from fertilizer use were observed in the one sample collected during storm water runoff. The site was categorized into the large size group, low irrigation use group, and medium fertilizer use group.

The source of exceedances appeared to be across the whole site, as the site is sloped and all drains down to the south end of the property. The operator of the property has converted the property to another land use, and an alternate sampling site has been selected. The alternate sampling site will adhere to the BMP implementation protocols outlined in this WQMP.

11.15 VALLEY SOD FARMS – NGA SITE #183

Crop Type: Turf Grass
Sub Basin: Los Angeles River
City: Encino
Total / Irrigated Acres: 60 Acres
Irrigation: Sprinkler
Fertilizers / Amount: 21-7-14 / 72,000 lb per year
Observed Discharge: Irrigation and Storm water
Approximate sample site GPS location: N 34° 18' 56.3" W 118° 28' 49.8"

Number of samples collected to date: 2 dry season, 2 wet season.

Laboratory Analytical Results:

- General Chemistry Exceedances: Varying concentrations of Chloride and Nitrate exceeded water quality objectives (Table 2).
- Pesticide Exceedances: Concentrations of DDD, DDE, DDT, Dicofol, and Bifenthrin were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: None (Table 6).

Field Parameters:

Instantaneous flow rates of runoff water during recorded rain events ranged from approximately 74.32 to 100.98 gallons per minute, depending on the sampling event and storm intensity. The duration of runoff time was not observed. Irrigation runoff water from this site ranged from approximately 43.74 to 62.20 gallons per minute. Instantaneous flow rates do not represent the total runoff from the site; they are only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of

turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 5,250,000 gallons (approximately 87,500 gallons per acre) of irrigation water are used per month during the dry season. Irrigation water is supplied by the municipal water supply. The entire farm is irrigated using a sprinkler system. The topography is relatively flat, and excess irrigation water drains to the south into a dirt drainage channel that runs to the southeast. Drainage swales had natural vegetation present. Irrigation runoff was consistently encountered at the site.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 6 different pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Of the 6 applied compounds, 0 were included in the laboratory analytical program outlined in the CWIL. Dicofol and Bifenthrin were detected during one sampling event. These compounds were not reported as being used in the PURs. Concentrations of historical Legacy Pesticides such as DDD, DDE, and DDT were also detected in runoff samples.

Fertilizer application:

Fertilizer is applied as broadcast down turf. Approximately 72,000 pounds (approximately 1,200 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances most likely stemming from fertilizer use at the site was observed for nitrate in two of the three samples.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Proposed BMPs:

The site is now closed, and has been replaced with an alternate sampling site with similar characteristics.

Discussion:

No pesticides that were included in the laboratory analytical suite were reported as being applied at the site on PURs. One pesticide not reported as being used in PURs was reported as an estimated concentration in a single irrigation water sample collected at the site. Currently the source of this pesticide is unknown, and will be evaluated further with future data.

Legacy Pesticides DDE, DDD, and DDT were detected above CWIL limits in storm water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff was consistently observed in large volumes at the site. Slight exceedances from fertilizer use also reported once during irrigation sampling and once during storm water sampling. The site was categorized into medium to high water use group and medium to high fertilizer use group.

The source of exceedances appeared to be across the whole site, as the property drains into a large culvert at the south border. The site is also the only sod farm that is sampled, and irrigation practices vary greatly from typical nursery practices. The operator of the property has currently converted the property to another land use, and an alternate sampling site from the same growers has been selected. The alternate sampling site will adhere to the BMP implementation protocols outlined in this WQMP.

11.16 WEST COVINA WHOLESALE – DAMIEN – NGA SITE #189

Crop Type: General Ornamental
Sub Basin: San Gabriel River
City: La Verne
Total / Irrigated Acres: 1.5 Acres
Irrigation: Drip and Hand watering
Fertilizers / Amount: 21-5-12 / 2,000 lb per year
Observed Discharge: Irrigation and Storm water
Approximate sample site GPS location: N 34° 06' 59.1" W 117° 47' 03.9"

Number of samples collected to date: 0 dry season, 1 wet season

Laboratory Analytical Results:

- General Chemistry Exceedances: None (Table 2).
- Pesticide Exceedances: Concentrations of DDE and various Chlordanes were detected above laboratory RLs in runoff samples (Tables 3-5).
- Toxicity Exceedances: Statistically significant toxicity was reported for Selenastrum (Table 6). Follow up TIE testing could not be completed.

