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**Daniel A. Sullivan, Mayor**

# **2013 Stormwater Outfall Monitoring Report**

**APDES Permit No. AKS-052558**

**MUNICIPALITY OF ANCHORAGE  
WATERSHED MANAGEMENT PROGRAM**

November 2013

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WATERSHED MANAGEMENT PROGRAM

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## **1.0 Introduction**

### **1.1 Background**

The U.S. Environmental Protection Agency (EPA) issued the Municipality of Anchorage (MOA) and the Alaska Department of Transportation and Public Facilities (ADOT&PF) a Municipal Separate Storm Sewer System (MS4) permit under the National Pollutant Discharge Elimination System (NPDES) in 1999. EPA re-issued the permit (Permit No. AKS-052558) in October 2009 (EPA 2009a), with an effective date of February 1, 2010, that included a requirement to conduct stormwater outfall monitoring at 10 priority stormwater outfalls beginning in the second year of the permit. The MOA has taken the lead role in implementing the monitoring requirements of the permit. Since permit issuance, EPA has delegated the NPDES stormwater program for Alaska to the Alaska Department of Environmental Conservation (ADEC) who now oversees its implementation. The permit is now administered by ADEC under the Alaska Pollutant Discharge Elimination System (APDES).

The APDES MS4 permit establishes minimum control measures requiring the co-permittees to develop programs and policies, and implement actions designed to prevent and control contaminants entering publicly-owned storm sewer systems. The permit also identifies a number of objectives for monitoring of which the stormwater outfall monitoring is one component. The objective most relevant to stormwater outfall monitoring is to broadly identify fecal coliform and petroleum product loading from stormwater. To accomplish this objective, a variety of land uses must be examined to ensure representative water quality conditions across the MS4 area are included in the monitoring program. This report and the data collected during the monitoring program fulfill the annual outfall monitoring objectives of the APDES Permit. The stormwater sampling that was conducted during 2013 was the third of four years of monitoring that will be performed for the program.

### **1.2 Stormwater Definition**

The EPA has recognized urban stormwater as a major contributor to pollution of the nation's streams, rivers, and lakes. EPA and delegated states are using the NPDES MS4 permit to control pollutants from urban stormwater to the maximum extent practicable. Urban stormwater can contribute to the degradation of the quality of water bodies. Runoff from precipitation and snowmelt events can transport contaminants from impervious surfaces, such as driveways, sidewalks, and roads and semi-pervious surfaces, such as lawns, into the local water bodies. Most stormwater runoff flows into a storm sewer system or directly to a water body, often without receiving treatment to remove the pollutants.

In issuing the Anchorage MS4 permit, EPA recognized that a number of water bodies in the greater Anchorage watershed have been categorized as impaired under section 303(d) of the Clean Water Act. For thirteen of the water bodies impaired for elevated concentrations of fecal coliform and one water body impaired for petroleum hydrocarbons, ADEC has developed (and EPA has approved) Total Maximum Daily Loads (TMDL) plans to improve water quality to the extent that the waters will meet the current standards. The TMDLs identify stormwater runoff as a contributor of fecal coliform and petroleum hydrocarbon contamination to the water bodies; and the TMDLs establish reduction goals for concentrations of these pollutants in stormwater.

### **1.3 Goals and Objectives of Monitoring Program**

The monitoring elements of the MS4 permit are designed to identify sources of stormwater pollution, such as fecal coliform and petroleum hydrocarbons, monitor the effectiveness of best management practices (BMPs), and monitor the status of stormwater outfalls and receiving waters. The goal of the stormwater outfall monitoring component of the permit is to obtain sufficient data to characterize the quality of the stormwater runoff for pollutants identified in the permit. By monitoring the same outfalls over the four-year period, the results should provide a qualitative characterization that meets the objectives identified in the APDES Permit and Fact Sheet (EPA, 2009a and 2009b).

The stormwater outfall monitoring program measured pollutants and pollutant indicators during precipitation events that generated runoff at 10 high priority stormwater outfall sites. This monitoring program will allow MOA to meet the EPA objectives specified in the permit. In preparing the permit, EPA anticipated that the stormwater outfall monitoring would address the following objectives:

- Broadly estimate the annual pollutant loading for fecal coliform and petroleum hydrocarbon to specific watersheds
- Assess the effectiveness of existing stormwater controls
- Prioritize portions of the MS4 that need additional controls
- Provide feedback on whether TMDL objectives are being met

### **2.0 Explanation of Report Organization**

This report is divided into the following sections:

- Introduction, background information, and goals and objectives of the program
- Summary information about the field phase of the project including project design, site selection and descriptions, parameters to be measured, field and laboratory procedures, deviations from the QAPP, and summary of QA/QC results
- Tabular and graphical summaries of the data along with a discussion of results
- Summary and preliminary conclusions
- References
- Appendices that include: field photographs, laboratory data reports, field and laboratory data validation summary, and completed field log forms

### **3.0 Monitoring Program**

#### **3.1 Sampling Design**

Beginning in the summer of 2011 and for the following three years, the 10 priority outfalls will be sampled four times each summer when there is sufficient precipitation to generate runoff

(typically, 0.1 to 0.25 inches depending upon percent impervious land use within the watershed). For planning purposes, 0.1 inches of rain was used as the trigger for a potential sampling event. Samples were analyzed for parameters that serve as indicators of nonpoint sources of pollutant inputs. Monitoring of the outfalls included both *in situ* field measurements and discrete grab samples to be submitted for laboratory analyses. At each outfall, the following parameters were monitored as stipulated in the *Stormwater Outfall Monitoring Plan*, which is Appendix B of the Quality Assurance Project Plan (QAPP)(MOA 2012), to evaluate the quality of the stormwater: flow, dissolved oxygen (DO), pH, temperature, turbidity, 5-day biochemical oxygen demand (BOD<sub>5</sub>), fecal coliform, and total suspended solids (TSS). For outfalls whose tributary land uses are predominantly commercial, industrial, or paved collector or arterial streets or parking lots, samples were also analyzed for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH). In addition, the supplemental measurement of specific conductance was also obtained with the field parameters.

### **3.2 Monitoring Site Selection and Descriptions**

The stormwater outfall monitoring prescribed in the permit requires the MOA to monitor specific water quality parameters and flow four times each year at 10 locations. To best meet the permit objectives, the outfalls selected were intended to represent a diversity of land uses. The MOA developed a selection process for identifying the 10 outfalls as the highest priority locations from a list of 30 medium to high priority outfalls. First, MOA identified the following criteria for targeted monitoring within the Anchorage Basin:

- Include a variety of land uses
- Include storm drains that discharge to water quality impaired (303(d)-listed) stream(s)
- Experience approximately the same annual precipitation
- Be geographically diverse while allowing relatively easy access to all outfalls during a single rainfall event

To meet these criteria, MOA selected a portion of the MS4 that extends from C Street on the west to Lake Otis Parkway on the east, and from the northern portion of the Chester Creek watershed to the southern edge of the Furrow Creek Watershed. The targeted area included substantially urbanized portions of the watershed tributary to Chester Creek, Furrow Creek, Little Campbell Creek, and Campbell Creek. These four streams are impaired for fecal coliform and have an approved TMDL and therefore, meet one of the permit objectives (ADEC 2004a, 2004b, 2005, and 2006).

Within the target area, the MOA identified as priorities outfalls that represent homogeneous land use subbasins, heterogeneous land use subbasins, and subbasins with and without oil/grit separator (OGS) devices. This diversity of land uses and structures was designed to meet the permit objectives of broadly quantifying pollutant loads and assessing effectiveness of existing best management practices (BMPs).

Monitoring data from subbasins meeting the four different conditions (homogeneous land use, heterogeneous land use, with OGS and without OGS) were intended to serve different functions. For the subbasins with a homogeneous land use:

- Data were intended to identify specific pollutants originating from a predominant land use that require additional controls. Specific controls could be tailored to a specific land use and targeted for use in those watersheds.
- Data from basins with homogeneous land uses are considered appropriate for developing loading estimates for fecal coliform and TAH, as described below.
- Fecal coliform, TAH, and TAqH data were also considered appropriate for comparison with receiving water quality criteria. Since water quality criteria do not apply directly to stormwater, the criteria were intended to serve as benchmarks.
- Fecal coliform data were considered appropriate for comparison with TMDL reduction goals for fecal coliform to determine improvement over time.

For subbasins with heterogeneous land uses:

- Data were intended to be used to develop loading estimates of fecal coliform and petroleum hydrocarbons.
- Data were also to be used to assess pollutants originating across land uses that may require additional controls, and additional BMP controls that could be applied across the basin.
- Fecal coliform and petroleum hydrocarbon data were considered appropriate for comparison with receiving water quality criteria.
- Fecal coliform data were considered appropriate for comparison with TMDL reduction goals for fecal coliform to determine improvement over time.

For subbasins with or without OGS systems:

- Data were intended to be used to assess the effectiveness of the OGS systems and determine whether additional OGS systems could be installed to improve stormwater quality.
- Petroleum hydrocarbon data were considered appropriate for comparison with receiving water quality criteria.

MOA used its hydrogeographic database (HGDB) and other municipal geographic data to select subbasins with the aforementioned characteristics. Application of this selection process resulted in the initial identification of 10 priority outfalls (Table 1). Following the pre-sampling field reconnaissance, it was determined that one of the selected outfalls (Node ID 299-20, highlighted in Table 1) exhibited severe corrosion within the outfall pipe and was not suitable for sampling. An alternative outfall location within the Little Campbell Creek Watershed, having the same land use and BMP characteristics (Node ID 847-1) was selected as having the next highest priority.

To facilitate sample labeling and simplify outfall identification in the field per the *Monitoring, Evaluation and Quality Assurance Plan* (MOA 2012), the outfall stations were sequentially numbered from south to north along the sampling corridor (SWM01 thru SWM10)(refer to Table 2). The physical characteristics of each outfall including: physical location, geographic location,



outfall dimensions, acreage of subbasin, and percent impervious surface of subbasin are presented in Table 2. An overview map is presented in Figure 1 that shows the final 10 monitoring outfall locations along with the subbasins for each watershed. Detailed larger scale maps that clearly show land use types for each of the outfalls and subbasins are depicted in Figure 2 through Figure 8 (refer to Table 2 for outfall cross reference location).

**Table 1. Top 10 Priority and Replacement Outfalls**

Subbasin ID	Outfall/Node ID	Watershed	Contributing Land Use*	OGS Present?	Priority Rank
<b>10 Identified Priority Outfalls</b>					
805	207-1	Campbell Creek	CI	Yes	1
219	314-22	Chester Creek	R	Yes	2
1224a	1224-1	Campbell Creek	R	Yes	3
132	499-1	Chester Creek	CI	Yes	4
554	525-2	Chester Creek	M	No	5
549	86-1	Chester Creek	M	No	6
1224b	1224-2	Campbell Creek	R	Yes	6
133	299-20	Chester Creek	CI	No	8
507	484-1	Chester Creek	CI	No	8
1040b	1040-3	Little Campbell Cr.	R	No	10
<b>Medium Priority Replacement Outfall</b>					
1210	847-1	Little Campbell Cr.	CI	No	17

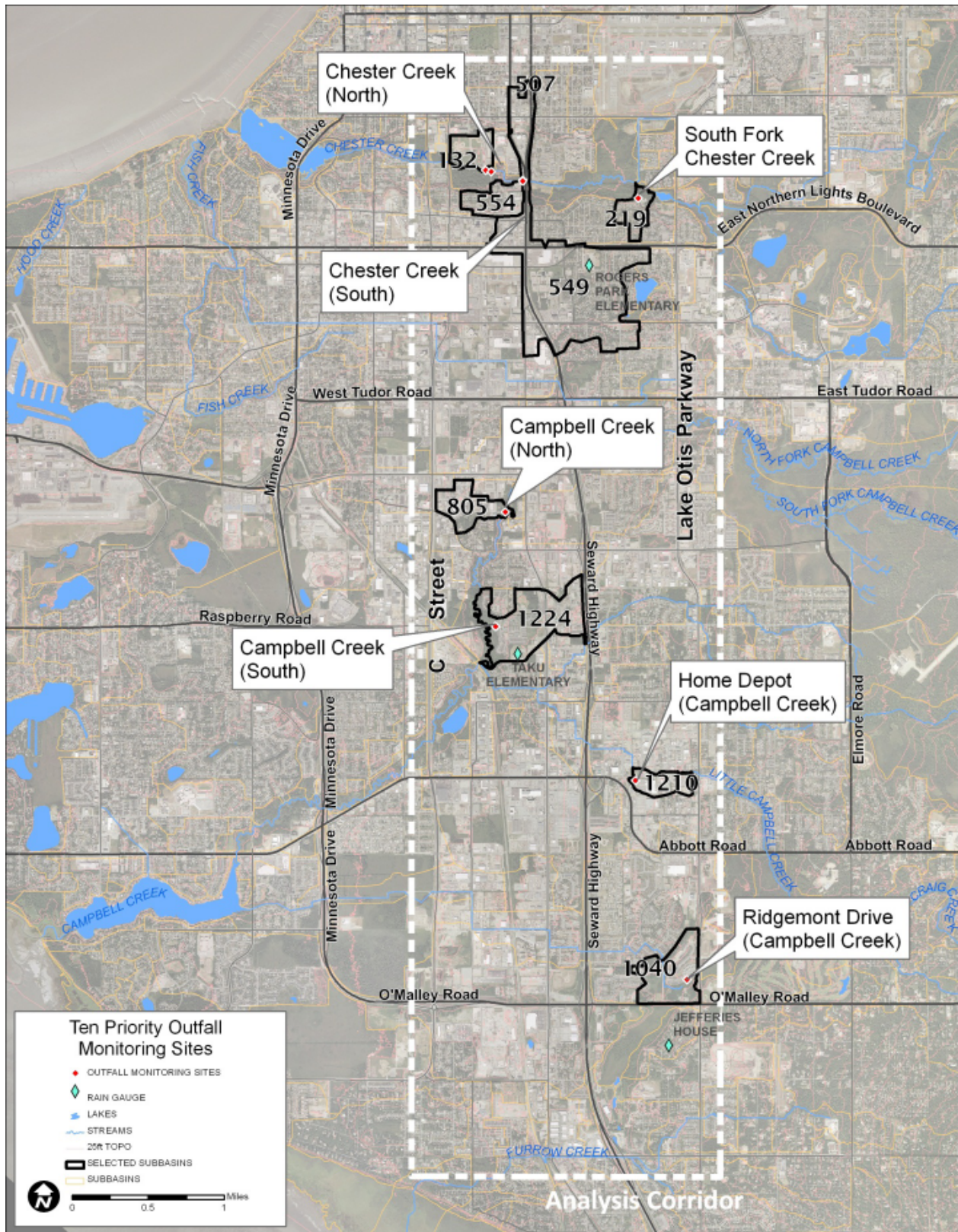
Yellow highlighted Subbasin 133 was replaced with yellow highlighted Subbasin 1210.

\*R = Residential; CI = Commercial and Industrial; M = Mixed

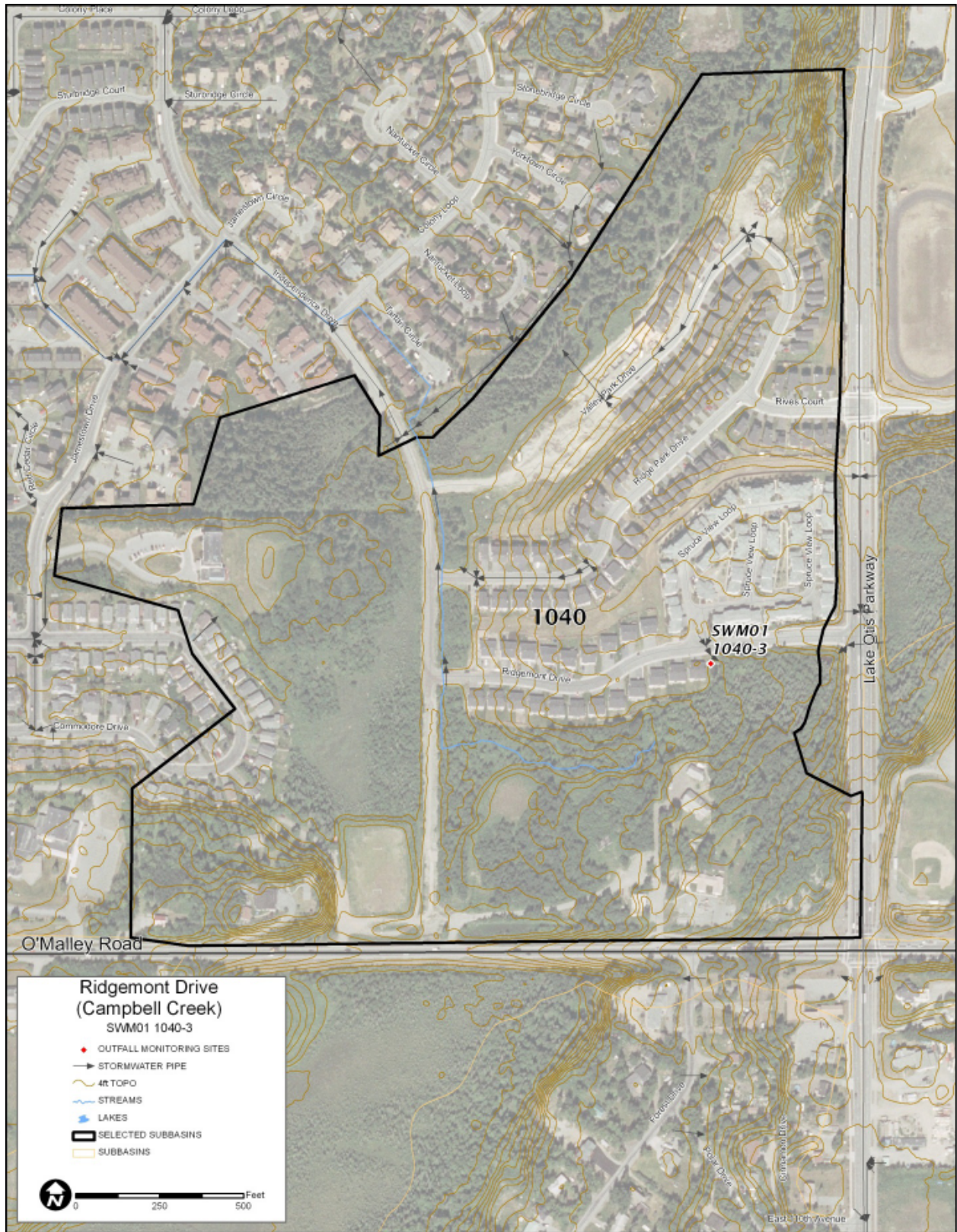
**Table 2. Outfall Identification, Physical Location, and Characteristics**

