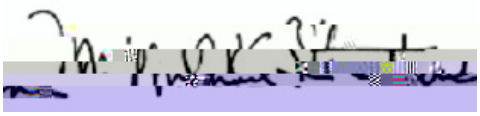
ISRA PERFORMANCE MONITORING AND



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ISRA Performance Monitoring and BMP Monitoring for
Outfalls 008 And 009

Expert Panel [Expert Panel], 2011d and 2012). The BMP Plan addenda provide additional detail on the BMP recommendations presented in the annual reports.

This summary report was prepared for Boeing and NASA by MWH and Geosyntec with input from and in accordance with the recommendations from the Expert Panel. Below is a description of the sections and appendices included in the report.

- Section 1 presents project background information, the scope and objectives of the ISRA performance monitoring and BMP monitoring programs,

1.1.1 ISRA Performance Monitoring Program

ISRA performance monitoring involves the collection of stormwater samples both upand downstream of each completed ISRA area and select CM systems to obtain water quality performance data to assess the contribution of COCs to stormwater within the Outfalls 008 and 009 watersheds following completion of remedial or CM activities. The performance data associated with the CM systems were also collected to assess the effectiveness of the CMs at promoting sediment settling and removing COCs. Performance monitoring will continue through two rainy seasons for each monitoring location; however, the actual study duration will depend on the quantity and quality of data collected at the performance monitoring locations and the associated outfalls (MWH, 2010a). The overall effectiveness of the ISRA remedial activities and the CM systems will be based on compliance with the NPDES Permit at the outfall monitoring locations (MWH, 2009).

The performance monitoring inspection and sample locations from the 2012/2013 rainy season are listed in Table 1-3 and shown on Figure 1-1. A summary of the activities and results from the 2012/2013 rainy s 1

considering the list of guiding principles established by the Expert Panel (MWH *et al.*, 2010). The BMP Plan also describes the types of BMPs available, grouping BMPs as either source, erosion/sediment controls, or treatment controls (e.g., the Lower Lot B filter), and provides the approach and criteria for identifying BMP sites and selecting the BMP type(s) for each location.

Additionally, the BMP Plan and subsequent addenda (Geosyntec and Expert Panel, 2011 and 2012e) summarize BMP activities that are planned, are underway, or have recently been completed in the Outfalls 008 and 009 watersheds, referred to as short-term activities (e.g., ISRA remediation and erosion control activities, Northern Drainage restoration activities, and several erosion and treatment control recommendations from the Expert Panel). An updated list of the short-term activities and their current status is provided in Section 1.2.2. In addition, the BMP Plan and addenda identify activities that will be performed as part of the BMP evaluation and implementation planning process at the identified potential BMP sites, referred to as long-term activities. Several long-term activities are ongoing or have been completed since submittal of the BMP Plan, including developing and implementing a potential BMP subarea monitoring program, evaluating existing surface water data, developing a prioritized ranking of sites for placing new BMPs, and developing BMP sizing criteria.

1.2.1 Potential BMP and BMP Performance Monitoring Program

The potential BMP subarea monitoring program involves the collection of stormwater samples at locations receiving runoff from potential source areas and other infrastructure (e.g., roads, buildings, parking areas) to assess the potential for contribution of COCs from potential source areas and to identify locations for new BMPs and/or treatment controls, as described in the BMP Plan (MWH *et al*, 2010) and BMP Plan Addenda (Geosyntec and Expert Panel, 2011, 2012e) within the Outfall 008 and 009 watersheds. Potential BMP monitoring locations are performed at "planned"[4] or "potential"[5] BMP sites. Following implementation of treatment BMPs, BMP performance monitoring is conducted and stormwater samples are collected at locations up and downstream to evaluate the performance of the BMP.

As part of the BMP monitoring program, an approach was developed by the Expert Panel for ranking the potential BMP sites to prioritize the locations based on water quality considerations.

[4] "Planned" treatment BMPs include those that are expected to be designed and constructed in 2013 irrespective of subarea monitoring results.

[5] "Potential" treatment BMPs include those that will be considered based on comparison of subarea monitoring results with onsite stormwater background concentrations and NPDES permit limits; if deemed necessary, new BMPs will be designed in late 2013 and constructed thereafter.

A letter summarizing the BMP site ranking analysis approach was submitted to the RWQCB on June 22, 2011 (Expert Panel, 2011). The BMP site ranking and selection process described in the letter is planned to occur on a yearly basis through the end of the BMP Plan coverage period, currently scheduled for 2014. In addition, the existing Santa Susana BMP sizing criteria developed by the Expert Panel is for the capture of runoff from the 1-year 24-hour design storm event or, alternatively, 90% long-term runoff volume capture (these are roughly equivalent). These criteria will be used for the sizing of new treatment controls for the BMP Plan. Plan will be evaluated by the Expert Panel on a site-by-site basis as individual projects are developed.

Recommendations for BMP sites and modifica

season (3 of 9 rain events) compared to the 2011/2012 rainy season (9 of 10 rain events). The temporary system will continue operation until the asphalt is removed during planned demolition.

Downslope along Helipad Road, slope protection measures were implemented at areas of exposed soil west of the road, including jute matting, fiber rolls, and street sweeping, to address sediment being washed into the asphalt swale along Helipad Road and entering the culvert at the corner of Area II Road.

Expendable Launch Vehicle (ELV) Area. During December 2012, mulefat plants and plant debris were removed from the ELV channel, a row of sandbags and fiber rolls were installed along the edge of soils adjacent to Area II Road, and gravel was added to exposed soil areas to address sediment-laden runoff being carried down Area II Road towards CMP-1.

Furthermore, construction of a treatment control BMP in the ELV area began June 2013. The ELV BMP includes removal of the existing 520-foot asphalt drainage swale south of ELV and installation of a concrete sump, sump pumps, settling tanks with tube settling plates, and a media filter at the corner of Helipad Road and Area II Road. Stormwater will be gravity driven through the tank system, starting with the settling tanks, then through the filter media tank, before discharging to a tributary that flows to Outfall 009. Construction is tentatively scheduled to be completed Fall 2013.

Liquid Oxygen (LOX) Area. HDPE slope drains and rip rap were installed ud tennd a]TJ 0 Tc
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and the January 23-27, 2013 rain event, which measured 0.99 inches, 1.49 inches, 1.13 inches, and 1.78 inches, respectively.

1.4 NPDES MONITORING, 2012/2013 RAINY SEASON

NPDES monitoring and sampling of Outfalls 008 and 009 conducted during the 2012/2013 rainy season was performed in accordance with the NPDES permit adopted on June 3, 2010. During the 2012/2013 rainy season, no samples were collected at Outfall 008 (no flow was recorded at Outfall 008 for the 2012/2013 rainy season) and three samples were

2.0 ISRA PERFORMANCE MONITORING SUMMARY

The data collected during the 2012/2013 rainy season represents the fourth year of rainy season monitoring for one CM system (CM-9), which is downstream of the A2LF ISRA areas (A2LF-1 and A2LF-2), the second year of rainy season monitoring for one Phase III ISRA area (2-IEL) and the first year of monitoring for seven Phase III ISRA areas. The performance monitoring inspection and sample locations from the 2012/2013 rainy season are listed in Table 3-1 and shown on Figure 3-1. A summary of the ISRA performance monitoring results from the 2009/2010, 2010/2011, and 2011/2012 rainy seasons is provided in Section 2.1. A summary of the results from the 2012/2013 rainy season is provided in Section 2.2. An upstream/downstream evaluation of ISRA performance monitoring results collected to date and recommendations for modifications to the ISRA performance monitoring program are included in Sections 2.3 and 2.4, respectively.

