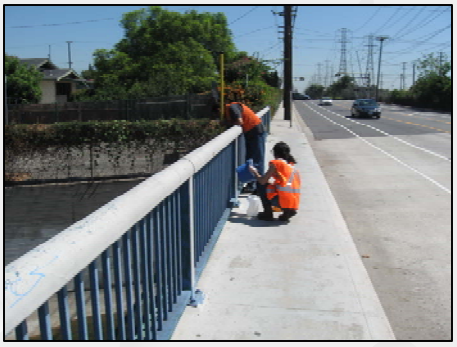
City of Gardena

Integrated Monitoring Program


1700 West 162nd Street – Gardena, CA 90247

March 7. 2016

Section One: Monitoring and Reporting Program (MRP)

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1.0 Summary

The Los Angeles County MS4 permit (Order R4-2012-0175) includes compliance with a Monitoring and Reporting Program (No. CI-6948), (MRP). The MRP addresses the several types of monitoring tasks required by the permit. The City intends to meet these requirements through its **Integrated Monitoring Program** (IMP) submittal.

The purpose of the monitoring is to facilitate an evaluation of the adequacy of control measures in meeting the specified limitations. The LA County MS4 Permit Attachment E Table E-2 as well as Attachment L-R specifies the applicable receiving water limitations and water quality based effluent limitations to which MS4 discharges are subject. They can be taken from the current permit 'The LA County MS4 permit No. R4-2012-0175' under the MS4 permit's MRP under Attachment E.

All pollutants subject to monitoring will be loaded into the RAA/Water Quality Model to evaluate to what extent the City is persistently exceeding TMDLs and other water quality standards and identify BMPs that are necessary to preventing such exceedances.

1.1 Integrated Monitoring Program

The City is subject to an Integrated Monitoring Program (IMP) to comply with monitoring requirements under the MS4 permit. In accordance with the MRP, the IMP includes the following elements: (1) receiving water monitoring; (2) storm water outfall based monitoring; (3) non-storm water outfall based

monitoring; (4) new development/re-development effectiveness tracking; and (5) regional studies.

1.2 **IMP Requirements**

Through the **Integrated Monitoring Program** the City proposes to consolidate applicable monitoring program requirements as specified in Attachment E of the MS4 permit, which *provides flexibility to allow Permittees to coordinate monitoring efforts on a watershed or sub-watershed basis to leverage monitoring resources in an effort to increase cost-efficiency and effectiveness and to closely* align monitoring with TMDL monitoring requirements *and Watershed Management Programs*.

GIS maps have been developed to depict the geographic boundaries of the monitoring plan including the receiving waters, the MS4 catchment drainages, storm drains, and outfalls, sub-watershed boundaries, political boundaries, land use, and the proposed receiving water monitoring stations for both dry weather and wet weather monitoring (see **Appendix A, Maps**).

1. 3 **Receiving Water Monitoring**

The MS4 permit requires receiving water monitoring to be performed at in-stream mass emissions stations; additional receiving water compliance points approved by the Regional Board's Executive Officer; and additional locations that are representative of impacts from MS4 discharges. The objectives of receiving water monitoring are:(1) determine if receiving water

limitations are being achieved; (2) assess trends in pollutant concentrations over time; and (3) determine whether the designated beneficial uses are fully supported based on water chemistry, as aquatic toxicity and bio-assessment monitoring.

The City will, rely on in-stream monitoring to assess the impact of the SWMP on beneficial uses of the receiving waters into which it discharges.

The City will conduct wet and dry weather monitoring of receiving water from mass emission station S28 located at Artesia Blvd. & Vermont Ave. Drainage area is 33.2 square miles and is located in a concrete-lined rectangular channel. All analyses required by the NPDES permit (including relevant TMDLs) will be monitored at this site.

Table II – Summary of NPDES Receiving Water Monitoring Sites

Site ID	Site Location	Coordinates	Catchment Area (square miles)	City's Area (square miles)
S-28	Mass Emission station (Artesia Blvd.)	33.9376667, -118.399444	33.2	5.87

1.4 Storm Water Outfall-Based Monitoring

The City is committed to stormwater monitoring at the outfall in accordance with federal stormwater regulations. Outfall monitoring will be used to: (1) determine compliance with WQBELs (TMDL WLAs and other water quality standards); (2) evaluate stormwater discharges against Municipal Action Levels (MALs); and (3) determine wither the City's discharge causes or contributes to an exceedance of receiving water limitations.

The City has identified one outfall from which discharges are released to Dominguez Channel. However, the City cannot sample from outfalls because: (1) they are located on property owned and operated by County of Los Angeles Flood Control District (LACFCD); and (2) it would be physically impossible to draw a grab sample from them.

Federal regulations allow monitoring to be conducted at representative field screening points which, along with outfalls, are illustrated on **Appendix A-1**. Four screening points have been selected for Dominguez Channel (above Vermont Avenue). Each located upstream of five outfalls. Ordinarily, each of the outfalls would be sampled from upstream storm drain locations. However, two of the outfalls cannot be accessed to serve as field screening points. No outfall prioritization of the field screening points is necessary because all of them are upstream of the outfalls from which the City discharges to Dominguez Channel.

Outfall Discharging into Receiving Water

The field screening points are representative of discharges from the City which are a mix of residential, commercial, and industrial land uses. Stormwater discharges from the outfall field screening points will be measured

against WQBELs and MALs. Sampling results will be reported to the Regional Board semi-annually.

The City plans to conduct stormwater outfall monitoring three times a year during wet weather in accordance with 40 CFR §122.21(g)(7). The City falls within two HUC 12 drainage area, Upper Dominguez Channel and Lower Dominguez Channel. There are two field screening points are located in lower Dominguez channel HUC 12 drainage area. City will conduct sampling from each field screening points to provide a representative characterization of City stormwater outflows. At the end of the 5 year term of the permit, the City will be able to evaluate exceedances of WQBELs and other water quality standards and propose adjustments to BMPs and other actions in the Report of Waste Discharge (ROWD). The MS4 permit reapplication is due to the Regional Board 180 days prior to the expiration of the current permit (July 1, 2017).

Table III provides Land Use the Breakdown for the City of Gardena. Table IV provides land use breakdown for the HUC-12 drainage area. Table V shows the drainage area of land use that each outfall area covers. The City has chosen to use two field screening points for monitoring purposes. The City of Gardena falls into two HUC 12 Upper Dominguez Channel and Lower Dominguez Channel. There is only one field screening point located in upper Dominguez Channel drainage area. There are 3 field screening points located in lower Dominguez Channel. The City will choose two sampling locations. Field Screening points # 3 and #4 will be sampled three times a year, every year. Field screening point #3 represent outfall #3 and field screening point #4

represent outfall #5. Table VI shows the land use breakdown for each outfall drainage area.

The City does not have any open channels other than the Dominguez Channel or underground pipes 18 inches or greater in diameter. Furthermore, the City does not have any dry weather diversions within its jurisdiction.

Table III – Land Use Breakdown

Land Use Category	Area (Acre)	Percentage
Residential	1593.2	42.5%
Mixed-Use (Residential/Commercial)	37.3	1%
Commercial	454.3	12.1 %
Industrial	550	14.7 %
Agriculture	47.6	1.3%
Transportation	809.9	21.6 %
Public	211.7	5.6 %
Vacant	44.8	1.2%
Total	**3749**	**100%**

Table IV – Land Use Breakdowns for HUC 12 Drainage Areas

Land Use Type	Drainage Area (Acres & Percentage)	
	HUC 12 Drainage area (Upper Dominguez Channel)	
	576 Acre	
Residential	156.8 (4.2%)	1436.4 (38.3%)
Agriculture	0.4 (0.01%)	47.5 (1.29%)
Commercial	62.5 (0.2%)	391.8 (11.9%)
Industrial	176.3 (4.7%)	373.7 (10%)
Transportation	155 (4.1%)	654.9 (17.5%)
Vacant	0 (0%)	44.8 (1.2%)

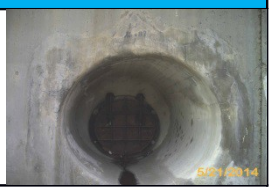
Public	25 (0.7%)	186.7 (4.9%)
Mixed-Use (Residential/Commercial)	0 (0%)	37.3 (1%)

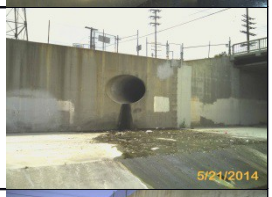
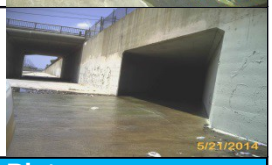
Table V – Land use breakdown of Field Screening Points Drainage area

Land Use Type	Field Screening point #3 Drainage Area(Acre)	Field Screening Point #4 Drainage Area(Acre)
Residential	502.74 (13.4%)	574.6 (15.3%)
Agriculture	16.6 (0.45%)	21.4 (0.58%)
Commercial	137.13 (4.2%)	156.8 (4.5%)
Industrial	130.8 (3.5%)	149.6 (4%)
Transportation	229.2 (6.1%)	261.9 (7%)
Vacant	14.9 (0.39%)	29.9 (0.81%)
Public	65.3(1.7%)	74.7 (2%)
Mixed-Use (Residential/Commercial)	11.8 (0.31%)	25.5 (0.69)
Total		

Field screening point#3 represent outfall #5 and field screening point #4 represent outfall #4

Table VI - Summary of Outfall and Field Screening Points

Outfall #	Coordinates	Outlet Location	Ownership	Size (in)	Outlet material	Picture
1	33.9090167, -118.32568	132nd Street	LACFCD	42	Reinforced Channel Pipe (RCP)	

2	33.909458, -118.325608	W 135th St.	LACFCD	168	Reinforced Cement Concrete (RCC)	
3	33.901283, -118.326691	Rosecrans Ave.	LACFCD	87	Reinforced Concrete Box (RCB)	
4	33.871158, -118.306413	Western & Artesia (S-28)	LACFCD	48	Reinforced Channel Pipe (RCP)	
5	33.8712527, -118.882141	S Normandie Ave.	LACFCD	117	Reinforced Concrete Box (RCB)	
Field Screening point No.	**Field Screening Coordinates**	**Field Screening Location**	**Ownership**	**Size (in)**	**Field Screening material**	**Picture**
3	33.901836, -118.324964	S. Normandie Ave	LACFCD	36	Concrete Box	
4	33.872029, -118.298876	Western & Artesia Blvd. (S-28)	LACFCD	36	Concrete Box	

1.5 **Non-Storm Water Outfall-Based Monitoring**

MS4 permittees are required to prohibit impermissible (i.e., non-exempt) non-stormwater discharges into the MS4. If a permittee does not succeed in getting the discharger to prohibit the non-stormwater discharge, it must require the discharger to obtain a separate discharge permit.