Station ID	Detail Map	Outfall Node ID	Subbasin ID	Physical Location	Latitude	Longitude	Outfall Diam (in)	Acreage	Percent Impervious
<b>Little Campbell Creek Watershed</b>									
SWM01	Fig 2	1040-3	1040b	Ridgemont	61° 07.526'	-149° 50.196'	18	91.38	35.52
SWM02	Fig 3	847-1	1210	Home Depot	61° 08.665'	-149° 50.797'	18	37.17	81.53
<b>Campbell Creek Watershed</b>									
SWM03	Fig 4	1224-1	1224a	Sylvan (north)	61° 09.548'	-149° 52.443'	36	99.99	70.05
SWM04	Fig 4	1224-2	1224b	Sylvan (south)	61° 09.545'	-149° 52.451'	18	20.10	31.78
SWM05	Fig 5	207-1	805	East 56th	61° 10.202'	-149° 52.326'	24	58.34	75.41
<b>Chester Creek Watershed</b>									
SWM06	Fig 6	314-22	219	Maplewood	61° 11.996'	-149° 50.750'	26	33.81	37.26
SWM07	Fig 7	484-1	507	New Seward	61° 12.100'	-149° 52.114'	24	50.17	87.68
SWM08	Fig 8	86-1	549	New Seward	61° 12.095'	-149° 52.114'	42	354.62	68.94
SWM09	Fig 7	499-1	132	Ben Boeke	61° 12.176'	-149° 52.554'	24	40.04	53.65
SWM10	Fig 7	525-2	554	Eagle Street	61° 12.161'	-149° 52.486'	24	47.51	74.62

\*R = Residential; CI = Commercial and Industrial; M = Mixed



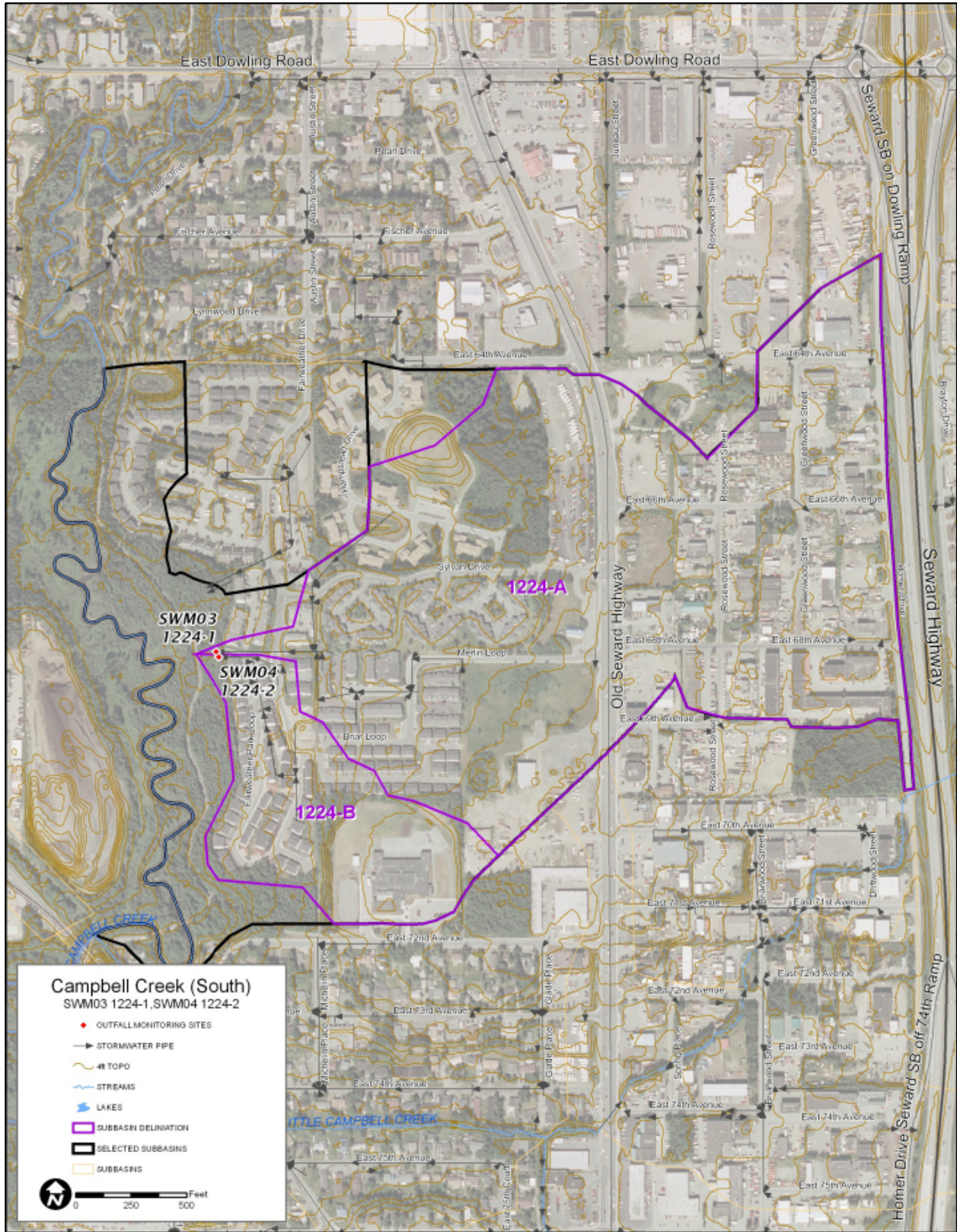
**Figure 1. Overview Map of the Ten Final Outfall Monitoring Sites and Subbasins**



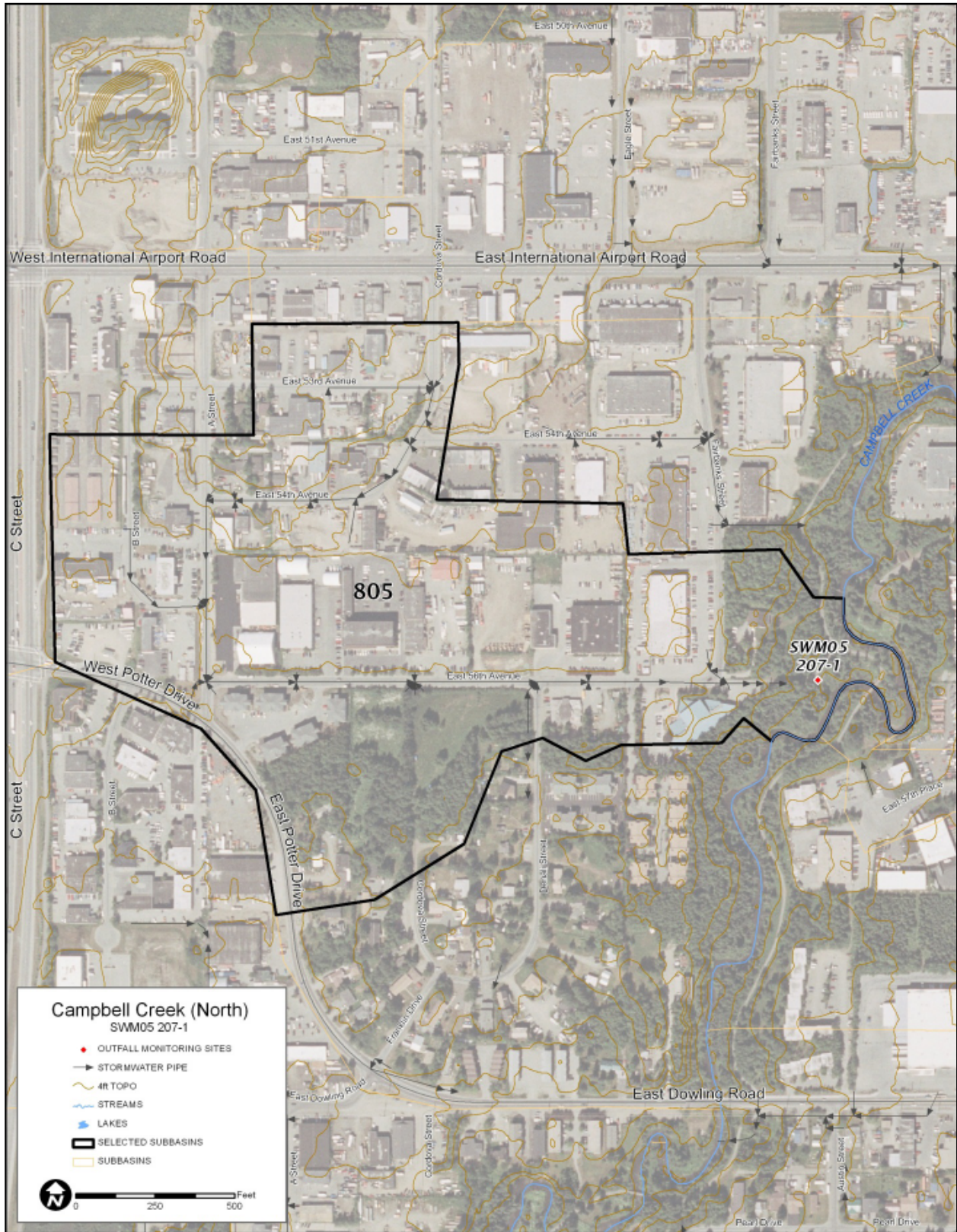
**Figure 2. Outfall SWM01, Ridgemont Drive (Little Campbell Creek)**



**Figure 3. Outfall SWM02, Abbot Road at Home Depot (Little Campbell Creek)**

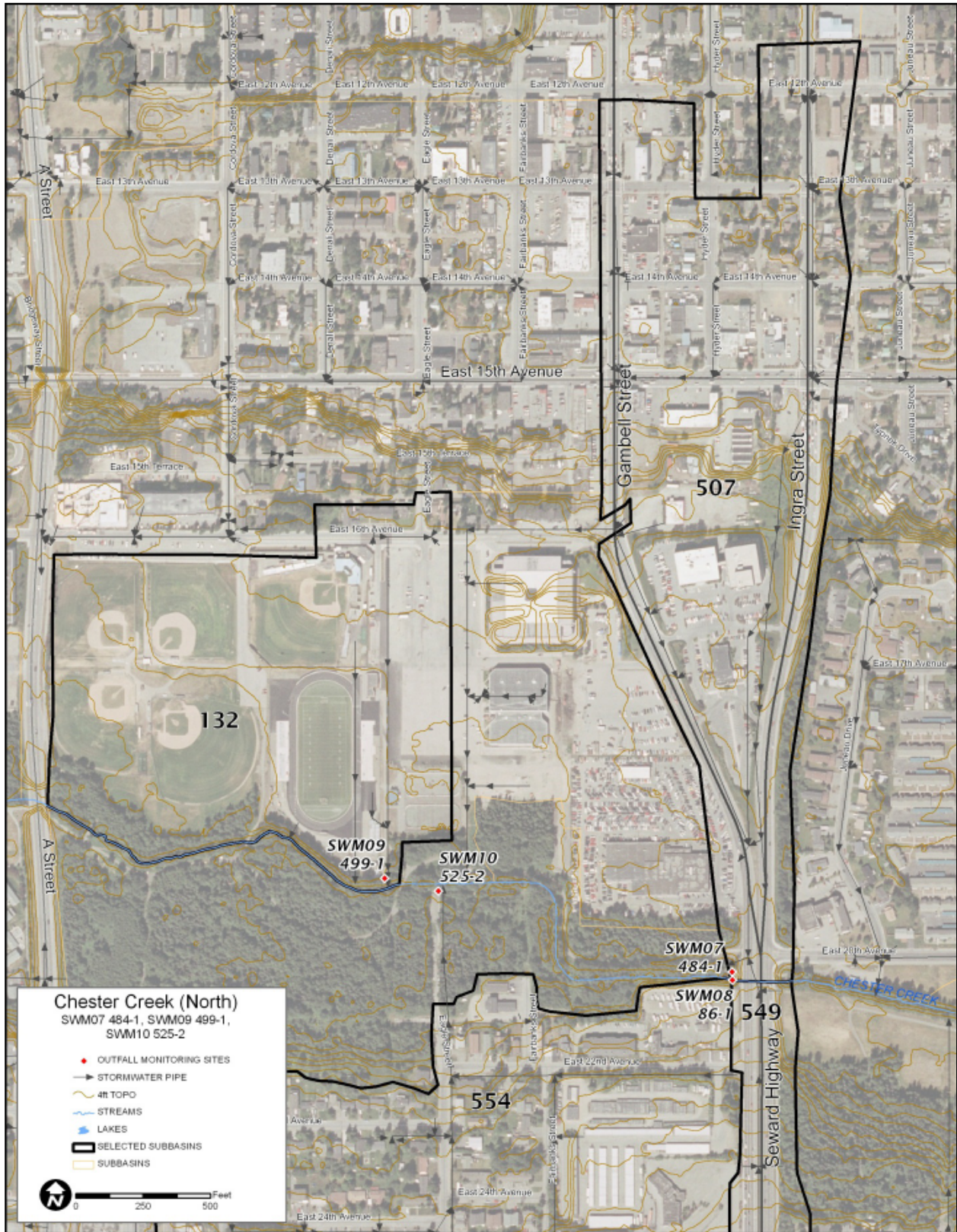


**Figure 4. Outfalls SWM03 and SWM04, Fairweather Loop off Sylvan Drive (Campbell Creek)**



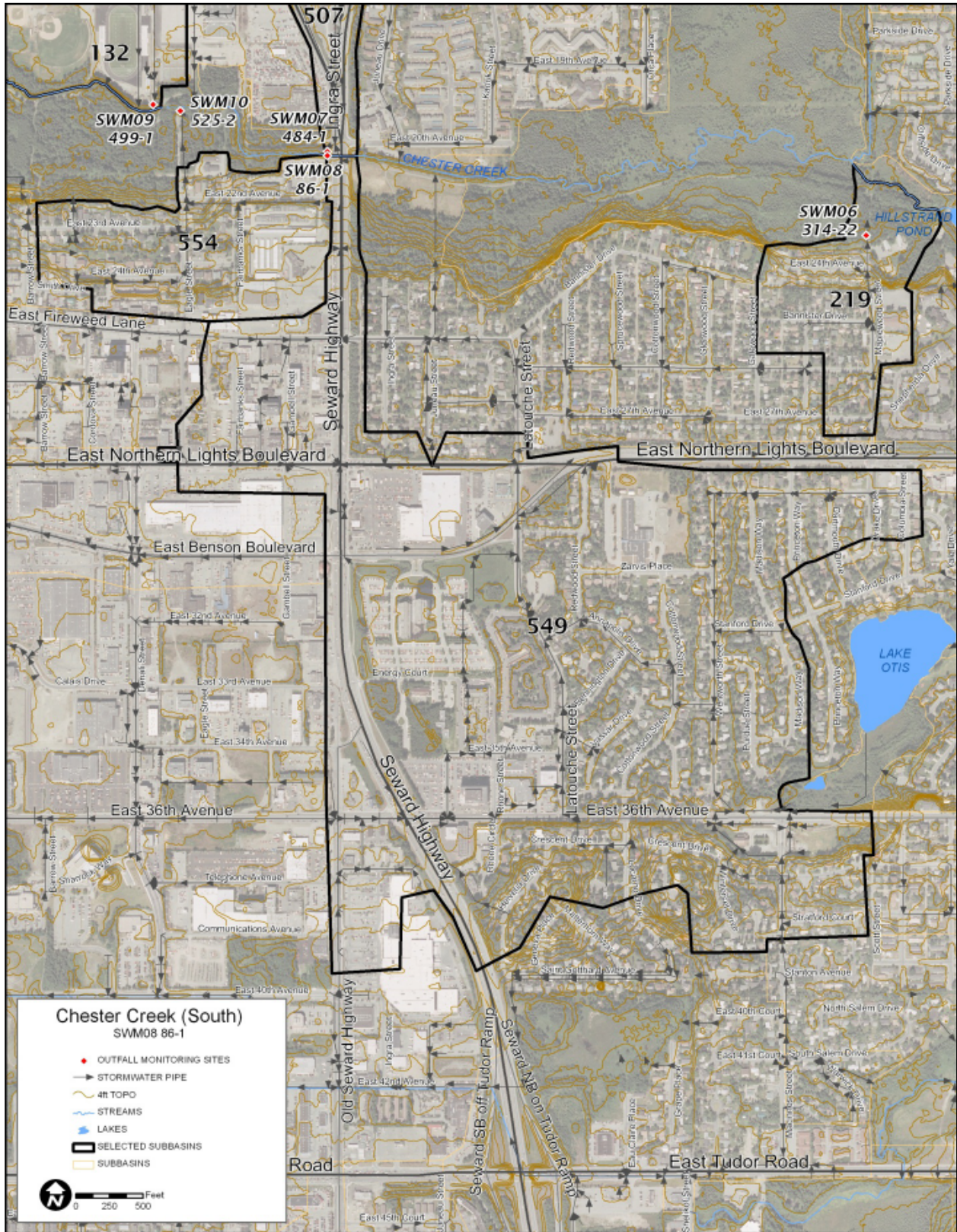
**Figure 5. Outfall SWM05, East 56th Avenue (Campbell Creek)**





**Figure 7. Outfalls SWM07, SWM09, & SWM10 (Chester Creek)**





**Figure 8. Outfall SWM08, New Seward Highway (Chester Creek)**

### 3.3 Measured Parameters

Parameters that were measured during the stormwater outfall monitoring are shown in Table 3. The table includes measurement type, analysis method, frequency of sampling, purpose of monitoring, as well as whether the parameter was measured in the field or submitted for laboratory analysis. Measurement quality objectives for each parameter including precision, accuracy, sensitivity, and measurement range were presented in the final QAPP for the program (MOA 2012). In addition to the water quality parameters listed in Table 3, field observations were recorded at each outfall including: any evidence of oily sheen, scum, odor, detritus, floating material, water color and clarity, deposits or stains, vegetation, and any other pertinent observation.

Three tipping bucket rain gauges were installed within the monitoring area to record precipitation during each monitoring event. The rain gauges were located along the north-south sampling corridor in order to provide a good representation of rainfall within each of the sampled subbasins (refer to Figure 1 for rain gauge locations).

**Table 3. Measured Parameter, Type, Purpose, and Method of Analysis**

Parameter	Type of Sample	Measurement Type	Method	Purpose	Frequency
Flow	IR	Field	Flow meter, or bucket	Characterize flow	4/year
Specific Conductance	IR	Field	EPA 120.1/ YSI 556	Stormwater quality	4/year
DO	IR	Field	EPA 360.1/ YSI 556	Stormwater quality	4/year
pH	IR	Field	EPA 150.2/ YSI 556	Stormwater quality	4/year
Temperature	IR	Field	SM2550B/ YSI 556	Stormwater quality	4/year
Turbidity	IR/G	Field	EPA 180.1M/ Hach 2100	Stormwater quality	4/year
BOD <sub>5</sub>	G	Laboratory	SM 5210 B	Stormwater quality	4/year
Fecal Coliform	G	Laboratory	SM 9222D	Stormwater quality & estimate loading	4/year
TSS	G	Laboratory	SM 2540D	Stormwater quality	4/year
TAH	G	Laboratory	EPA 624	Stormwater quality & estimate loading	4/year
TAqH	G	Laboratory	EPA 625 + EPA 624	Stormwater quality & estimate loading	4/year

IR = instantaneous recording of field analysis; G = grab sample for laboratory analysis; M = modified for field use

Table 4 identifies the parameters that were monitored at each outfall location. The commercial industrial (CI) land use categories in the table represent predominantly commercial and industrial areas with paved collectors, arterial streets and parking lots. Outfalls with watersheds dominated by these land uses are those most likely to contribute petroleum hydrocarbon pollutants to stormwater and were monitored for TAH and the TAqH in addition to the other parameters. For this monitoring program, two CI subbasin categories were selected that had existing OGS systems and two others were selected that did not have OGS systems. Other than petroleum hydrocarbons, all other parameters were measured at each outfall location during each storm.