2.1 PRE-2012/2013 RAINY SEASON SAMPLING SUMMARY

A summary of pre-2012/2013 ISRA performance monitoring is provided in Table 2-1 and the monitoring locations and sampling dates are shown on Figures 2-1 through 2-6. The results and recommendations from previous rainy seasons are presented in annual reports (MWH, 2010c, MWH *et al.*, 2011, MWH *et al*, 2012). It should be noted that subsequent to submittal of the 2009/2010 rainy season report and consistent with recommendations of the RWQCB, all dioxins toxic equivalency (TEQ) concentrations were recalculated using toxic equivalency factor (TEF) and bioaccumulation equivalency factor (BEF) and validation was performed on dioxins results above the permit limit. The updated 2009/2010 rainy season performance monitoring sample results were presented in 2010/2011 rainy season report (MWH, *et al*, 2011).

Table 2-1 Pre-2012/2013 ISRA Performance Monitoring Summary

Area Monitored	Rainy Season		
	2009/2010	2010/2011	2011/2012
Phase I ISRA Areas			
OF008 ISRA areas (10)	X	X	X (Discontinued[a])
A2LF-1, -3	X	X	X (Discontinued[a])
CM Systems			
CM-1	X	X	X (Reassigned[b])
CM-9	X	X	X
CM-3, CM-8, CM-11 (Background CMs)	X	X (Discontinued[c])	--
B-1 Media Filter	--	--	X (Reassigned[b])

the nine events. Two performance samples were collected and analyzed from locations within the Outfall 009 watershed. The RWQCB collected split samples of both performance samples. A summary of the number of primary performance monitoring samples collected during each rain event is presented in Table 2-1. The performance monitoring samples collected during the 2012/2013 rainy season, including RWQCB splits, are listed in Table 2-2. The monitoring locations and dates on which ISRA performance monitoring samples were collected are shown on Figures 2-1 through 2-6. Charts showing rainfall in inches per hour for the 2012/2013 rain events during which a performance monitoring sample was collected, along with the performance monitoring sampling times and Outfall 009 flow rates and sampling times, are included in Appendix A.

Stormwater flow was not observed at eight of the primary monitoring locations within the Outfall 009 watershed during the 2012/2013 rainy season and therefore samples could not be collected. The eight locations within the Outfall 009 watershed include upstream of AP/STP-1B/-1C-1/-1C-2/-1E-3 (three locations), downstream of all Ash Pile and Building 515 Sewage Treatment Plant (AP/STP) ISRA areas (one location), up- and downstream of IEL-2 (two locations), and up- and downstream of IEL-3 (two locations).

Field measurements of primary performance monitoring samples included turbidity, temperature, pH, and conductivity. Laboratory analysis of primary and split performance monitoring samples included NPDES COCs associated with the ISRA or CM areas and TSS, as described in the 2012/2013 Rainy Season SAP (MWH, 2012).

2.2.2 Sample Results

ISRA performance monitoring analytical results, including RWQCB split samples, field measurements, and rainfall event measurements from the 2012/2013 season are presented in Table 2-3. Consistent with the approach used during previous rainy seasons, Level II validation was performed on dioxin results above the permit limit. Laboratory and validation reports for performance monitoring samples (primary and RWQCB split) are included in Appendix B.

Performance monitoring sample results were compared to NPDES outfall results to assess whether there is a general pattern of water quality changes as runoff travels down the watersheds and to provide a context for evaluating possible contributions to NPDES samples at the outfalls.

Dekaport splitter improved the corelation (and decreased data

- Reassign downstream monitoring at CM-9 to the BMP monitoring program, where other treatment BMPs are currently being monitored (e.g., CM-1 and B-1 Media Filter).

3.0 POTENTIAL BMP AND BMP PERFORMANCE MONITORING PROGRAM

The data collected during the 2012/2013 rainy season represents the third year of BMP monitoring. The BMP monitoring inspection and sample locations from the 2012/2013 rainy season are listed in Table 4-1 and shown on Figure 1-9.

A summary of the BMP monitoring results from the 2010/2011 and 2011/2012 rainy seasons is provided in Section 3.1. A summary of the monitoring activities and results from the 2012/2013 rainy season is provided in Section 3.2. An up- and downstream evaluation of BMP performance monitoring results collected to date is included in Section 3.3. Section 3.4 and 3.5 present the results of the BMP site ranking analysis and the recommendations for modifications to the BMP monitoring program, respectively.

3.1 PRE-2012/2013 RAINY SEASON SAMPLING SUMMARY

A summary of pre-2012/2013 BMP monitoring is provided in Table 3-1 and the monitoring locations and sampling dates are shown on Figures 12 through 26.

Table 3-1 Pre-2012/2013 BMP Monitoring Summary

Area Monitored	Rainy Season	
	2010/2011	2011/2012
Outfall 008		
HVS	X	X
Outfall 009		
AILF/CM-9	X	X
A2LF	X	X
B-1	X	X
CM-1	X	X
ELV	X	X
Helipad	X	X
LOX	X	X
Lower Parking Lot	X	X
Background	X	X (Discontinued[a])
Sampling Summary	67 samples (from 22 locations)	88 samples (from 24 locations)

NOTES

- (X) BMP monitoring performed during specified rainy season.
- ([a]) BMP monitoring discontinued after specified rainy season because sufficient background data have been collected for the program.

Using the results of the 2010/2011 and 2011/2012 rainy seasons, the Expert Panel prioritized the potential BMP sites based on water quality considerations. The potential BMP sites were ranked based on the multi-constituent score, with the top-ranked sites recommended for consideration for new or enhanced stormwater control placement. Based on the ranking results, and utilizing best professional judgment (including consideration of information on planned ISRA, BMP, and demolition measures), new or improvements to the existing BMPs were recommended at the Helipad, ELV/CM-1, LOX, AILF, and CM-9. Conceptual designs for the BMP concepts and proposed implementation schedule were presented in the 2011 and 2012 BMP Plan addenda (Geosyntec and Expert Panel, 2011 and 2012). The current status of BMP activities that are being performed to improve surface water quality in the Outfalls 008 and 009 watersheds is provided in Section 1.2.2.

3.2 2012/2013 RAINY SEASON ACTIVITIES AND RESULTS

Potential BMP subarea monitoring during the 2012/2013 rainy season was performed at 17 "planned" or "potential" BMP sites. BMP performance monitoring during the 2012/2013 rainy season was performed at 12 locations that monitored four BMP sites, including CM-1, the B-1 Media Filter, LOX, and the Lower Parking Lot BMP. A summary of the 2012/2013 inspection and sampling activities and results are presented below.

3.2.1 Inspection and Sampling Activities

Field inspections were conducted during all nine qualifying rain events in 2012/2013; however, stormwater runoff was observed and sampled at BMP monitoring locations during seven of the nine events. Fifty-three (53) BMP monitoring samples were collected and analyzed from a total of 17 locations within the Outfall 009 watershed; stormwater runoff was not observed at either of the monitoring locations within the Outfall 008 watershed. Additionally, three BMP monitoring samples were collected and placed on hold within the Outfall 009 watershed.[7] The sample collected on December 3, 2012 and placed on hold was not subsequently analyzed because a sample collected earlier in the same rain event was analyzed instead. The two samples collected on January 24, 2013 and placed on hold were associated with the Lower Parking Lot BMP and

[7] In addition, three BMP monitoring samples were collected and placed on hold within the Outfall 009 watershed. A sample collected on December 3, 2012 was placed on hold and not subsequently analyzed, because a sample

- For the 2012/2013 rainy season, cadmium and mercury were not detected in BMP performance monitoring samples

Development (LID)-type controls, or through detention if shown to provide equivalent water quality benefit.

(10) B1BMP0004 (B-1 media filter inlet north): The Expert Panel recommends continued maintenance of the filter media and hillside erosion controls, pretreatment check dams, and curb cuts.