Field Parameters:

Instantaneous flow rate of runoff water during the recorded rain event was approximately 30.85 gallons per minute. The duration of runoff time was not observed. The instantaneous flow rate does not represent the total runoff from the site; it is only representative of the sampling location at the time of sample collection.

Flow rates and field readings indicate that runoff water will not adversely affect the pH, temperature, or dissolved oxygen of receiving surface water. All three parameters were within acceptable ranges as outlined in the WQCP for the Los Angeles Region. Field readings of turbidity and TSS do not indicate that they could potentially affect beneficial uses of receiving waters. Field monitoring results are presented in Table 7.

Irrigation observations:

According to communications with the nursery and the NOI submitted to the LARWQCB, approximately 160,000 gallons of irrigation water (approximately 106,667 gallons per acre) are used per month during the dry season. Irrigation water is supplied by the municipal water supply. Hand watering and drip systems are used for irrigation at the site. The topography is flat, there minimal evidence of excessive over watering and minimal standing water encountered at the site. The minimal amount of irrigation discharge that leaves the site ends up running into a municipal water meter box and percolates into the soil. Irrigation discharge does not end up entering storm water drains.

Pesticide use:

PURs for the site are presented in Appendix D. The NOI submitted to the LARWQCB and PURs submitted to the CAC and the DPR reported 0 pesticides/compounds as being used at the site from the period of August 2007 to July 2008 (Table 11). Concentrations of Legacy Pesticides DDE and various Chlordanes were detected in runoff samples.

Fertilizer application:

Fertilizer is applied as topdress, and as slow release incorporated into the potting soil, depending on plant conditions. Approximately 2,000 pounds (approximately 1,333 pounds per acre) of dry fertilizer are applied to the site per year. CWIL exceedances stemming from fertilizer use at the site were not found during runoff water sampling.

Potential Loading Rates:

Potential loading rates for pesticide compounds detected during sampling events are presented in Table 15. Estimated loading rates are based on instantaneous flow rates collected from the point the sample was collected, and do not represent the total runoff from the site. Due to variability in flow readings, potential loading rates should only be used as a qualitative analysis of the potential impacts runoff water could have on surface waters.

Discussion:

No pesticides were reported as being applied at the site on PURs, and no currently used pesticides were detected in the single wet season water sample collected from the site.

Legacy Pesticides DDE, and Chlordanes were detected above CWIL limits in wet season water runoff from the site. The source of the Legacy Pesticides is most likely from compounds attached to soil leaving the site during storm events. A goal of reducing turbidity and TSS has been set for the site, as particulate matter from erosion can carry a number of constituents of concern off the site.

Irrigation runoff and exceedances from fertilizer use were not observed at the site. The site was categorized into the small size group, high irrigation use group, and high fertilizer use group.

Irrigation water and storm water occasionally leaves a corner of the property boundary, but the runoff enters a municipal water meter box and percolates into the soil prior to entering any storm drains. The single runoff sample was able to be collected when water meter box flooded after a substantial amount of rain. The site is currently covered in gravel to limit sediment runoff from the site.

BMP Questionnaire:

Complete BMPQ answers from the first version of the BMPQ can be found in Appendix E.

Specific Implemented BMPs:

West Covina Nursery has implemented BMPs for the Erosion and Runoff Management category. The grower's main objective was to limit the amount of sediment runoff. To limit the amount of sediment runoff, the grower has constructed a soil berm and planted vegetation along the fence line. In addition, gravel has been placed on the outside of the fence line and along strategic points on the property.

Generalized BMPs Implemented:

West Covina has begun to implement the following BMPs:

- Erosion and Runoff Management: BMPQ number 4.

Additional BMPs:

All required BMPs for the small sized growers have been met. BMPs required universally throughout the LAILG will be initiated by October 15, 2009, if not previously implemented. If future water quality exceedances are observed, additional BMPs will be implemented.