The City will perform visual outfall and sampling monitoring in connection with illicit connection and discharge elimination requirements in keeping with federal stormwater regulations and USEPA guidance. Non-stormwater discharge monitoring will conform to 122.26(d)(1)(D) for the purpose of screening for illicit connections and dumping, which specifies visual monitoring at outfalls for dry weather (non-stormwater discharges). Visual monitoring shall be performed twice a year during dry periods. If flow is observed samples for the outfall (or field screening points):

> *...samples shall be collected during a 24 hour period with a minimum period of four hours between samples. For all such samples, a narrative description of the color, odor, turbidity, the presence of an oil sheen or surface scum as well as any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping shall be provided.*

In addition, regulations require a narrative description of the results from sampling for fecal coliform, fecal streptococcus, surfactants (MBAS), residual chlorine, fluorides and potassium; pH, total chlorine, total copper, total phenol, and detergents (or surfactants) shall be provided along with a description of the flow rate. These analytes will be used as potential indicators of illicit discharges, which would trigger an up-stream investigation to identify the source of the suspected illicit discharge or connection. If the source of the illicit discharge/connection and discharger is identified, the City shall notify the discharger that it will need to halt the discharge and, if not feasible, will require the discharger to obtain a discharge permit.

As per the LA County MS4 Permit, non-stormwater outfall based monitoring must be included in the IMP as outlined in Part IX of Attachment E.

The City's non-stormwater outfall based screening and monitoring process is outlined below:

- Field Screening – Outfalls greater than or equal to 36 inches or for MS4 outfalls that discharge from a single pipe with an inside diameter of 12 inches or more or from its equivalent in diameter that receives storm water from lands zoned for industrial activity will be located and mapped using GIS. Field screening events will take place during dry weather, i.e., on days with <0.1 inch of rain and no less than 72 hours after a rain event. An observation will be conducted during working hours. During observations staff will complete an **Outfall Screening Form** containing information such as date, time, weather, flow amount, visual turbidity, and trash odor. Photographs will also be taken during the inspection.
- Inventory of Screening Points: An inventory will be developed for major MS4 outfalls with known significant non-stormwater discharges and those requiring no further assessment. This inventory will be updated annually.
- No further Assessment: No further Assessment will be reported in the inventory database if no flow is observed. However, where changes are needed, the City will make the changes in its written program documents, implement these changes in practice, and describe the changes within the next annual report.
- Prioritization Criteria & Source Investigation: Based on data collected during the screening process, the City will identify screening points with significant non-stormwater discharges and those requiring no

further action. The data collected as part of the outfall screening process will be used to prioritize outfalls for source investigation. The City will complete 25% of source identification inventory by December 28th, 2015 and 100% by December 28, 2017.

- Implement Source Identification: If necessary, the City will implement source identification in prioritized order, consistent with the City's IC/ID Program. The City's contribution will be quantified if the discharge is comprised of multiple sources. Upstream jurisdictions and the Regional Board will be notified if the source originates outside the City's jurisdictional area.
- Monitor Non-storm Water Discharge Exceedance Criteria: The City will monitor outfall screening points conveying significant discharges comprised of unknown or conditionally exempt non-stormwater discharges, or continuing illicit discharges. In addition, an outfall subject to an approved dry weather TMDL will be monitored per the TMDL Monitoring Plan. The City will monitor non-stormwater discharge four times per year. Monitoring frequency will be reduced to twice per year beginning the second year of monitoring if pollutant concentration during the first year do not exceed WQBELs, Non-stormwater Action Levels, or water quality standards for pollutants on the 303(d) list. After 1 year of monitoring, the City may submit a written request to the Executive Officer of the Regional Water Board to reduce or eliminate monitoring of specified pollutants, based on an evaluation of the monitoring data. Outfall(s) will be monitored for the flow, constituents identified in Attachment N of MS4 permit, Table E-2

constituents that are found exceeding the lowest water quality objective in the downstream receiving water, and other pollutants identified in 303(d) list. Pollutants identified in a TIE conducted in response to observed aquatic toxicity during dry weather at the nearest downstream receiving water monitoring station or, where the TIE conducted on the receiving water sample was inconclusive that non-stormwater outfall monitoring will include aquatic toxicity monitoring. If the discharge exhibits aquatic toxicity, then a TIE shall be conducted.

The City has challenged the MAL monitoring requirement in its administrative petition, based on these and other concerns. MAL monitoring represents an unnecessary cost that accomplishes nothing beneficial.

1.7 New Development/Redevelopment Tracking

The Planning and Land Development Program (PLDP) requires tracking new development and redevelopment projects within 60 days after the permit's adoption (by February 26, 2013). Although not a monitoring requirement per se, permittees are nevertheless required to maintain a database containing the following information:

- name of the project and developer,
- project location and map (preferably linked to the GIS storm drain map),
- date of Certificate of Occupancy,
- 85th percentile storm event for the project design (inches per 24 hours),

- 95th percentile storm event for projects draining to natural water bodies (inches per 24 hours), related to hydromodification
- other design criteria required to meet hydromodification requirements for drainages to natural water bodies,
- project design storm (inches per 24-hours),
- project design storm volume (gallons or MGD),
- percent of design storm volume to be retained on site
- design volume for water quality mitigation treatment BMPs, if any.
- If flow through, water quality treatment BMPs are approved, provide the one year, one-hour storm intensity as depicted on the most recently issued isohyetal map published by the Los Angeles County Hydrologist,
- percent of design storm volume to be infiltrated at an off-site mitigation or groundwater replenishment project site
- percent of design storm volume to be retained or treated with bio-filtration at an off-site retrofit project,
- location and maps (preferably linked to the GIS storm drain map required in Part VII.A of this MRP) of off-site mitigation, groundwater replenishment, or retrofit sites documentation of issuance of requirements to the developer.

The City intends to meet this requirement through a revised SUSMP evaluation form (see **Section Two, SUSMP Appendix B-4**).

1.8 Regional/Special Studies

The Southern California Stormwater Monitoring Coalition (SMC) Regional Watershed Monitoring Program was initiated in 2008. This program is conducted in collaboration with the Southern California Coastal Water Research Project (SCCWRP), State Water Board's Surface Water Ambient Monitoring Program, three Southern California Regional Water Quality Control Boards (Los Angeles, Santa Ana, and San Diego) and several county storm water agencies (Los Angeles, Ventura, Orange, Riverside, San Bernardino and

San Diego). SCCWRP acts as the facilitator to organize the program and completes data analysis and report preparation. The SMC monitoring program seeks to coordinate and leverage existing monitoring efforts to produce regional estimates of condition, improve data comparability and quality assurance, and maximize data availability, while conserving monitoring expenditures. The primary goal of this program is to implement an ongoing, large−scale regional monitoring program for southern California's coastal streams and rivers. The monitoring program addresses three main questions:

- What is the condition of streams in southern California?
- What are the stressors that affect stream condition?; and
- Are conditions getting better or worse?

In order to continue the implementation efforts of the SMC monitoring program, the City will support or provide monitoring data as described at the SMC sites within the watershed management area(s) that overlap with the City's jurisdictional area.

1.9 Toxicity Monitoring

The MRP of the MS4 permit requires toxicity testing at the outfall and in the receiving water. The City will collect and analyze grab samples taken from receiving water monitoring locations to evaluate the extent and cause of toxicity in the receiving water. Receiving water monitoring station (Dominguez Channel and Vermont Ave.) will be used to test for aquatic toxicity. If toxicity is present in the receiving water, the City will perform toxicity testing on water samples taken from field screening points to make sure that the toxicity is

coming from City's jurisdictional area. A sufficient number of samples specified in the MRP shall be collected to perform both the required toxicity test and TIE studies.

1.9.1 Sensitive Species Selection

The MRP states that a sensitivity screening is required to select the most sensitive test species unless "a sensitive test species has already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s), then monitoring shall be conducted using only that test species." Previous relevant studies conducted in the watershed should be considered. Such studies may have been completed via previous MS4 sampling, wastewater NPDES sampling, or special studies conducted within the watershed. The following sub-sections discuss the species section process for assessing aquatic toxicity in receiving waters.

1.9.2 Freshwater Sensitive Species Selection

As described in the MRP, samples collected in receiving waters with salinity less than or equal to 1 ppt or from outfalls discharging to receiving waters with salinity less than or equal to 1 ppt, the Marine and Estuarine Test Species and Methods would be used. Toxicity tests should be conducted on the most sensitive test species in accordance with species and short-term test methods in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.* The freshwater test species identified in the MRP are:

- A static renewal toxicity test with the fathead minnow, Pimephales promelas (Larval Survival and Growth Test Method 1000.04).
- A static renewal toxicity test with the daphnid, Ceriodaphnia dubia (Survival and Reproduction Test Method 1002.05).
- A static non-renewal toxicity test with the green alga, Selenastrum capricornutum (also named Raphidocelis subcapitata) (Growth Test Method 1003.0).