(14.5) LPBMP0001-A (Lower Parking Lot sheetflow, post-gravel bag berms): Discontinued.

(14.5) B1SW0002 (Woolsey Canyon Road runoff): Discontinued.

(14.5) B1BMP0001 (B1 media filter inlet [post-media filter installation]): Discontinued.

(14.5) LXBMP0006 (LOX east, runoff along dirt road): The Expert Panel recommends robust erosion and sediment controls during and following the ISRA removal work.

(14.5) LPBMP0002 (Lower parking lot influent to cistern): The Expert Panel recommends no new actions at this time to address runoff from this currently treated subarea, beyond the recently completed sedimentation and biofilter control.

(14.5) EVBMP0006 (2012/13 Area II Road near ELV ditch): The Expert Panel recommends no new actions at this time to addr0.16 Tw -25. 5 >-2(r)3(e)re 5 >-2ru-4(e-2(s)-13(

NOTES

- **Bolded** locations indicate that the site is ranked within the top fifteen of the constituent scores.
- Gray text indicates historic subarea monitoring sites that are discontinued.
- ([a]) Based on a single influent/effluent sampling event.
- ([b]) These upstream and downstream sample locations were not top-ranked sites, however, this pair is included to more fully demonstrate water quality improvements around the B-1 area.

2012 BMP Recommendations and Status Updates

Based on the 2012 ranking results, the following recommendations were made by the Expert Panel in the 2012 Annual Report. The general locations of these recommendations are shown on Figures 3-1 and 3-2.

1. **ELV/CM-1 (NASA):** The Expert Panel's 2012 treatment system recommendations are currently being constructed (construction began in June 2013). The Panel also recommended that the upper paved ELV and Helipad areas be swept, and that regular maintenance of pumps and berms be performed. Maintenance of infiltration holes is optional since cumulative infiltration through these holes is not known.

2. **Helipad (NASA):** In 2012, the Expert Panel recommended asphalt removal and contouring. This plan is currently on hold. Additional runoff will be routed toward the Helipad from the western paved area around the ELV building. NASA's long-term plan is to remove the asphalt from the Helipad area (anticipated to occur in 2014) and then re-vegetate. The Expert Panel's existing recommendations for this area were described earlier.

3. **24-inch drain beneath Lower Lot (Boeing):** In 2012, the Expert Panel recommended biofiltration or equivalent above-ground natural treatment systems around storm drain inlets and remaining impervious areas, and post-demolition erosion controls around Building 1436 and any removed asphalt areas of the upper parking lot. The current demolition plan is for removal of Bilding 1436 in 2013. The Panel's 2013 recommendations for this area were described earlier.

4. **B-1 Area (Boeing):** In 2012 the Expert Panel recommended continued maintenance activities to enhance the performance of the existing media filter. Expert Panel recommendations in the 2012 report were completed in 2012. These recommendations included curb cuts along the entrance road northwest of the existing rock check dams. These curb cuts divert runoff from the pavement to the north side of the B-1 media filter,

rather than the south side, to better balance influent delivery to the two sides of the treatment system. Additional improvements installed in 2012 in this area included rock stabilization at the outlet of the curb cuts and stabilization measures (e.g., hydroseed) on denuded and exposed sloped soils.

5. **CM-9 (Boeing):** Expert Panel's 2012 recommendations for this area were implemented in 2012. These recommendations included erosion control measures of straw wattles and hydromulch installed on the steep roadside embankments on both sides of the Area II Road. Additional recommendations including wattles along the path below and west of the former Building 1300 were installed in 2012. Recommended controls along the Area II Road included a low flow diversion to collect runoff from the Area II Road and divert these flows into a perforated pipe to distribute the runoff onto the vegetated sloped area to the south of the CM-9 location. A rock grade control structure (i.e., rock check dam) was installed in the drainage upstream of the CM-9 to provide storage volume and settle suspended sediment prior to reaching the media filter downstream. Additional recommendations installed in 2012 include replacing the filter fabric on the weir boards of the CM-9 culvert headwall.

6. **LOX Area (NASA):** In the 2012 BMP Ranking Memo, the LOX ISRA excavation was tentatively planned for 2013. Based on review of available data, the Expert Panel recommends that implementation at certain LOX ISRA areas (LOX-1A, LOX-1B-4, LOX-1C, and LOX-1D) be addressed by remedial activities to be performed under the 2010 Administrative Order on Consent (NASA areas) given the potential water quality risks that could occur as a result of these interim measures. The Expert Panel currently recommends that the sites be isolated hydrologically to the extent feasible and stabilized with vegetation and BMPs, and that monitoring in the area continue.

7. **Outfall 008:** Several improvements have been made to Outfall 008 in accordance with the *Santa Susanna Field Laboratory: Recommendations from Field Investigation of Outfall 008 Watershed* Memo (Geosyntec and Expert Panel, 2012a).

   - The temporary silt fence and straw bale road barriers were removed and replaced with rock berms.

   - The original recommendations included to extend an existing culvert standpipe to increase the inlet elevation of the standpipe and install a berm/mound around the standpipe. However, after mobilization the contractor identified that the culvert outlet was clogged with sediment and that the outlet was lower in elevation than the adjacent ground surface. The revised recommendation was to leave the

culvert as found and rely on the rock berms to treat runoff through this area as described in the above bullet.

- Gravel water bars were extended to divert flow into the vegetation to the north or south of the access road. The discharge side of the road (i.e., at the down slope outlet of the gravel water bars) was lowered in elevation to create a side drain.
- Two rock grade control structures (e.g., rip rap check structures) were installed in

4.0 UPDATED MILESTONES SCHEDULE

The milestone schedule presented in the BMP Plan has been updated, and is provided below. The schedule accounts for phasing of implementation to allow completion of ongoing work within the Outfalls 008 and 009 watersheds.

2013:

August – December 2013	Complete LOX and ELV ISRA activities.
August – October 2013	Complete the ELV BMP construction and restoration activities. Conduct concrete foundation removal as part of Building 1436 demolition.
September 2013	t(n)2(a)-4(c)6(r)5((itiO)4(u)2(E)-7ue)6( )0 Tw 16.72 0 Td0 -

MWH, 2009. Final Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County, California. May

MWH, 2010a. Interim Source Removal Action (ISRA), Phase I Implementation Report 2009 Activities, Santa Susana Field Laboratory, Ventura County, California. March.

MWH, 2010b. 2010 ISRA Work Plan Addendum, Santa Susana Field Laboratory, Ventura County, California. April.

MWH, 2010c ISRA Performanc2tura C. a Snt5.10nta- 5.5nt O2tl.(pr)3(i)-3(i)-12(d .9(e)4(nt)Tj ()9.5(T

WWE and Expert Panel. 2010. Environmental Sampling of Dioxins and Other Low Solubility Pollutants at Parts-per-Billion and Lower Concentrations: Field Protocols for Collecting SSFL

TABLES

Table 1-1
Summary of NPDES Permit Limit Exceedances - Outfall 008
(Page 1 of 1)

Analyte	Units	2010 Compliance Limit	Sample Date	Result	Data Type
Copper	µg/L	14.0	2/18/2005	15	Monitoring-only
Copper	µg/L	14.0	4/13/2012	18	Compliance
Lead	µg/L	5.2	10/20/2004	9.8	Monitoring-only
Lead	µg/L	5.2	10/27/2004	9	Monitoring-only
Lead	µg/L	5.2	12/28/2004	6.4	Monitoring-only
Lead	µg/L	5.2	2/18/2005	13	Monitoring-only
Lead	µg/L	5.2	10/18/2005	120	Monitoring-only
Lead	µg/L	5.2	1/1/2006	20	Monitoring-only
Lead	µg/L	5.2	4/15/2006	18	Compliance
Lead	µg/L	5.2	1/25/2008	6.3	Benchmark
Lead	µg/L	5.2	1/18/2010	7.9	Benchmark
Lead	µg/L	5.2	2/5/2010	10	Benchmark
Lead	µg/L	5.2	2/28/2010	7.0	Benchmark
Lead	µg/L	5.2	12/19/2010	6.7	Compliance
Lead	µg/L	5.2	4/13/2012	10	Compliance
Dioxins / TCDD TEQ	µg/L	2.80E-08	2/18/2005	4.46E-08	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	2/28/2006	3.19E-07	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	1/18/2010	2.35E-06	Benchmark

Notes:

NPDES Permit exceedances are sample results that are greater than the NPDES limit and were collected after the discharge limit was established and before limit was updated to a benchmark (performance based) limit for the outfalls (compliance data above).