12.0 DISCUSSION / GOALS

Based on field monitoring and laboratory analytical results to date, discharges from LAILG sampling sites have exceeded CWIL benchmarks and/or water quality objectives set in the basin plan. Due to the exceedances, LAILG developed a WQMP as required in the CWIL. The WQMP is designed to immediately implement BMPs at LAILG sampling sites with known exceedances in order to improve water quality. Most of the LAILG sampling sites have already implemented BMPs based on the results of the sampling. LAILG will be working directly with the sampling sites to evaluate the BMPs currently in place and to design more BMPs if necessary to improve water quality. LAILG will document and photograph all BMPs implemented at sampling sites and forward the information to the LARWQCB.

Subsequent monitoring and sampling data collected from LAILG sampling sites will be used to evaluate the effectiveness of the BMPs, and will be reported to the LARWQCB in the AMRs. The effectiveness of the BMPs will also be provided to all LAILG members in order to better select BMPs. This information will be provided to growers thru mailers, emails, and posted on the NGA website.

The current data set developed from the LAILG sampling sites was used in conjunction with the NOIs for all members enrolled in the LAILG to develop priorities and BMPs based on a threat to water quality. The data was evaluated in numerous ways and it was determined that the LAILG sites would be prioritized by size.

LAILG members were broken up into four groups: sampling sites, large sites (>5 acres), medium sites (2.5-5 acres) and small sites (<2.5 acres). Each group has specific goals and BMP requirements. Workshops are currently being designed to best fit each group.

The workshops are designed to do the following: 1) educate members on the CWIL program and on why they are being regulated; 2) provide BMP guidance documents to members and display how to use guidance documents for their facility and to educate their staff; 3) assist with the development of a site plan of members facilities; 4) educate members on how to evaluate their site plan from a water quality standpoint; and, 5) BMP education and hands on training on installations of structural BMPs.

LAILG will also require members to keep the guidance manuals on site and require members to conduct water quality BMP “tail gate” meetings with all staff. The “tail gate” meetings will be developed in English and Spanish, and LAILG is currently working on a social marketing slogan regarding water quality to be posted at enrolled facilities. To improve water quality, LAILG believes that all people involved in the growing process should be educated in water quality BMPs.

LAILG will also require that all discharge points be labeled at member’s facilities. An understanding of where the runoff leaves the property during irrigation and storm events is crucial to developing successful BMPs.

The main goals of the WQMP for LAILG sampling sites is to implement BMPs to improve water quality and meet CWIL benchmarks; to evaluate the effectiveness of BMPs with subsequent monitoring and sampling, and to integrate water quality and water conservation into the growing process thru education.

LAILG believes that education of all members and their staff is the first step towards improving water quality. Education will be the foundation to develop more sophisticated BMPs, if warranted based on future sampling. LAILG respectfully requests that this WQMP be approved so that the education and guidance documents can be prepared and workshops scheduled for members.

13.0 REFERENCES

- Extoxnet. University of California-Davis. Sep 2008
<http://www.extoxnet.orst.edu/pips/ghindex.html>.
- Haver L. Darren. “Best Management Practices: A Water Quality Field Guide for Growers, Southern California Edition”. 30 (2007).
- Meister Ag Crop Protection Data Base. Sep 2008
<http://www.meisterpro.com>>
- Newman, Julie, ed. Management Practices to Protect Water Quality: A Manual for Greenhouses and Growers. Ventura: University of California Cooperative Extension.
- Regional Water Quality Control Board, Central Coast Region (3). Management Practice Checklist Update Summary Report 2006. June 2007
- United States Environmental Protection Agency. Guidance Manual for Developing Best Management Practices (BMP). Office of Water (EN-336). Oct 1993
- Water Quality Control Plan Los Angeles Region. Basin Plan for the Coastal Watershed of Los Angeles and Ventura Counties. June 1994
- Wheelock, E.Craig, and et al. “Development of Toxicity Identification Evaluation Procedures for Pyrethroid Detection Using Esterase Activity” Environmental Toxicology and Chemistry. 23.11 (2004): 2699-2708

APPENDIX A

**COMPLETE LIST OF LOS ANGELES COUNTY IRRIGATED LANDS
GROUP – NURSERY GROWERS ASSOCIATION**

APPENDIX B

LABORATORY ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION FOR 2008– CRG AND ABC

APPENDIX C

REVISED BEST MANAGEMENT PRACTICE QUESTIONNAIRE

APPENDIX D
PESTICIDE USE REPORTS

APPENDIX E

ORIGINAL BEST MANAGEMENT PRACTICE QUESTIONNAIRES SUBMITTED TO SAMPLING SITES