**Table 4. Parameters Measured at each Subbasin Outfall**

Station ID	Outfall ID	Watershed	Contributing Land Use*	OGS Present?	Field Parameters						Lab Samples				
					Flow	Cond	pH	Temp	DO	Turb	BOD	FC	TSS	TAH	TAqH
SWM01	1040-3	L. Campbell Cr	R	No	x	x	x	x	x	x	x	x	x		
SWM02	847-1	L. Campbell Cr	CI	No	x	x	x	x	x	x	x	x	x	x	x
SWM03	1224-1	Campbell Cr	R	Yes	x	x	x	x	x	x	x	x	x		
SWM04	1224-2	Campbell Cr	R	Yes	x	x	x	x	x	x	x	x	x		
SWM05	207-1	Campbell Cr	CI	Yes	x	x	x	x	x	x	x	x	x	x	x
SWM06	314-22	Chester Cr	R	Yes	x	x	x	x	x	x	x	x	x		
SWM07	484-1	Chester Cr	CI	No	x	x	x	x	x	x	x	x	x	x	x
SWM08	86-1	Chester Cr	M	No	x	x	x	x	x	x	x	x	x		
SWM09	499-1	Chester Cr	CI	Yes	x	x	x	x	x	x	x	x	x	x	x
SWM10	525-2	Chester Cr	M	No	x	x	x	x	x	x	x	x	x		

\*R-Residential, CI-Commercial/Industrial, M-Mixed

### 3.4 Field Sampling Procedures

Precipitation was monitored throughout the summer rainfall season in order to capture four storms that were representative of typical Anchorage rainfall conditions. Water sampling was conducted during storm events that were both expected to create runoff in the MS4 area and that met antecedent dry weather conditions. Typically, rain events yielding 0.1 inches to 0.25 inches within a 24-hour period were considered sufficient to generate runoff at all sites. Therefore, a minimum of 0.1 inches of rain was required before targeting an event. In addition, all storm events were to be preceded by a relatively dry period. A dry period was defined as rainfall of  $\leq$  0.1 inches in the preceding 24 hour period.

Once a storm event was identified for sampling, the field crew prepared field sampling equipment and laboratory bottles for sampling. All portable water quality measurement instrumentation were pre-calibrated immediately prior to going in the field for each event per the manufacturer’s recommendation as outlined in Appendix H of the QAPP. In addition, all bottles were pre-labeled with station location, date, number of bottles, and analysis type and method.

The field sampling team consisted of two people to address safety concerns and to allow one-person to be the designated recorder while the second person performed measurements and conducted the grab sampling. Upon arriving on site at the outfall, the field team took flow measurements and placed the YSI 556 multi-probe into the outfall stream in order to allow the probes to equilibrate for at least three minutes prior to taking any measurements.

The QAPP called for flow measurements to be made by either of two methods; installation of a temporary portable weir or by timing the collection of flow in a bucket of known volume. However, after performing the pre-sampling reconnaissance in 2011 it was determined that only one of the ten outfalls was amenable to collection of the flow in a bucket. For most outfalls, a vertical drop did not exist at the end of the outfall pipe where the discharge could easily be collected with a bucket. Likewise, it was determined that due to the varying outfall sizes, condition of the outfall pipe, and corrugated nature of most outfall pipes, that a portable weir sized properly for variable flow and that would seal completely with the outfall pipe would be

nearly impossible to install in a timely manner during each storm sampling event. For these reasons, flow was measured with an acoustic Doppler flow meter and staff gauge. The flow meter was used to measure the average velocity of the outfall pipe. The average velocity was then used in conjunction with the water depth and pipe diameter to calculate the instantaneous flow of each outfall.

After measuring flow, the field crew measured dissolved oxygen (DO), specific conductance, pH, and temperature with a YSI 556 multi-probe system. Turbidity was also measured in the field by collecting a discrete sample that was analyzed on-site with a portable Hach 2100P/Q turbidimeter. All water quality measurements were obtained from the water flowing out of the end-of-pipe prior to any mixing with the receiving water body. All field measurements were recorded on project specific field log forms that were bound in the project field log books along with field instrument calibration logs (refer to Appendix D).

The field crew obtained the water samples necessary to fill the laboratory bottles for BOD, TSS, fecal coliform, TAH, and TAqH. The water quality samples were collected to represent the water column by collecting samples from the water flowing out of the end-of-pipe. Sample crews took extra care not to disturb any accumulated sediment when collecting a water sample. To avoid having to perform decontamination procedures, all samples, with the exception of TAH, were collected directly into their respective sample containers. In the case of TAH, the samples were first collected into the pre-cleaned and certified TAqH (PAH) bottle which was then used to carefully fill the 40-ml vials for TAH analyses. The TAqH bottle was then topped off with additional water from the outfall discharge. Since the TAqH bottles were pre-cleaned and certified, it was unnecessary to perform equipment rinsate analyses. Once the water samples were collected, the field crew recorded visual observations at each outfall location.

The field crew conducted replicate field measurements and laboratory analyses at a rate of 15 percent per sampling event. This resulted in two additional measurements for all parameters except TAH and TAqH. TAH and TAqH required only one additional field measurement since fewer outfalls were sampled. Additional water for TAH and TAqH was taken at one station to allow the laboratory to perform matrix spike/ matrix spike duplicate (MS/MSD) analyses. TAH analyses also included a trip blank sample that was provided by the laboratory and that accompanied the sample bottles in the field.

Precipitation was recorded using tipping a bucket rain gauge and data logger recording in 0.01 inch increments. During precipitation events, the collection cup in the gage collects precipitation until it reaches the equivalent of 0.01 inches of precipitation where upon the bucket tips, triggering a reed switch and recording an event with a time stamp. These events are stored in the data logger and downloaded into a computer program where they can be summarized over different time intervals or graphed as a time series. Three rain gauges were installed for this program and were located at Rogers Park Elementary School, Taku Elementary School, and on Forest Drive (“Jefferies’ House”) and represented the northern, middle, and southern portions of the study area respectively (refer to Figure 1 for rain gauge locations).

### **3.5 Sampling Handling and Chain of Custody Procedures**

BOD, TSS, fecal coliform, TAH, and TAqH samples were collected, preserved, and packed for shipment to the laboratory as described in the QAPP. Since the laboratory that was selected for

the program, SGS North America, Inc., is located in Anchorage, no special sample shipping or packaging was required. Upon sample collection, all samples were immediately chilled to 6°C with gel ice and delivered to the laboratory by the field crew following the sample collection effort. All samples were transferred to the laboratory under strict chain of custody (COC) procedures as outlined in the QAPP. Copies of all completed COCs are included with the laboratory data reports in Appendix B. When necessary, fecal samples were taken to the laboratory in two batches during the storm event to ensure that the 6-hour holding time requirement was met.

### **3.6 Laboratory Analyses**

The water quality constituents that were selected for this program were established based upon the requirements of MOA's APDES Stormwater Permit (AKS-052558). All analyses were conducted by SGS North America, Inc. a laboratory that is certified for conducting such analyses. All analytical methods (refer to Table 3) were based upon approved EPA methodology and included all necessary Quality Assurance/Quality Control (QA/QC) procedures and analyses as outlined in the methodology and detailed in the QAPP.

The laboratory QA/QC activities provide information needed to assess potential laboratory contamination, analytical precision and accuracy, and representativeness. Analytical quality assurance for this program included:

- Employing analytical chemists trained in the procedures and analytical methods to be conducted
- Adherence to documented procedures, EPA methods, and laboratory SOPs
- Calibration of analytical instruments
- Use of quality control samples, internal standards, surrogates, and standard reference material (SRMs)
- Complete documentation of sample tracking and analysis

Internal laboratory control checks included the use of internal standards, method blanks, MS/MSDs, duplicates, laboratory control spikes, and SRMs as required by the sample analysis methodology. For additional detail on laboratory QA/QC procedures, refer to the QAPP.

### **3.7 Deviation from the QAPP**

Ten priority outfalls were selected for sampling based on a series of selection criteria and are identified in Appendix B of the QAPP. However, following pre-sampling field reconnaissance in 2011, it was determined that one of the selected outfalls (Node ID 299-20) could not be sampled due to severe corrosion within the outfall pipe. Therefore, this outfall was replaced with the next highest priority outfall (Node ID 847-1) that had the same land use and BMP characteristics.

The QAPP called for flow measurements to be made by either of two methods; installation of a portable weir or by timing the collection of flow in a bucket of known volume. However, after performing the pre-sampling reconnaissance in 2011 it was determined that only one of the ten

outfalls was amenable to collection of the flow in a bucket since a drop did not exist at most outfalls where a bucket could be used to collect the flow. Likewise, it was determined that due to the varying outfall sizes, condition of the outfall pipe, and corrugated nature of most outfall pipes, that a portable weir would be nearly impossible to install in a timely manner during each storm that would be sized properly for variable flow and that would seal completely with the outfall pipe. For these reasons, flow was measured with with an acoustic Doppler flow meter, which provided the average flow velocity, and a staff gauge which provided the centerline depth of the flow. This information was then used to calculate the volumetric flow rate at each site.

### **3.8 QA/QC and Data Validation Results**

Quality Control and Quality Assurance (QA/QC) procedures were followed according to the QAPP (MOA 2012). The procedures included analytical checks (field replicates, trip blanks, matrix spikes and matrix spike duplicates); instrument calibration; and procedures to assess data for precision, accuracy, representativeness, comparability, and completeness.

Verification analyses for laboratory parameters were conducted by SGS. The data review focused on criteria for the following QA and QC parameters and their overall effects on the data:

- Sample handling (chain of custody)
- Temperature blank
- Holding time compliance
- Matrix spikes and matrix spike duplicates
- Field replicate comparison
- Data validation.

The laboratory performing the analyses, SGS, is certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with EPA-approved protocols and guidelines.

Sample custody was adequately maintained for the samples. The coolers transporting the samples were held at temperatures of less than 6 °C. The holding times for all parameters tested were adhered to and were analyzed before the hold time expirations.

The analyses for the fecal coliform, biological oxygen demand (BOD), total suspended solids (TSS), total aqueous hydrocarbons (TAqH), and total aromatic hydrocarbons (TAH) were reported as required with appropriate method detection limits and report detection limit.

The QA/QC officer validated all data reported by the laboratory. Data that was determined to be a biased low estimate was flagged based on low recovery rates from laboratory control samples. Any data that was considered suspicious was also rejected and flagged as such. For a more detailed summary of field and laboratory data validation results, refer to Appendix C.

Other QA/QC procedures included a field audit of the sampling in 2011 to ensure that all field protocols were being followed and that protocols being used were sufficient. The field audit concluded that all protocols were being followed and were sufficient. The field team was also required to QC all data at the end of each event to insure all data was collected and complete.

## 4.0 Results and Discussion

The 2013 stormwater monitoring at the 10 long-term monitoring sites was initiated in July and was the third year of monitoring for the program. Approximately seven inches of rain (including snow) had been measured in 2013 at the National Oceanic and Atmospheric Administration (NOAA), National Weather Service's PAFC weather station located at the Anchorage International Airport (AIA) before the first event was sampled on 1 July (Figure 9). Four stormwater outfall monitoring events were conducted in 2013 as required by the *Stormwater Outfall Monitoring Plan* (MOA 2012) and the APDES Permit. Sampling events took place on 1 July, 20 July, 29 August, and 19 September and with the exception of two sampling events, included sampling of all ten outfalls during each of the four events. Based on the long-term historic record, rainfall for June and July in 2013 was below normal with measured precipitation about half of the long-term mean precipitation for those two months. Whereas, the precipitation in August and September 2013 was much higher than normal when compared to the long-term mean (Figure 9). The highest precipitation during the year occurred in September which represented the time when the fourth sampling event took place.

### 4.1 Precipitation

A total of four events were sampled in 2013 starting on 1 July and ending on 19 September. Total rainfall, as measured at the three stations in the monitoring area, during each monitored event ranged from 0.02 inches during the first event to 0.32 inches during the second event although the third and fourth events were similar in size to the last event (Table 5 and Figure 10). The highest outfall flow rates usually occurred during either the second or fourth event depending on the outfall. The highest flow rate for any outfall was 361 gallons per minute (gpm) at SWM08 which drains the largest of the watersheds, and was about four times higher than all other sites (Table 6 and Figure 11). Refer to Table 2 for a cross reference of monitoring station locations, outfall identification numbers, subbasins, and physical locations within each watershed.

Daily rainfall records are illustrated in Figure 10 for each of the three rain gauges located along the sampling corridor. Since the three rain gauges were not active throughout the entire year, rainfall records from the PAFC weather station at the AIA were used to supplement the three project rain gauges to provide a comparison to the long term historic record (Table 5).

The first storm event took place on July 1st with rainfall ranging from 0.02 inches recorded at Jefferies' to 0.44 inches recorded at AIA. No measureable precipitation was recorded at any of the four locations during the preceding 24-hr period with the rain event beginning about 05:00 on July 1st. Sampling was initiated approximately 6 hours after the start of the rain event. Based on the recorded precipitation at the various locations it appears that the rain was patchy with much higher accumulations in some areas versus others. The precipitation was the greatest in West Anchorage (AIA) where a rain band initially hit progressing towards North Anchorage (Rogers Park) and leaving South Anchorage (Jefferies' and Taku) with little to no precipitation.

The second storm event occurred on July 20th with recorded rain ranging from 0.24 inches at Rogers Park to 0.32 inches at both AIA and Taku. No rain was recorded within the study area

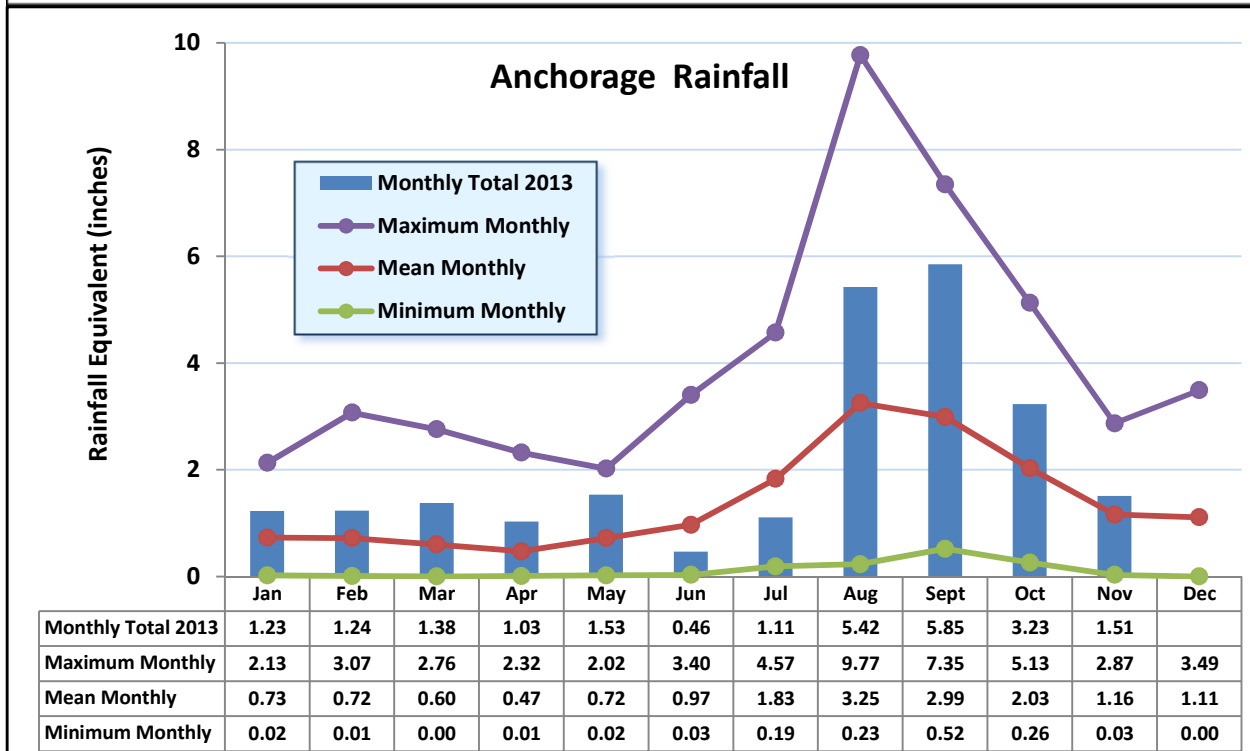
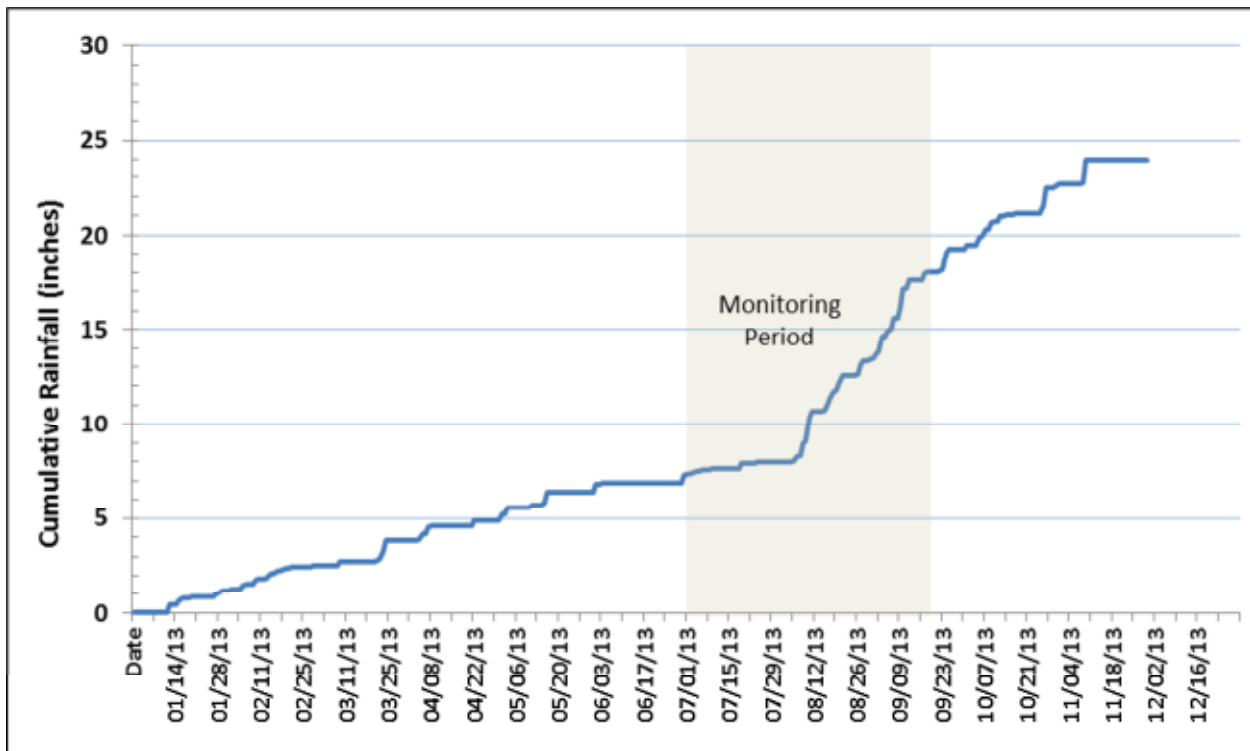
during the preceding 24-hr period. Sampling for the second event was initiated within 8 hours of the beginning of the storm after most of the rain had already fallen.