Dioxins / TCDD TEQ - A sum of 17 dioxin / furan congener results adjusted for toxicity. The TEQ is calculated for samples collected before July 2010 by multiplying the result of each congener by its respective World Health Organization's (1998 WHO's) toxic equivalency factor (TEF), which is based on the relative potency of the congener to cause a toxic response relative to 2,3,7,8-TCDD. Samples collected after July 2010 are also multiplied by the Great

Table 1-2
Summary of NPDES Permit Limit Exceedances - Outfall 009
(Page 1 of 2)

Analyte	Units	2010 Compliance Limit	Sample Date	Result	Data Type
Cadmium	µg/L	4.0	10/17/2005	9.2	Monitoring-only
Copper	µg/L	14	10/17/2005	39	Monitoring-only
Copper	µg/L	14	2/18/2006	22	Monitoring-only
Copper	µg/L	14	4/4/2006	26	Compliance
Lead	µg/L	5.2	12/28/2004	11	Monitoring-only
Lead	µg/L	5.2	2/18/2005	10	Monitoring-only
Lead	µg/L	5.2	10/17/2005	260	Monitoring-only
Lead	µg/L	5.2	2/18/2006	33	Monitoring-only
Lead	µg/L	5.2	4/4/2006	64	Compliance
Lead	µg/L	5.2	9/22/2007	8.6	Compliance
Lead	µg/L	5.2	2/3/2008	6.0	Benchmark
Lead	µg/L	5.2	12/15/2008	19	Benchmark
Lead	µg/L	5.2	2/6/2009	7.5	Benchmark
Lead	µg/L	5.2	2/13/2009	20	Benchmark
Lead	µg/L	5.2	12/7/2009	5.7	Benchmark
Lead	µg/L	5.2	1/19/2010	9.3	Benchmark
Lead	µg/L	5.2	2/28/2010	8.9	Benchmark
Lead	µg/L	5.2	10/6/2010	11	Compliance
Lead	µg/L	5.2	3/25/2012	7.2	Compliance
Mercury	µg/L	0.13	1/4/2005	0.20	Monitoring-only
Mercury	µg/L	0.13	10/17/2005	0.21	Monitoring-only
Oil & Grease	µg/L	15	1/11/2005	16	Compliance
pH	pH units	6.5 - 8.5	10/17/2005	8.80	Compliance
Dioxins / TCDD TEQ	µg/L	2.80E-08	1/4/2005	1.72E-06	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	2/18/2005	5.20E-08	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	10/17/2005	9.10E-04	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	11/9/2005	6.14E-07	Monitoring-only
Dioxins / TCDD TEQ	µg/L	2.80E-08	2/18/2006	1.56E-05	Monitoring-only
Dioxins / TCDD TEQ	µg/L	ng-only			

Table 1-2
Summary of NPDES Permit Limit Exceedances - Outfall 009
(Page 2 of 2)

Analyte	Units	2010 Compliance Limit	Sample Date	Result	Data Type
Dioxins / TCDD TEQ	µg/L	2.80E-08	2/13/2009	1.22E-05	Benchmark
Dioxins / TCDD TEQ	µg/L	2.80E-08	10/14/2009	1.60E-06	Benchmark
Dioxins / TCDD TEQ	µg/L	2.80E-08	12/7/2009	1.10E-07	Benchmark
Dioxins / TCDD TEQ	µg/L	2.80E-08	1/19/2010	3.43E-06	Benchmark

Table 1-3
ISRA Performance Monitoring Inspection Locations and Analytical Plan
2012/2013 Rainy Season
Page 1 of 1

Object ID	Location	Purpose	Areas Monitored	Notes	Cadmium (Total Recoverable) (Method 200.8)	Copper (Total Recoverable) (Method 200.8)	Lead (Total Recoverable) (Method 200.8)	Mercury (Total Recoverable) (Method 245.1)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)
Outfall 009 Watershed										
A1SW0009	AILF	DS	AILF/CM-9	CM-9 under drain	X	X	X	X	X	X
APSW0007	AP/STP	US/BG	AP/STP-1B, -1C-1	AP/STP tributary drainage	X	X	X	X	X	X
APSW0008	AP/STP	US/BG	AP/STP-1C-1, -1C-2	Intermittent stream flow	X	X	X	X	X	X
APSW0009	AP/STP	Secondary	AP/STP-1B-, -1C-1, -1C-2	AP/STP tributary drainage	To Be Determined*					
APSW0010	AP/STP	Secondary	AP/STP-1E-1	Intermittent stream flow	To Be Determined*					
APSW0011	AP/STP	Secondary	AP/STP-1E-2	AP/STP tributary drainage	To Be Determined*					
APSW0012	AP/STP	US/BG	AP/STP-1E-3	Intermittent stream flow					X	X
APSW0013	AP/STP	DS	All AP/STP	AP/STP tributary drainage	X	X	X	X	X	X
ILSW0003	IEL	US	IEL-2	Intermittent stream flow	X		X	X		X
ILSW0004	IEL	DS	IEL-2	Intermittent stream flow	X		X	X		X
ILSW0005	IEL	US	IEL-3	Intermittent stream flow	X	X	X	X		X
ILSW0006	IEL	DS	IEL-3	Intermittent stream flow	X	X	X	X		X

Abbreviations:

DS - Downstream
US - Upstream
BG - Background Assessment
CM - Culvert Modification
X = Collect and Analyze

Notes:

* Analytical suite of secondary monitoring locations will be based on the evaluation of data from primary performance monitoring locations and only sampled as warranted by the primary data.

Table 1-4
Potential/Planned and Treatment BMP Monitoring Inspection Locations and Analytical Plan
2012/2013 Rainy Season
Page 1 of 2

Object ID	Location	Purpose	Areas Monitored	Notes	Metals (Total Recoverable) (Method 200.7/200.8)	Metals (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Recoverable) (Method 200.7/200.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)
Outfall 008 Watershed												
HZBMP0001	Happy Valley	Potential BMP Location	HVS	HVS tributary drainage	X	X			X	X	X	X
HZBMP0003	Happy Valley	Potential BMP Location	CYN, DRG	CYN/DRG tributary drainage	X	X			X	X	X	X
Outfall 009 Watershed												
A1BMP0002	AILF	Planned BMP Location	CM-9, AILF, IEL	Tributary drainage	X	X			X	X	X	X
A2BMP0001	A2LF	Potential BMP Location	A2LF	Tributary drainage, west	X	X			X	X	X	X
A2BMP0002	A2LF	Potential BMP Location	A2LF	Tributary drainage, east	X	X			X	X	X	X
A2BMP0003	A2LF, WS-13 Road	Potential BMP Location	AP/STP, ELV, A2LF	Tributary drainage	X	X			X	X	X	X
A2BMP0005	ELV	Potential BMP Location	AP/STP, ELV	Tributary drainage	X	X			X	X	X	X
A2BMP0006	CM-1	US Eas (CM)-4.937()14.823.596()48.006(X)4 Td [A6h)92 APXSTP		Ash Pile drainage X X X X								
Potential BMP Location	B-1, Upper Parking Lot	Culvert inlet	X	X X X X X								
US North, Treatment BMP Performance Monitoring	B-1 Media Filter	Tributary drainage		X X X X X								
US South, Treatment BMP Performance Monitoring	B-1 Media Filter	Asphalt swale downstream of retention basin discharge		X X X X X								
DS, Treatment BMP Performance Monitoring	B-1 Media Filter	B-1 Media Filter under drains		X X X X X								
Potential BMP Location	B-1	Tributary drainage downstream of B-1 storm drain culvert outlet	X	X X X X X								
pad Planned BMP Location	Helipad	Spillway inlet	X	X X X X X								

