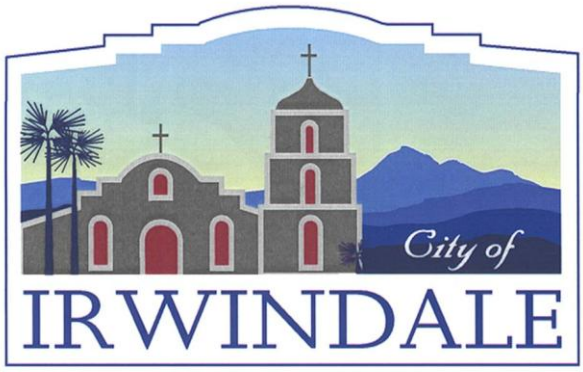

INTEGRATED MONITORING PROGRAM (IMP)

February 16, 2016

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APPENDICES

Section One Monitoring and Reporting Program (MRP)

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 several types of monitoring required by the permit including: (1) TMDL monitoring at the outfall and receiving water; (2) municipal action levels (MALs) monitoring at the outfall; (3) monitoring action levels (non-stormwater) at the outfall; (4) new development/re-developmenteffectiveness tracking (limited to observations); (5) regional studies; (6) toxicity testing, and (7) Receiving Water Monitoring, including the following CWA 303(d)-listed Pollutants that are not addressed by a TMDL: Cyanide from Rio Hondo Reach 2 (at spreading grounds); Indicator Bacteria from San Gabriel River Reach 3 (Whittier Narrows to Ramona); and Benthic-Macroinvertebrate Bioassessments, Indicator Bacteria, and pH from Walnut Creek Wash (drains from Puddingstone Reservoir). The purpose of the monitoring is to facilitate an evaluation of the adequacy of control measures in meeting the specified limitations, which are listed in the LA County MS4 Permit Attachments E, O, and P. The City intends to meet these requirements through its **Integrated Monitoring Program** (IMP) submittal.

1.1 Integrated Monitoring Program

The City has opted for an **Integrated Monitoring Program** (IMP) to comply with monitoring and SWMP/WMP 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; and new

development/re-development effectiveness tracking; (4) regional studies; and (5) toxicity testing.

1.2 IMP Requirements

Through the Integrated Monitoring Program (IMP), the City proposes to consolidate applicable monitoring program requirements as specified in Attachment E of the MS4, 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*. The City has entered into a Memorandum of Understanding with the County of Los Angeles to collaborate with the Upper San Gabriel River CIMP Group to cost share for the Receiving Water Monitoring in the San Gabriel River Watershed. The City has also contacted the Rio Hondo/San Gabriel River Water Quality CIMP Group and is in the process of collaborating with them to cost share Receiving Water Monitoring in the Los Angeles River Watershed.

GIS maps have been developed to depict the geographic boundaries of the monitoring plan, including the receiving waters, the MS4 catchment drainages and outfalls, sub-watershed boundaries, land use, and proposed receiving water monitoring stations. Outfall monitoring points are shown on the maps along with the HUC-12 sub watershed boundaries. The maps are contained in **Appendix A**.

The City of Irwindale drains into Los Angeles River Watershed via Reach 2 of the Rio Hondo and into the San Gabriel River Watershed at Reach 3, 4, and 5. The Table below summarizes the land use breakdown:

Table I – Land use Breakdown

Land Use	Rio Hondo Channel		San Gabriel River		Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Residential	6.16	0.1%	53.51	0.9%	59.67	0.98%
Commercial	1.20	0.02%	124.87	2.1%	126.07	2.07%
Industrial	400.02	6.6%	2255	37.1%	2655.02	43.7%
Parks	321.06	5.3 %	2052.57	33.7%	2373.63	39%
Vacant	32.81	0.5 %	294.44	5%	327.25	5.4%
Transportation	54.88	0.9%	538.33	8.9%	593.21	9.8%
Total	**816.13**	**13.4%**	**5318.72**	**86.6%**	**6134.85**	**100%**

Table II – Land Use Breakdown regarding HUC -12 Sub Watersheds

Land Use	Santa Anita Wash-Rio Hondo		Big Dalton Wash		Santa Fe Flood Control Basin –	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Residential	6.16	0.1%	50.81	0.8%	2.7	0.04%
Commercial	1.20	0.02%	10.51	0.2%	114.36	1.9%
Industrial	400.02	6.6%	380.13	6.3%	1874.9	30.8%
Parks	321.06	5.3 %	91.27	1.5%	1951.36	32.09%
Vacant	32.81	0.5 %	143.40	2.4%	151.04	2.5%
Transportation	54.88	0.9%	173.26	2.8%	310.19	5.1%
Total	**816.13**	**13.4%**	**849.38**	**13.9%**	**4404.6**	**72.6%**

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, or during time specified; and (3) determine whether the designated beneficial uses are fully supported based on water chemistry, such as aquatic toxicity and bio-assessment monitoring.

The City of Irwindale is located in the Los Angeles River Watershed Management Area and San Gabriel River Watershed Management Area. The City drains into Sawpit Wash via the Buena Vista Channel and goes into Rio Hondo Reach 2, which is tributary to the Los Angeles River System. Receiving Water Monitoring will be conducted three times per year during wet weather and twice per year during dry weather as stated in Attachment E of the 2012 MS4 Permit.

The City has contacted the Upper San Gabriel River CIMP Group and is in the process of collaborating with them to cost share the Receiving Water Monitoring in the San Gabriel River Watershed. The City has also contacted the Rio Hondo/San Gabriel River Water Quality CIMP Group and is in the process of collaborating with them to cost share the Receiving Water Monitoring in the Los Angeles River Watershed.

The City will also participate in receiving water monitoring above the Los Angeles River Estuary as required by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL. The City listed with cities that are in the "Other Group" in Exhibit A of the Gateway Contract (attachment).

The table below summarizes the location of Receiving Water Monitoring:

Table III – Receiving Water Monitoring Locations

Water Body	Site ID	Monitoring Type	Drainage Area	Coordinates	
				Latitude	Longitude
San Gabriel River Reach 3	S14	ME	450 square miles	34.077077	-117.999915
San Gabriel River Reach 4	USGR_R4_RAM(site of Upper San Gabriel River Group)	TMDL	222 square miles	34.112139	-117.969961
Walnut Creek Wash	USGR_WCW_BP (site of Upper San Gabriel River Group)	TMDL	30 square miles	34.060350	-118.004053
Peck Road Park Lake	RHSGR_PRP_LAKE (site of Rio Hondo/San Gabriel Water Quality Group)	TMDL	37 square miles	34.105319	-118.010567
Los Angeles River Estuary*	S10 Lower Los Angeles River CIMP	TMDL	825 square miles	33.764409	-118.204977
Mouth of San Gabriel River Estuary* near Spring Street*	R8 Lower San Gabriel River CIMP	TMDL	640 square miles	33.748746	-118.111548

**The City of Irwindale entered into a contract agreement with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for cost sharing for the installation of monitoring equipment and monitoring pursuant to the Harbor Toxic Pollutants TMDL for both the Los Angeles River and San Gabriel River Watersheds.*

The City has been participating in the following TMDL Monitoring Plans:

- Monitoring Work Plan to Assess Nutrients Loading from the Municipal Separate Storm Sewer System in Los Angeles River Watershed (March 23, 2005}.
- Coordinated Monitoring Plan for Los Angele River Watershed Bacteria TMDL- Compliance Monitoring (March 23, 2013).
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (March 25, 2008) – (Approved April 11, 2008).

1.4 Storm Water Outfall-Based Monitoring

The City is committed to stormwater monitoring at the outfall in accordance with the 2012 MS4 Permit. Outfall monitoring will include: (1) determining compliance with WQBELs (TMDL WLAs and other water quality standards; and (2) evaluating stormwater discharges against Municipal Action Levels (MALs).

The City has identified three (3) outfalls from which discharges are released to receiving waters. See Appendix A-1 for outfall and sampling locations. The City intends to monitor three (3) outfalls BDW-027A, SGR-077, and SAWPW-074A each year.

The City of Irwindale is unique in that the City has very few residential areas; approximately 1% of the City's land use. The City is also unique in that there are many large areas, approximately 30% of the City's land use, associated with mining/quarry activities (sand and gravel extraction); that do not drain to the MS4, thus no outfall(s) to receiving waters. Also, a large proportion of the City's land area, approximately 32%, is comprised of the Santa Fe Dam and Recreation Area. The remaining areas are comprised largely of Commercial and Industrial/Business Park type land uses and other miscellaneous land uses as listed in Table IV. One of the Commercial /Industrial areas, located on Alpha Street, borders the City of Duarte and an unincorporated area of the County of Los Angeles. The drainage system for Alpha Street appears to tie into the LACFCD storm drain system on Mountain Avenue and then drains into the Buena Vista Channel. Since the storm drain system on Mountain Avenue appears to receive storm water from three separate jurisdictions, the City has opted not to conduct outfall based monitoring at the Mountain Avenue outfall into the Buena Vista Channel.

The three proposed outfalls for Storm Water Outfall-Based Monitoring meet the requirement for monitoring one outfall within each HUC Boundary associated with Irwindale. The proposed Outfall Based Monitoring locations also best represent Irwindale's land uses. The drainage areas and the land use within those drainage areas are shown in Table 1. The proposed monitoring location and drainage areas are depicted on the accompanying map entitled ***Storm Water Outfall Based Monitoring Locations***.