The three test species were evaluated to determine if either a sensitive test species had already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s). In reviewing the available data in the Dominguez Channel watershed, metals, historical organics, and pyrethroids have been identified as problematic and are generally considered the primary aquatic life toxicants of concern found in urban runoff. Given the knowledge of the presence of these potential toxicants in the watershed, the sensitivities of each of the three species were considered to evaluate which is the most sensitive to the potential toxicants in the watersheds.

As C. dubia is identified as the most sensitive to known potential toxicant(s) typically found in receiving waters and urban runoff in the freshwater portions of the watershed, C. dubia is selected as the most sensitive species. The species also has the advantage of being easily maintained by means of in-house mass cultures. The simplicity of the test, the ease of interpreting results, and the smaller volume necessary to run the test, make the test a valuable screening tool. The ease of sample collection and

higher sensitivity will support assessing the presence of ambient receiving water toxicity or long term effects of toxic storm water over time.

As such, toxicity testing in the freshwater portions of the watershed will be conducted using C. dubia. However, C. dubia test organisms are typically cultured in moderately hard waters and can have increased sensitivity to elevated water hardness greater than 400 mg/L CaCO3, which is beyond their typical habitat range. Because of this, in instances where hardness in site waters exceeds 400 mg/L (CaCO3), an alternative test species may be used. Daphnia magna is more tolerant to high hardness levels and is a suitable substitution for C. dubia in these instances.

1.9.3 **Toxicity Identification Evaluation (TIE)**

A toxicity test sample is immediately subject to TIE procedures to identify the toxic chemical(s), if either the survival or sub-lethal endpoint demonstrates a Percent Effect value equal to or greater than 50% at the Instream Waste Concentration (IWC). Percent Effect is defined as the effect value denoted as the difference between the mean control response and the mean IWC response, divided by the mean control response-multiplied by 100. A TIE shall be performed to identify the causes of toxicity using the same species and test method and, as guidance, U.S. EPA manuals: Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I (EPA/600/6-91/005F, 1992); Methods for Aquatic Toxicity Identification *Evaluations, Phase II* Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/081, 1993); Methods for Aquatic Toxicity Identification *Evaluations, Phase III* Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/081, 1993) and Marine

Toxicity Identification Evaluation (TIE): Phase I Guidance Document (EPA/600/R-96-054, 1996).

The TIE should be conducted on the test species demonstrating the most sensitive toxicity response at a sampling station. A TIE may be conducted on a different test species demonstrating a toxicity response with the caveat that once the toxicant(s) are identified, the most sensitive test species triggering the TIE shall be further tested to verify that the toxicant has been identified and addressed. A TIE Prioritization Metric (see Appendix 5 in SMC Model Monitoring Program) may be utilized to rank sites for TIEs.

1.9.4 Toxicity Reduction Evaluation (TRE)

If a toxicant or class of toxicants could not be conclusively identified through a TIE conducted on the receiving water sample, the City will conduct toxicity testing at the outfall at the next sampling event during the same condition (i.e., either wet weather or dry weather) in which the toxicity was observed in the receiving water. When a toxicant or class of toxicants is identified through a TIE conducted at a receiving water monitoring station, the City shall analyze for the toxicant(s) during the next scheduled sampling event in the discharge from the outfall(s) upstream of the receiving water location. If the toxicant is present in the discharge from the outfall at levels above the applicable receiving water limitation, a TRE shall be performed for that toxicant. The TRE shall include all reasonable steps to identify the source(s) of toxicity and discuss appropriate BMPs are identified; the City shall submit a TRE Corrective Action Plan to the Regional Water Board Executive Officer for approval. At a minimum, the plan shall include a discussion of the following:

- The potential sources of pollutant(s) causing toxicity.

- A list of municipalities and agencies that may have jurisdiction over sources of pollutant(s) causing toxicity.
- Recommended BMPs to reduce the pollutants(s) causing toxicity.
- Proposed post-construction control measures to reduce the pollutant(s) causing toxicity.
- Follow-up monitoring to demonstrate that the toxicants have been reduced or eliminated.

1.10 Chemical TMDL Monitoring and Compliance Schedule

Chemical TMDL sampling will be performed at field screening points from stormwater discharges at least three times a year. Sampling and analysis will be in keeping with USEPA guidance. The table below specifies interim and final TMDL WLAs and compliance deadline dates to which the City is subject. Table VII below is a summarize list of constituents for MS4 and TMDL storm water outfall, receiving water, and non-stormwater outfall based monitoring. In addition, non-stormwater outfall based, receiving water and stormwater outfall-based monitoring will include testing for 303(d) listed pollutants that are not addressed by TMDLs.

Table VII – List of Constituents

Upper Dominguez Channel (Upper HUC 12)	Lower Dominguez Channel (Lower HUC 12)
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, TSS & SSC	Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, TSS & SSC
Table E-2 Pollutants	Table E-2 Pollutants

Copper, Lead, Zinc	Copper, Lead, Zinc
Toxicity - Chlordane, DDT, PCBs, & PAHs	Toxicity - Chlordane, DDT, PCBs, & PAHs
Suspended Sediment: Copper, Lead, Silver, Zinc, Chlordane, DDT, PCBs & PAHs	Suspended Sediment: Copper, Lead, Silver, Zinc, Cadmium, Chlordane, DDT, PCBs & PAHs
TIE	TIE
303(d) List – Ammonia, Copper, Indicator bacteria, Lead, Toxicity, Zinc, Diazinon	303(d) List – Ammonia, BMB, Benzo Pyrene, benzo Anthracene, Chlordane (tissue), Chrysene(C1-C4), Coliform Bacteria, DDT(tissue & sediment), Dieldrin(tissue), Lead(tissue), PCBs, Phenanthrene, Pyrene, Zinc(sediment), Sediment toxicity

Table VIII – Dominguez Channel Freshwater TMDL

Toxics TMDL	Wet Weather Interim WLA	Deadline	Wet Weather Final WLA	Deadline
Total Copper	207.51 g/L	December 28, 2012	1300.3 g/day	March 23, 2032
Total Lead	122.88 g/L	December 28, 2012	5733.7 g/day	March 23, 2032
Total Zinc	898.87 g/L	December 28, 2012	9355.5 g/day	March 23, 2032
Toxicity	2 TUc	December 28, 2012	1 TUc	March 23, 2032

Table IX – Dominguez Channel Estuary TMDL

Pollutant	Interim Sediment	Compliance Schedule	Final Sediment	Compliance Schedule
Copper	220 mg/kg	December 28, 2012	22.4 kg/year	March 23, 2032
Lead	510 mg/kg	December 28, 2012	54.2 kg/year	March 23, 2032
Zinc	789 mg/kg	December 28, 2012	271.8 kg/year	March 23, 2032
DDT	1.727 mg/kg	December 28, 2012	0.25 g/year	March 23, 2032
PAHs	31.60 mg/kg	December 28, 2012	0.134 kg/year	March 23, 2032
PCBs	1.490 mg/kg	December 28,	0.207 g/year	March 23,

		2012		2032
Cadmium	--	--	1.2 mg/kg	March 23, 2032

The City will additionally monitor fish tissue and sediment samples from Dominguez Channel Estuary as required by the TMDL.

1.11 MAL Monitoring

Stormwater sampling against MAL analytes shall be performed at the same time stormwater monitoring is performed for other purposes and with the same frequency – three times during wet weather. The table below identifies the MAL analytes and their numeric limitations.

Table X - Municipal Action Levels

Metals	Unit	Total
Cadmium	ug/l	2.52
Chromium	ug/l	20.2
Copper	ug/l	71.12
Lead	ug/l	102
Zinc	ug/l	641.3
Nickel	ug/l	27.43
Mercury	ug/l	0.32
Conventional Pollutants	**Unit**	**MAL**
Total Phosphorus	mg/l	0.80
Nitrate & Nitrite	mg/l	1.85
Kjedahl Nitrogen (TKN)	mg/l	4.59
COD	mg/l	247.5
TSS	mg/l	264.1
pH	-	6 -9

1.12 Action Level Monitoring

The tables below lists non-stormwater action level analytes for the Dominguez Channel. As mentioned, the City shall not conduct outfall monitoring for compliance purposes. Such monitoring is not authorized under the Clean Water Act and is contrary to State Board water quality orders. Because non-stormwater discharges are not subject to an iterative process, an exceedance would place a permittee in violation. Nevertheless, tThe City shall conduct non-stormwater monitoring for non-storm water action levels to detect and eliminate illicit discharges and connections (see below Section 1.14).