Table 1-4
Potential/Planned and Treatment BMP Monitoring Inspection Locations and Analytical Plan
2012/2013 Rainy Season

Object ID	Location	Purpose	Areas Monitored	Notes	Metals (Total Recoverable) (Method 200.7/200.8)	Metals (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Recoverable) (Method 200.7/200.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)
Outfall 009 Watershed (continued)												

Table 1-5
2012/2013 Rain Event and Sampling Summary - Outfall 008 and 009 Watersheds
(Page 1 of 1)

Rain Event	Total Rainfall[1] (inches)	Average Rainfall Intesity[1] (inches / hour)	Maximum 1-Hour Rainfall Intensity[1] (inches / hour)	Outfall 008 Watershed				Outfall 009 Watershed			
				NPDES Samples	BMP Monitoring Samples	Analyzed	Hold	NPDES Samples	BMP Monitoring Samples	Analyzed	Hold

Table 1-6
NPDES Sample Results, Outfall 008
2012/2013 Rainy Season

Object Name:	N/A
Sample Name:	N/A
Sample Date:	N/A
Sample Type:	N/A
Location:	N/A
Rain Event:	N/A

ANALYTE	UNITS	NPDES Permit Limit
DIOXINS		
TCDD TEQ_NoDNQ	ug/L	2.80E-08
INORGANICS		
Copper	ug/L	14
Copper, dissolved	ug/L	-/-
Lead	ug/L	5.2
Lead, dissolved	ug/L	-/-
MISCELANEOUS		
Total Suspended Solids	mg/L	-/-
FIELD MEASUREMENTS		
Conductivity	mS	-/-
Temperature	deg C	-/-
pH	SU	6.5-8.5/-
Turbidity	NTU	-/-
RAINFALL MEASUREMENTS		
Intensity (Ave) - Pre-Sampling	in/hr	-/-
Intensity (Ave) - Rain Event	in/hr	-/-
Intensity (Max) - Pre-Sampling	in/hr	-/-

Table 1-7
NPDES Sample Results, Outfall 009
2012/2013 Rainy Season

Object Name:	**OUTFALL 009**	**OUTFALL 009**	**OUTFALL 009**

Table 2-2
ISRA Performance Monitoring Sample Collection Matrix
2012/2013 Rainy Season

Watershed	Object ID	Sample ID	Collection Date	Collection Time	Areas Monitored	Notes	Purpose	Sample Type	Cadmium (Total Recoverable) (Method 200.8)	Copper (Total Recoverable) (Method 200.8)	Lead (Total Recoverable) (Method 200.8)	Mercury (Total Recoverable) (Method 245.1)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Comments
009	A1SW0009	A1SW0009S006	11/17/12	13:00	CM-9 Media Basin	CM-9 under drain	DS	Primary	X	X	X	X	X	X	

Table 2-3 (CM-9)
Performance Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season
Page 1 of 1

		Sample Type:		
		Location:		
ANALYTE	*UNITS*	*NPDES Permit Limit*		
DIOXIN				
TCDD TEQ_NoDNQ	µg/L	2.80E-08	**4.47E-08**	**5.88E-08**
INORGANICS				
Cadmium	µg/L	4.0		
Copper	µg/L	14		
Lead	µg/L	5.2	**19 MB*$**	**16 *$**
Mercury	µg/L	0.13		
MISCELANEOUS				
Total Suspended Solids	mg/L	-		
FIELD MEASUREMENTS				
Conductivity (Field)	mS	-		
pH (Field)	pH Units	6.5 - 8.5		
Temperature	°C	30		
Turbidity (Field)	NTU	-		
RAINFALL MEASUREMENTS †				
Intensity (Ave) - Pre-Sampling	in/hr	-		
Intensity (Ave) - Rain Event	in/hr	-		
Intensity (Max) - Pre-Sampling	in/hr	-		
Intensity (Max) - Rain Event	in/hr	-		
Total - Pre-Sampling	in	-		
Total - Rain Event	in	-		

Notes:

Upstream Sample Location

Results above NPDES Permit Limit in bold with darker shading

† Total rainfall, average rainfall intensity, and maximum 1-hour rainfall intensity were calculated based on rainfall recorded at a RWQCB-approved weather station within Area IV.

See Appendix B for explanation of data validation qualifiers.

Table 3-2
BMP Monitoring Sample Collection Matrix
2012/2013 Rainy Season
Page 1 of 3

Watershed	Object ID	Sample ID	Collection Date	Collection Time	Purpose	Areas Monitored	Notes	Metals (Total Recoverable) (Method 200.7/200.8)	Metals (Total Dissolved) (Method 200.7/2000.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (ASTMD422)	Turbidity (Method 180.1)	Copper (Total Recoverable) (Method 200.8)	Lead (Total Recoverable) (Method 200.8)	Cadmium (Total Recoverable) (Method 200.8)	Mercury (Total Recoverable) (Method 245.1)	Copper (Total Dissolved) (Method 200.8)	Lead (Total Dissolved) (Method 200.8)	Cadmium (Total Dissolved) (Method 200.8)	Mercury (Total Dissolved) (Method 245.1)	pH	Comments
009	B1BMP0003	B1BMP0003S007	11/17/12	12:30	Potential BMP Location	B-1	Culvert inlet near Upper Parking Lot	X	X	X	X	X	X										V1
009	B1BMP0004	B1BMP0004S002	11/17/12	12:00	US North, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream north			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0005	B1BMP0005S002	11/17/12	11:30	US South, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream south			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0006	B1BMP0006S001	11/17/12	11:45	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1
009	ILBMP0001	ILBMP0001S011	11/17/12	11:00	Potential BMP Location	IEL	Storm drain discharge under spillway chute	X	X	X	X	X	X										V1
009	ILBMP0002	ILBMP0002S008	11/17/12	10:05	Planned BMP Location	CM-9	Area II Road culvert inlet	X	X	X	X	X	X										V1
009	EVBMP0003	EVBMP0003S007	11/17/12	12:30	US West, Treatment BMP Performance Monitoring	CM-1	Sheetflow along Area II Road, upstream west			X	X	X		X	X	X	X	X	X	X	X		V1
009	A2BMP0007	A2BMP0007S001	11/17/12	13:15	DS, Treatment BMP Performance Monitoring	CM-1	Downstream culvert outlet			X	X	X		X	X	X	X	X	X	X	X		V1
009	A2BMP0003	A2BMP0003S006	11/17/12	13:45	Potential BMP Location	Well 13 Road	Tributary drainage	X	X	X	X	X	X										V1
009	EVBMP0002	EVBMP0002S013	11/17/12	7:45	Planned BMP Location	Helipad	Helipad spillway	X	X	X	X	X	X										V1
009	EVBMP0004	EVBMP0004S001	11/17/12	11:00	Planned BMP Location	Helipad Road	Helipad Road asphalt swale	X	X	X	X	X	X									X	V1
009	EVBMP0005	EVBMP0005S001	11/17/12	11:05	Planned BMP Location	ELV	ELV culvert asphalt swale	X	X	X	X	X	X										V1
009	EVBMP0006	EVBMP0006S001	11/17/12	11:15	Planned BMP Location	ELV	Flow escaping from beneath ELV culvert asphalt swale	X	X	X	X	X	X										V1
009	ILBMP0001	ILBMP0001S012	11/29/12	8:40	Potential BMP Location	IEL	Storm drain discharge under spillway chute	X	X	X	X	X	X										V1
009	B1BMP0003	B1BMP0003S008	11/30/12	8:15	Potential BMP Location	B-1	Culvert inlet near Upper Parking Lot	X	X	X	X	X	X										V1
009	B1BMP0004	B1BMP0004S003	11/30/12	11:00	US North, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream north			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0005	B1BMP0005S003	11/30/12	10:30	US South, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream south			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0006	B1BMP0006S002	11/30/12	10:45	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0007	B1BMP0007S001	11/30/12	11:30	Potential BMP Location	B-1	Tributary drainage downstream of storm drain discharge	X	X	X	X	X	X										V1
009	EVBMP0002	EVBMP0002S014	11/30/12	10:00	Planned BMP Location	Helipad	Helipad spillway	X	X	X	X	X	X										V1
009	EVBMP0003	EVBMP0003S008	11/30/12	13:15	US West, Treatment BMP Performance Monitoring	CM-1	Sheetflow along Area II Road, upstream west			X	X	X		X	X	X	X	X	X	X	X		V1
009	EVBMP0004	EVBMP0004S002	11/30/12	11:20	Planned BMP Location	Helipad Road	Helipad Road asphalt swale	X	X	X	X	X	X										V1
009	ILBMP0001	ILBMP0001S013	12/03/12	9:00	Potential BMP Location	IEL	Storm drain discharge under spillway chute	H	H	H	H	H	H										H
009	B1BMP0006	B1BMP0006S003	12/18/12	8:40	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1
009	ILBMP0001	ILBMP0001S014	12/18/12	7:30	Potential BMP Location	IEL	Storm drain discharge under spillway chute	X	X	X	X	X	X										V1