Their locations indicate a mix of industrial, commercial, and residential uses and, therefore, are representative. Stormwater discharges from the outfall sampling points will be measured against applicable WQBELs and MALs. Sampling results will be reported to the Regional Board annually.

The City plans to conduct stormwater outfall monitoring three times a year, during the wet season (October 1 through May 15). Each of the three outfalls is representative to the extent it includes drainage areas from a mix of land uses. According to Appendix A-3 of the IMP, the City falls within 3 HUC-12 drainage areas; therefore, 3 outfalls, one for each HUC-12 drainage area, will be monitored per year. If an outfall cannot be accessed during a storm event, the nearest upstream alternative

monitoring point (such as a manhole or catch basin) will be utilized to collect samples. At the end of the 5 year term of the permit the City will be able to evaluate persistent 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 that is due to the Regional Board 180 days prior to the expiration of the current permit (May of 2017).

The City will use the data to determine compliance with WQBELs, TMDL WLAs, and to measure stormwater discharges against municipal action levels (MALs).

Stormwater outfall based monitoring, receiving water, and non-storm water outfall based monitoring will include analysis for 303(d) listed pollutants as referenced in Appendix B of this IMP.

Table IV. Storm Water Outfall Based Monitoring Drainage Area Land Use Comparison

Land Use Type	Land Use within drainage area for SAWPW - 074A (7 Acres)	Land Use within drainage area for SGR-077 (67 Acres)	Land Use within drainage area for BDW-027A (135 Acres)	City Land Use[1]
Residential	-	-	-	1%
Office/Commercial	-	28.3%	6.9%	2%
Industrial/Business Park/Yards	100%	71.7%	89.9%	14%
Parks	-	-	3.2%	~ 0.25%
Quarries/Landfills	-	-	-	30%
Utilities/Public Areas/Institutional	-	-	-	7%
Santa Fe Dam	-	-	-	32%
Roads/Railroads/vacant	-	-	-	~13.75%
Total				100%

1 City Land Use data retrieved from *City of Irwindale General Plan Update* http://www.ci.irwindale.ca.us/DocumentCenter/View/38

Table V – Outfall and Field Screening Points Location

ID No.	Outfall Coordinates	Outfall Location	Ownership	Size (in)	
SGR 077	34.10733919; -117.97600865	San Gabriel River @ Live Oak Ave	LACFCD	66	
BDW 027A	34.09619873; -117.93476701	Cypress Street	LACFCD	72	
SAWP W-074A	34.11439583; -118.00210118	Myrtle Ave	LACFCD	18	
ID No.	**Coordinates**	**Alternative Monitoring Site Location**	**Ownership**	**Size (in)**	**Approximate Manhole/Catch Basin**
M1	34.106691; -117.973343	Live Oak Ave @ Rivergrade Rd	LACFCD	N/A	Catch Basin
M2	34.098072; -117.934359	Olive St. & Irwindale Ave.	LACFCD	N/A	Catch Basin
M3	34.115595; -118.001757	Myrtle Ave	LACFCD	36	Manhole

Note: The city is currently working on the storm drain outfall catchment area maps for each major outfall within the City's jurisdiction. The City will submit these maps to the Regional Water Board by the end of 2016.

1.5 Non-Storm Water Outfall-Based Monitoring

As per the Los Angeles 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:

- **Outfall Screening**: The criteria for screening of non-stormwater

outfall discharges are defined as a major municipal separate storm sewer outfall (or “major outfall”) that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more). All major outfalls as defined above will be located and mapped using GIS. The 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. Observations 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, trash, and odor. Photographs will also be taken during inspections.

- **Inventory of Outfalls**: An inventory will be developed for major MS4 outfalls with known significant non-stormwater discharges. The inventory database will be updated annually.
- **No further Assessment**: No further Assessment will be reported in the inventory database if no flow is observed on at least 2 out of 3 visits. However, the City will conduct at least one re-assessment of its non-stormwater outfall-based screening and monitoring program during the term of the LA County MS4 Permit. The City shall 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 outfall screening process, the City will identify the outfalls 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 28, 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 jurisdiction.

Non-storm Water Discharge Exceedance Criteria: The City will monitor those outfalls conveying significant discharges comprised of unknown or conditionally exempt non- stormwater discharges, or continuing illicit discharges. Discharges with the following characteristics will be considered significant:

- Discharges from major outfalls subject to dry weather TMDLs
- Discharges for which existing monitoring data exceeds non-storm water Action Levels identified in Attachment G
- Non-Storm water discharges that have caused or have the potential to cause overtopping of downstream diversions (if applicable)
- Other characteristics determined during the field screening:
    - Garden hose amount of flow or greater (~5 gpm)

- Persistent Flows (flow observed twice from same outfall)
- Visual and olfactory observations: turbidity, trash, floatables, foam, algae, odor, etc.

- **Monitoring of Non-Storm Water Outfall Discharges Exceeding Criteria:** Beginning within 90 days of completing source identification, the City will monitor those outfalls as described below:
  - Outfalls subject to an approved dry weather TMDL will be monitored per the TMDL monitoring plan.
  - Outfalls conveying significant discharges comprised of unknown or conditionally exempt non-storm water discharges, or continuing discharges.
  - Monitoring frequency maybe reduced to twice per year beginning the second year of monitoring provided that pollutant concentrations during the first year do not exceed WQBELs, non-storm water Action Levels, or water quality standards on the 303(d) list for the receiving water or downstream receiving waters. The City will 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 flow and constituents identified in Attachment E of the MS4 permit, and other pollutants identified on the 303(d) list. The following parameters shall be monitored:
    - Flow
    - Pollutants assigned a WQBEL or RWL to implement TMDL Provisions applicable to the receiving waterbody
    - Other Pollutants identified on the CWA 303(d) list for receiving water

- Pollutants identified in a TIE conducted in response to observed aquatic toxicity during dry weather at the nearest downstream receiving water monitoring station during the last sample event or, where the TIE conducted on the receiving water sample was inconclusive. If the discharge exhibits aquatic toxicity, then a TIE shall be conducted.
- Other parameters in Table E - 2 identified as exceeding the lowest applicable water quality objective in the nearest downstream receiving water monitoring station per Part VI.D.1.d. of the MS4 Permit.

Non-stormwater outfall based monitoring, receiving water, and outfall based monitoring will include analysis for 303(d) listed pollutants as referenced in Appendix B of this IMP.

The City will perform outfall visual and sampling monitoring in consistent with the City's IC/ID Program and with the 2012 MS4 Permit.

The City will attempt to quantify the discharge if it is comprised of multiple sources, identify the sources, and notify upstream jurisdictions if the source(s) originate outside the City's jurisdiction. 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.

Conducting visual monitoring of outfalls for non-stormwater discharges will be difficult for Reach 2 of the Rio Hondo. Outfalls in this flood control channel, as shown below, are equipped with iron flap gates that open to allow stormwater to be discharged to the floor of the channel.

The flap gate opens to a degree that is determined by the amount of stormwater flow expressed as cubic feet per second (cfs). It estimated that the amount of flow that is needed to open the gate is at least 10 cfs from a one inch storm. During dry periods, non-stormwater cannot leave the storm drain connected to the flap-gated outfall. . If an outfall cannot be accessed, the nearest upstream alternative monitoring point (such as a manhole or catch basin) will be utilized to collect samples. 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.

1.6 Municipal Action Levels

Since MAL constituents are included in other stormwater monitoring requirements, the City will effectively be meeting this requirement. The permit's monitoring program also requires evaluation of non-stormwater discharges against non-stormwater action levels, which the City will comply with as part of its monitoring program.

[1]Total nitrogen, total phosphorous, Ammonia N, TKN, Total PCBs, Chlordane, Dieldrin, 4,4 – DDD, 4,4 – DDE, 4,4 – DDT, Cadmium, Chromium, copper, lead, zinc, E-Coli, fecal coliform

1.7 New Development/Redevelopment Tracking

The PLDP requires tracking new development and redevelopment projects within 60 days after the permit's adoption (unless a permittee chooses to participate in watershed management program). 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.

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. If toxicity is present in the receiving water, the City will perform toxicity testing on water samples taken from field screening (manhole sample) points to evaluate whether the toxicity is coming from the 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. Additionally, based on the August 7, 2015 Los Angeles Regional Water Quality Control Board's (LARWQCB) clarification memo addressed to Los Angeles County MS4 Permittees and City of Long Beach, "outfall monitoring must either entail monitoring for specific pollutants identified in a toxicity identification evaluation (TIE) in the downstream receiving water, or for aquatic toxicity itself, where the specific pollutants could not be identified through the TIE conducted on the downstream receiving water." The City will ensure that toxicity monitoring is consistent with LARWQCB's August 2015 clarification memo and with Attachment E of the 2012 MS4 Permit.