**Table 5. Anchorage Precipitation Data for 7 Days Prior to Each Sampling Event**

Date	PANC NOAA Airport (in)	Rogers Park Elementary (in)	Taku Elementary (in)	Jefferies' Residence (in)
06/24/13	0	0	0	0
06/25/13	0	0	0	0
06/26/13	0	0	0	0
06/27/13	0	0	0	0
06/28/13	T	0	0	0
06/29/13	0	0	0	0
06/30/13	0	0	0	0
07/01/13 (Event 1)	0.44	0.12	0.05	0.02
07/13/13	0	0	0	0
07/14/13	0	0	0	0
07/15/13	T	0	0	0
07/16/13	T	0	0	0
07/17/13	0	0	0	0
07/18/13	0	0	0	0
07/19/13	0	0	0	0
07/20/13 (Event 2)	0.32	0.24	0.32	0.28
08/22/13	0.41	0.51	0.5	0.44
08/23/13	0.06	0.03	0.04	0.03
08/24/13	T	0.05	0.04	0.06
08/25/13	0	0	0	0
08/26/13	0	0	0	0
08/27/13	0.03	0.02	0	0
08/28/13	0.48	0.44	0.42	0.37
08/29/13 (Event 3)	0.21	0.17	0.22	0.23
09/12/13	0.07	0.01	0	0
09/13/13	0.4	0.31	0.38	0.22
09/14/13	T	0.02	0.01	0
09/15/13	0	0	0	0
09/16/13	0.01	0.01	0	0
09/17/13	0.02	0	0	0.04
09/18/13	0.35	0.16	0.17	0.02
09/19/13 (Event 4)	0.07	0.23	0.25	0.27

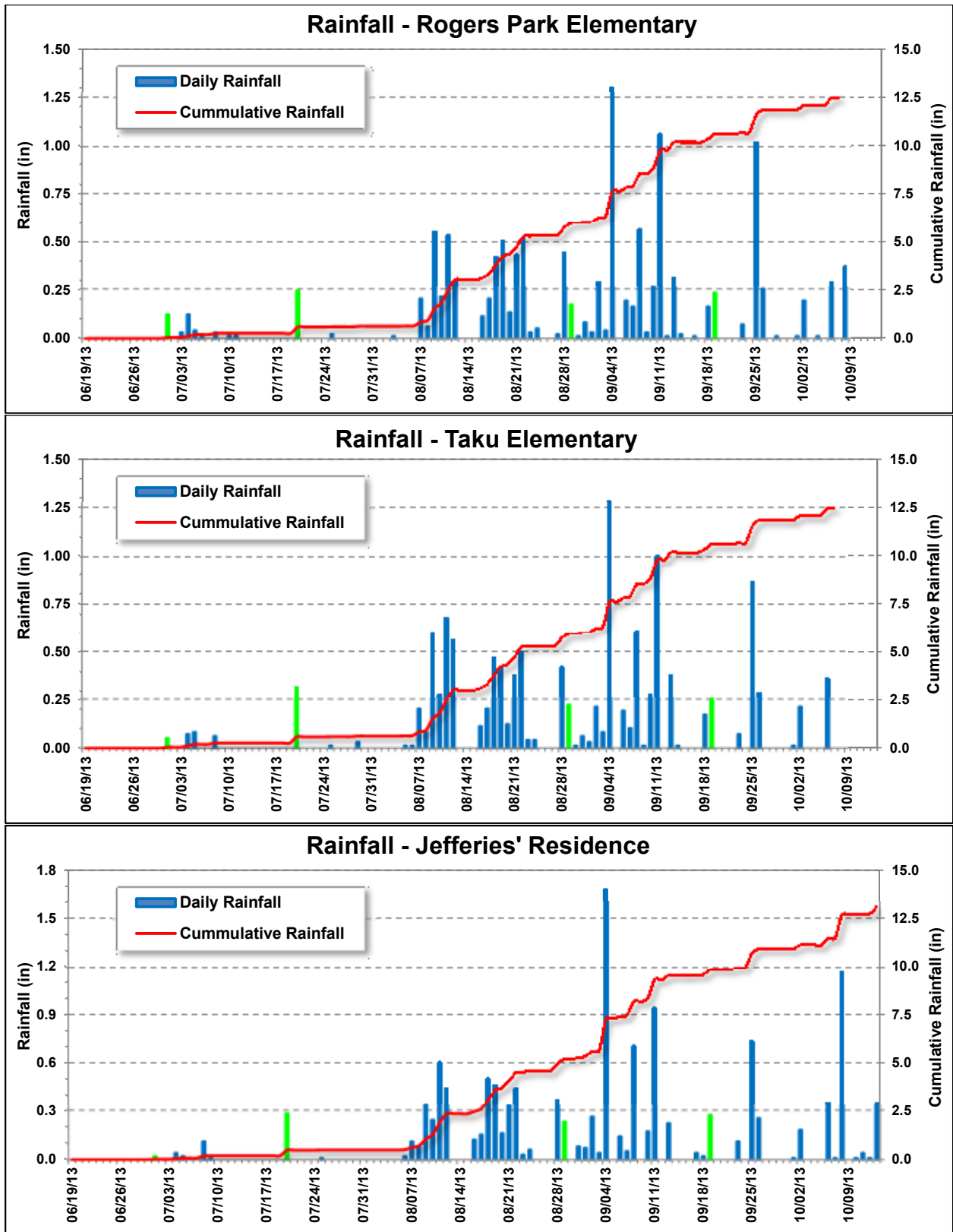
T = Trace level measurement





Note: Data for 2013 is incomplete at this time and includes only the period of 1/1/13 through 11/21/13.

**Figure 9. Cumulative, Monthly, and Historic Rainfall Measured at the PANC NOAA Weather Station. Snowfall Has Been Converted to Rain Equivalent.**



**Figure 10. Rainfall Measured at the Three Monitoring Rain Gauges.** (note: sampling days highlighted in green)

The third event took place on August 29<sup>th</sup>. On the day of sampling, precipitation ranged from 0.17 inches at Rogers Park to 0.23 inches recorded at Jefferies'. Fairly heavy precipitation occurred at all sites during the previous calendar day, but this represented the same storm event and was within the preceding 24-hr period. The rain event began at approximately 19:00 the prior day as seen in the precipitation records from all three project rain gauges. Outfall monitoring for the third storm event was initiated within 16 hours of the start of the storm event after approximately 0.5 inches of rain had fallen including rainfall from the prior evening.

The fourth monitoring event took place on September 19<sup>th</sup>. Precipitation for this event ranged from 0.07 inches at AIA to 0.27 inches at Jefferies'. As with the third storm event, rainfall for the fourth event began the prior evening with heavy rainfall at AIA, Rogers, and Taku being recorded just prior to midnight. Outfall monitoring for the fourth storm event began within 11 hours of the start of the storm event with the majority of the storm occurring prior to the start of sampling.

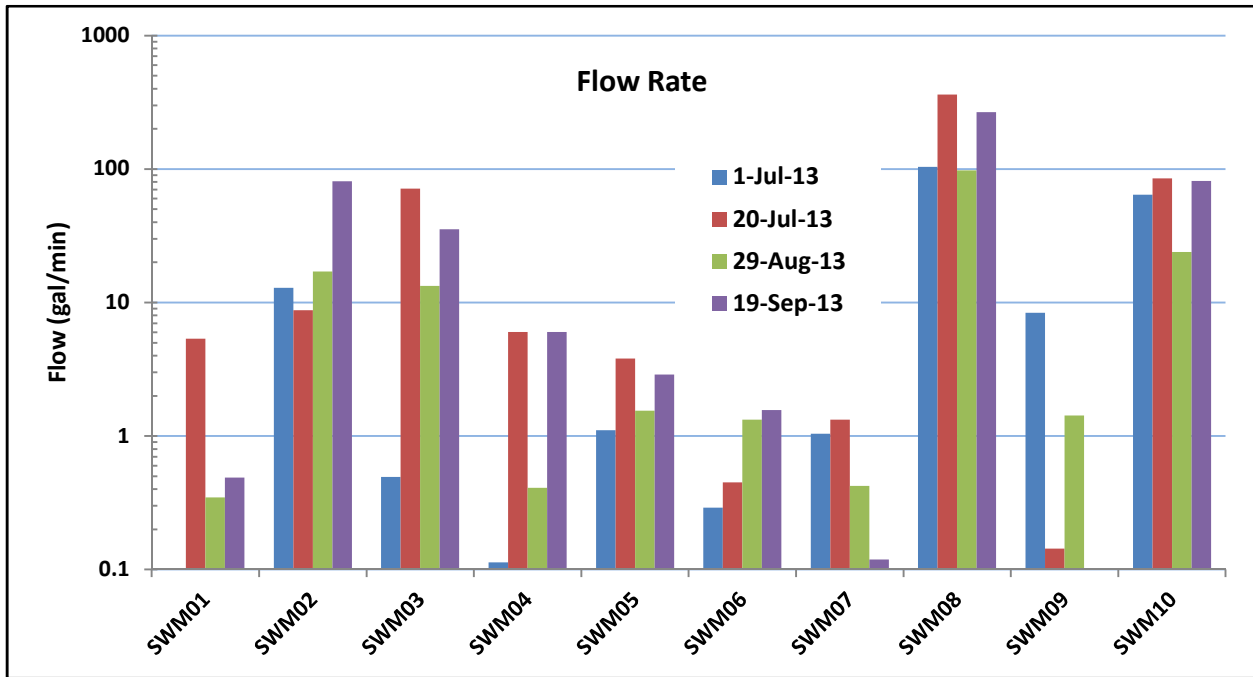
## **4.2 Field Measurements**

The results of field measurements for flow, turbidity, DO, conductivity, pH, and temperature are shown graphically in Figure 11 through Figure 16 and in Table 6 and Table 7. Where appropriate, field and laboratory measurements were compared against the most stringent Alaska Water Quality Standard (AWQS) numeric criteria for each parameter (refer to Table 10 for AWQS benchmarks used for comparisons). Most of these parameters exhibited similar trends to those observed for other stormwater programs in cooler climates.

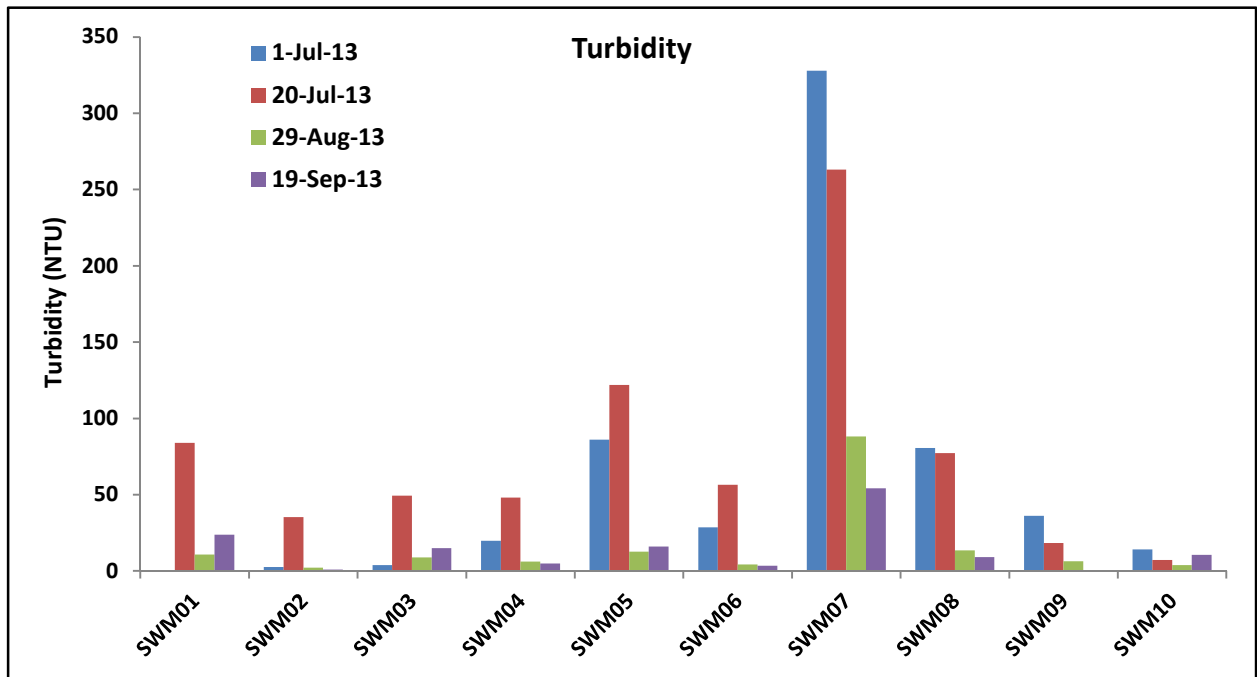
Flow rates were highly variable between sites and storm events with SWM08 having highest flow rates for all four storm events. Flow rates ranged from no discharge at SWM01 during the first storm event to 361 gal/min at SWM08 during the second storm event. The highest flows for seven of the ten locations occurred during the second event on 20 July. The remaining three locations (SWM02, SWM04, and SWM06) had the highest measured flow during the fourth storm event.

Mean turbidity levels ranged from a low of 8.9 NTUs at SWM10 to 183.4 NTUs at SWM07. Station SWM07 was found to have the highest turbidity levels for all four storm events. The elevated turbidity concentrations were also evident in total suspended sediment (TSS) samples taken for laboratory analysis at the same location. Overall, large differences between outfalls are expected for turbidity since it is highly dependent on the drainage area and is a function of the type of useage, percent impervious surfaces, amount of disturbed land from construction and other activities, drainage slope, flow rate, and other factors.

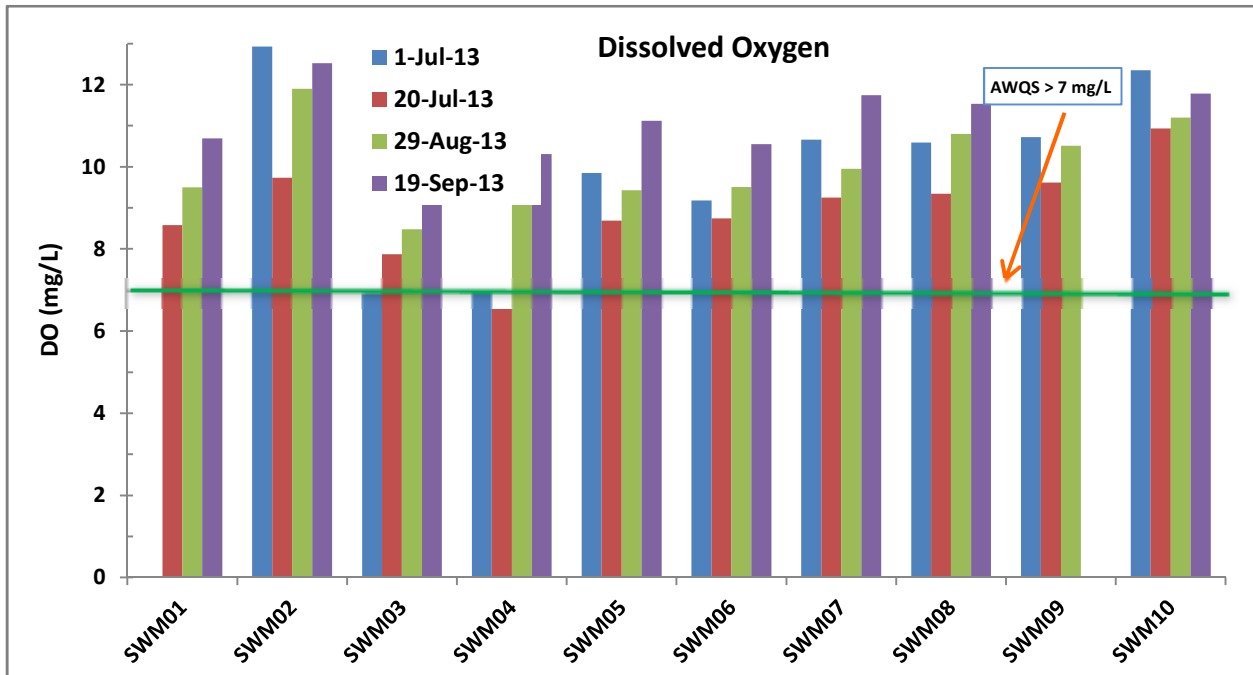
Although not required by the monitoring plan, specific conductivity was recorded at each site since it was available on the portable multi-parameter field instrumentation and was considered useful for interpretation of the data. Specific conductance was then converted to total dissolved solid (TDS) concentrations so that comparisons could be made with AWQS criteria. The highest TDS concentrations generally occurred during the first storm event which also was one of the first rain events of the summer following spring breakup. Elevated TDS concentrations for the first storm event may have been influenced by salt and other chemical use during the winter on roads, parking lots, and residential use for de-icing purposes that had not completely washed off