Table XI – Action Levels (Non-Stormwater) for Dominguez Channel (with receiving water salinity equal to or less than 1 ppt)

Analyte	Units	Average Monthly	Daily Maximum
pH	Standard units	6.5-8.5[2]	
E. coli Bacteria	#/100 ml	126[3]	235[4]
Cyanide, Total Recoverable	µg/l	4.3	8.5
Copper, Total Recoverable	µg/l	7	14
Lead, Total Recoverable	µg/l	2.6	5.2
Mercury, Total Recoverable	µg/l	0.051	0.10
Selenium, Total Recoverable	µg/l	4.1	8.2

[2]Within the range of 6.5 to 8.5 at all times
[3]E.coli density shall not exceed a geometric mean of 126/200 ml
[4]E.coli density in a single sample shall not exceed shall not exceed 235/100 ml
[5]In accordance with applicable water quality objectives contained in Chapter 3 of the Basin Plan
[6]Same as Chloride (see footnote 13)

Table XII – Action Levels (Non-Stormwater) for Dominguez Channel Estuary (with receiving water salinity equal to or greater than 10 ppt 95% or more of the time)

Analyte	Units	Average Monthly	Daily Maximum
pH	Standard units	6.5-8.5[1]	
Total Coliform bacteria	#/100 ml	1000[2,3]	10,000[3,4]
Fecal Coliform Bacteria	#/100 ml	200[2]	400[4]
Enterococcus Bacteria	#/100 ml	35[2]	104[4]

Cyanide, Total Recoverable	ug/L	0.5	1
Copper, Total Recoverable	ug/L	2.9	5.8
Lead, Total Recoverable	ug/L	7	14
Mercury, Total Recoverable	ug/L	0.051	0.1
Selenium, Total Recoverable	ug/L	58	117

[1]Within the range of 6.5 to 8.5 at all times.
[2] Total coliform density shall not exceed a geometric mean of 1,000/100 ml. Fecal coliform density shall not exceed a geometric mean of 200/100 ml. Enterococcus density shall not exceed a geometric mean of 35/100 ml.
[3] In areas where shellfish may be harvested for human consumption, as determined by the Regional Water Board, the median total coliform density shall not exceed 70/100 ml and not more than 10 percent of the samples shall exceed 230/100 ml.
[4] Total coliform density in a single sample shall not exceed 10,000/100 ml. Fecal coliform density in a single sample shall not exceed 400/100 ml. Enterococcus density shall not exceed a geometric mean of 104/100 ml.

1.13 Additional Monitoring Required for IMP Compliance

MRP section VI.C.2.a.i and ii requires additional outfall monitoring tasks for permittees. They include pollutants that are currently not TMDLs but are nevertheless 303(d) listed (e.g., cyanide).

The purpose of this monitoring task is to identify non-TMDL pollutants that are causing impairments to beneficial uses of receiving waters and to evaluate the effectiveness of BMPs implemented through the SWMP~~/WMP~~. They are also included to determine if non-TMDL pollutants are causing or contributing to exceedances of receiving water limitations.

Resulting data generated from SWMP-related monitoring will be, along with TMDL monitoring, loaded into the water quality model. These pollutants will be added to the stormwater outfall sampling list. Monitoring for all the constituents that will be tested will be conducted according to test procedures approved under 40 CFR Part 136 for the analysis of the pollutants. Suspended Sediment Concentration (SSC) shall be analyzed per American Society for Testing and Materials (ASTM) Standard Test Method D-3977-97.

Table XIII - Monitoring for Non-TMDL Water Quality Standards

		MLs
CONVENTIONAL POLLUTANTS		**mg/L**
Oil and Grease	EPA 1664	5
Total Phenols	EPA 420.1	0.1
Cyanide	EPA 4500-CNC	0.005
pH	EPA 150.1	0 – 14
Temperature	NA	None
Dissolved Oxygen	NA	Sensitivity to 5 mg/L
BACTERIA (single sample limits)		**MPN/100ml**
Total Coliform (marine waters)	SM 9221B	10,000
Fecal Coliform (marine & fresh waters)	SM 9222 B	400
Enterococcus (marine waters)	SM 9230 B	104
E-Coli	SM 9230 B	235
GENERAL		**mg/L**
Dissolved Phosphorus	SM 4500-PC	0.05
Total Phosphorus	SM 4500-PC	0.05
Turbidity	EPA 180.1	0.1NTU
Total Suspended Solids	EPA 160.2	2
Total Dissolved Solids	EPA 160.1	2
Volatile Suspended Solids	EPA 160.4	2
Total Organic Carbon	SM 5310 B	1
Total Petroleum Hydrocarbon	EPA 1664	5
Biochemical Oxygen Demand	SMOL-5210	2
Chemical Oxygen Demand	SM 5220D	20-900
Total Ammonia-Nitrogen	EPA 350.2	0.1
Total Kjeldahl Nitrogen	EPA 351.2	0.1
Nitrate-Nitrite	EPA 4110	0.1
Alkalinity	EPA 310.1	2
Specific Conductance	EPA 120.1	1umho/cm
Total Hardness	EPA 130.2	2
MBAS	SM 5540 C	0.5
Chloride	EPA 300	2
Fluoride	EPA 300	0.1
Methyl tertiary butyl ether (MTBE)	EPA 4110	1
Perchlorate	EPA 314.0	4 ug/l
METALS (Dissolved & Total)		**µg/L**
Aluminum	EPA 200.8	100
Antimony	EPA 200.8	0.5
Arsenic	EPA 200.8	1
Beryllium	EPA 200.8	0.5
Cadmium	EPA 200.8	0.25
Chromium (total)	EPA 200.8	0.5
Chromium (Hexavalent)	EPA 200.8	5
Copper	EPA 200.8	0.5

Iron	EPA 200.8	100
Lead	EPA 200.8	0.5
Mercury	EPA 1631E	0.5
Nickel	EPA 200.8	1
Selenium	EPA 200.8	1
Silver	EPA 200.8	0.25
Thallium	EPA 200.8	1
zinc	EPA 200.8	1
SEMIVOLATILE ORGANIC COMPOUNDS		
ACIDS		**µg/L**
2-Chlorophenol	EPA 625	2
4-Chloro-3-methylphenol	EPA 625	1
2,4-Dichlorophenol	EPA 625	1
2,4-Dimethylphenol	EPA 625	2
2,4-Dinitrophenol	EPA 625	5
2-Nitrophenol	EPA 625	10
4-Nitrophenol	EPA 625	5
Pentachlorophenol	EPA 625	2
Phenol	EPA 625	1
2,4,6-Trichlorophenol	EPA 625	10
BASE/NEUTRAL		**µg/L**
Acenaphthene	EPA 625	1
Acenaphthylene	EPA 625	2
Anthracene	EPA 625	2
Benzedine	EPA 625	5
1,2 Benzanthracene	EPA 625	5
Benzo(a)pyrene	EPA 625	2
Benzo(g,h,i)perylene	EPA 625	5
3,4 Benzoflouranthene	EPA 625	10
Benzo(k)flouranthene	EPA 625	2
Bis(2-Chloroethoxy) methane	EPA 625	5
Bis(2-Chloroisoproply) ether	EPA 625	2
Bis(2-Chloroethyl) ether	EPA 625	1
Bis(2-Ethylhexl) phthalate	EPA 625	5
4-Bromophenyl Phenyl ether	EPA 625	5
Butyl benzyl phthalate	EPA 625	10
2-Chloroethyl vinyl ether	EPA 625	1
2-Chloronaphthalene	EPA 625	10
4-Chlorophenyl phenyl ether	EPA 625	5
Chrysene	EPA 625	5
Dibenzo(a,h)anthracene	EPA 625	0.1
1,3-Dichlorobenzene	EPA 625	1
1,4-Dichlorobenzene	EPA 625	1
1,2-Dichlorobenzene	EPA 625	1

3,3-Dichlorobenzidine	EPA 625	5
Diethyl phthalate	EPA 625	2
Dimethyl phthalate	EPA 625	2
di-n-Butyl phthalate	EPA 625	10
2,4-Dinitrotoluene	EPA 625	5
2,6-Dinitrotoluene	EPA 625	5
4,6 Dinitro-2-methylphenol	EPA 625	5
1,2-Diphenylhydrazine	EPA 625	1
di-n-Octyl phthalate	EPA 625	10
Fluoranthene	EPA 625	0.05
Fluorene	EPA 625	0.1
Hexachlorobenzene	EPA 625	1
Hexachlorobutadiene	EPA 625	1
Hexachloro-cyclopentadiene	EPA 625	5
Hexachloroethane	EPA 625	1
Indeno(1,2,3-cd)pyrene	EPA 625	0.05
Isophorone	EPA 625	1
Naphthalene	EPA 625	0.2
Nitrobenzene	EPA 625	1
N-Nitroso-dimethyl amine	EPA 625	5
N-Nitroso-diphenyl amine	EPA 625	1
N-Nitroso-di-n-propyl amine	EPA 625	5
Phenanthrene	EPA 625	0.05
Pyrene	EPA 625	0.05
1,2,4-Trichlorobenzene	EPA 625	1
CHLORINATED PESTICIDES		**µg/L**
Aldrin	EPA 608	0.005
alpha-BHC	EPA 608	0.01
beta-BHC	EPA 608	0.005
delta-BHC	EPA 608	0.005
gamma-BHC (lindane)	EPA 608	0.02
alpha-chlordane	EPA 8270	0.1
gamma-chlordane	EPA 8270	0.1
4,4'-DDD	EPA 8270	0.05
4,4'-DDE	EPA 8270	0.05
4,4'-DDT	EPA 8270	0.01
Dieldrin	EPA 608	0.01
alpha-Endosulfan	EPA 608	0.02
beta-Endosulfan	EPA 608	0.01
Endosulfan sulfate	EPA 608	0.05
Endrin	EPA 608	0.01
Endrin aldehyde	EPA 608	0.01
Heptachlor	EPA 608	0.01
Heptachlor epoxide	EPA 608	0.01

Toxaphene	EPA 608	0.5
POLYCHLORINATED BIPHENYLS		**µg/L**
Aroclor-1016	EPA 8270	0.5
Aroclor-1221	EPA 8270	0.5
Aroclor-1232	EPA 8270	0.5
Aroclor-1242	EPA 8270	0.5
Aroclor-1248	EPA 8270	0.5
Aroclor-1254	EPA 8270	0.5
Aroclor-1260	EPA 8270	0.5
ORGANOPHOSPHATE PESTICIDES		**µg/L**
Atrazine	EPA 8141A/B	2
Chlorpyrifos	EPA 8141A/B	0.05
Cyanazine	EPA 8141A/B	2
Diazinon	EPA 8141A/B	0.01
Malathion	EPA 8141A/B	1
Prometryn	EPA 8141A/B	2
Simazine	EPA 8141A/B	2
HERBICIDES		**µg/L**
2,4-D	EPA 8151A	10
Glyphosate	EPA 8151A	5
2,4,5-TP-SILVEX	EPA 8151A	0.5
SOLIDS		**mg/L**
Total Suspended Solids (TSS)	SM 2540D	2
Suspended Sediment Concentration (SSC)	ASTM D3977-97C	NA
Volatile Suspended Solids	EPA 1684	2

1.14 Non-stormwater Monitoring for ICID

As mentioned above, the City proposes to perform non-stormwater monitoring to detect and eliminate illicit connections and discharges in accordance with 40 CFR 122.26(d)(1)(D). Monitoring will consist of dry weather visual observations at outfalls or field screening points that shall be conducted monthly during the dry season (May 1 to September 30)-see **Appendix A-1** for field screening locations. If flow is detected, grab samples are to be taken within a 24 hour period and measured against fecal coliform, fecal streptococcus, surfactants (MBAS), residual chlorine, fluorides, and

potassium. Other constituents may be added later based on USEPA's ICID-DE guidance manual.