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, if samples are collected in receiving waters with salinity less than 1 part per thousand (ppt), or from outfalls discharging to receiving waters with salinity less than 1 ppt, toxicity tests should be conducted on the most sensitive species in accordance with *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 established or, if there is prior knowledge of potential toxicant(s), to determine if a test species is sensitive to such toxicant(s). In reviewing the available data in the Los Angeles and San Gabriel Watersheds, 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, it was chosen as the most sensitive species. This 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 it 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 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* (TIE); *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. 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 that

have been 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 and Water Discharged Characteristics Monitoring

Chemical TMDL sampling will be performed at field screening points for stormwater discharges at least three times a year in accordance with the MRP. For stormwater outfall monitoring, the 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. Sampling and analysis will be in keeping with USEPA guidance. In the Rio Hondo Reach 2 of the Los Angeles River, the constituents are flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, TSS and SSC, Table E-2 pollutants, copper, lead, zinc, ammonia as N, Nitrite-N, Nitrite-N +nitrate-N, suspended sediments, e-coli, and trash. Peck Road Park Lake constituents consist of flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, TSS and SSC, Table E-2 pollutants, ammonia, dissolved oxygen, pH, Nitrogen,

phosphorus, trash, PCBs, chlordane, DDT, Dieldrin, Toxicty – TIE, and 303(d) listed pollutants. Outfall SAWPW-074A drains into Peck Road Park Lake from the Sawpit Wash, and then into the Rio Hondo Reach 2 of the Los Angeles River from Peck Road Park Lake. The San Gabriel River constituents include the same as the Rio Hondo Reach 2 with the exception of Cadmium, ammonia as N, Nitrite-N, Nitrite-N +nitrate-N, e-coli, bacteria and trash. Outfall SGR-077 drains directly into Reach 4 of the San Gabriel River; whereas, BDW-027A drains into the Big Dalton Wash before entering the San Gabriel River Reach 4.

The table VI below specifies each TMDL WLA to which the City is subject.

Table VI – List of Constituents

LAR – Rio Hondo Reach 2	PECK ROAD PARK LAKE	SGR Reach 3
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, TSS & SSC	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	Table E-2 Pollutants
Copper, Lead, Zinc, Cadmium	Lead	Copper, Lead, Zinc
Ammonia as N, Nitrate-N, Nitrite-N, Nitrite-N + nitrate-N	Ammonia, Nitrogen, Phosphorus	-
Suspended Sediment: Copper, Lead, Silver, Zinc, Chlordane, DDT, PCBs & PAHs	-	Suspended Sediment: Copper, Lead, Silver, Zinc, Chlordane, DDT, PCBs & PAHs
E-coli	-	-
Trash	Trash	-
-	-	Bacteria
-	PCBs	-
-	Chlordane	-
-	DDT	-
-	Dieldrin	-
Toxicity, TIE	Toxicity, TIE	Toxicity, TIE
303(d) listed pollutants	303(d) listed pollutants	303(d) listed pollutants

For the Los Angeles River Bacteria TMDL, the City will be submitting a Load Reduction Strategy (LRS) for Segment B Tributaries (Rio Hondo and Arroyo Seco) by March 23, 2016. We are contracting directly with Paradigm Environmental to complete this compliance plan.

The City of Irwindale entered into a contract agreement with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for cost sharing for the installation of monitoring equipment and monitoring pursuant to the Harbor Toxic Pollutants TMDL for both the Los Angeles and San Gabriel Rivers.

Tables VII and VIII identify WLAs for TMDL based receiving water, stormwater outfall, and non-stormwater outfall based monitoring.

Table VII - Los Angeles River Watershed TMDLs
(Including Tributary Reach 2 of the Rio Hondo) and Peck Road Park Lake

Wet Weather WLAs*				
Water Body	Copper	Lead	Zinc	Cadmium
Reach 2 Rio Hondo[2]	$1.5*10^{-8}$*daily volume(L)-9.5	$5.6*10^{-8}$*daily volume(L)-3.85	$1.4*10^{-7}$*daily volume(L)-83	$2.8*10^{-9}$*daily volume(L)-1.8
Water Body	Bacteria	Daily Maximum	Geometric Mean	
Reach 2 Rio Hondo	E-Coli	235/100mL**	126/100 mL	
Water Body	NH3-N	NO3-N	NO2-N	NO3-N+NO2-N
Reach 2 Rio Hondo	10.1 mg/l***	8 mg/L	1 mg/L	8 mg/L
Water Body	Trash	2014 (10%)	2015 (3.3%)	2016 (0%)
Reach 2 Rio Hondo	Gallons of uncompressed trash	1235	408	0
Water Body	Phosphorus	Nitrogen	PCBs Associated With Suspended Sediment	PCBs In the Water column

Peck Road Park Lake Eastern	496 lb/yr	3487 lb/yr	1.29 µg/kg Dry weight	0.17 ng/L
Water Body	Phosphorus	Nitrogen	PCBs Associated with Suspended Sediment	PCBs in the Water Column
Peck Road Park Lake Near Lake	28.2 lb/yr	207 lb/yr	1.29 µg/kg Dry weight	0.17 ng/L
Water Body	Chlordane Associated with Suspended Sediment	Chlordane in the Water Column	DDT Associated with Suspended Sediment	4-4′ DDT in the Water Column
Peck Road Park Lake Eastern	1.73 µg/kg Dry weight	0.59 ng/L	5.28µg/kg Dry weight	0.59 ng/L
Water Body	Chlordane Associated with Suspended Sediment	Chlordane in the Water Column	DDT Associated with Suspended Sediment	4-4′ DDT in the Water Column
Peck Road Park Lake Near Lake	1.73 µg/kg Dry weight	0.59 ng/L	5.28µg/kg Dry weight	0.59 ng/L
Water Body	Dieldrin Associated with Suspended Sediment	Dieldrin in the Water Column	Trash	
Peck Road Park Lake Eastern	0.43µg/kg Dry weight	0.14 ng/L	0 gal/yr	
Water Body	Dieldrin Associated with Suspended Sediment	Dieldrin in the Water Column	Trash	
Peck Road Park Lake Near Lake	0.43µg/kg Dry weight	0.14 ng/L	0 gal/yr	

*With the exception of metals, WLAs listed for bacteria, nitrogen compounds, and trash are for wet and dry weather, or for annual discharge {i.e., trash).

** Dry weather E.coli Interim WLA for Rio Hondo is 2 X10 9 MPN/Day.

*** 30-day average WLA for NH3-N is 2.3 mg/l.

Note: Annual Allowable Exceedance Days of the Single Sample Objective (days) will be as specified in Attachment O Part D.4.a

Table VIII - San Gabriel River Watershed TMDLs

Wet Weather WLA			
Water Body	**Copper**	**Lead**	**Zinc**
San Gabriel River Reach 2*	N/A	81.34 mg/l x daily storm volume (L)	N/A

*The City does not drain into Reach 2 of the San Gabriel River.

Monitoring for all constituents that will be tested will be conducted according to test procedures approved under 40CFR Part 136 for the analysis unless another test procedure is required under 40 CFR subchapters N and O or otherwise specified in LA County MS4 Permit.

1.11 TMDL Compliance Schedule

Tables III through VI below show the following compliance deadlines for: (1) interim and final TMDL waste load allocations (WLAs) for the metals and selenium TMDL for the San Gabriel River; (2) interim and final WLAs bacteria TMDL for Reach 2 of the Rio Hondo; (3) interim and final WLAs for the metals TMDL for the Rio Hondo; (4) interim and final nutrients TMDL WLAs for the Rio Hondo; and (5) trash TMDL for the Los Angeles River.

Table IX - Metals and Selenium TMDLs for San Gabriel River

TMDL Pollutant	Target	Interim WLA
All Metals	• 30% of the total drainage area meeting dry-weather WLAs & 10% meeting the wet-weather WLAs	September 30, 2017
	• 70% of the total drainage area meeting dry-weather WLAs & 35% meeting the wet-weather WLAs	September 30, 2020

TMDL Pollutant	Target	Final WLA
	• 100% of the total drainage area meeting dry-weather WLAs & 65% meeting the wet-weather WLAs	September 30, 2023
	• 100% of the total drainage area meeting the wet weather WLAs	September 30, 2026

Table X – Metals TMDL for Reach 2 of the Rio Hondo

TMDL Pollutant	Target	Interim WLA
All Metals	• 75% drainage area meeting dry-weather WLA	January 11, 2020
	• 100% of the total drainage area meeting dry-weather WLAs & 50% meeting the wet-weather WLAs	January 11, 2024
TMDL Pollutant	**Target**	**Final WLA**
All Metals	• 100% total drainage area meeting dry & wet weather WLA	January 11, 2028

Table XI – Bacteria TMDL for Reach 2 of the Rio Hondo

TMDL Pollutant	Compliance Target	Interim WLA
First Phase – Segment B Tributaries (Rio Hondo and Arroyo Seco)		
	• Submit a Load Reduction Strategy (LRS) for Segment B tributaries	March 23, 2016
	• Complete implementation of LRS	September 23, 2020
	• Achieve interim (or final) water quality-based effluent limitations and submit report to Regional Water Board	September 23, 2023
Second Phase, if necessary – Segment B Tributaries (Rio Hondo and Arroyo Seco) for LRS approach only		
	• Submit a new LRS	September 23, 2024
	• Complete implementation of LRS	March 23, 2028
	• Achieve final water quality-based effluent limitations Segment B tributaries or demonstrate that non-compliance is due to upstream contributions and submit report to Regional Water Board	March 23, 2030

TMDL Pollutant	Compliance Target	Final WLA
Bacteria	• Wet weather WLA	March 23, 2037

Table XII – Nutrients for Reach 2 of the Rio Hondo

TMDL Pollutant	Compliance Target	Final WLA
Nutrients	• Water Quality-Based Effluent Limitations	Effective date of Order

Table XIII – Trash TMDL – Reach 2 of the Rio Hondo

Year	Implementation	Waste Load Allocation	Compliance Point
Sept 30, 2008	Year 1	60% of Baseline Waste Load Allocations for the Municipal permittees and Caltrans	60% of the baseline load
Sept 30, 2009	Year 2	50% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	55% of the baseline load calculated as a 2-year annual average
Sept 30, 2010	Year 3	40% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	50% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2011	Year 4	30% of Baseline Waste Load Allocations for the Municipal permittees and Caltrans	40% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2012	Year 5	20% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	30% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2013	Year 6	10% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	20% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2014	Year 7	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	10% of the baseline load calculated as a rolling 3-year annual average

Sept 30, 2015	Year 8	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	3.3% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2016	Year 9	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	0% of the baseline load calculated as a rolling 3-year annual average

1.12 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 the wet season. The table below identifies the MAL analytes and their numeric limitations.