Table 3-2
BMP Monitoring Sample Collection Matrix
2012/2013 Rainy Season
Page 2 of 3

Watershed	Object ID	Sample ID	Collection Date	Collection Time	Purpose	Areas Monitored	Notes	Metals (Total Recoverable) (Method 200.7/200.8)	Metals (Total Dissolved) (Method 200.7/2000.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (ASTMD422)	Turbidity (Method 180.1)	Copper (Total Recoverable) (Method 200.8)	Lead (Total Recoverable) (Method 200.8)	Cadmium (Total Recoverable) (Method 200.8)	Mercury (Total Recoverable) (Method 245.1)	Copper (Total Dissolved) (Method 200.8)	Lead (Total Dissolved) (Method 200.8)	Cadmium (Total Dissolved) (Method 200.8)	Mercury (Total Dissolved) (Method 245.1)	pH	Comments
009	B1BMP0003	B1BMP0003S009	12/24/12	7:15	Potential BMP Location	B-1	Culvert inlet near Upper Parking Lot	X	X	X	X	X	X										V1
009	B1BMP0004	B1BMP0004S004	12/24/12	7:45	US North, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream north			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0005	B1BMP0005S004	12/24/12	7:30	US South, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream south			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0006	B1BMP0006S004	12/24/12	8:00	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0007	B1BMP0007S002	12/24/12	8:30	Potential BMP Location	B-1	Tributary drainage downstream storm drain discharge	X	X	X	X	X	X										V1
009	ILBMP0001	ILBMP0001S015	12/24/12	8:15	Potential BMP Location	IEL	Storm drain discharge under spillway chute	X	X	X	X	X	X										V1
009	A2BMP0007	A2BMP0007S002	12/24/12	7:25	DS, Treatment BMP Performance Monitoring	CM-1	Downstream culvert outlet			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0003	B1BMP0003S010	01/24/13	8:15	Potential BMP Location	B-1	Culvert inlet near Upper Parking Lot	X	X	X	X	X	X										V1
009	B1BMP0004	B1BMP0004S005	01/24/13	9:00	US North, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream north			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0005	B1BMP0005S005	01/24/13	8:30	US South, Treatment BMP Performance Monitoring	B-1 Media Filter	Upstream South			X	X	X		X	X	X	X	X	X	X	X		V1
009	B1BMP0006	B1BMP0006S005	01/24/13	8:45	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1

Table 3-2
BMP Monitoring Sample Collection Matrix
2012/2013 Rainy Season
Page 3 of 3

Watershed	Object ID	Sample ID	Collection Date	Collection Time	Purpose	Areas Monitored	Notes	Metals (Total Recoverable) (Method 200.7/200.8)	Metals (Total Dissolved) (Method 200.7/2000.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (ASTMD422)	Turbidity (Method 180.1)	Copper (Total Recoverable) (Method 200.8)	Lead (Total Recoverable) (Method 200.8)	Cadmium (Total Recoverable) (Method 200.8)	Mercury (Total Recoverable) (Method 245.1)	Copper (Total Dissolved) (Method 200.8)	Lead (Total Dissolved) (Method 200.8)	Cadmium (Total Dissolved) (Method 200.8)	Mercury (Total Dissolved) (Method 245.1)	pH	Comments
009	B1BMP0006	B1BMP0006S006	03/08/13	8:15	DS, Treatment BMP Performance Monitoring	B-1 Media Filter	Media filter under drains			X	X	X		X	X	X	X	X	X	X	X		V1
009	ILBMP0001	ILBMP0001S017	03/08/13	8:30	Potential BMP Location	IEL	Storm drain discharge under spillway chute	X	X	X	X	X	X										V1
009	LPBMP0003	LPBMP0003S002	03/08/13	8:50	Intermediate, Treatment BMP Performance Monitoring	Lower Lot BMP	Sediment Basin effluent pipe (discharge from Sediment Basin to Biofilter)			X	X	X		X	X	X	X	X	X	X	X		V1
009	LPBMP0004	LPBMP0004S002	03/08/13	8:45	DS, Treatment BMP Performance Monitoring	Lower Lot BMP	Biofilter effluent pipe (discharge from Biofilter)			X	X	X		X	X	X	X	X	X	X	X		V1
009	A2BMP0007	A2BMP0007S004	03/08/13	8:55	DS, Treatment BMP Performance Monitoring	B-1	Tributary drainage downstream of storm drain discharge			X	X	X		X	X	X	X	X	X	X	X		V1
009	EVBMP0002	EVBMP0002S016	03/08/13	9:20	Planned BMP Location	Helipad	Helipad Spillway	X	X	X	X	X	X										V1

Table 3-3

Potential and Planned BMP Monitoring Sample Results, Outfall 009

		-	<3.0 *	3.1 J,DX*	3.1 J,DX*	<3.0 *	3.2 J,DX*	3.2 J,DX*
Zinc	ug/L	-	4.2 J,DX*	37 J,DX*	18 J,DX*	27 *	40 *	89 *
Zinc, Dissolved	ug/L	-	<4.0 *	23 *	13 J,DX*	4.7 J,DX*	25 *	21 *