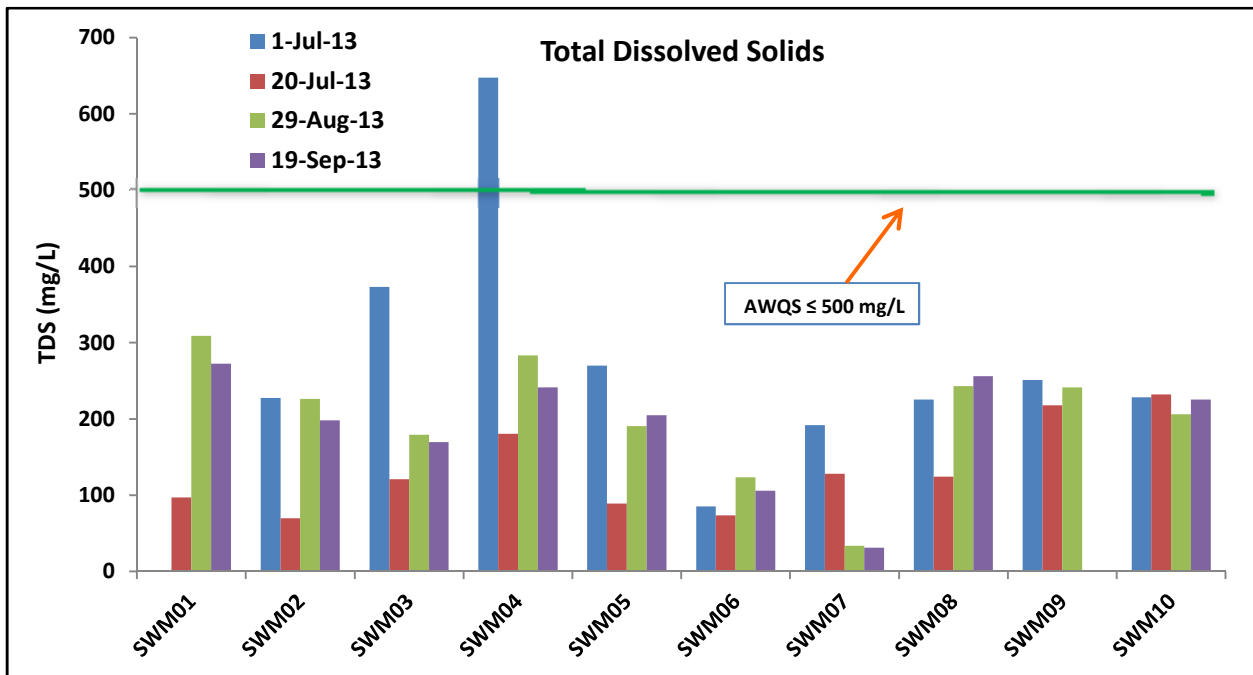
**Figure 11. Flow Rates Measured at Monitoring Sites During all Four Events.**



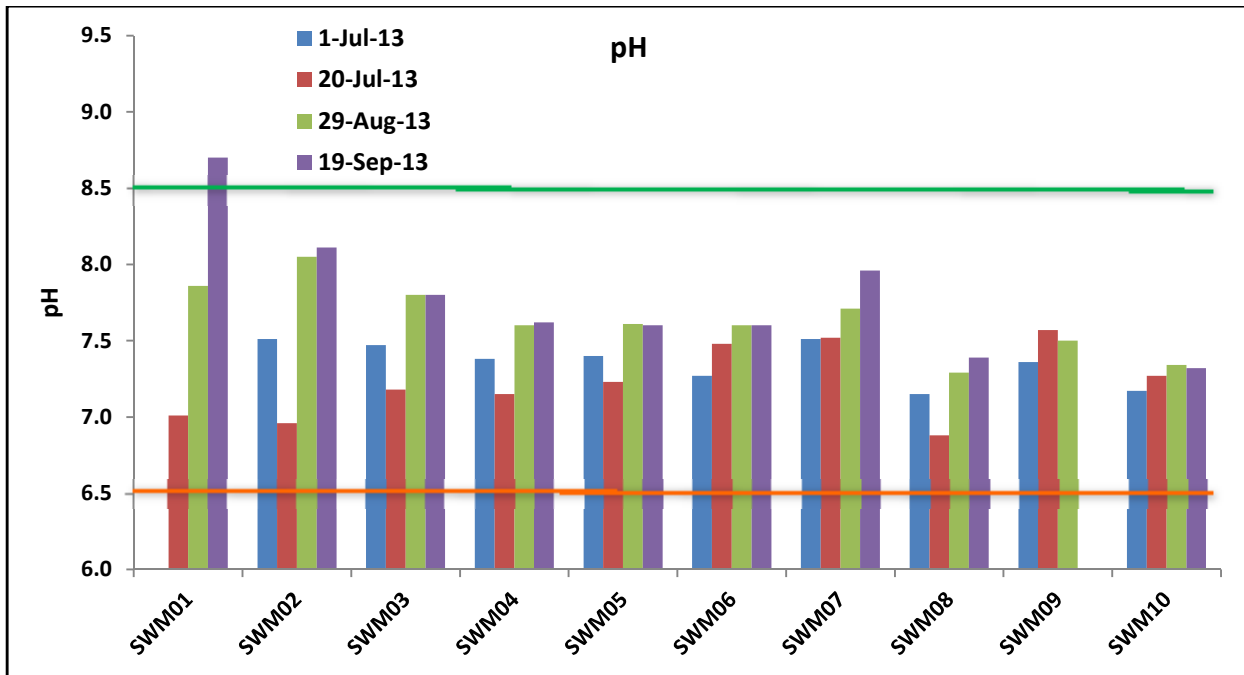
**Figure 12. Turbidity Measured in Stormwater Sampled at Monitoring Sites During all Four Events.**



**Figure 13. Dissolved Oxygen Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria > 7 mg/L).**

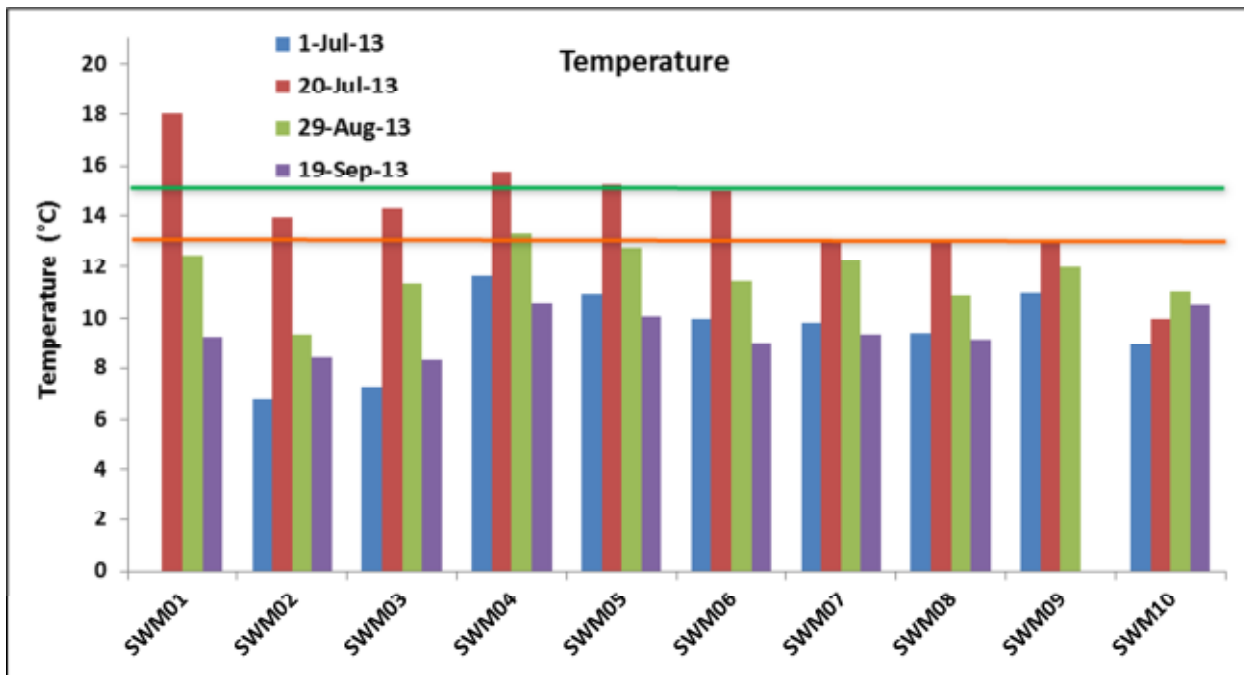


**Figure 14. Total Dissolved Solids Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria ≤ 500 mg/L).**



Green line indicate the upper limit of 8.5 and the red line indicates the lower limit of 6.5.

**Figure 15. pH (units) Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria  $\geq 6.5$  and  $\leq 8.5$ ).**



Red line indicate the upper limit of 13°C for spawning and the green line indicates the upper limit of 15°C for migration.

**Figure 16. Temperature (°C) Measured in Stormwater Sampled at Monitoring Sites During all Four Events. (AWQS Criteria  $\leq 13^\circ\text{C}$  for spawning and egg/fry incubation and  $\leq 15^\circ\text{C}$  for migration routes and rearing areas).**

**Table 6. Flow Rate, Turbidity, and pH Measured at Monitoring Sites During All Four Sampling Events**

Station	Event-01 1-Jul-2013	Event-02 20-Jul-2013	Event-03 29-Aug-2013	Event-04 19-Sept-2013	Mean
<b>Flow Rate (gpm)</b>					
SWM01	(a)	5.4	0.35	0.49	2.1
SWM02	12.9	8.8	17.0	80.8	29.9
SWM03	0.49	71.3	13.3	35.4	30.1
SWM04	0.11	6.0	0.41	6.0	3.1
SWM05	1.1	3.8	1.6	2.9	2.3
SWM06	0.29	0.45	1.3	1.6	0.9
SWM07	1.0	1.3	0.42	0.12	0.7
SWM08	104	361	97.9	267	207
SWM09	8.4	0.14	1.4	(b)	3.3
SWM10	64.2	85.1	24.0	81.4	63.7
<b>Turbidity (NTU)</b>					
SWM01	(a)	83.9	10.7	23.8	39.5
SWM02	2.7	35.3	2.2	0.9	10.3
SWM03	3.9	49.3	9.0	15.0	19.3
SWM04	19.8	48.1	6.2	4.8	19.7
SWM05	86.1	122.0	12.7	16.1	59.2
SWM06	28.6	56.4	4.2	3.4	23.1
SWM07	328.0	263.0	88.2	54.2	183.4
SWM08	80.7	77.2	13.4	9.2	45.1
SWM09	36.1	18.3	6.4	(b)	20.3
SWM10	14.2	7.2	3.8	10.5	8.9
<b>pH</b>					
SWM01	(a)	7.01	7.86	8.70	7.01 – 8.70
SWM02	7.51	6.96	8.05	8.11	6.96 – 8.11
SWM03	7.47	7.18	7.80	7.80	7.18 – 7.80
SWM04	7.38	7.15	7.60	7.62	7.15 – 7.62
SWM05	7.40	7.23	7.61	7.60	7.23 – 7.61
SWM06	7.27	7.48	7.60	7.60	7.27 – 7.60
SWM07	7.51	7.52	7.71	7.96	7.51 – 7.96
SWM08	7.15	6.88	7.29	7.39	6.88 – 7.39
SWM09	7.36	7.57	7.50	(b)	7.36 – 7.57
SWM10	7.17	7.27	7.34	7.32	7.17 – 7.34

a. Samples not taken due to lack of flow at the site.

b. No samples due to storm drain cleaning.

**Table 7. Dissolved Oxygen, Total Dissolved Solids, and Temperature Measured at Monitoring Sites During All Four Sampling Events.**

Station	Event-01 1-Jul-2013	Event-02 20-Jul-2013	Event-03 29-Aug-2013	Event-04 19-Sept-2013	Mean
<b><i>Dissolved Oxygen (mg/L)</i></b>					
SWM01	(a)	8.58	9.50	10.69	9.59
SWM02	12.93	9.73	11.90	12.52	11.77
SWM03	6.93	7.87	8.48	9.34	8.16
SWM04	6.98	6.58	9.08	10.31	8.24
SWM05	9.85	8.69	9.43	11.12	9.77
SWM06	9.18	8.74	9.51	10.55	9.50
SWM07	10.66	9.25	9.95	11.74	10.40
SWM08	10.59	9.34	10.80	11.53	10.57
SWM09	10.77	9.62	10.51	(b)	10.30
SWM10	12.35	10.93	11.20	11.78	11.57
<b><i>Total Dissolved Solids (mg/L)</i></b>					
SWM01	(a)	96.9	308.8	272.4	226.0
SWM02	227.5	69.6	226.2	198.3	180.4
SWM03	373.1	120.9	179.4	169.7	210.8
SWM04	647.4	180.7	283.4	241.2	338.2
SWM05	269.8	89.1	190.5	204.8	188.5
SWM06	85.2	73.5	123.5	106.0	97.0
SWM07	191.8	128.1	33.8	31.2	96.2
SWM08	225.6	124.2	243.1	256.1	212.2
SWM09	250.9	217.8	241.2	(b)	236.6
SWM10	228.2	232.1	206.1	225.6	223.0
<b><i>Temperature (°C)</i></b>					
SWM01	(a)	18.03	12.51	9.25	13.26
SWM02	6.80	13.96	9.35	8.43	9.64
SWM03	7.25	14.28	11.31	8.30	10.29
SWM04	11.63	15.75	13.33	10.58	12.82
SWM05	10.92	15.22	12.80	10.08	12.26
SWM06	9.99	14.96	11.43	9.03	11.35
SWM07	9.84	13.05	12.23	9.36	11.12
SWM08	9.41	13.08	10.86	9.17	10.63
SWM09	10.97	13.03	11.97	(b)	11.99
SWM10	8.98	9.98	11.03	10.51	10.13

a. Samples not taken due to lack of flow at the site.

b. No samples due to storm drain cleaning.



or could have been due to the extended period of dry weather and accumulations prior to the first storm event. Water from one site, SWM04, tended to have notably higher TDS levels as compared to other locations. Mean TDS concentrations ranged from 96.2 mg/L at SWM07 to 338.2 mg/L at SWM04. Although elevated conductivities and TDS can be indicative of contaminants, the highest concentrations measured were well within expected ranges for stormwater (EPA 1983). Also, only one TDS concentration that was measured at SWM04 during the first storm event exceeded the most restrictive AWQS criteria of 500 mg/L.

Dissolved oxygen (DO) levels were generally found to be fairly high and near saturation. The highest concentrations at seven locations were seen during the fourth storm event which is not unexpected since oxygen saturation levels increase as water temperatures decrease. Many of the outfalls had fairly turbulent flows which tend to raise DO levels. The lowest DO concentrations were seen at SWM04 with two concentrations of 6.98 and 6.58 mg/L measured during the first and second storm events which were below the minimum AWQS criteria of 7.0 mg/L for the growth and propagation of fish, shellfish, and other aquatic life, and wildlife.

Except for one sample, measurements of pH were all within AWQS criteria for all storm events and locations. pH ranged from a low of 6.88 at SWM08 to a high of 8.70 at SWM01. Rainfall is often slightly acidic but exposure to minerals in soils typically mitigates any brief depressions. The National Atmospheric Deposition Program (NADP) indicates that rainfall in Alaska is typically in the range of 5.2 to 5.5 pH.

During 2011, discharge temperatures underwent a general seasonal decline where the coldest temperatures were found during the last sampling event in October, whereas in 2012 most locations exhibited the coolest temperatures during the first storm event. In 2013, the coolest temperatures were found during either the first storm or last storm, with four locations cooler during the first storm and six locations coolest during the last storm. The coolest outfall discharge temperatures were seen at SWM02 for two of the four storm events with a mean temperature of 9.64°C and the warmest temperatures were seen at SWM01, which drains a small residential area, with a mean temperature of 13.26°C. Temperature values were generally found to be less than the AWQS of 13°C for spawning and egg/fry incubation areas, and all were below the AWQS criteria of 15°C for migration routes and rearing areas (Figure 16).

In addition to the standard field measurements, the field crew also recorded visual observations of any odor, water color, clarity, floatables, deposits or stains, sheens, and debris. Observations for petroleum odor and sheen are noted under hydrocarbons. Observations of water color and clarity were consistent and matched those outfalls where high turbidity and TSS were observed. Floatables consisted of some suds, vegetative material, and other small pieces of organic material that were noted at a few locations (refer to field logs in Appendix D). Some stains were observed such as rust at SWM10 which may be an indication of corrosion of the stormwater piping or simply the result of high iron content that is often seen in Anchorage area streams. Other observations included: a small amount of scum at a couple of sites, some garbage type debris, sediment deposits, and algae. Other than hydrocarbons, no attempt has been made to correlate any of the visual observations with the conventional or pollutant measurements that were obtained.

### 4.3 Conventional Parameters (BOD<sub>5</sub> and TSS)

The 5-day biological oxygen demand (BOD<sub>5</sub>) (Table 8 and Figure 17) were typically highest during the first storm event with the next highest concentrations occurring during the second storm event. Concentrations ranged from a low of ND (<2) at most sites during the third and fourth storms to a high of 57.9 mg/L measured at SWM07 during the first storm event. The highest BOD<sub>5</sub> concentrations were seen at SWM07 for all four sampling events with a mean concentration of 20.8 mg/L. These concentrations were approximately twice as high as those seen at the next two highest locations, SWM05 and SWM06 where the mean concentrations were 11.0 and 11.4 mg/L, respectively. Outfall SWM10 had the lowest BOD<sub>5</sub> overall with no detectable concentrations during any of the four sampling events.

As noted earlier, it is expected that TSS levels would be highly correlated with turbidity. In comparing these two measurements it was seen that the location (SWM07) with the highest TSS also exhibited the highest turbidity levels (Table 6, Table 8, and Figure 18). TSS concentrations ranged from a low of 1.02 mg/L at SWM02 to a high of 85.0 mg/L at SWM07 seen during the first storm event. The station mean concentrations ranged from 5.3 mg/L at SWM02 to 45.5 mg/L at SWM07. In general mean concentrations appeared to be somewhat lower at most locations than that seen in 2011 and 2012 with most individual measurements less than 40-50 mg/L. As noted with turbidity, large differences can occur for TSS since it is highly dependent on the drainage area and is a function of the type of useage, percent impervious surfaces, slope, flow rate, and other factors.

### 4.4 Fecal Coliform

Although fecal coliform measurements were found to often exceed the 200 fecal coliform (FC)/100 mL AWQS criteria, overall concentrations were relatively low (Table 8 and Figure 19). Although the AWQS do not directly apply to stormwater, the limit of 200 FC/100 ml was used as a benchmark comparison since most applicable beneficial use criteria are based on this numeric limit (refer to Table 10). One site, SWM10, had measured concentrations below the standard during all four surveys. Other sites with low fecal coliform levels were SWM02 and SWM06 where three of the four surveys were found to be below the benchmark level. The geometric mean of fecal coliform ranged from a low of 14 FC/100 ml at SWM10 to a high of 1,916 FC/100 ml measured at SWM07. Studies conducted by EPA in the early 1980s (EPA, 1983) indicated that fecal coliform levels in warm climates were typically in the range of 10s to 100s of thousand FC/100 ml with a median of 21,000 FC/100 mL. In colder climates, the median concentration of fecal coliform was in the range of 1,000 FC/100 mL which is slightly higher than that seen at most project locations during 2013.