Table XIV - 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

1.13 Action Level Monitoring

The tables below lists non-stormwater action level analytes for the Los Angeles River and San Gabriel River.

Table XV - Non-stormwater Action Levels Los Angeles River

Analyte	Units	Average Monthly	Daily Maximum
pH	Standard units	6.5-8.5[1]	
E. Coli Bacteria	#/100ml	126[2]	235[3]
Chloride	mg/L	250[4]	--
Nitrite/Nitrogen Total (as N)	mg/L	1.0[5]	--
Sulfate	mg/L	250[4]	--
Total Dissolved Solids	mg/L	500[4]	--
Turbidity	NTU	5[5]	--
Aluminum, Total Recoverable	ug/L	1.0[5]	--
Cyanide, Total Recoverable	ug/L	4.3	8.5
Copper, Total Recoverable	ug/L	[6]	[6]
Mercury, Total Recoverable	ug/L	0.051	0.10
Selenium, Total Recoverable	ug/L	4.1	8.2

[1]Within the range of 6.5 to 8.5 at all times.
[2]E. coli density shall not exceed a geometric mean of 125/100 ml
[3]E. coli density shall not exceed a geometric mean of 235/100 ml
[4]in accordance with applicable water quality objectives contained in Chapter 3 of the Basin Plan
[5]Applicable only to discharges to receiving waters or receiving waters with underlying groundwater designated for Municipal and Domestic Supply (MUN) use as specified in Tables 2-1 and 2-2 of the Basin Plan.
[6] Action levels are hardness dependent. See section VII of Attachment G of LA County Permit for a listing of the applicable action levels.

Table XVI – Non-stormwater Action Levels San Gabriel River

Analyte	Units	Average Monthly	Daily Maximum
pH	Standard Units	6.0 – 9.0[1]	
E. Coli Bacteria	#/100ml	126[2]	235[3]
Chloride	mg/l	[4]	--
Nitrite/Nitrogen Total (as N)	mg/l	[4]	--
Sulfate	mg/l	[4]	--
TDS	mg/l	[4]	--
Aluminum, Total Recoverable	mg/l	1.0[5]	--
Cyanide, Total Recoverable	µg/L	4.3	8.5
Cadmium, Total Recoverable	µg/L	[6]	[6]
Copper, Total Recoverable	µg/L	[6]	[6]
Lead, Total Recoverable	µg/L	[6]	[6]
Mercury, Total Recoverable	µg/L	0.051	0.10
Nickel, Total Recoverable	µg/L	[6]	[6]
Selenium, Total Recoverable	µg/L	4.1	8.2
Silver, Total Recoverable	µg/L	[6]	[6]
Zinc, Total Recoverable	µg/L	[6]	[6]

[1]Within the range of 6.5 to 8.5 at all times.
[2]E. coli density shall not exceed a geometric mean of 126/100 ml.
[3]E. coli density in a single sample shall not exceed 235/100 ml.
[4]In accordance with applicable water quality objectives contained in Chapter 3 of the Basin Plan.
[5]Applicable only to discharges to receiving waters or receiving waters with underlying groundwater designated for Municipal and Domestic Supply (MUN) use as specified in Tables2-1 and 2-2 of the Basin Plan.
[6] Action levels are hardness dependent. See section VII of Attachment G of LA County Permit for a listing of the applicable action levels.

1.14 Additional Monitoring Required for WMP Compliance

MRP section VI.C.2.a.i and ii requires additional outfall monitoring tasks for permittees that opt for the WMP. They include pollutants that are currently not TMDLs but are nevertheless 303(d) listed (e.g. cyanide for Reach 2 of the Rio Hondo). Attachment E, in LA County MS4 Permit Order No. R4-2012-0175, will be utilized to determine which other water quality standards should be included in additional monitoring requirements.

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 WMP-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.

Table XVII - WMP Monitoring for Non-TMDL Water Quality Standards

CONSTITUENTS	USEPA METHOD	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		MPN/100ml
CONSTITUENTS		MLs
Total Coliform	SM 9221B	10,000
Fecal Coliform	SM 9222 B	104

Enterococcus	SM 9230 B	400
E. coli	SM 9223 B	235
GENERAL		**mg/L**
Dissolved Phosphorus	SM 4500-PC	0.05
Total Phosphorus	SM 4500-PC	0.05
Turbidity	EPA 180.1	0.1 NTU
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 1631	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
Benzedrine	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 608	0.5
Aroclor-1221	EPA 608	0.5
Aroclor-1232	EPA 608	0.5
Aroclor-1242	EPA 608	0.5
Aroclor-1248	EPA 608	0.5
Aroclor-1254	EPA 608	0.5
Aroclor-1260	EPA 608	0.5
Congeners3	EPA 8270C	NA
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)	STM D3977-97C	NA
Volatile Suspended Solids	EPA 1684	2

*Monitoring for PCBs (in sediment or water) will be reported as the summation of aroclors and a minimum of 40 congeners (preferably at least 50 congeners) using EPA Methods 8270 and 1668C (as appropriate) and high resolution mass spectrometry.

1.15 Non-stormwater Monitoring for IC/ID

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. 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). If flow is detected, grab samples are to be taken within a 24 hour period and measured against (a) Flow, (b) Pollutants assigned a WQBEL or receiving water limitation to implement TMDL Provisions for the respective receiving water, as identified in Attachments L - R of this Order, (c) Other pollutants identified on the CWA section 303(d) List for the receiving water or downstream receiving waters, (d) Pollutants identified in a TIE conducted in response to observed aquatic toxicity during dry weather at the nearest downstream receiving water monitoring station during the last sample event or, where the TIE conducted on the receiving water sample was inconclusive, aquatic toxicity. If the discharge exhibits aquatic toxicity, then a TIE shall be conducted.

1.16 Reporting Requirements

The City shall comply with all reporting requirements specified in the MRP. Currently TMDL reports for trash, nutrients, and TMDL constituents are reported with the MS4 permit annual report, which is due in December

of each year. The City cannot begin to report monitoring results until the IMP has been approved by the Regional Board. A standardized annual report form is being developed that will include reporting criteria for the MS4 permit, TMDLs, MALs and certain water quality standards.

1.17 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. The parameters in Table E-2 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. Wet weather is defined as when the flow with the receiving water is at least 20% greater than the base flow. As per San Gabriel River Metals and Impaired Tributaries Metals and Selenium TMDLs, wet weather is defined in San Gabriel Reach 2 and all upstream reaches and tributaries of San Gabriel River Reach 2 as when maximum daily flow of the river is equal to or greater than 260 cubic feet per second (cfs) as measured at USGS 11085000, located at the bottom of Reach 3, just above the Whittier Narrows Dam. As per Los Angeles River and Tributaries Metals TMDL, wet weather is defined as any day when the maximum daily flow in the Los Angeles River is equal to or greater than 500 cfs measured at the Wardlow gage station. Wet weather monitoring will occur at least three times per year for all applicable parameters with the exception for

aquatic toxicity. Aquatic toxicity monitoring will be conducted at a minimum of twice per year. The first wet weather event with a predicted rainfall of 0.25 inch and with a 70% probability 24 hours prior to rainfall will be targeted for monitoring. At a minimum two additional rainfall events with a minimum separation of three dry days (less than .1 inch of rain per day) between monitoring will be monitored to meet the minimum requirement of three storm events per year. Moreover, two additional rainfall events will be monitored within the same wet weather season. Receiving water monitoring shall be coordinated to start as soon as possible following storm water outfall monitoring to better reflect the potential impact from MS4 discharges.

Dry weather is defined as when the flow with the receiving water is less than 20% of the base flow or as defined by the effective TMDLs within the watershed. The parameters in Table E-2 of the LA County MS4 Permit will be monitored in the first year during the critical dry weather event. Dry weather monitoring requirements are defined in section VI.D of Attachment E in the MS4 Permit. Monitoring shall take place a minimum of two times per year for all parameters, or more if required by a TMDL monitoring plan. At least one of the monitoring events shall take place during the historically driest month of the year. Typically the driest months of the year are July through August, which will be utilized for the time period of which at least one of the monitoring events occurs. (http://www.huffingtonpost.com/2012/08/08/hottest-month-on-record-july-2012_n_1756217.html-Aug12, 2015)

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

Dry weather samples will be collected on days when no measurable precipitation has occurred within the last three days. Grab samples will be taken for constituents that are required to be collected by grab sampling. If the City cannot install an automated sampler, grab

samples will be collected. 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 outfall, sample shall be from storm water discharge from three storm events occurring in accordance with the requirements indicated below:

- For storm water discharges, all samples shall be collected from and shall be taken each hour of discharge for the first 24 hours of flows when the receiving water is at least 20% greater than the base flow. 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 with a 70% probability of at least 24 hours prior to the event start time. Another two wet weather samples will be taken when the predicted rain event is equal to or more than 0.1 inch and a minimum of 3 consecutive days of dry weather. Sample collection of stormwater outfall monitoring shall occur concurrently with receiving water wet weather monitoring.