1.15 Reporting Requirements

The City shall comply with all reporting requirements specified in the MRP/IMP. The City expects to conduct monitoring effective October 1, 2015 and monitoring to be reported in the Annual Report due to the Regional Board on or before December 15, 2016.

1.16 Monitoring Protocols

The MRP requires a variety of monitoring requirements that are governed by monitoring protocols established by USEPA, which are summarized below.

I. *Receiving Monitoring Protocol*

Minimum required receiving water monitoring frequencies are defined in section VI.C of Attachment E in the MS4 Permit. Wet weather is defined as when the flow with the receiving water is at least 20% greater than the base flow. In an effort to simplify the wet weather definition, the City will utilize the definition in Attachment A of the MS4 Permit, which defines the wet season as the time period between October 1st and April 15th unless a storm event that is qualified to be targeted as the first event of the year is forecasted within a reasonable amount of time prior to October 1st. The City will conduct monitoring which will occur during wet weather . Monitoring will occur at least three times per year during wet weather for all applicable parameters with the

exception for aquatic toxicity, which will be monitored twice per year during wet weather. The first monitoring event will occur during a predicted rainfall of .25 inches with a 70% probability of rain fall. At a minimum, two additional events within the same wet weather season with a minimum separation of three dry days between monitoring will be monitored to meet the minimum requirement of three storm events per year.

TMDL WQBELs, 303(d) List parameters will be sampled during monitoring events. Parameters in Table E-2 (Table – XIII) of the LA County MS4 Permit will be monitored in the first year of monitoring during the first significant rain event of the storm year.

Dry weather monitoring requirements are defined in section VI.D of Attachment E in the MS4 Permit. Dry weather is defined as when the flow is less than 20% than the base flow. Monitoring shall take place a minimum of two times per year for all parameters, or more if required by a TMDL monitoring plan. Parameters in Table E-2 (Table – XIII) of the LA County MS4 Permit will be monitored in the first year during the critical dry weather event. At least one of the monitoring events shall take place during the historically driest month of the year. Based on precipitation data and graph, July is the driest month of the year. This data can be seen in Appendix C.

II. *Non-storm water outfall based sampling Protocol*

Non-storm water outfall based samples will be collected on days when precipitations is <0.1 inch and those days not less than 3 days after a rain day. Flow-weighted composite samples shall be taken for a non-stormwater discharge using a continuous sampler or it shall be taken as a combination of a minimum of 3 sample aliquots, taken in each hour during a 24-hour period.

Grab samples will be taken for constituents that are required to be collected by grab sampling. If the City cannot install an automated sampler then an alternate protocol (grab sampling) will be proposed with justification and submitted for approval by the Regional Board. Non-stormwater outfall monitoring of significant non-stormwater discharges that cannot be eliminated will occur 4 times during the year following source identification, or at the frequency identified in a TMDL Monitoring Plan if an outfall is subject to dry weather TMDLs. Flow will be estimated for storm water outfall monitoring sites based on drainage area, impervious cover, and precipitation data. Sample collection for non-stormwater outfall monitoring will occur concurrently with receiving water dry weather monitoring.

III *Outfall Based sampling protocol*

For each field screening point, samples shall be collected of storm water discharge from three storm events, within the same wet weather season, occurring at least one month apart in accordance with the requirements indicated below:

- Flow will be estimated for storm water outfall monitoring sites based on drainage area, impervious cover, and precipitation data.
- For storm water discharges, all samples shall be collected from the discharge resulting flow with the receiving water is at least 20% greater than the base flow. For Dominguez Channel, wet weather is defined as any day when the maximum daily flow measured at a location within the Dominguez Channel is equal to or greater than 62.7 cfs, a flow-weighted

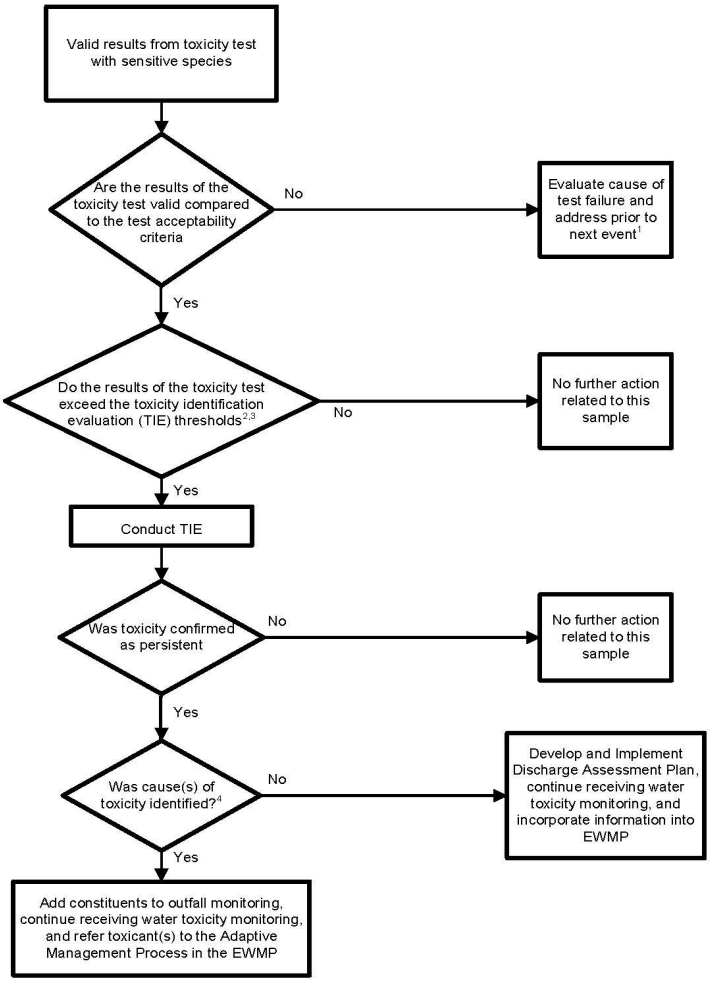
composite shall be taken each hour of discharge for the first 24 hours of the discharge or for the entire discharge if the storm event is less than 24 hours. The flow-weighted composite sample for a storm water discharge may be taken with a continuous sampler or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the first 24 hours of the discharge or for the entire discharge if the storm event is less than 24 hours, with each aliquot being separated by a minimum period of twenty minutes. In addition, the City will target the first storm event of the storm year with a predicted rainfall of at least 0.25 inch at a 70% probability of rainfall at least 24 hours prior to the event start time. Another two wet weather monitoring sampling event will happen when the predicted rain is equal to or more than 0.1 inches and minimum 3 consecutive days of dry weather.

- List of constituents described in Table VII will be monitored from outfall. For stormwater outfall monitoring, other parameters in Table E-2 identified as exceeding the lowest applicable water quality objective in the nearest downstream receiving water monitoring station will be monitored.
- Sample collection of stormwater outfall monitoring shall occur concurrently with receiving water wet weather monitoring.

IV. *Toxicity Monitoring/Testing Protocol*

The approach to conducting aquatic toxicity monitoring is presented in Figure C-1, which describes a general evaluation process for each sample collected as part of routine sampling conducted twice per year in wet weather

and once per year in dry weather. Monitoring begins in the receiving water and the information gained is used to identify constituents for monitoring at outfalls to support the identification of pollutants.



Footnotes

1. Test failure includes pathogen or epibont interference, which should be addressed prior to the next toxicity sampling event. Additionally, lab control organisms may fail to meet test standards. As a result of test failure, toxicity samples will be collected during the next wet weather event, or as soon as possible following notification of test failure for dry event samples.
2. For freshwater, the TIE threshold is equal to or greater than 50% (≥50%) mortality in an acute (wet weather) or chronic (dry weather) test. If a ≥50% effect in a sub-lethal endpoint for chronic test is observed during dry weather, a follow up sample will be collected within two weeks of the completion of the initial sample collection. If the follow up sample exhibits a ≥50% effect, a TIE will be initiated.
3. For marine waters and estuarine waters, the TIE threshold is the percent effect value ≥50%. If a ≥50% or greater effect is observed during dry weather a follow up sample will be collected within two weeks of the initial sample collection and if the follow up sample exhibits a ≥50% effect, a TIE will be initiated.
4. The goal of conducting Phase I TIEs is to identify the cause of toxicity so that outfall monitoring can incorporate the toxicant(s) into the list of constituents monitored during outfall monitoring. Thus, if specific toxicant(s) or the analytical class of toxicants (i.e., metals that are analyzed via EPA Method 200.8) are identified, sufficient information is available to inform the addition of pollutants to the list of pollutants monitored during outfall monitoring.