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season
Page 3 of 8

ANALYTE	UNITS	Object Name Sample Name Sample Date Sample Type Location Rain Event NPDES Permit Limit
DIOXINS		
TCDD TEQ_NoDNQ	ug/L	2.80E-08
INORGANICS		
Aluminum	ug/L	-
Aluminum, dissolved	ug/L	-
Antimony	ug/L	6.0
Antimony, dissolved	ug/L	-
Arsenic	ug/L	-
Arsenic, dissolved	ug/L	-
Barium	mg/L	-
Barium, dissolved	mg/L	-
Beryllium	ug/L	-
Beryllium, dissolved	ug/L	-
Boron	mg/L	1.0
Boron, dissolved	mg/L	-
Cadmium	ug/L	4.0
Cadmium, dissolved	ug/L	-
Chromium	ug/L	-
Chromium, dissolved	ug/L	-
Cobalt	ug/L	-
Cobalt, dissolved	ug/L	-
Copper	ug/L	14
Copper, dissolved	ug/L	-
Iron	mg/L	-
Iron, dissolved	mg/L	-
Lead	ug/L	5.2
Lead, dissolved	ug/L	-
Manganese	ug/L	-
Manganese, dissolved	ug/L	-
Mercury	ug/L	0.13
Mercury, dissolved	ug/L	-
Nickel	ug/L	100
Nickel, dissolved	ug/L	-

Nio/a.849(e).849(e).849(e)5.445(s)/mq 0.12 0 0 0.12 0 0 cm 4688 21

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

ANALYTE	UNITS	Object Name Sample Name Sample Date Sample Type Location Rain Event NPDES Permit Limit
MISC		
Total Suspended Solids	mg/L	-
Specific Conductivity (Lab)	umhos/cm	-
Turbidity	NTU	-
pH (Lab)	SU	6.5-8.5
FIELD MEASUREMENTS		
Conductivity (Field)	mS	-
pH (Field)	pH units	6.5-8.5
Temperature	deg c	86
Turbidity (Field)	NTU	-
RAINFALL		
Intensity (Ave) - Pre-Sampling	in/hr	-
Intensity (Ave) - Rain Event	in/hr	-
Intensity (Max) - Pre-Sampling	in/hr	-
Intensity (Max) - Rain Event	in/hr	-
Total - Pre-Sampling	in	-
Total - Rain Event	in	-

Notes:

NR - Not recorded; field meter not functioning properly.
* - Data not validated.

For an explanation of qualifiers, refer to laboratory and
data validation reports included in Appendix B.

Results above NPDES Permit Limit in bold and gray shading

† Total rainfall, average rainfall intensity, and maximum 1-hour

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

ANALYTE	UNITS	Object Name Sample Name Sample Date Sample Type Location Rain Event NPDES Permit Limit
DIOXINS		
TCDD TEQ_NoDNQ	ug/L	2.80E-08
INORGANICS		
Aluminum	ug/L	-
Aluminum, dissolved	ug/L	-
Antimony	ug/L	6.0
Antimony, dissolved	ug/L	-
Arsenic	ug/L	-
Arsenic, dissolved	ug/L	-
Barium	mg/L	-
Barium, dissolved	mg/L	-
Beryllium	ug/L	-
Beryllium, dissolved	ug/L	-
Boron	mg/L	1.0
Boron, dissolved	mg/L	-
Cadmium	ug/L	4.0
Cadmium, dissolved	ug/L	-
Chromium	ug/L	-
Chromium, dissolved	ug/L	-
Cobalt	ug/L	-
Cobalt, dissolved	ug/L	-
Copper	ug/L	14
Copper, dissolved	ug/L	-
Iron	mg/L	-
Iron, dissolved	mg/L	-
Lead	ug/L	5.2
Lead, dissolved	ug/L	-
Manganese	ug/L	-
Manganese, dissolved	ug/L	-
Mercury	ug/L	0.13
Mercury, dissolved	ug/L	-
Nickel	ug/L	100
Nickel, dissolved	ug/L	-
Selenium	ug/L	-
Selenium, dissolved	ug/L	-
Silver	ug/L	-
Silver, dissolved	ug/L	-
Thallium	ug/L	2.0
Thallium, dissolved	ug/L	-
Vanadium	ug/L	-
Vanadium, dissolved	ug/L	-
Zinc	ug/L	-
Zinc, Dissolved	ug/L	-

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

		Object Name Sample Name Sample Date	EVBMP0004 EVBMP0004S003 1/24/2013	EVBMP0005 EVBMP0005S002 1/24/2013	ILBMP0001 ILBMP0001S016 1/24/2013	ILBMP0002 ILBMP0002S009 1/24/2013	A2BMP0003 A2BMP0003S007 1/25/2013	EVBMP0002 EVBMP0002S016 3/8/2013	ILBMP0001 ILBMP0001S017 3/8/2013
		Sample Type Location Rain Event	Planned BMP Helipad Road January 23 - 27, 2013	Planned BMP ELV January 23 - 27, 2013	Potential BMP IEL January 23 - 27, 2013	Planned BMP CM-9, IEL, Area II Road January 23 - 27, 2013	Potential BMP AP/STP, ELV, A2LF January 23 - 27, 2013	Planned BMP Helipad March 7 - 8, 2013	Potential BMP IEL March 7 - 8, 2013
ANALYTE	**UNITS**	**NPDES Permit Limit**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
DIOXINS									
TCDD TEQ_NoDNQ	ug/L	2.80E-10	2.60E-10	**1.39E-07**	**1.80E-07**	**8.65E-07**	5.50E-10	8.20E-10	**3.47E-08**
INORGANICS			--	--	--	--	--		
Aluminum	ug/L	-	910 *	440 *	6800 *	2100 *	860 *	210 *	1800 *
Aluminum, dissolved	ug/L	-	110 *	190 *	590 *	270 *	90 *	<40 *	130 *
Antimony	ug/L	6.0	0.33 J,DX*	0.46 J,DX*	0.51 J,DX*	1.0 J,DX*	0.67 J,DX*	0.30 J,DX*	0.55 J,DX*
Antimony, dissolved	ug/L	-	<0.30 *	<0.30 *	<0.30 *	0.53 J,DX*	<0.60 *	0.48 J,DX*	0.51 J,DX*
Arsenic	ug/L	-	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *
Arsenic, dissolved	ug/L	-	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *	<7.0 *
Barium	mg/L	-	0.013 *	0.012 *	0.081 *	0.033 *	0.018 *		
Barium, dissolved	mg/L	-							
Beryllium	ug/L	-							
Beryllium, dissolved	ug/L	-							
Boron	mg/L	1.0							
Boron, dissolved	mg/L	-							
Cadmium	ug/L	4.0							
Cadmium, dissolved	ug/L	-							
Chromium	ug/L	-							
Chromium, dissolved	ug/L	-							
Cobalt	ug/L	-							
Cobalt, dissolved	ug/L	-							
Copper	ug/L	14							
Copper, dissolved	ug/L	-							
Iron	mg/L	-							
Iron, dissolved	mg/L	-							
Lead	ug/L	5.2							
Lead, dissolved	ug/L	-							
Manganese	ug/L	-							
Manganese, dissolved	ug/L	-							
Mercury	ug/L	0.13							
Mercury, dissolved	ug/L	-							
Nickel	ug/L	100							
Nickel, dissolved	ug/L	-							
Selenium	ug/L	-							
Selenium, dissolved	ug/L	-							
Silver	ug/L	-							
Silver, dissolved	ug/L	-							
Thallium	ug/L	2.0							
Thallium, dissolved	ug/L	-							
Vanadium	ug/L	-							
Vanadium, dissolved	ug/L	-							
Zinc	ug/L	-							
Zinc, Dissolved	ug/L	-							

Table 3-3
Potential and Planned BMP Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