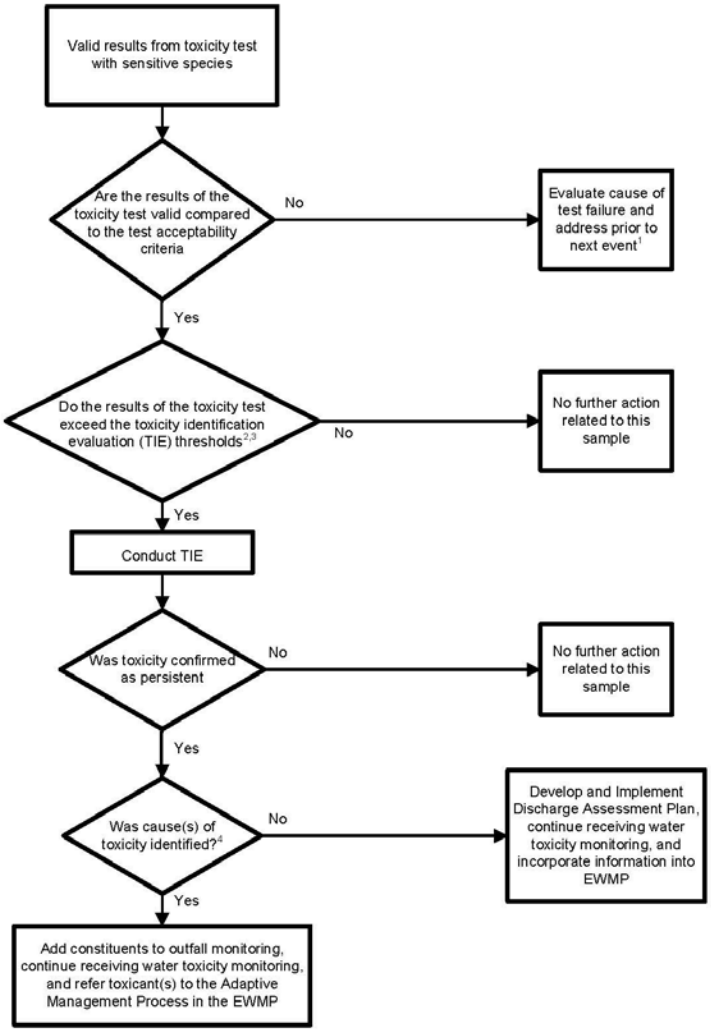
- ***Alternate Protocol for Composite Sampling****:* The outfall samples will be collected manually by taking at least three discrete grab samples during each of the first three hours of discharge (if the event lasts longer than three hours). If the event lasts less than three hours at least three discrete grab

samples shall be collected during each hour of discharge for the entire duration of the storm event. Samples must be collected at least 15 minutes apart. The result will be at least nine discrete samples. These samples will be composited into a single flow-weighted sample. Flow at the outfall will be estimated by recording the time required to fill a container of known volume.

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. As stated in Section 1.9, Toxicity Monitoring will follow the LARWQCB's August 7, 2015 memo.

Figure C-1 – Aquatic Toxicity Monitoring Approach



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.

1.18 Implementation Schedule (Milestones)

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

Table XVIII – Implementation Schedule

Task	Deadline Date
• Submit IMP to Regional Board	No later than June 28, 2014
• 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 watersheds and sub-watersheds based on Los Angeles County's HUC 12 equivalent boundaries	No later than June 28, 2014
• Using GIS mapping identify groundwater recharge facilities into which City drains	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
• Receiving Water Monitoring	Commence approximately February 2016
• Outfall Monitoring	Commence approximately March 2016
• Conduct outfall monitoring for stormwater discharges for TMDLs, other water quality standards, MALs, and toxicity three times beginning during 2015-2016 wet season and annually thereafter.	Commence approximately March 2016
• During the dry season, conduct monthly non-stormwater visual observations and grab sampling if flow is detected. • The data collected as part of the outfall screening process will be used to prioritize outfalls for source investigation. • Visual monitoring shall be performed twice a year during dry periods. • 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.	• July-August 2016 • 25% by December 28, 2015 • 100% by December 28, 2017

• Review available monitoring data and studies to assess the health of the San Gabriel River (reaches 2 and above) and Reach 2 of the Rio Hondo	Commence approximately March-April 2016
• Submit annual monitoring reports to the Regional Board of any available TMDL or other water quality standards data generated through this IMP.	Annually, beginning December 2016
• Submit new development/redevelopment tracking form	No later than one month following the Regional Board's approval of the IMP