1.17 Implementation Schedule (Milestones)

The table below provides a schedule for implementing MRP/IMP tasks.

Table XIV – Implementation Schedule

Task	Deadline Date
• Using GIS mapping, provide land use overlay of City's storm drain system	No later than June 28, 2014
• Using GIS mapping, show City's storm drain system including catch basins and connections to receiving waters	No later than June 28, 2014
• Using GIS mapping, identify watershed and sub-watershed based on Los Angeles County's HUC 12 equivalent boundaries	No later than June 28, 2014
• Using GIS mapping, identify: stormwater outfalls and field screening points; mass emission and other in-stream monitoring points/stations; and ambient monitoring locations established by the Regional Board's Surface Water Ambient Monitoring Program (SWAMP); and locations established by the Council for Watershed Health.	No later than June 28, 2014
• Conduct outfall monitoring for stormwater discharges for TMDL WQBELs, other water quality standards, MALs, and toxicity during three storm events beginning during 2015-2016 wet season and three times per year in every year thereafter.	Beginning no later than October 1, 2015
• During the dry season, conduct monthly non-stormwater visual observations and grab sampling if flow is detected.	No later than May 1, 2016
• Conduct receiving water monitoring	No later than October 1, 2015
• Submit annual monitoring reports to the Regional Board of any available TMDL or other water quality standards data generated through outfall and receiving water monitoring, including required TMDL monitoring in Dominguez Channel and Dominguez Channel Estuary.	Beginning no later than December of 2015
• Submit new development/redevelopment tracking form.	No later than one month following the Regional Board's approval of the IMP

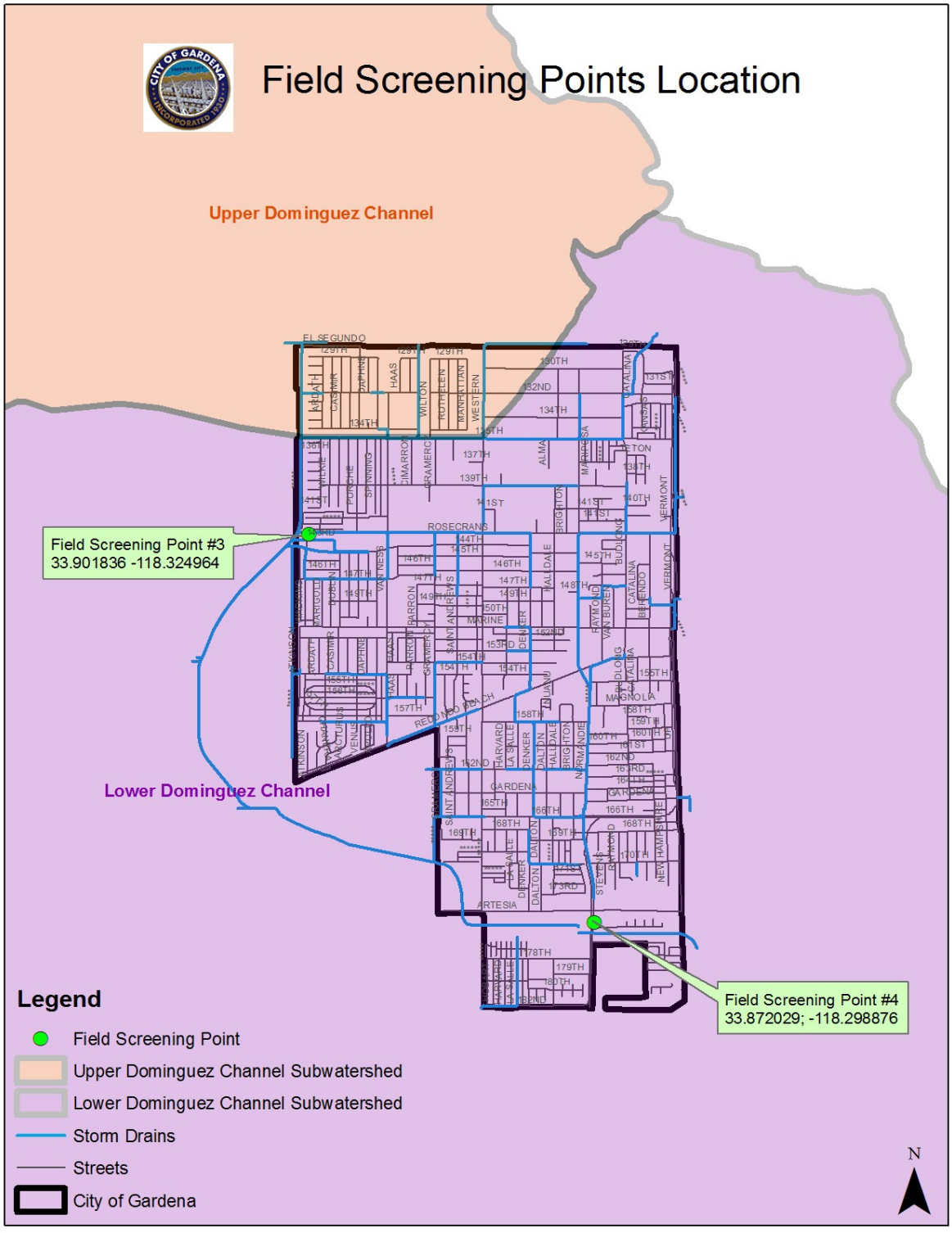
End Section One

Appendix A

Maps

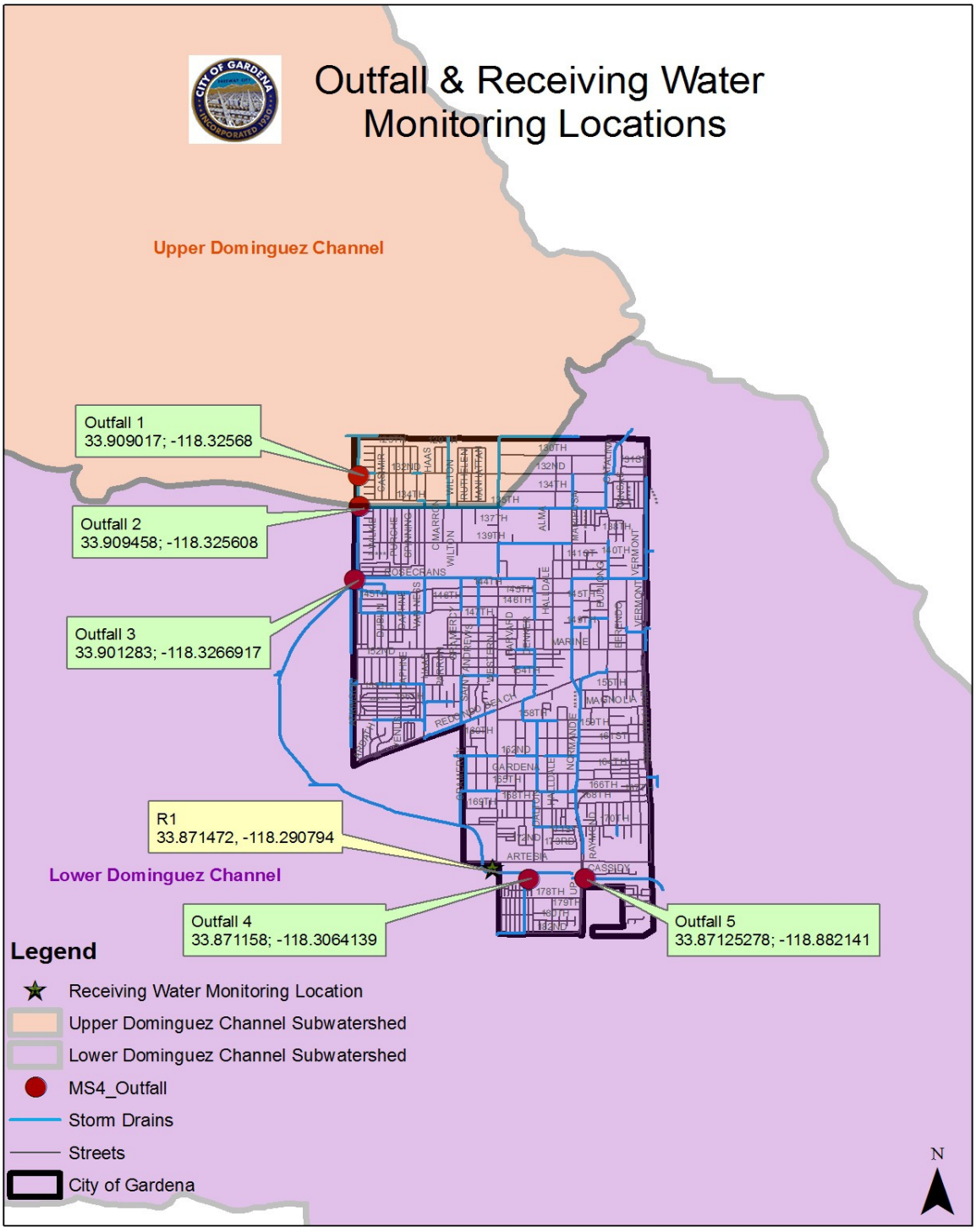
Appendix A-1

Field Screening – HUC 12 Location Map


Field Screening Points Location
Upper Dominguez Channel
Lower Dominguez Channel
Field Screening Point #3
33.901836 -118.324964
Field Screening Point #4
33.872029; -118.298876
Legend
Field Screening Point
Upper Dominguez Channel Subwatershed
Lower Dominguez Channel Subwatershed
Storm Drains
Streets
City of Gardena
N