Despite the fact that established fecal coliform standards were exceeded at least once at 9 of the 10 sites, overall concentrations were not alarming. The highest mean concentrations were seen at SWM01, SWM03, SWM05, and SWM07 with geometric means of 540, 751, 1654, and 1916 FC/100 mL, respectively, although elevated individual samples were also seen at a number of other locations (Table 8). Nevertheless, the higher levels seen at some of the outfalls should be closely tracked as more samples are obtained. An earlier analysis of fecal coliform in Anchorage streams indicated that highest loads would be most likely to occur in August/September in

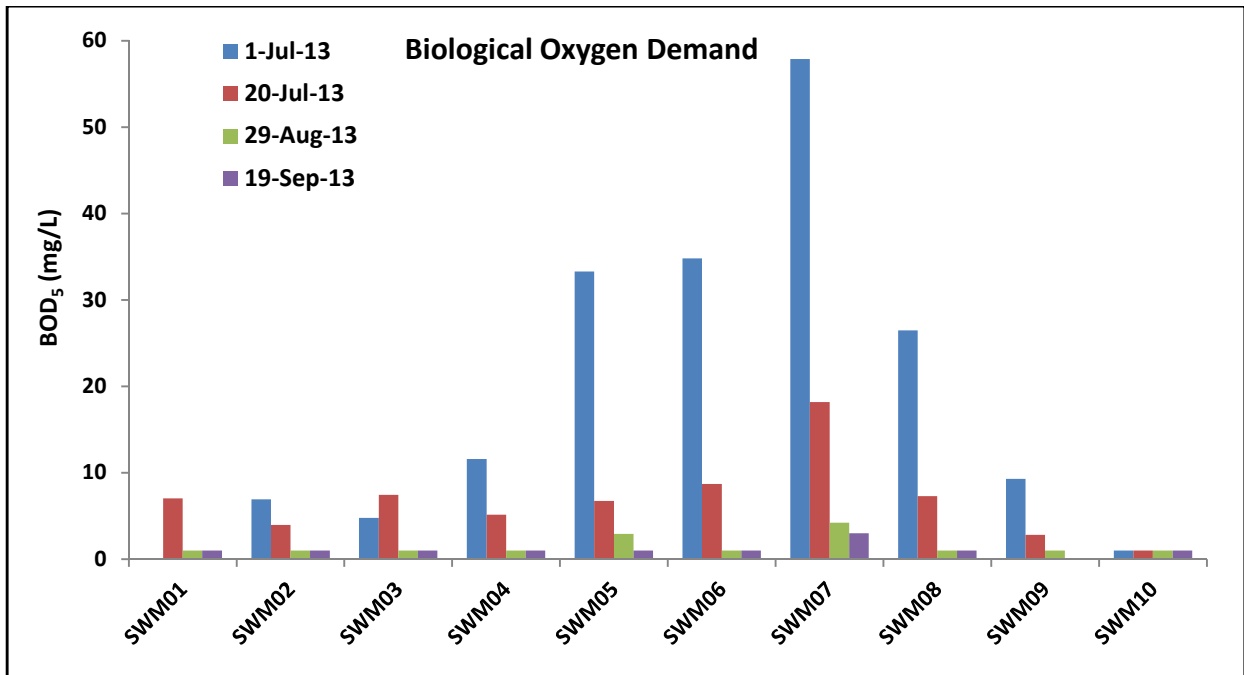
**Table 8. Concentrations of Microbiological and Conventional Parameters.**

Station	Event-01 1-Jul-2013	Event-02 20-Jul-2013	Event-03 29-Aug-2013	Event-04 19-Sept-2013	Mean
<b>Fecal Coliform (CFU/100 ml)</b>					
SWM01	(a)	332	360	1320	540
SWM02	213	177	41	3	46
SWM03	470	172	5400	727	751
SWM04	147	106	1350	387	300
SWM05	209	14900	18500	130	1654
SWM06	564	170	40	8	74
SWM07	32300	2500	964	173	1916
SWM08	791	682	72	88	242
SWM09	275	745	17	(b)	152
SWM10	25	4	64	6	14
<b>Biological Oxygen Demand (mg/L)</b>					
SWM01	(a)	7.06	2U	2U	3.0
SWM02	6.93	3.97	2U	2U	3.2
SWM03	4.79	7.45	2U	2U	3.6
SWM04	11.6	5.16	2U	2U	4.7
SWM05	33.3	6.76	2.92	2U	11.0
SWM06	34.8	8.71	2U	2U	11.4
SWM07	57.9	18.2	4.24	3.00	20.8
SWM08	26.5	7.30	2U	2U	8.9
SWM09	9.3	2.84	2U	(b)	4.4
SWM10	2U	2U	2U	2U	2U
<b>Total Suspended Solids (mg/L)</b>					
SWM01	(a)	44.0	7.16	6.67	19.3
SWM02	1.10	18.5	1.02	1.25U	5.3
SWM03	2.37	34.0	5.96	11.3	13.4
SWM04	29.0	19.0	7.75	8.35	16.0
SWM05	30.0	36.0	5.75	7.13	19.7
SWM06	10.0	30.0	2.13	2.00	11.0
SWM07	85.0	56.0	24.3	16.8	45.5
SWM08	21.0	34.0	14.9	3.78	18.4
SWM09	32.0	8.84	19.9	(b)	20.2
SWM10	8.18	4.95	3.75	14.8	7.9

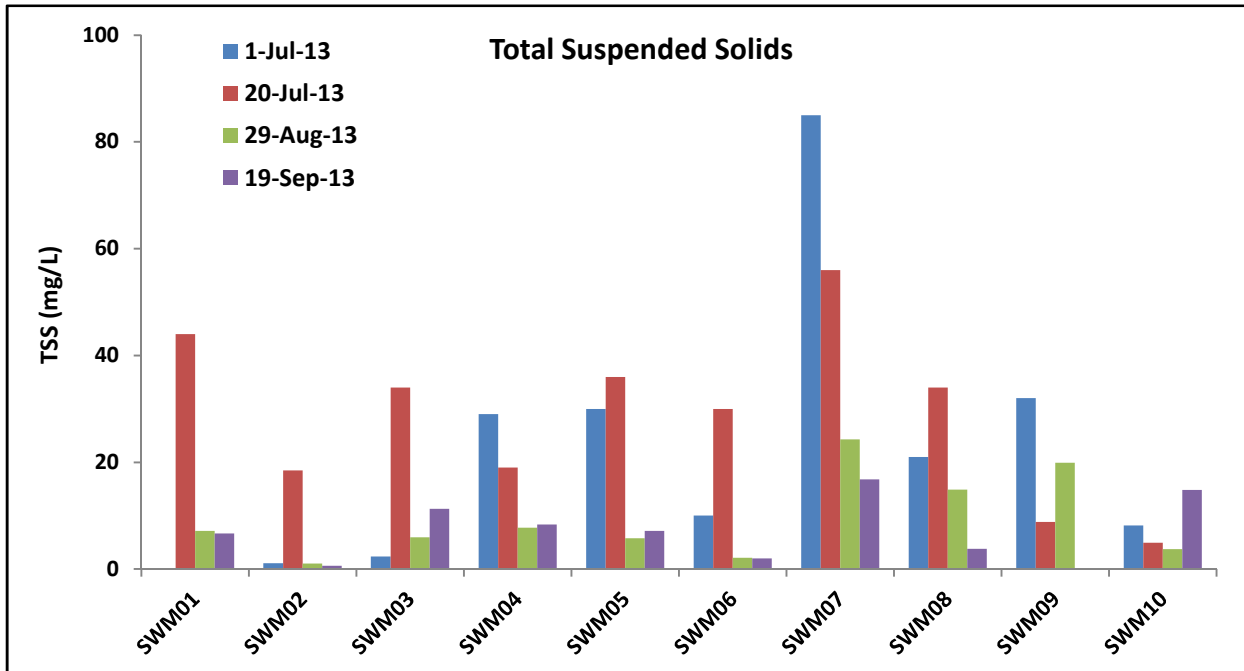
Footnotes: U = not detected at the associated detection limit that is shown. Mean calculations used geometric mean for fecal coliform and utilized 1/2 the reporting limit where analyte was not detected.

a. Samples not taken due to lack of flow at the site.

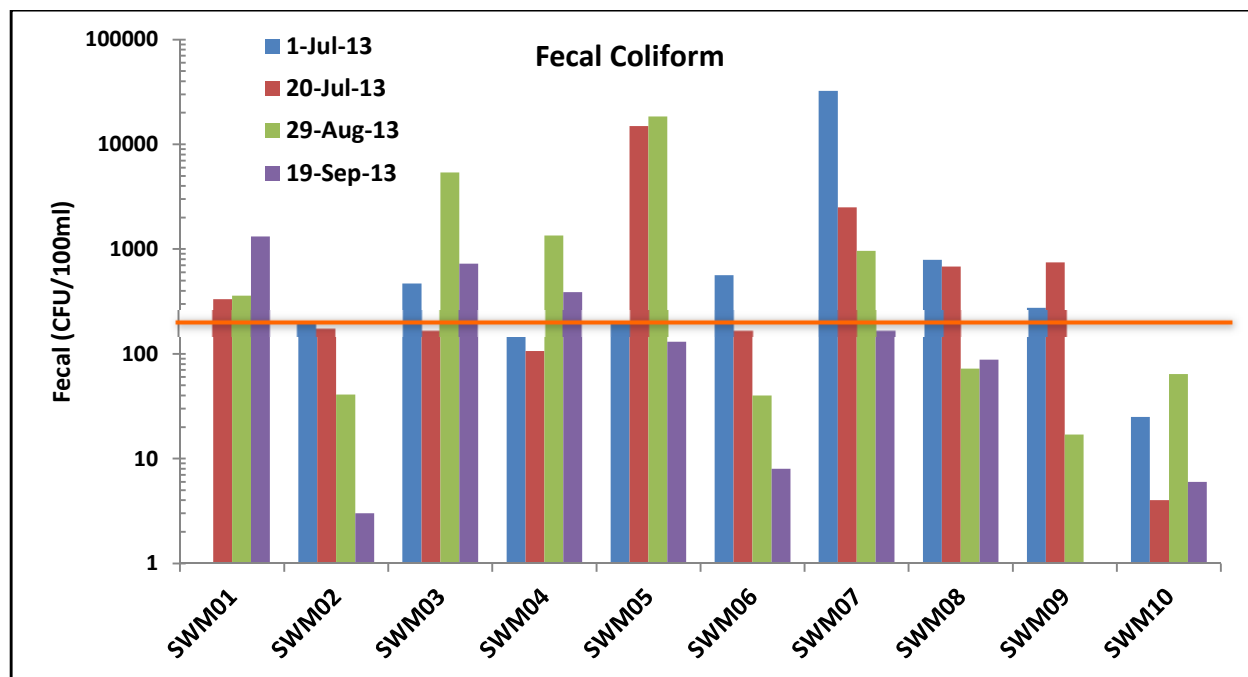
b. No samples due to storm drain cleaning.



**Figure 17. BOD<sub>5</sub> (mg/L) Measured in Stormwater Sampled at Monitoring Sites During all Four Events.**



**Figure 18. Total Suspended Solids Measured in Stormwater Sampled at Monitoring Sites During all Four Events**



**Figure 19. Fecal Coliform (FC/100 mL) Measured in Stormwater Sampled at Monitoring Sites during all Four Events (AWQS less than 200 FC/100mL).**

association with peak runoff and rainfall in urban areas (MOA 2003). This analysis appeared to agree with what was seen during both 2011 and 2013 when the highest levels of fecal coliform tended to occur in July and August with somewhat lower levels seen in September. No seasonal differences were readily apparent in the 2012 data since storms were closely spaced. The high variability of fecal coliform measurements between both storm events and locations suggests the need to monitor this parameter over a relatively extended time period to assess performance of control measures. Also, it would be beneficial to collect additional fecal coliform as well as other data from both earlier and later in the storm season to better define seasonal differences.

#### 4.5 Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) and total volatile aromatic hydrocarbons (TAH) were measured at four of the monitoring sites; SWM02, SWM05, SWM07, and SWM09). In all cases, PAH concentrations were found to be very low with total PAHs ranging from non detect (ND) to 2.75  $\mu\text{g/L}$  (Table 9 and Figure 20). TAH concentrations were all found to be below detection limits for all sites and all storms and all samples were found to be well within the AWQS criteria for both total aqueous hydrocarbons (TAqH) and TAH measured as benzene, ethylbenzene, toluene, and xylenes (BETX). TAqH is defined in the AWQS as the summation of total PAH and TAH with a criteria of 15  $\mu\text{g/L}$  whereas TAH alone has an AWQS criteria of 10  $\mu\text{g/L}$ . The highest concentration of TAqH seen during the sampling was 2.75  $\mu\text{g/L}$  which was seen at two locations; SWM02 during the second stormwater sampling event and SWM09 during the third stormwater sampling event. The field team did not note any sheen or obvious hydrocarbon type odor at either of these sites during any of the storm events.

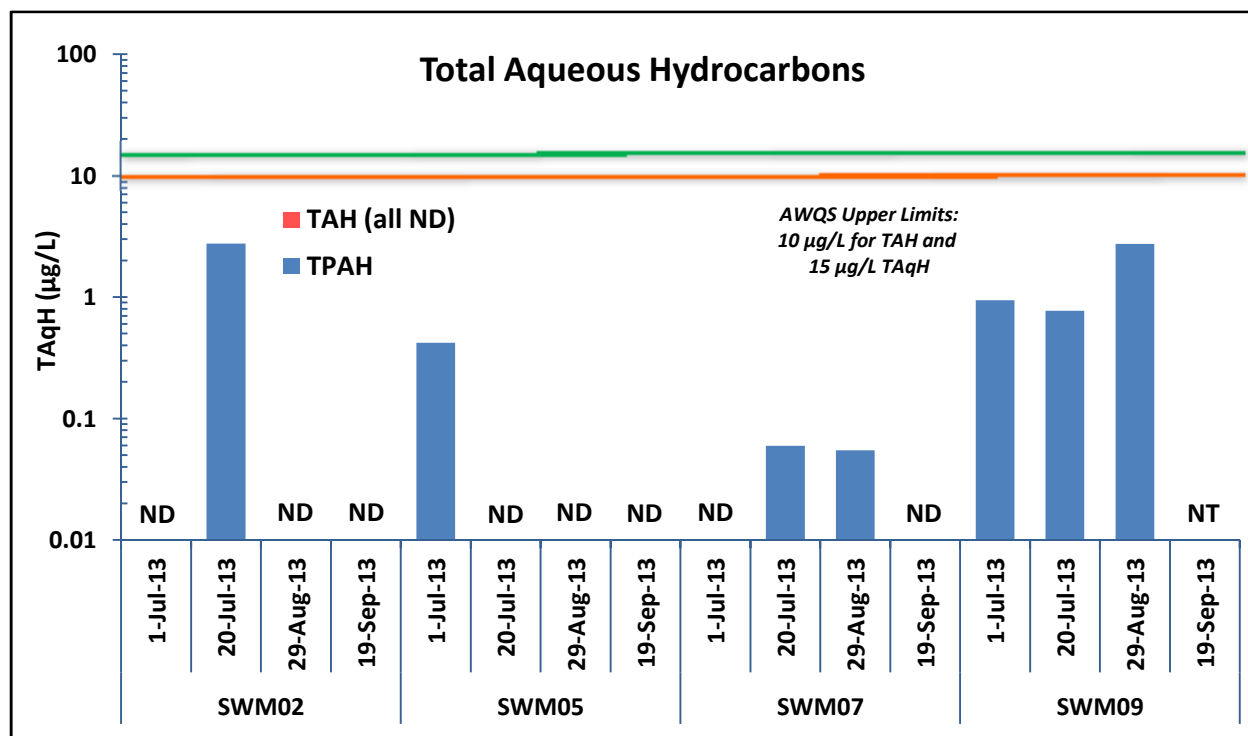
**Table 9. Hydrocarbon Concentrations Measured in Stormwater at Four Sites During All Four Storm Events**

	SWM02 - OGS (No)				SWM05 - OGS (Yes)				SWM07 - OGS (No)				SMW09 - OGS (Yes)			
	07/1/13	07/20/13	08/29/13	09/19/13	07/1/13	07/20/13	08/29/13	09/19/13	07/1/13	07/20/13	08/29/13	09/19/13	07/1/13	07/20/13	08/29/13	09/19/13
<i>Polycyclic Aromatic Hydrocarbons (µg/L)</i>																
Acenaphthene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	0.0513U	NT
Acenaphthylene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	0.0513U	NT
Anthracene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	0.0513U	NT
Benzo(a)anthracene	0.05U	0.0581U	0.0556U	0.0552U	<b>0.0867</b>	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	<b>0.0596</b>	<b>0.0559</b>	<b>0.18</b>	NT
Benzo(a)pyrene	0.05U	<b>0.0962</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	<b>0.25</b>	NT
Benzo(b)fluoranthene	0.05U	<b>0.519</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	<b>0.0872</b>	<b>0.123</b>	<b>0.415</b>	NT
Benzo(g,h,i)perylene	0.05U	<b>0.167</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	<b>0.196</b>	NT
Benzo(k)fluoranthene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	<b>0.113</b>	NT
Chrysene	0.05U	<b>0.395</b>	0.0556U	0.0552U	<b>0.0595</b>	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	<b>0.0838</b>	<b>0.0844</b>	<b>0.272</b>	NT
Dibenzo(a,h)anthracene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	0.0513U	NT
Fluoranthene	0.05U	<b>0.768</b>	0.0556U	0.0552U	<b>0.274</b>	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	<b>0.332</b>	<b>0.276</b>	<b>0.532</b>	NT
Fluorene	0.05U	0.0581U	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	0.0513U	NT
Indeno(1,2,3-cd)pyrene	0.05U	<b>0.131</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	0.05U	0.0556U	<b>0.174</b>	NT
Naphthalene	0.1U	0.116U	0.111U	0.11U	0.1U	0.104U	0.1U	0.1U	0.1U	0.1U	0.1U	0.102U	0.1U	0.111U	0.103U	NT
Phenanthrene	0.05U	<b>0.268</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	0.05U	0.05U	0.051U	<b>0.206</b>	<b>0.0768</b>	<b>0.209</b>	NT
Pyrene	0.05U	<b>0.405</b>	0.0556U	0.0552U	0.05U	0.0521U	0.05U	0.05U	0.05U	<b>0.0595</b>	<b>0.0547</b>	0.051U	<b>0.171</b>	<b>0.157</b>	<b>0.407</b>	NT
<i>Volatile Aromatic Hydrocarbons (µg/L)</i>																
1,2-Dichlorobenzene	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	NT
1,3-Dichlorobenzene	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	NT
1,4-Dichlorobenzene	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	NT
Benzene	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	NT
Chlorobenzene	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	NT
Ethylbenzene	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	NT
o-Xylene	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	NT
Toluene	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	NT
Xylene, Isomers m & p	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	NT
<i>Hydrocarbon Summary Parameters (µg/L)</i>																
TPAH	ND	<b>2.749</b>	ND	ND	<b>0.420</b>	ND	ND	ND	ND	<b>0.060</b>	<b>0.055</b>	ND	<b>0.940</b>	<b>0.773</b>	<b>2.748</b>	NT
TAH as BETX	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
TAqH (TPAH + TAH)	ND	<b>2.749</b>	ND	ND	<b>0.420</b>	ND	ND	ND	ND	<b>0.060</b>	<b>0.055</b>	ND	<b>0.940</b>	<b>0.773</b>	<b>2.748</b>	NT

Footnotes: U = not detected at the detection limit, ND = no concentration detected in any analyte tested, NT = no samples collected due to storm drain cleaning by MOA contractor. All detected concentrations are shown in bold.