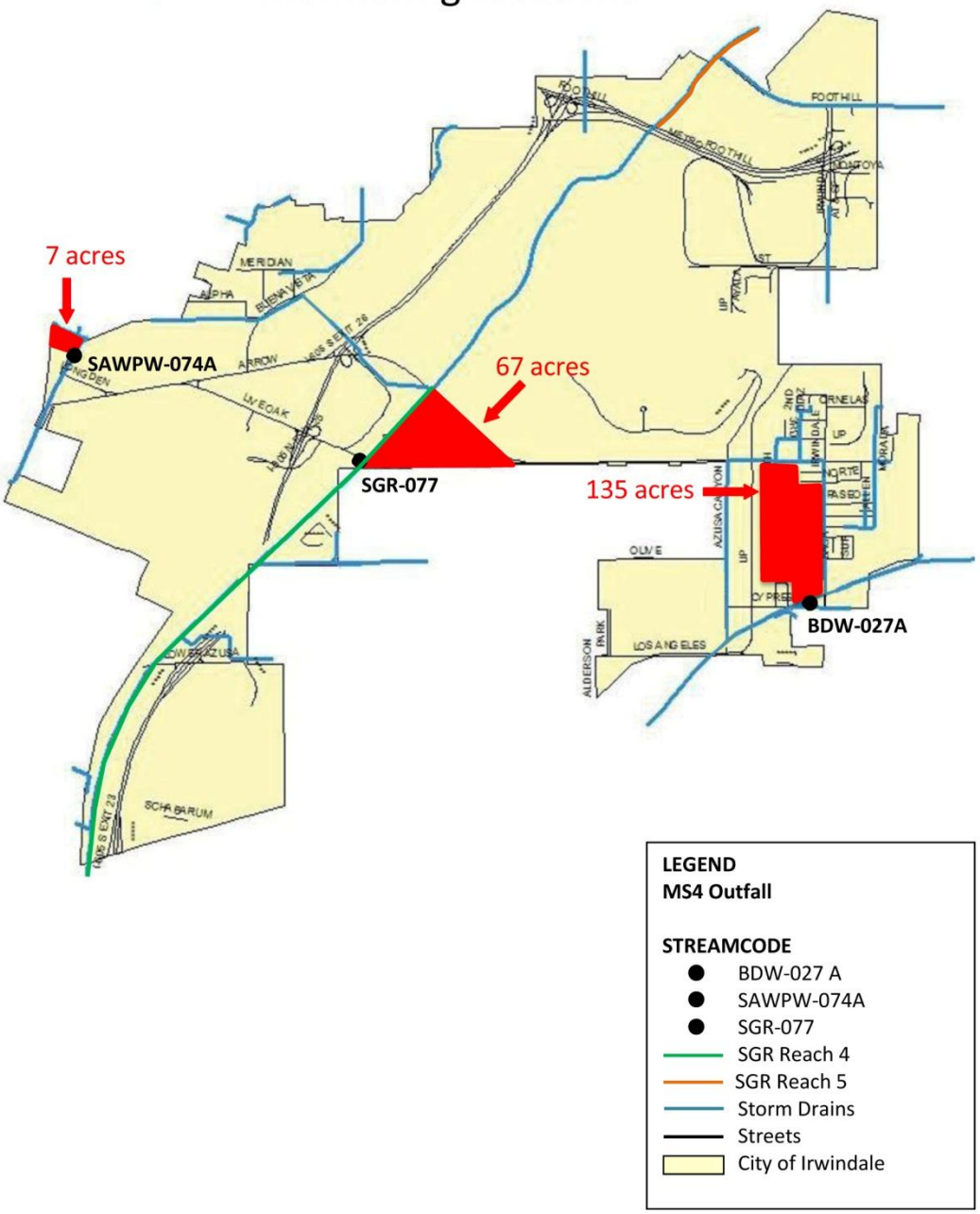
Appendix A

Maps

Appendix A-1

Outfall Location Map

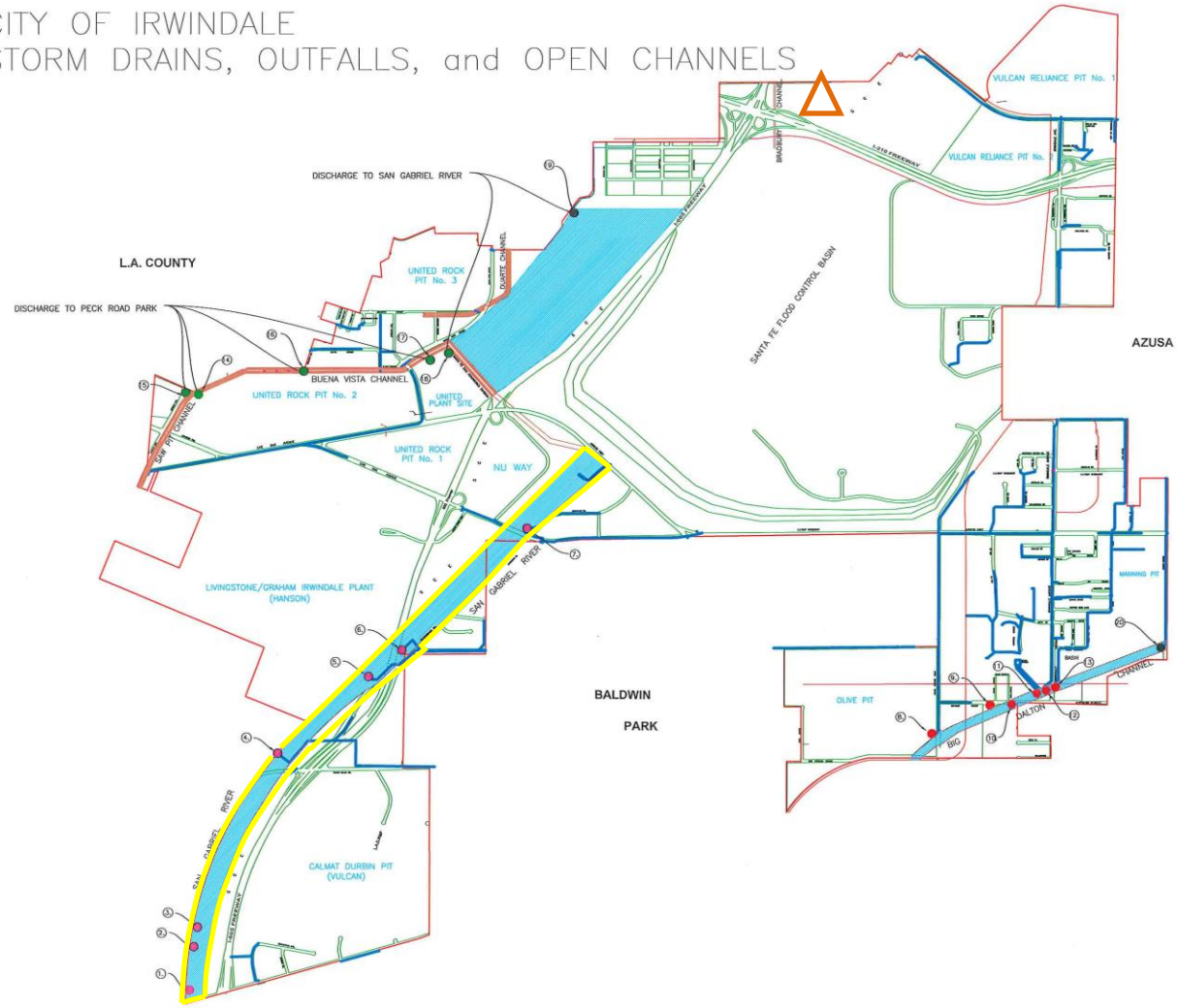
Storm Water Outfall Based Monitoring Locations



Appendix A-1.1

Storm Drain, Outfalls, and Open Channels Map

CITY OF IRWINDALE
STORM DRAINS, OUTFALLS, and OPEN CHANNELS



N.T.S

LEGEND

- DISCHARGE LOCATION
- OPEN CHANNEL
- 18" OR GREATER STORM DRAIN
- CITY BOUNDARY
- MS4 OUTFALL : 36" OR GREATER
  - BDW
  - BUENVC
  - SGR

MS4 OUTFALL ID

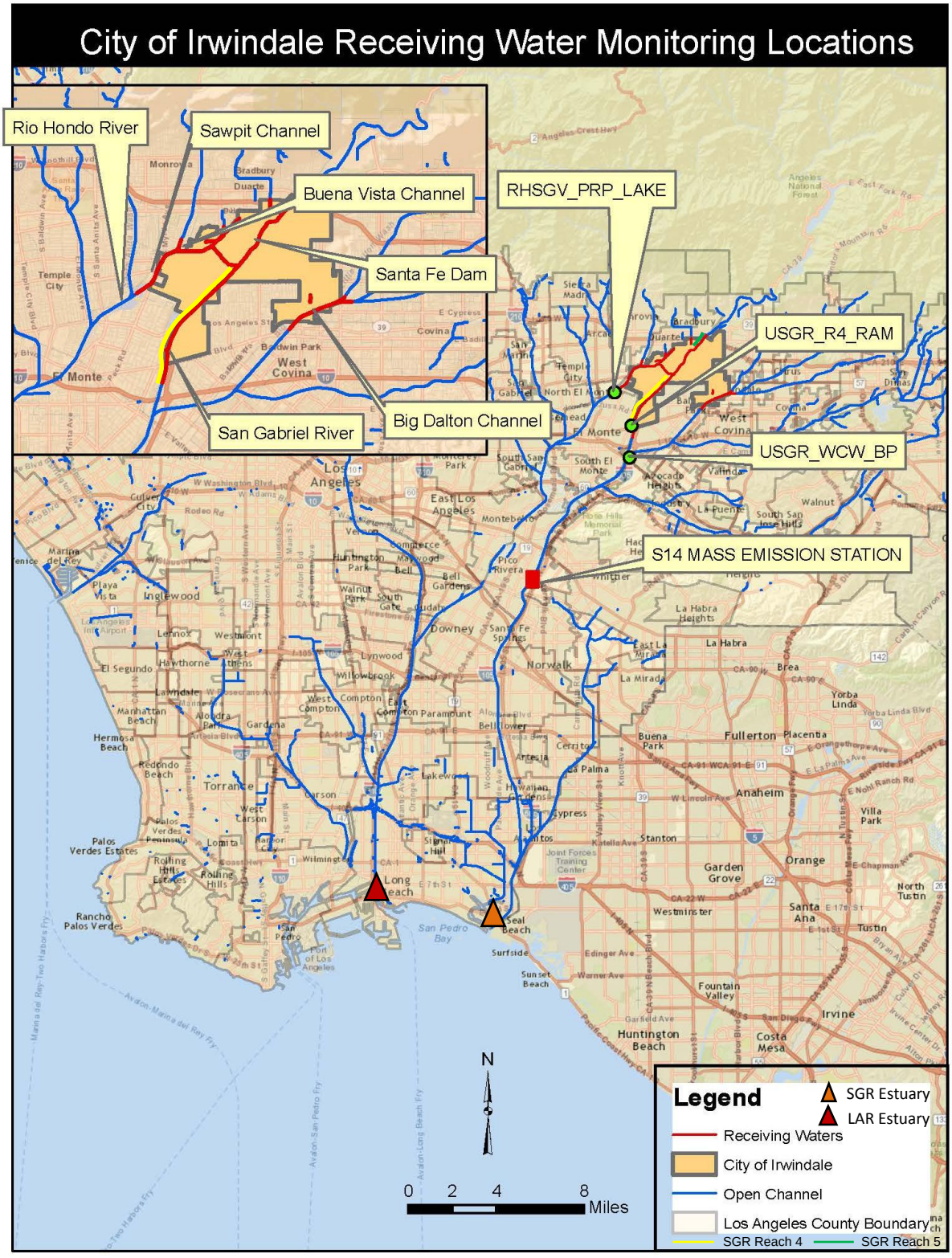
1. SGR-070A
2. SGR-070B
3. SGR-071
4. SGR-073
5. SGR-074A
6. SGR-074B
7. SGR-077
8. BDW-023
9. BDW-025
10. BDW-026
11. BDW-027A
12. BDW-028
13. BDW-029
14. SAWPW-024B
15. SAWPW-074A
16. BUENVC-016
17. BUENVC-048
18. BUENVC-054
19. BUENVC-100
20. LTLDW-001