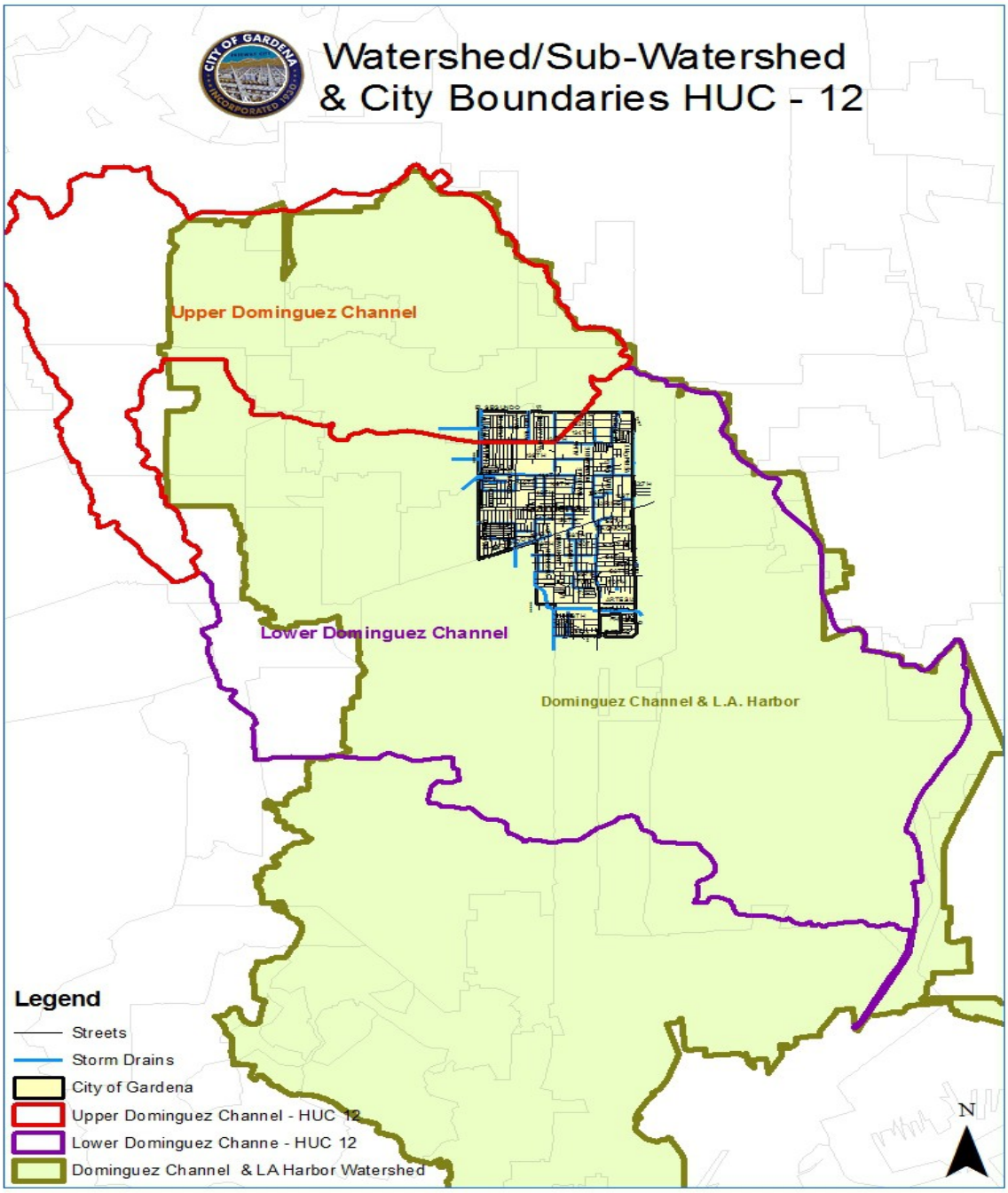
Appendix A-2

Outfall & Receiving Water Monitoring Location


Outfall & Receiving Water Monitoring Locations
Upper Dominguez Channel
Outfall 1
33.909017; -118.32568
Outfall 2
33.909458; -118.325608
Outfall 3
33.901283; -118.3266917
R1
33.871472, -118.290794
Lower Dominguez Channel
Outfall 4
33.871158; -118.3064139
Outfall 5
33.87125278; -118.882141
Legend
Receiving Water Monitoring Location
Upper Dominguez Channel Subwatershed
Lower Dominguez Channel Subwatershed
MS4_Outfall
Storm Drains
Streets
City of Gardena
N

Appendix A-3

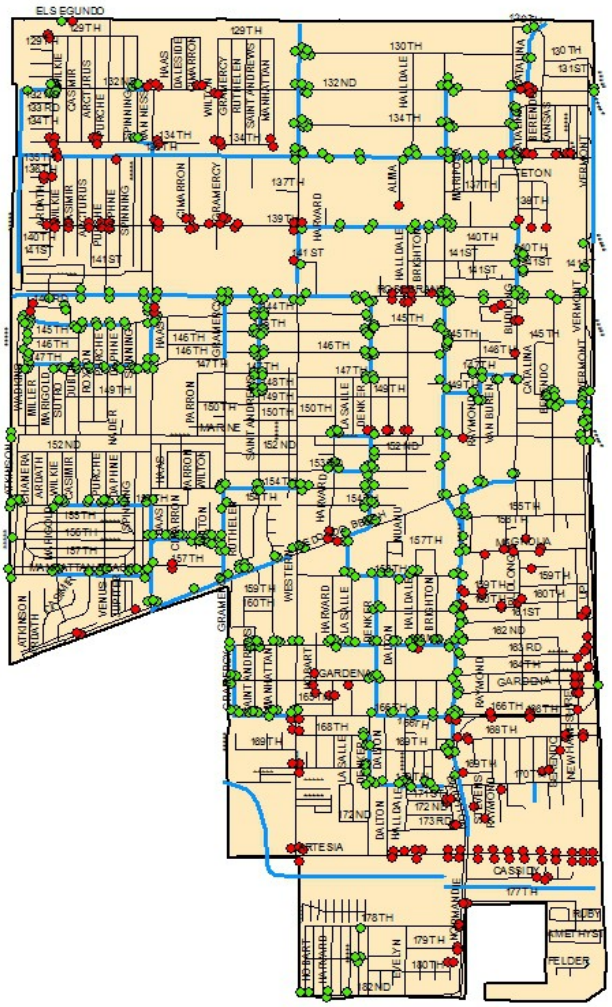
Watershed/Sub-watershed & City Boundary Map


Watershed/Sub-Watershed
& City Boundaries HUC - 12
Upper Dominguez Channel
Lower Dominguez Channel
Dominguez Channel & L.A. Harbor
Legend
Streets
Storm Drains
City of Gardena
Upper Dominguez Channel - HUC 12
Lower Dominguez Channe - HUC 12
Dominguez Channel & LA Harbor Watershed
N