		Object Name Sample Name Sample Date	EVBMP0004 EVBMP0004S003 1/24/2013	EVBMP0005 EVBMP0005S002 1/24/2013	ILBMP0001 ILBMP0001S016 1/24/2013	ILBMP0002 ILBMP0002S009 1/24/2013	A2BMP0003 A2BMP0003S007 1/25/2013	EVBMP0002 EVBMP0002S016 3/8/2013	ILBMP0001 ILBMP0001S017 3/8/2013
		Sample Type Location Rain Event	Planned BMP Helipad Road January 23 - 27, 2013	Planned BMP ELV January 23 - 27, 2013	Potential BMP IEL January 23 - 27, 2013	Planned BMP CM-9, IEL, Area II Road January 23 - 27, 2013	Potential BMP AP/STP, ELV, A2LF January 23 - 27, 2013	Planned BMP Helipad March 7 - 8, 2013	Potential BMP IEL March 7 - 8, 2013
ANALYTE	**UNITS**	**NPDES Permit Limit**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
MISC									
Total Suspended Solids	mg/L	-	15 *	<10 *	180 *	36 *	27 *	11 *	23 *
Specific Conductivity (Lab)	umhos/cm	-	--	--	--	--	--	--	--
Turbidity	NTU	-	31 MB*	12 MB*	160 MB*	63 MB*	15 *	7.8 *	9.3 *
pH (Lab)	SU	6.5-8.5	--	--	--	--	--	--	--
FIELD MEASUREMENTS									
Conductivity (Field)	mS	-	0.023 *	0.178 *	0.026 *	0.017 *	0.051 *	0.041 *	0.026 *
pH (Field)	pH units	6.5-8.5	**6.00 ***	**6.10 ***	**6.33 ***	**6.48 ***	6.80 *	6.61 *	**6.33 ***
Temperature	deg c	86	13.8 *	* 15.0 *	11.34 *	11.24 *	12.81 *	10.8 *	11.47
Turbidity (Field)	NTU	-							
RAINFALL									
Intensity (Ave) - Pre-Sampling	in/hr	-							
Intensity (Ave) - Rain Event	in/hr	-							
Intensity (Max) - Pre-Sampling	in/hr	-							
Intensity (Max) - Rain Event	in/hr	-							
Total - Pre-Sampling	in	-							
Total - Rain Event	in	-							

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Notes:

NR - Not recorded; field meter not functioning properly.
* - Data not validated.

For an explanation of qualifiers, refer to laboratory and data validation reports included in Appendix B.

Results above NPDES Permit Limit in bold and gray shading

† Total rainfall, average rainfall intensity, and maximum 1-hour rainfall intensity were calculated based on rainfall recorded at a RWQCB-approved weather station within Area IV.

Table 3-4a (B-1 Media Filter)
Treatment BMP Performance Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

ANALYTE	UNITS	Object Name Sample Name Sample Date Sample Type Location Rain Event NPDES Permit Limit
DIOXINS		
TCDD TEQ_NoDNQ	ug/L	2.80E-08
INORGANICS		
Cadmium	ug/L	4.0
Cadmium, dissolved	ug/L	-
Copper	ug/L	14
Copper, dissolved	ug/L	-
Lead	ug/L	5.2
Lead, dissolved	ug/L	-
Mercury	ug/L	0.13
Mercury, dissolved	ug/L	-
MISC		
Total Suspended Solids	mg/L	-
FIELD MEASUREMENTS		
Conductivit439.96 c		

Table 3-4a (B-1 Media Filter)
Treatment BMP Performance Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

ANALYTE	UNITS	Object Name Sample Name Sample Date Sample Type Location Rain Event NPDES Permit Limit
DIOXINS		
TCDD TEQ_NoDNQ	ug/L	2.80E-08
INORGANICS		
Cadmium	ug/L	4.0
Cadmium, dissolved	ug/L	-
Copper	ug/L	14
Copper, dissolved	ug/L	-
Lead	ug/L	5.2
Lead, dissolved	ug/L	-
Mercury	ug/L	0.13
Mercury, dissolved	ug/L	-
MISC		
Total Suspended Solids	mg/L	-
FIELD MEASUREMENTS		
Conductivity (Field)	mS	-
pH (Field)	pH units	6.5-8.5
Temperature	deg c	86
Turbidity (Field)	NTU	-
RAINFALL		
Intensity (Ave) - Pre-Sampling	in/hr	-
Intensity (Ave) - Rain Event	in/hr	-
Intensity (Max) - Pre-Sampling	in/hr	-
Intensity (Max) - Rain Event	in/hr	-
Total - Pre-Sampling	in	-
Total - Rain Event	in	-

Notes:

NR - Not recorded; field meter not functioning properly.
* - Data not validated.

For an explanation of qualifiers, refer to laboratory and
data validation reports included in Appendix B.

Upstream Sample Location
Downstream Sample Location
Results above NPDES Permit Limit in bold and gray shading

† Total rainfall, average rainfall intensity, and maximum 1-hour rai

Table 3-4b (CM-1)
Treatment BMP Performance Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season

		Object Name Sample Name Sample Date	EVBMP0003 EVBMP0003S009 1/25/2013	A2BMP0007 A2BMP0007S003 1/26/2013	A2BMP0007 A2BMP0007S004 3/8/2013
		Sample Type Location Rain Event	Treatment BMP Perf Mon US West (CM-1) January 23 - 27, 2013	Treatment BMP Per Mon DS (CM-1) January 23 - 27, 2013	Treatment BMP Per Mon DS (CM-1) March 7 - 8, 2013
ANALYTE	**UNITS**	**NPDES Permit Limit**	**RESULT**	**RESULT**	**RESULT**
DIOXINS					
TCDD TEQ_NoDNQ	ug/L	2.80E-08	**2.07E-07**	2.50E-10	3.80E-10
INORGANICS					
Cadmium	ug/L	4.0	0.18 J,DX*	0.22 J,DX*	<0.10 *
Cadmium, dissolved	ug/L	-	<0.10 *	<0.10 *	<0.10 *
Copper	ug/L	14	6.5 MB*	5.8 *	3.4 *
Copper, dissolved	ug/L	-	2.3 *	1.3 J,DX*	2.4 *
Lead	ug/L	5.2	**13 MB***	3.1 *	1.2 *
Lead, dissolved	ug/L	-	0.71 J,DX*	0.35 J,DX*	0.22 J,DX*
Mercury	ug/L	0.13	0.10 J,DX*	<0.10 *	<0.10 *
Mercury, dissolved	ug/L	-	<0.10 *	<0.10 *	<0.10 *
MISC					
Total Suspended Solids	mg/L	-	90 *	<10 *	<10 *
FIELD MEASUREMENTS					
Conductivity (Field)	mS	-	0.095 *	0.097 *	0.035 *
pH (Field)	pH units	6.5-8.5	**5.20 ***	6.93 *	6.53 *
Temperature	deg c	86	13.38 *	13.94 *	11.1 *
Turbidity (Field)	NTU	-	145 *	116 *	14.5 *
RAINFALL					
Intensity (Ave) - Pre-Sampling	in/hr	-	0.036	0.028	0.067
Intensity (Ave) - Rain Event	in/hr	-	0.020	0.020	0.041
Intensity (Max) - Pre-Sampling	in/hr	-			
Intensity (Max) - Rain Event	in/hr	-			
Total - Pre-Sampling	in	-			
Total - Rain Event	in	-			

Notes:

NR - Not recorded; field meter not functioning properly.
* - Data not validated.

For an explanation of qualifiers, refer to laboratory and data validation reports included in Appendix B.

Upstream Sample Location
Downstream Sample Location
Results above NPDES Permit Limit in bold and gray shading

† Total rainfall, average rainfall intensity, and maximum 1-hour rainfall intensity were calculated based on rainfall recorded at a RWQCB-approved weather station within Area IV.

Table 3-4c (Lower Parking Lot BMP)
Treatment BMP Performance Monitoring Sample Results, Outfall 009 Watershed
2012/2013 Rainy Season