SGR Reach 4

SGR Reach 5

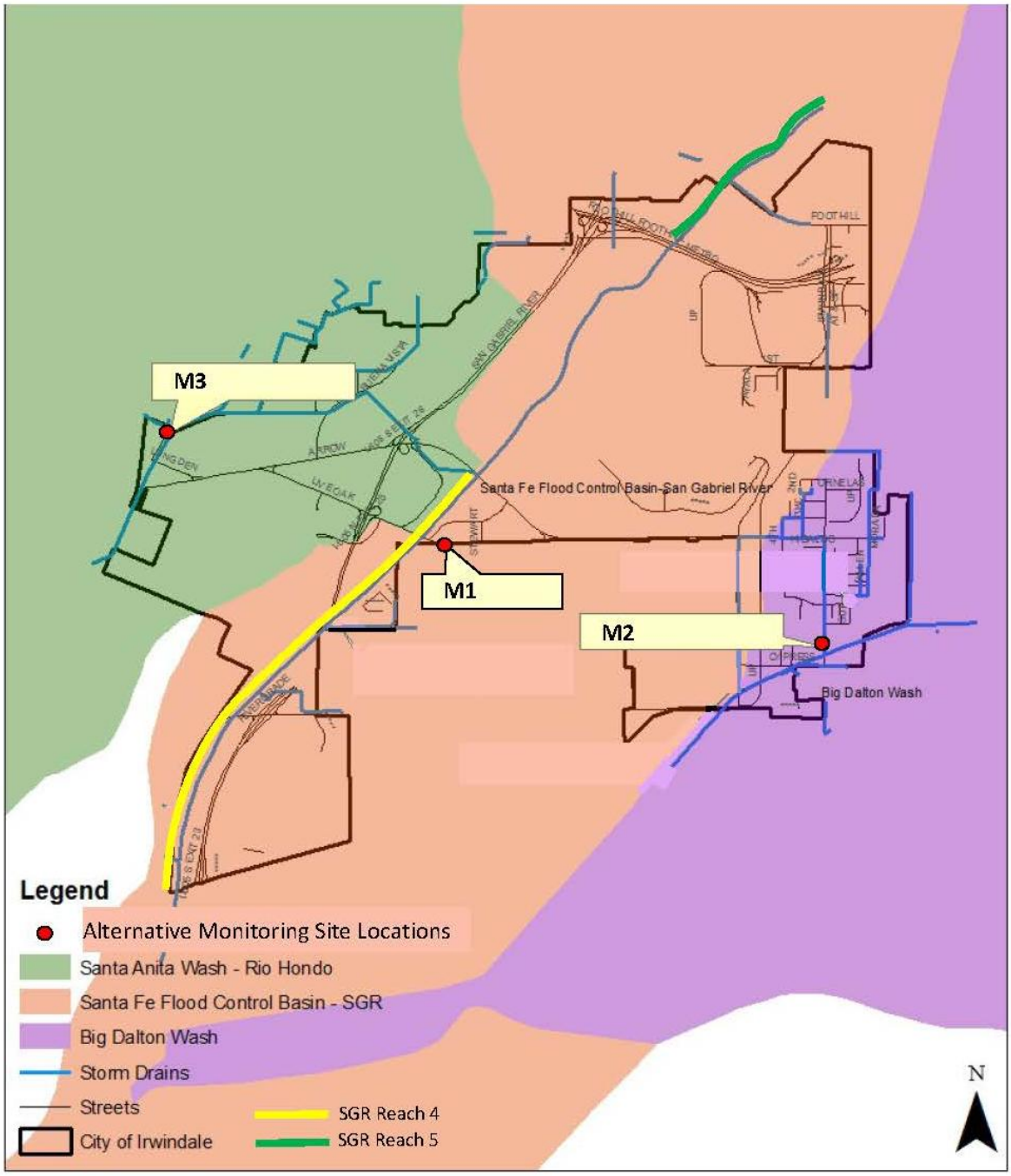
Appendix A-2

Receiving Water Monitoring Locations


City of Irwindale Receiving Water Monitoring Locations
Rio Hondo River
Sawpit Channel
Buena Vista Channel
Santa Fe Dam
San Gabriel River
Big Dalton Channel
RHSGV_PRP_LAKE
USGR_R4_RAM
USGR_WCW_BP
S14 MASS EMISSION STATION
N
0 2 4 8
Miles
Legend
SGR Estuary
LAR Estuary
Receiving Waters
City of Irwindale
Open Channel
Los Angeles County Boundary
SGR Reach 4
SGR Reach 5

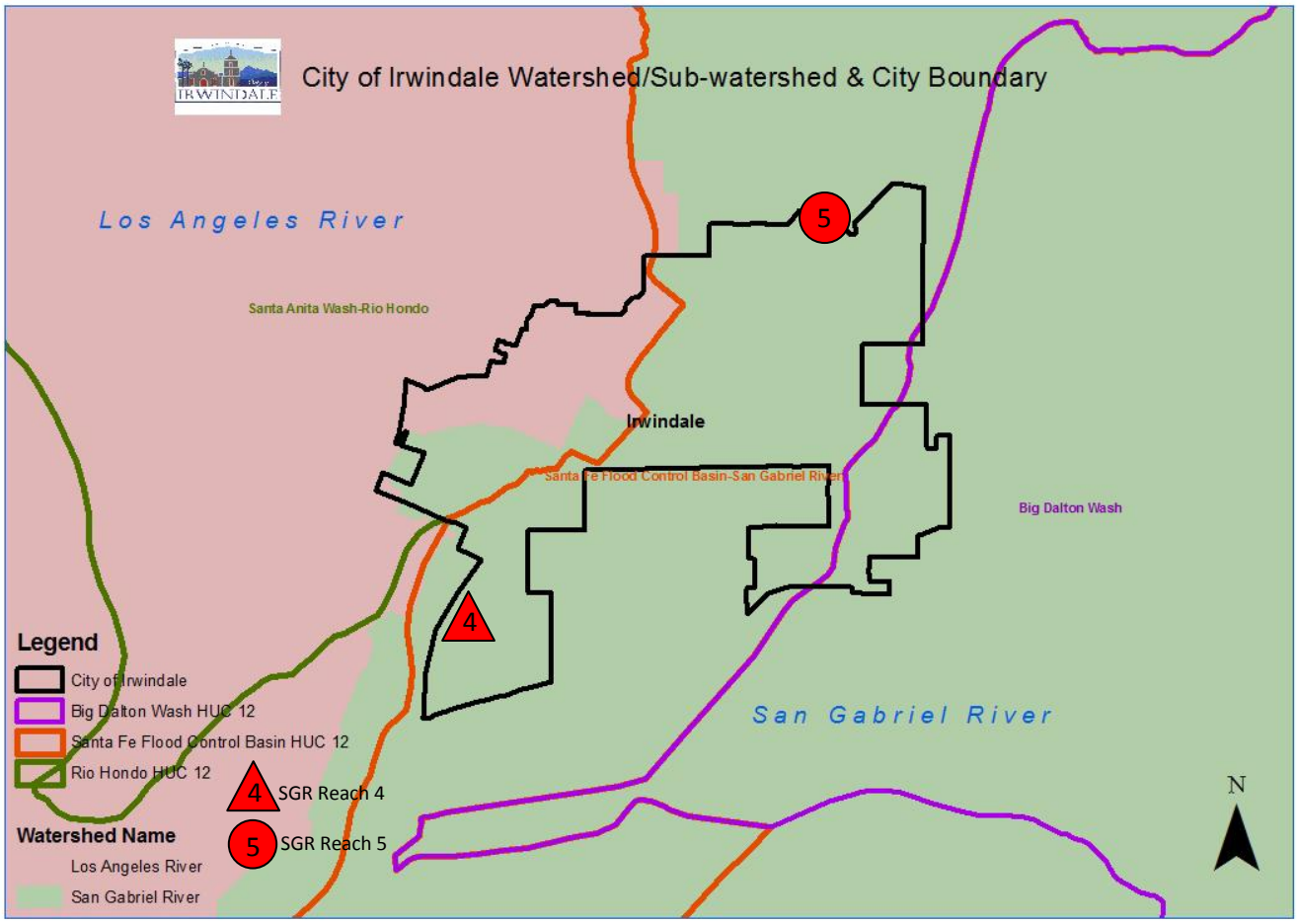
Appendix A-3
Alternative Monitoring Site Locations

ALTERNATIVE MONITORING SITE LOCATIONS



Appendix A-4

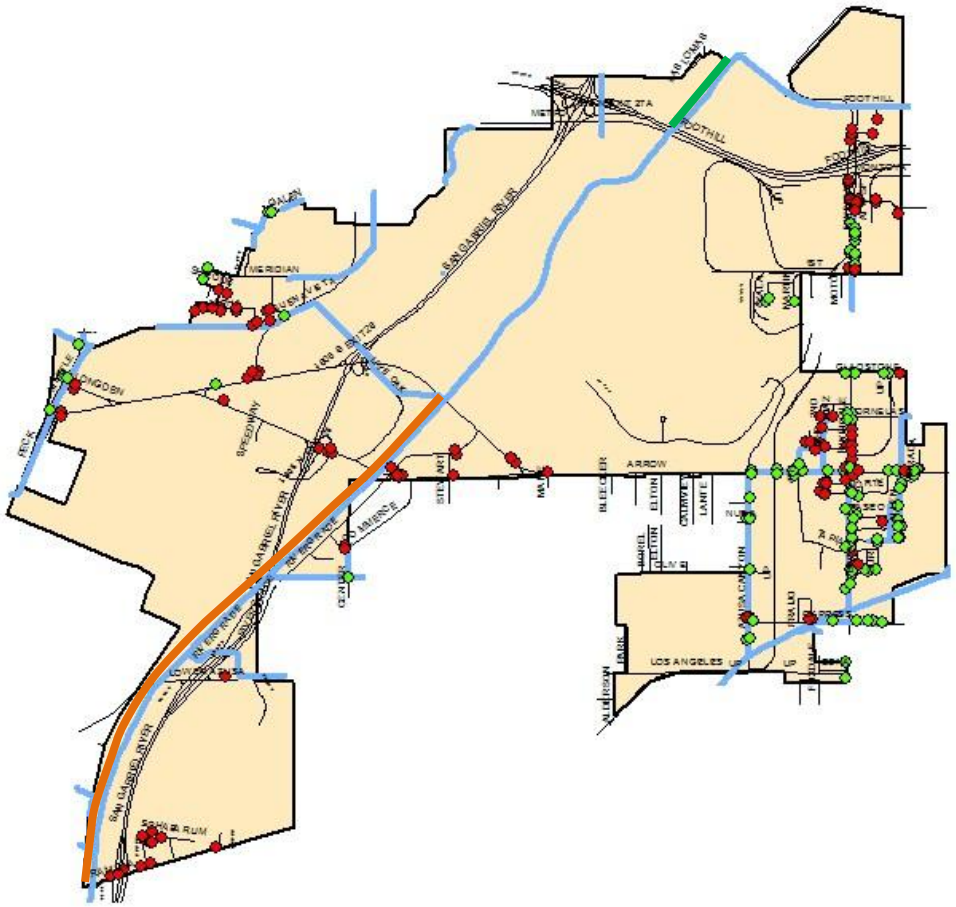
Watershed/Subwatershed Map


City of Irwindale Watershed/Sub-watershed & City Boundary
Los Angeles River
Santa Anita Wash-Rio Hondo
Irwindale
Santa Fe Flood Control Basin-San Gabriel River
Big Dalton Wash
San Gabriel River
5
4
Legend
City of Irwindale
Big Dalton Wash HUC 12
Santa Fe Flood Control Basin HUC 12
Rio Hondo HUC 12
4 SGR Reach 4
5 SGR Reach 5
Watershed Name
Los Angeles River
San Gabriel River
N