Appendix A- 4

Storm Drain/Catch Basin Map

City of Gardena Catch Basins



Legend

Catch Basin

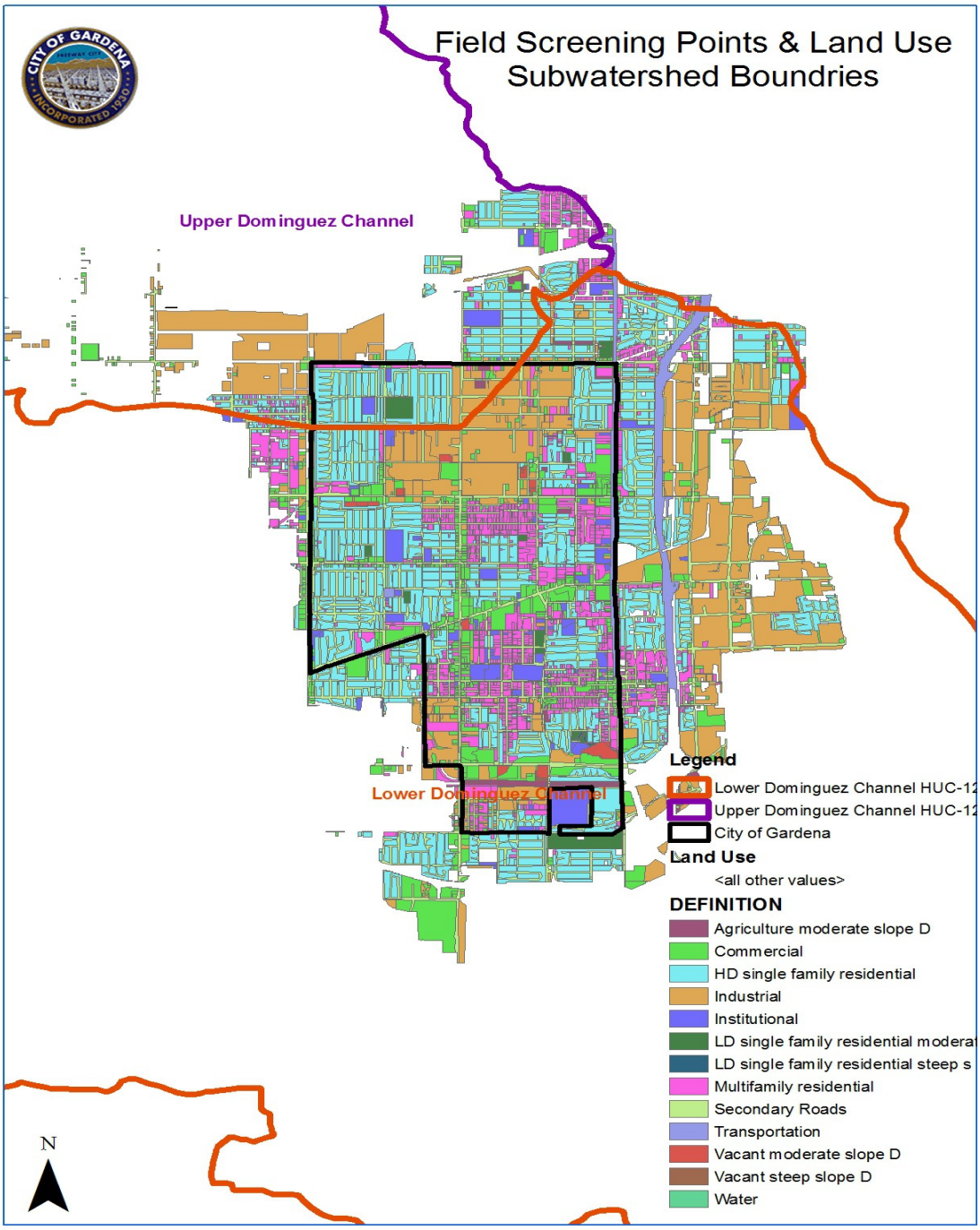
OWNERSHIP

- CITY
- LACFCD
- Storm Drains
- Streets
- Gardena

N

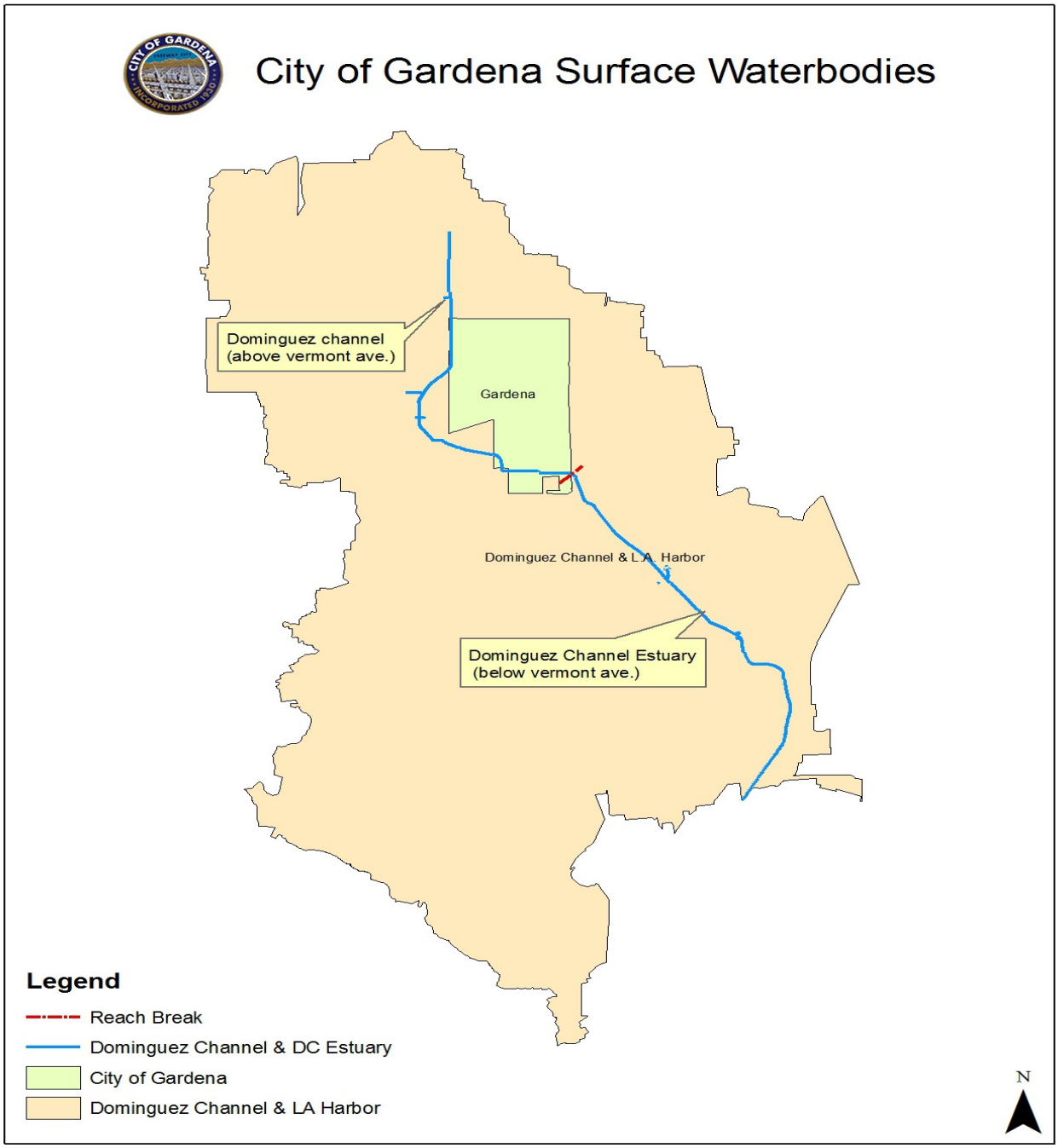
Appendix A-5

City Land Use Map


Field Screening Points & Land Use
Subwatershed Boundries
Upper Dominguez Channel
Lower Dominguez Channel
Legend
Lower Dominguez Channel HUC-12
Upper Dominguez Channel HUC-12
City of Gardena
Land Use
<all other values>
DEFINITION
Agriculture moderate slope D
Commercial
HD single family residential
Industrial
Institutional
LD single family residential moderat
LD single family residential steep s
Multifamily residential
Secondary Roads
Transportation
Vacant moderate slope D
Vacant steep slope D
Water
N

Appendix A-6

City Surface Waterbodies MAP


City of Gardena Surface Waterbodies
Dominguez channel
(above vermont ave.)
Gardena
Dominguez Channel & L.A. Harbor
Dominguez Channel Estuary
(below vermont ave.)
Legend
Reach Break
Dominguez Channel & DC Estuary
City of Gardena
Dominguez Channel & LA Harbor
N

Appendix B

2010 303(d) List for Dominguez Channel

Appendix B
Table XIV – 303(d) List – Dominguez Channel

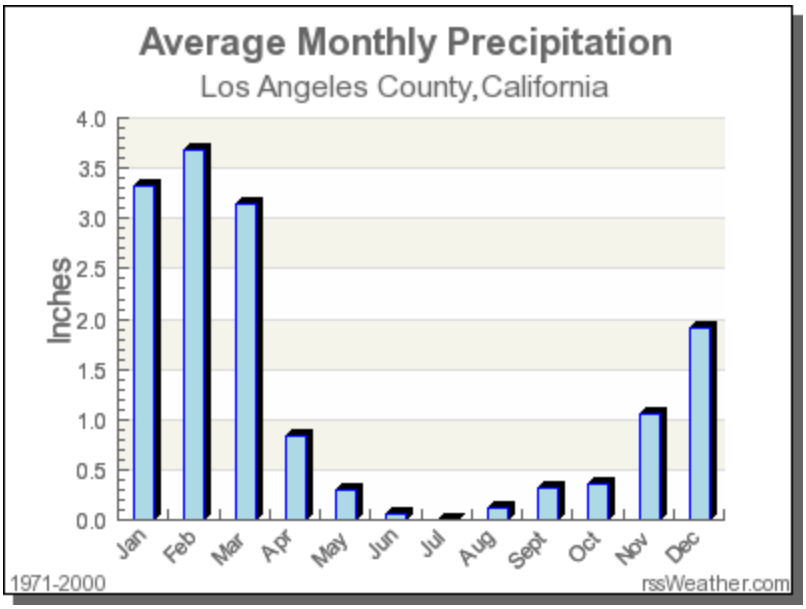
2010 303 (d) List

Water Body	Parameter	TMDL Status Date	Source
Dominguez Channel (below Vermont Avenue)	Ammonia	2019	Nonpoint/Point Source
	BMB	2019	Nonpoint/Point Source
	Benzo Pyrene (PAHs)	2019	Source Unknown
	Benzo Anthracene (PAHs)	2019	Source Unknown
	Chlordane (tissue)	2019	Source Unknown
	Chrysene (C1-C4)	2019	Source Unknown
	Coliform Bacteria	2007	Nonpoint/Point Source
	DDT (tissue & Sediment)	2019	Nonpoint/Point Source
	Dieldrin (tissue)	2019	Nonpoint/Point Source
	Lead (tissue)	2019	Nonpoint/Point Source
	PCBs	2019	Source Unknown
	Phenanthrene	2019	Source Unknown
	Pyrene	2019	Source Unknown
	Zinc (sediment)	2019	Nonpoint/Point Source
	Sediment Toxicity	2021	Nonpoint Source
Dominguez Channel	Ammonia	2019	Point Source

(Above Vermont Avenue)	Copper	2019	Nonpoint/Point Source
	Indicator Bacteria	2007	Nonpoint/Point Source
	Lead	2019	Nonpoint/Point Source
	Toxicity	2021	Nonpoint/Point Source
	Zinc	2019	Nonpoint/Point Source
	Diazinon	2019	Source Unknown

Appendix C

LA County Precipitation Data



Month	Precipitation
Jan	3.33in.
Feb	3.68in.
Mar	3.14in.
Apr	0.83in.
May	0.31in.
Jun	0.06in.
Jul	0.01in.
Aug	0.13in.

Sept	0.32in.
Oct	0.37in.
Nov	1.05in.
Dec	1.91in.

The driest month in Los Angeles County is **July** with 0.01 inches of precipitation.