**Table 10. Pertinent Numeric Alaska Water Quality Standard Criteria**

Designated Use	Description of Standard
<b>Fecal Coliform Bacteria</b>	
(A) Water Supply (i) drinking, culinary and food processing	In a 30-day period, the geometric mean may not exceed 20/FC/100 ml, and not more than 10% of the samples may exceed 40 FC/100 ml.
(A) Water Supply (ii) agriculture, including irrigation and stock watering	The geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml. For products not normally cooked and for dairy sanitation of unpasteurized products, the criteria for drinking water supply, (1)(A)(i), apply.
(A) Water Supply (iii) aquaculture	For products normally cooked, the geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml. For products not normally cooked, the criteria for drinking water supply, (1)(A)(i), apply.
(A) Water Supply (iii) Industrial	Where worker contact is present, the geometric mean of samples taken in a 30-day period may not exceed 200 FC/100 ml, and not more than 10% of the samples may exceed 400 FC/100 ml.
(B) Water Recreation (iv) contact recreation	In a 30-day period, the geometric mean of samples may not exceed 100 FC/100 ml, and not more than one sample or more than 10% of the samples if there are more than 10 samples, may exceed 200 FC/100 ml.
(B) Water Recreation (ii) secondary contact	In a 30-day period, the geometric mean of samples may not exceed 200 FC/100 ml, and not more than 10% of the total samples may exceed 400 FC/100 ml.
(C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	Not applicable.
<b>Dissolved Oxygen</b> (most restrictive shown)	
(A) Water Supply (iii) aquaculture (C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	DO must be greater than 7mg/L in surface waters. The concentration of total dissolved gas may not exceed 110% of saturation at any point of sample collection.
<b>pH</b>	
(A) Water Supply (i) drinking, culinary and food processing	May not be less than 6.0 or greater than 8.5.
(A) Water Supply (ii) agriculture, including irrigation and stock watering, & (iv) Industrial	May not be less than 5.0 or greater than 9.0.
(A) Water Supply (iii) aquaculture	May not be less than 6.5 or greater than 8.5. May not vary more than 0.5 pH unit from natural conditions.
(B) Water Recreation (iv) contact recreation	May not be less than 6.5 or greater than 8.5. If the natural condition pH is outside this range, substances may not be added that cause an increase in the buffering capacity of the water.
(B) Water Recreation (ii) secondary contact	Same as (6)(A)(iv)
(C) Growth and Propagation of Fish, Shellfish, other Aquatic Life and Wildlife	May not be less than 6.5 or greater than 8.5. May not vary more than 0.5 pH unit from natural conditions.
<b>Petroleum Hydrocarbons</b>	
(A) Water Supply (iii) aquaculture & (C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife.	TAqH in the water column may not exceed 15 µg/L. TAH in the water column may not exceed 10 µg/L. Surface waters and adjoining shorelines must be virtually free from floating oil, film, or discoloration.
<b>Dissolved Inorganic Substances</b> (most restrictive show)	
(A) Water Supply (i) drinking, culinary, and food processing	Total dissolved solids (TDS) from all sources may not exceed 500 mg/L.
<b>Temperature</b> (most restrictive show)	
(A) Water Supply (iii) aquaculture & (C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife.	The following maximum temperatures may not be exceeded, where applicable: Migration routes and rearing areas: 15°C Spawning areas, egg & fry incubation: 13°C



**Figure 20. Total Aqueous Hydrocarbons (TAqH = TAH + TPAH) Measured in Stormwater Sampled at Monitoring Sites During all Four Events (AWQS  $\leq 10 \mu\text{g/L}$  for TAH and  $\leq 15 \mu\text{g/L}$  for TAqH).**

PAHs were the most common compounds found at each site and were typically comprised of combustion related compounds like pyrene, chrysene, fluoranthene, benzo(a)pyrene, benzo (a) anthracene, and benzo(b)fluoranthene although small quantities of phenanthrene were also seen in a number of samples. Concentrations of individual PAHs were found to be low and with the exception of two samples were all less than  $0.5 \mu\text{g/L}$ . PAHs were seen during only one storm event at SWM02 which captures runoff from a commercial area including a Home Depot parking lot, and in two of the four storms at both SWM07 which drains an area adjacent to the Seward Highway. The highest and most persistent concentrations of PAHs were seen at SWM09 which drains the parking area near Ben Boeke Ice and Sullivan Arenas where PAHs were seen all three storms events that were sampled. The last site, SWM05, experienced measurable levels of PAHs during one storm event. This site receives runoff from predominantly commercial and light industry land use areas.

In addition to the laboratory measurements of PAH and TAH, field observations were taken for any sheens or odors. Sheens were observed at SWM01, which drains a small residential area during the first and second storm events and at SWM06 during three of the four storm events. No other sheens were observed during 2013 at any of the ten outfalls. The field crew did note fuel type odors at SWM08 during two of four storm events. This site is located adjacent to the New Seward Highway, so it is possible that the odor was from passing vehicular traffic.



## 4.6 Site Trends

This report presents the third of four years of monitoring that will be conducted for this program. It is still early to compare trends between years, but some general trends between sites were seen, that in some cases have persisted across sampling events and between years. General site differences were investigated graphically with boxplots that have been prepared for each field and laboratory parameter (Figure 21 and Figure 22). The boxplots constitute the results from 11–12 samples that were collected at each location during 2011 thru 2013, which depict the minimum, maximum, median, 25-percentile, 75-percentile, and grand median measurements across all locations. In addition, AWQS criteria have been plotted where appropriate for each parameter.

A few locations seem to stand out for each parameter. For pH, SWM06 appears to be consistently lower than the other locations with a few measurements below the AWQS lower limit of 6.5. Outfall SWM03 has the highest median pH concentration and SWM01 was found to exhibit the highest variability and the highest pH concentration with one value exceeding the upper pH water quality criteria limit of 8.5.

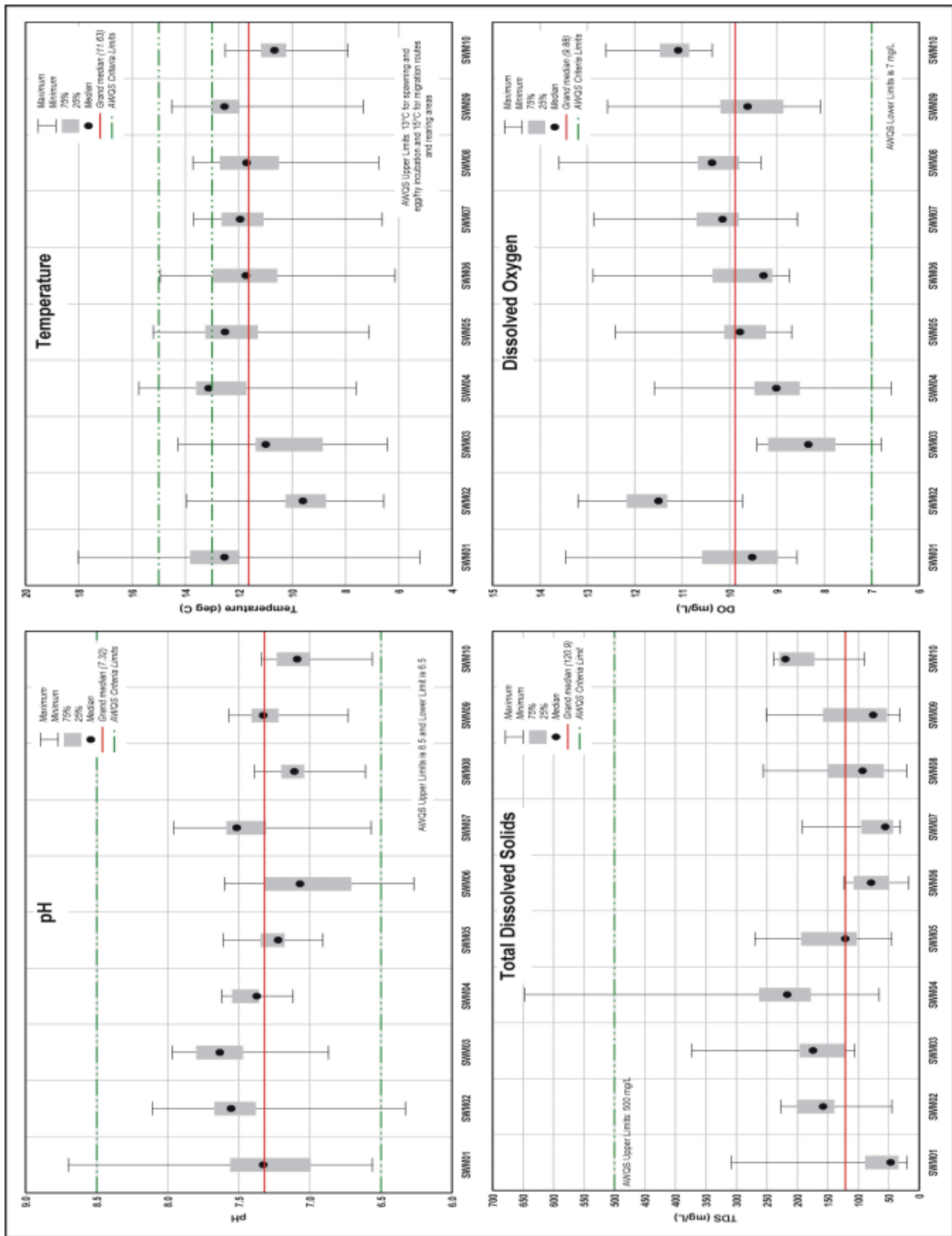
Temperature appeared to be somewhat lower at three locations (SWM02, SWM03, and SWM10) which may be function of which outfall pipes are buried (cooler) versus those with more open-channel flow that may be influenced more by warmer air temperatures or runoff that has been heated through conduction and contact with a warm surface such as asphalt.

TDS appeared to be slightly higher at both SWM04 and SWM10 and may be an indication of other pollutants such as trace metals or salts that should be watched. Potential sources could be magnesium chloride, which MOA uses on the city streets for de-icing/anti-icing purposes or residential/commercial use of deicing salts on walkways and driveways that could show up as an increase in TDS levels particularly during the early summer storms.

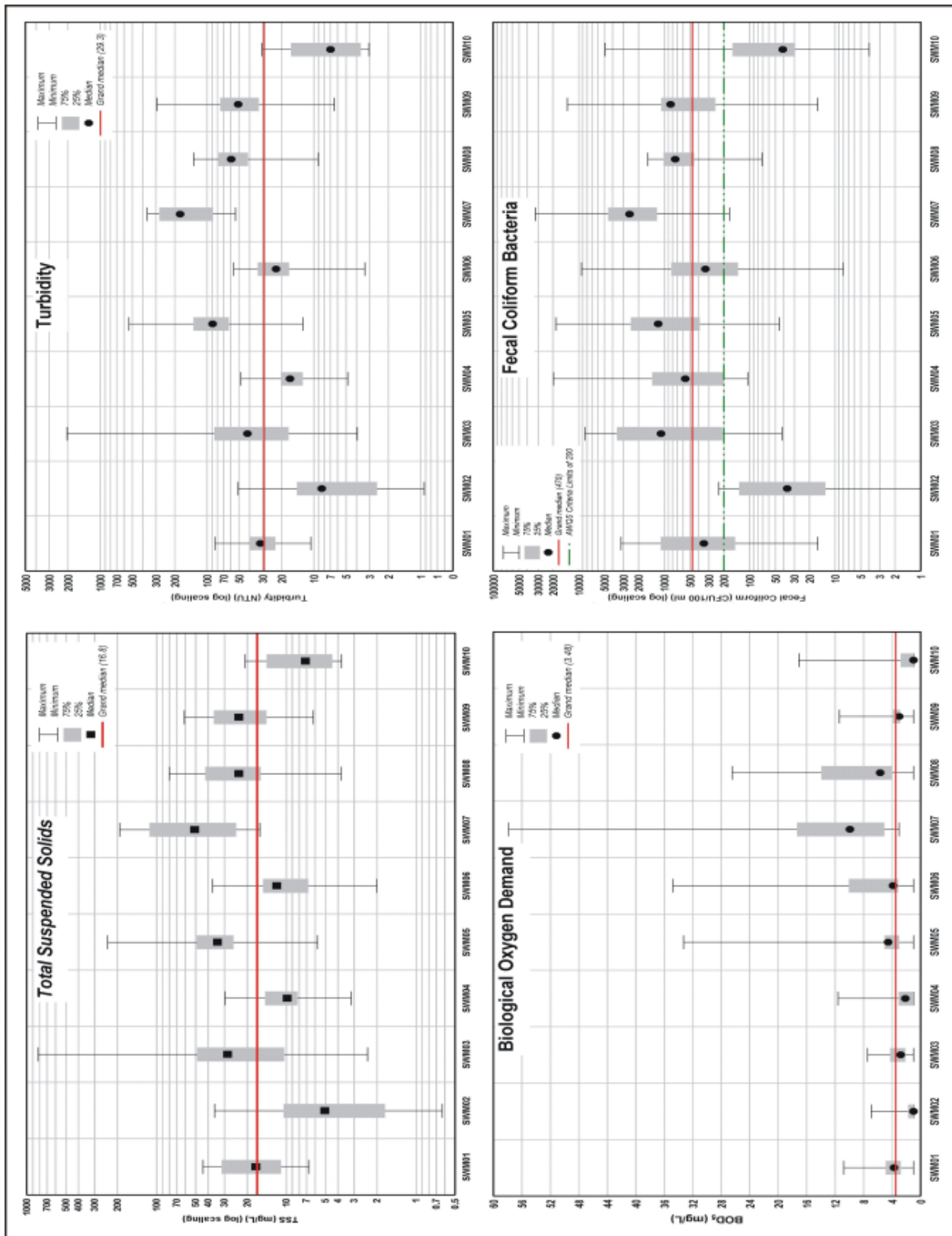
Dissolved oxygen was found to be fairly high at all locations, with SWM02 having the highest levels as a result of the turbulent flow in the outfall pipe prior to discharge. SWM02 was also one of the locations with the lowest BOD<sub>5</sub> demands. Although this potential correlation did not hold true for SWM07 which had a median DO level of >10 mg/L but also had the highest BOD<sub>5</sub> concentration. For BOD<sub>5</sub>, SWM07 and SWM08 appear to be somewhat higher which may be the result of vehicle cooling liquid inputs (glycols) from streets and driveways since the drainage areas for both of these outfalls includes a high percentage of streets, parking lots, and other impervious surfaces.

Both TSS and turbidity were found to be highly variable although there did appear to be a general correlation between TSS and turbidity in the boxplot location patterns. The highest median TSS and turbidity concentrations were seen at SWM07 that drains an area between the north and south-bound lanes of the Seward Highway near 15<sup>th</sup> Avenue.

For fecal coliform, SWM02 and SWM10 were found to be consistently lower than other locations and SWM07 was found to be consistently higher. A detailed examination of these site patterns is premature at this time, but these preliminary observations can be used to guide future efforts and to focus subsequent analyses.



**Figure 21. Station Boxplots of pH, Temperature, Total Dissolved Solids, and Dissolved Oxygen for 2011 thru 2013.**



**Figure 22. Station Boxplots of Total Suspended Solids, Turbidity, Biological Oxygen Demand, and Fecal Coliform for 2011 thru 2013.**

## 5.0 Summary and Conclusions

This report describes the third of four years of sampling under the current APDES permit specified monitoring program. Results from the first three years were intended to allow an initial screening by comparison against all available water quality standards. If exceedances were identified, the intent was that MOA would identify likely causes and take actions such as education and outreach or installation of additional BMPs to reduce the pollutant loading.

Overall, there were no significant findings from either 2011, 2012, or 2013 that would suggest the need for any special investigations to be initiated at this time. With the exception of fecal coliforms, elevated TSS/turbidity that was seen at one location in 2011, and increased hydrocarbons at one location during one storm event in 2012, concentrations of target constituents in the grab samples and in the field measurements were all well within the range of expected values. Although AWQS criteria were commonly exceeded in the fecal samples, concentrations were not considered extraordinary and warranting further investigation at this time. Also, it should be noted that AWQS criteria were used in this report for benchmark comparisons and any exceedances noted are not considered water quality violations.

The elevated TSS and turbidity concentrations that were noted at one location during two storm events in 2011 were believed to be due to commercial construction activities within the subbasin at the time of sampling. Since that time, no elevated turbidity or TSS concentrations have been seen at that location. In 2012, the one sample with elevated hydrocarbons, that was collected adjacent to the Seward Highway, is believed to have originated from a gasoline type source as there was no indication that it originated from a combustion source and BETX levels in diesel fuel are typically much less. A sample taken at the same location three days later during the subsequent storm event did not detect any volatile hydrocarbons. It was recommended in 2011 that field crews should immediately report any anomolous field measurements that might warrant further investigation. This would allow MOA an opportunity to perform a site inspection and potentially identify the source of the problem. No anomolous field measurements were noted in 2012 or 2013 that warranted further investigation.

A comprehensive summary report will be prepared in year four of sampling. Data will be evaluated to estimate loadings at each site and compare differences in water quality between basins with and without OGSs. Data will also be used to determine whether existing stormwater controls are effective and whether additional controls are necessary in portions of the MS4 area. No attempt to evaluate these differences was made at this time with the limited data from the first three years of monitoring as it is expected that a concerted effort will be undertaken in 2014 following the fourth year of sampling.

Based on the results of this monitoring, the sampling plan will be re-examined prior to the 2014 field effort to determine whether there are any areas of the program that should be adjusted to better address the overall program objectives. With the exception of one site where there was no flow during one storm event and another site that could not be sampled during one storm event due to stormwater drain maintenance activity, the third year of monitoring successfully sampled all parameters specified for each of the ten selected outfalls during all four monitoring events and met the permit requirements.