Appendix A-5

Storm Drain/Catch Basin Map

Catch Basin Map



Legend

OWNERSHIP

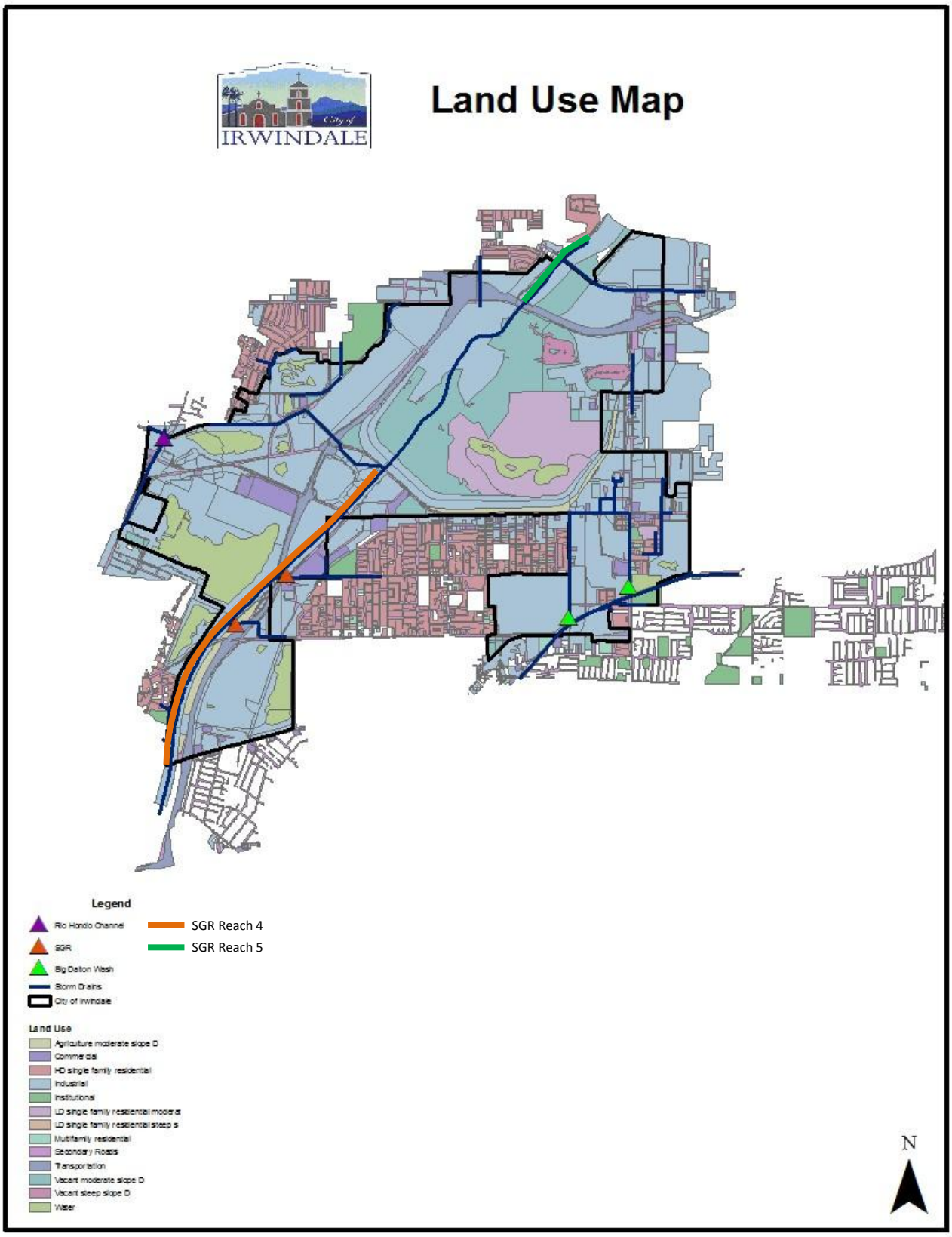
- CITY
- LACFCD
- Storm Drain
- Street
- Irwindale
- SGR Reach 4
- SGR Reach 5

N

Appendix A-6

City Land Use Map

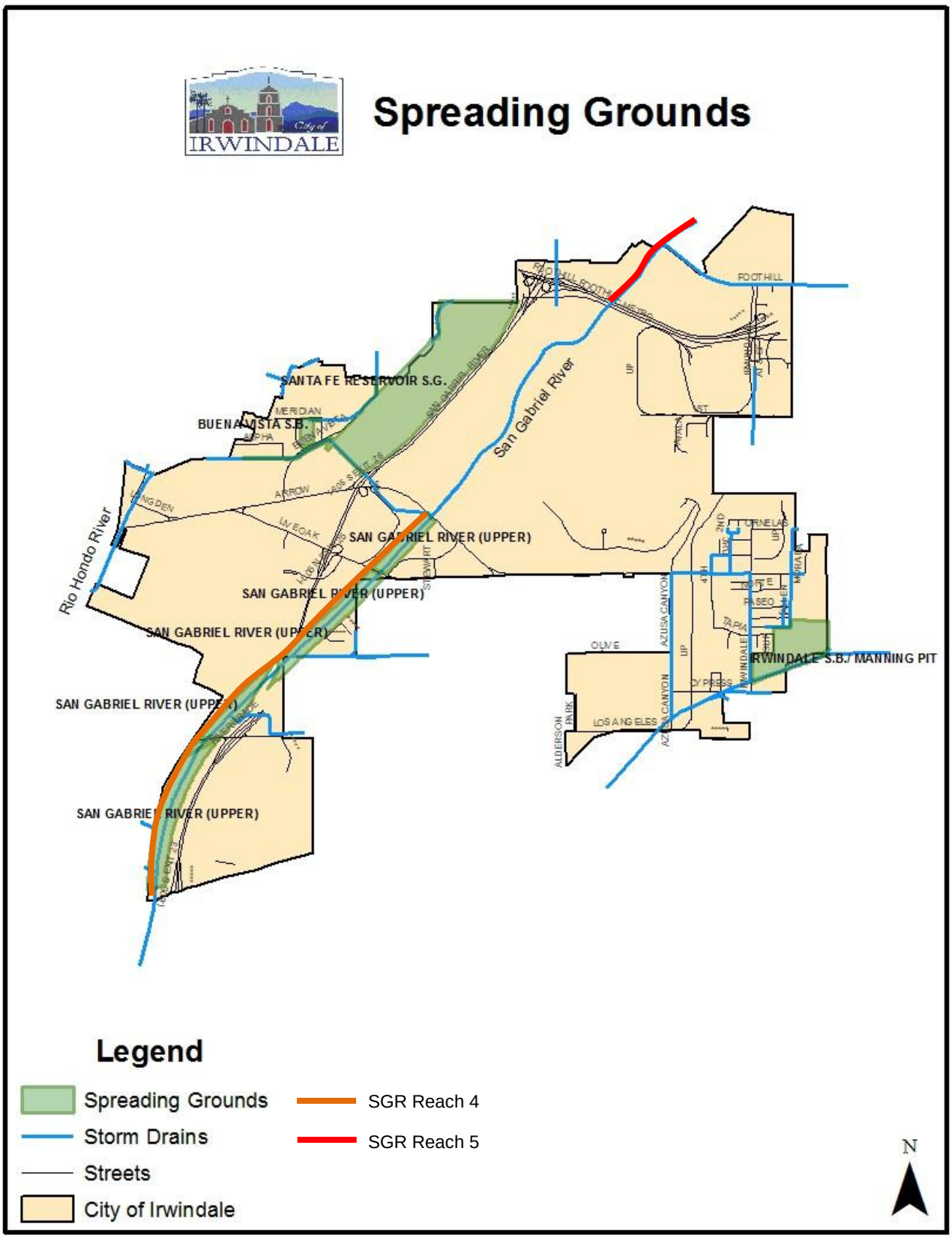
Land Use Map


IRWINDALE
Legend
Rio Hondo Channel
SGR
Big Dalton Wash
Storm Drains
City of Irwindale
SGR Reach 4
SGR Reach 5
Land Use
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-7

Spreading Grounds Location Map

Spreading Grounds



Appendix B

2010 303(d) List for Los Angeles and San Gabriel Rivers and Tributaries

Appendix B

Table I – 303(d) List - San Gabriel River and Tributaries

2010 303 (d) List			
Reach	**Parameter**	**TMDL Status Date**	**Source**
SG River Reach 3 Whittier Narrows Dam	Indicator Bacteria	2021	Unknown
Walnut Creek (Drains from Puddingstone Reservoir)	Indicator Bacteria	2021	Unknown
	Benthic-Macro inverte-brate Bioassessment	2012	Unknown
	pH	2007	Unknown

Table II – 303(d) List, Reach 2, Rio Hondo

2010 303 (d) List			
Reach	**Parameter**	**TMDL Status Date**	**Source**
Rio Hondo Reach 2 at Spreading Grounds	Coliform Bacteria	2009	Nonpoint/Point Source
	Cyanide	2021	Unknown