## 6.0 References

- ADEC 2004a. Total Maximum Daily Loads (TMDLs) for Fecal Coliform in the Waters of Little Campbell Creek in Anchorage, Alaska. Final - March, 2004.
- ADEC 2004b. Total Maximum Daily Loads (TMDLs) for Fecal Coliform in the Waters of Furrow Creek in Anchorage, Alaska. Final - March, 2004.
- ADEC 2005. Total Maximum Daily Loads (TMDLs) for Fecal Coliform in Chester Creek, University Lake, and Westchester Lagoon, Anchorage, Alaska. Final - May, 2005.
- ADEC 2006. Total Maximum Daily Loads (TMDLs) for Fecal Coliform Bacteria in the Waters of Campbell Creek and Campbell Lake in Anchorage, Alaska. Final - May, 2006.
- ADEC 2008. Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances. State of Alaska Department of Environmental Conservation.
- ADEC 2009. Water Quality Standards, 18 AAC 70. State of Alaska Department of Environmental Conservation (ADEC).
- EPA 1983. Results of the Nationwide Urban Runoff Program. Water Planning Division, PB 84-185552, Washington, D.C., December 1983.
- EPA 2009a. Authorization to Discharge under the National Pollutant Discharge Elimination System, Permit No. AKS-052558. Permit Issued to the Municipality of Anchorage and the Alaska Department of Transportation and Public Facilities, 29 October, 2009.
- EPA 2009b. Fact Sheet for NPDES Permit No. AKS-052558. July 17, 2009.
- MOA 2003. Fecal Coliform in Anchorage Streams: Sources and Transport Processes. Document APg03001, September 2003
- MOA 2012. Monitoring, Evaluation, and Quality Assurance Plan (QAPP), APDES Permit NO. AKS-052558. Prepared for Alaska Department of Environmental Conservation, Division of Water. Prepared by HDR Alaska, Inc. and Municipality of Anchorage. July 2011, revised in October 2012.
- NWS 2013. National Weather Service Forecast Office, Anchorage. Climate and Rain Gauge Data, Anchorage, Alaska. <http://www.nws.noaa.gov/climate/index.php?wfo=pafc>

**Appendix A**

**Photographs**





**Photograph 1. Outfall SWM01 (1040-3), Ridgemont Drive.**



**Photograph 2. Outfall SWM02 (847-1), Home Depot on Abbott Road.**





**Photograph 3. Outfall SWM03 (1224-1), Fairweather Loop off Sylvan Drive.**



**Photograph 4. Outfall SWM04 (1224-2), Fairweather Loop off Sylvan Drive.**



**Photograph 5. Outfall SWM05 (207-1), East 56<sup>th</sup> Avenue at Save School.**



**Photograph 6. Outfall SWM06 (314-22), Maplewood Street off of Northern Lights Boulevard.**



**Photograph 7. Outfall SWM07 (484-1), New Seward Highway at Chester Creek.**



**Photograph 8. Outfall SWM08 (86-1), New Seward Highway at Chester Creek.**



**Photograph 9. Outfall SWM09 (499-1), Anchorage Football Stadium & Ben Boeke Ice Arena.**



**Photograph 10. Outfall SWM10 (525-2), Eagle Street at Chester Creek.**



**Photograph 11. Station SWM01, Storm #1 – No flow or samples taken.**



**Photograph 12. Storm Drain Cleaning, Station SWM09, Storm #4.**

## **Appendix B**

### **Laboratory Data Packages & Chain of Custodies**



## **Appendix B1**

### **Laboratory Data Package Storm Event #1**







## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1132776**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 07/10/2013 4:12:20PM

## Case Narrative

**Customer: KINNETL**

**Kinnetic Laboratories, Inc.**

**Project: 1132776**

**5078 MOA Stormwater Management**

Refer to the sample receipt form for information on sample condition.

**1132776009 PS**

**SWM07-01**

8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample matrix.

**1157083 DUP**

**1137969021DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1157472 DUP**

**1132776006DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1157473 DUP**

**1132776007DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1132776003	SWM02-01 MSD	XMS7413	Benzo(a)Anthracene	RP
1132776003	SWM02-01 MSD	XMS7413	Benzo[b]Fluoranthene	RP
1132776003	SWM02-01 MSD	XMS7413	Chrysene	BLC
1132776012	SWM09-01	XMS7413	Chrysene	BLC

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM02-01	1132776001	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 MS	1132776002	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 MSD	1132776003	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 Dup	1132776004	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM03-01	1132776005	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM04-01	1132776006	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM05-01	1132776007	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM06-01	1132776008	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM07-01	1132776009	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM08-01	1132776010	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM08-01 Dup	1132776011	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM09-01	1132776012	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM10-01	1132776013	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
Trip Blank	1132776014	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: **SWM02-01**

Lab Sample ID: 1132776001

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.93	mg/L
Fecal Coliform	213	col/100mL
Total Suspended Solids	1.10	mg/L

Client Sample ID: **SWM02-01 Dup**

Lab Sample ID: 1132776004

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.56	mg/L
Fecal Coliform	233	col/100mL
Total Suspended Solids	1.77	mg/L

Client Sample ID: **SWM03-01**

Lab Sample ID: 1132776005

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	4.79	mg/L
Fecal Coliform	470	col/100mL
Total Suspended Solids	2.37	mg/L

Client Sample ID: **SWM04-01**

Lab Sample ID: 1132776006

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	11.6	mg/L
Fecal Coliform	147	col/100mL
Total Suspended Solids	29.0	mg/L

Client Sample ID: **SWM05-01**

Lab Sample ID: 1132776007

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	33.3	mg/L
Fecal Coliform	209	col/100mL
Benzo(a)Anthracene	0.0867	ug/L
Chrysene	0.0595	ug/L
Fluoranthene	0.274	ug/L
Total Suspended Solids	30.0	mg/L

Client Sample ID: **SWM06-01**

Lab Sample ID: 1132776008

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	34.8	mg/L
Fecal Coliform	564	col/100mL
Total Suspended Solids	10.0	mg/L

Client Sample ID: **SWM07-01**

Lab Sample ID: 1132776009

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	57.9	mg/L
Fecal Coliform	32300	col/100mL
Total Suspended Solids	85.0	mg/L

Client Sample ID: **SWM08-01**

Lab Sample ID: 1132776010

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	26.5	mg/L
Fecal Coliform	791	col/100mL
Total Suspended Solids	21.0	mg/L

### Detectable Results Summary

Client Sample ID: **SWM08-01 Dup**

Lab Sample ID: 1132776011

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	25.6	mg/L
Fecal Coliform	745	col/100mL
Total Suspended Solids	21.0	mg/L

Client Sample ID: **SWM09-01**

Lab Sample ID: 1132776012

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	9.30	mg/L
Fecal Coliform	275	col/100mL
Benzo(a)Anthracene	0.0596	ug/L
Benzo[b]Fluoranthene	0.0872	ug/L
Chrysene	0.0838	ug/L
Fluoranthene	0.332	ug/L
Phenanthrene	0.206	ug/L
Pyrene	0.171	ug/L
Total Suspended Solids	32.0	mg/L

**Waters Department**

Client Sample ID: **SWM10-01**

Lab Sample ID: 1132776013

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	25	col/100mL
Total Suspended Solids	8.18	mg/L



## Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776001  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.93		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776001-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	213		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776001-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776001  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 18:20
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20

**Surrogates**

2-Fluorobiphenyl	51		50-110		%	1	07/03/13 18:20
Terphenyl-d14	70		50-135		%	1	07/03/13 18:20

**Batch Information**

Analytical Batch: XMS7413  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/03/13 18:20  
Container ID: 1132776001-F

Prep Batch: XXX29299  
Prep Method: SW3520C  
Prep Date/Time: 07/02/13 10:05  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

## Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776001  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:27
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 14:27
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:27
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 14:27
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/02/13 14:27
4-Bromofluorobenzene	103		75-120		%	1	07/02/13 14:27
Toluene-d8	95.6		85-120		%	1	07/02/13 14:27

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 14:27  
 Container ID: 1132776001-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776001  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.10		0.549	0.165	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776001-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 910 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776004  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.56		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776004-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	233		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776004-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776004  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 19:53
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53

## Surrogates

2-Fluorobiphenyl	56		50-110		%	1	07/03/13 19:53
Terphenyl-d14	82.6		50-135		%	1	07/03/13 19:53

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 19:53  
 Container ID: 1132776004-F

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776004  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:01
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:01
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:01
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:01
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105		70-120		%	1	07/02/13 13:01
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 13:01
Toluene-d8	96.7		85-120		%	1	07/02/13 13:01

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:01  
 Container ID: 1132776004-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776004  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.77		0.521	0.156	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776004-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 960 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



## Results of SWM03-01

Client Sample ID: **SWM03-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776005  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:03  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.79		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776005-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	470		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776005-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM03-01**

Client Sample ID: **SWM03-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776005  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:03  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.37		0.515	0.155	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776005-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 970 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM04-01

Client Sample ID: **SWM04-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776006  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:05  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	11.6		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776006-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	147		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776006-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM04-01**

Client Sample ID: **SWM04-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776006  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:05  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-2

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	29.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776006-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776007  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	33.3		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776007-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	209		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776007-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776007  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 207-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo(a)Anthracene	0.0867		0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Chrysene	0.0595		0.0500	0.0150	ug/L	1	07/03/13 20:09
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Fluoranthene	0.274		0.0500	0.0150	ug/L	1	07/03/13 20:09
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:09
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09

**Surrogates**

2-Fluorobiphenyl	52		50-110		%	1	07/03/13 20:09
Terphenyl-d14	68.2		50-135		%	1	07/03/13 20:09

**Batch Information**

Analytical Batch: XMS7413  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/03/13 20:09  
Container ID: 1132776007-G

Prep Batch: XXX29299  
Prep Method: SW3520C  
Prep Date/Time: 07/02/13 10:05  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776007  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:19
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:19
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:19
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:19
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/02/13 13:19
4-Bromofluorobenzene	106		75-120		%	1	07/02/13 13:19
Toluene-d8	96.1		85-120		%	1	07/02/13 13:19

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:19  
 Container ID: 1132776007-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776007  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 207-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	30.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776007-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



## Results of SWM06-01

Client Sample ID: **SWM06-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776008  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:10  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 314-22

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	34.8		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776008-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	564		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776008-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776008  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:10  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 314-22

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	10.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776008-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	57.9		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776009-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	32300		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776009-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:24
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24

## Surrogates

2-Fluorobiphenyl	38.4	*	50-110		%	1	07/03/13 20:24
Terphenyl-d14	71.4		50-135		%	1	07/03/13 20:24

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 20:24  
 Container ID: 1132776009-G

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:36
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:36
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:36
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:36
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/02/13 13:36
4-Bromofluorobenzene	107		75-120		%	1	07/02/13 13:36
Toluene-d8	96		85-120		%	1	07/02/13 13:36

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:36  
 Container ID: 1132776009-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776009  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 484-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	85.0		25.0	7.50	mg/L	1	07/03/13 11:17

**Batch Information**

Analytical Batch: STS4114  
Analytical Method: SM21 2540D  
Analyst: J.C  
Analytical Date/Time: 07/03/13 11:17  
Container ID: 1132776009-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM08-01

Client Sample ID: **SWM08-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776010  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	26.5		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776010-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	791		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776010-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL

## Results of SWM08-01

Client Sample ID: **SWM08-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776010  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.0		5.00	1.50	mg/L	1	07/05/13 12:14

## Batch Information

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776010-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



## Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776011  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	25.6		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776011-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	745		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776011-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL

## Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776011  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.0		5.00	1.50	mg/L	1	07/05/13 12:14

## Batch Information

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776011-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776012  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	9.30		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776012-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	275		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776012-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM09-01

Client Sample ID: **SWM09-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776012  
 Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo(a)Anthracene	0.0596		0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[b]Fluoranthene	0.0872		0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Chrysene	0.0838		0.0500	0.0150	ug/L	1	07/03/13 20:39
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Fluoranthene	0.332		0.0500	0.0150	ug/L	1	07/03/13 20:39
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:39
Phenanthrene	0.206		0.0500	0.0150	ug/L	1	07/03/13 20:39
Pyrene	0.171		0.0500	0.0150	ug/L	1	07/03/13 20:39

## Surrogates

2-Fluorobiphenyl	64.7		50-110		%	1	07/03/13 20:39
Terphenyl-d14	76.9		50-135		%	1	07/03/13 20:39

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 20:39  
 Container ID: 1132776012-G

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM09-01

Client Sample ID: **SWM09-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776012  
 Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:10
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 14:10
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:10
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 14:10
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/02/13 14:10
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 14:10
Toluene-d8	95.9		85-120		%	1	07/02/13 14:10

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 14:10  
 Container ID: 1132776012-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 07/10/2013 4:12:22PM



**Results of SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776012  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	32.0		10.0	3.00	mg/L	1	07/03/13 11:17

**Batch Information**

Analytical Batch: STS4114  
Analytical Method: SM21 2540D  
Analyst: J.C  
Analytical Date/Time: 07/03/13 11:17  
Container ID: 1132776012-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM10-01

Client Sample ID: **SWM10-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776013  
 Lab Project ID: 1132776

Collection Date: 07/01/13 14:25  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 525-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00	U	2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776013-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	25		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776013-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM10-01**

Client Sample ID: **SWM10-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776013  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:25  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 525-2

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.18		0.505	0.152	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776013-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776014  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:25  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 11:53
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 11:53
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 11:53
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 11:53
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105		70-120		%	1	07/02/13 11:53
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 11:53
Toluene-d8	96.4		85-120		%	1	07/02/13 11:53

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 11:53  
 Container ID: 1132776014-A

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1458428 [BOD/4725]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1157270

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4725

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 7/2/2013 11:30:00AM

Print Date: 07/10/2013 4:12:24PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [BOD4725]

Blank Spike Lab ID: 1157271

Date Analyzed: 07/02/2013 11:30

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	207	105	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4725**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:



### Method Blank

Blank ID: MB for HBN 1458660 [BTF/12911]  
Blank Lab ID: 1157324

Matrix: Water (Surface, Eff., Ground)

#### QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

### Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1U	1	1	col/100mL

### Batch Information

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Instrument:  
Analyst: SDP  
Analytical Date/Time: 7/1/2013 6:10:00PM

Print Date: 07/10/2013 4:12:26PM

## Method Blank

Blank ID: MB for HBN 1458393 [STS/4114]

Blank Lab ID: 1157080

QC for Samples:

1132776009, 1132776012

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4114

Analytical Method: SM21 2540D

Instrument:

Analyst: J.C

Analytical Date/Time: 7/3/2013 11:17:10AM

Print Date: 07/10/2013 4:12:26PM

## Duplicate Sample Summary

Original Sample ID: 1137969021

Duplicate Sample ID: 1157083

QC for Samples:

1132776009, 1132776012

Analysis Date: 07/03/2013 11:17

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	10.0	11.0	9.50*	5.00

## Batch Information

Analytical Batch: STS4114

Analytical Method: SM21 2540D

Instrument:

Analyst: J.C

Print Date: 07/10/2013 4:12:27PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [STS4114]  
 Blank Spike Lab ID: 1157081  
 Date Analyzed: 07/03/2013 11:17

Spike Duplicate ID: LCSD for HBN 1132776 [STS4114]  
 Spike Duplicate Lab ID: 1157082  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776009, 1132776012

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	45.2	90	50	46.1	92	( 75-125 )	2.00	(< 5 )

## Batch Information

Analytical Batch: STS4114  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: J.C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1458778 [STS/4117]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1157469

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776010, 1132776011, 1132776013

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 7/5/2013 12:14:52PM

Print Date: 07/10/2013 4:12:28PM



## Duplicate Sample Summary

Original Sample ID: 1132776006

Duplicate Sample ID: 1157472

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007

Analysis Date: 07/05/2013 12:14

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	29.0	26.0	10.90*	5.00

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/10/2013 4:12:28PM

## Duplicate Sample Summary

Original Sample ID: 1132776007

Duplicate Sample ID: 1157473

QC for Samples:

1132776007, 1132776008, 1132776010, 1132776011, 1132776013

Analysis Date: 07/05/2013 12:14

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	30.0	33.0	9.50*	5.00

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/10/2013 4:12:28PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [STS4117]  
 Blank Spike Lab ID: 1157470  
 Date Analyzed: 07/05/2013 12:14

Spike Duplicate ID: LCSD for HBN 1132776 [STS4117]  
 Spike Duplicate Lab ID: 1157471  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776010, 1132776011, 1132776013

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	44.9	90	50	45.3	91	( 75-125 )	0.89	(< 5 )

## Batch Information

Analytical Batch: STS4117  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: MEV

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1458313 [VXX/24883]  
 Blank Lab ID: 1156861

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1132776001, 1132776004, 1132776007, 1132776009, 1132776012, 1132776014

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	104	70-120		%
4-Bromofluorobenzene	104	75-120		%
Toluene-d8	96.6	85-120		%

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: NRB  
 Analytical Date/Time: 7/2/2013 10:09:00AM

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 7/2/2013 9:01:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 07/10/2013 4:12:29PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [VXX24883]  
 Blank Spike Lab ID: 1156862  
 Date Analyzed: 07/02/2013 10:27

Spike Duplicate ID: LCSD for HBN 1132776  
 [VXX24883]  
 Spike Duplicate Lab ID: 1156863  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776007, 1132776009, 1132776012, 1132776014

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	30.8	103	30	30.1	100	( 70-120 )	2.30	(< 20 )
1,3-Dichlorobenzene	30	31.3	104	30	30.5	102	( 75-125 )	2.60	(< 20 )
1,4-Dichlorobenzene	30	31.4	105	30	30.6	102	( 75-125 )	2.70	(< 20 )
Benzene	30	34.6	115	30	33.0	110	( 80-120 )	4.80	(< 20 )
Chlorobenzene	30	32.6	109	30	31.6	105	( 80-120 )	3.30	(< 20 )
Ethylbenzene	30	33.5	112	30	32.4	108	( 75-125 )	3.20	(< 20 )
o-Xylene	30	33.0	110	30	31.9	106	( 80-120 )	3.30	(< 20 )
P & M -Xylene	60	67.1	112	60	64.8	108	( 75-130 )	3.60	(< 20 )
Toluene	30	33.2	111	30	32.0	107	( 75-120 )	3.80	(< 20 )

## Surrogates

1,2-Dichloroethane-D4	30	93.4	93	30	92.9	93	( 70-120 )	0.47
4-Bromofluorobenzene	30	100	100	30	100	100	( 75-120 )	0.37
Toluene-d8	30	98.3	98	30	98.3	98	( 85-120 )	0.03

## Batch Information

Analytical Batch: **VMS13598**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **NRB**

Prep Batch: **VXX24883**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **07/02/2013 09:01**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



### Billable Matrix Spike Summary

Original Sample ID: 1132776001  
MS Sample ID: 1132776002 BMS  
MSD Sample ID: 1132776003 BMSD

Analysis Date: 07/02/2013 14:27  
Analysis Date: 07/02/2013 14:44  
Analysis Date: 07/02/2013 15:02  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	30.9	103	30.0	29.6	99	70-120	4.20	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	31.3	104	30.0	30.0	100	75-125	4.10	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	31.8	106	30.0	30.0	100	75-125	6.00	(< 20 )
Benzene	0.400U	30.0	35.3	118	30.0	33.5	112	80-120	5.50	(< 20 )
Chlorobenzene	0.500U	30.0	32.8	109	30.0	31.5	105	80-120	4.00	(< 20 )
Ethylbenzene	1.00U	30.0	34.2	114	30.0	32.7	109	75-125	4.60	(< 20 )
o-Xylene	1.00U	30.0	33	110	30.0	31.6	105	80-120	4.50	(< 20 )
P & M -Xylene	2.00U	60.0	68.2	114	60.0	64.9	108	75-130	5.00	(< 20 )
Toluene	1.00U	30.0	33.6	112	30.0	32.1	107	75-120	4.50	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	28.8	96	30.0	28.6	95	70-120	0.73	
4-Bromofluorobenzene		30.0	30.3	101	30.0	30.0	100	75-120	0.73	
Toluene-d8		30.0	29.2	97	30.0	29.7	99	85-120	1.90	

### Batch Information

Analytical Batch: VMS13598  
Analytical Method: EPA 602/624  
Instrument: VPA 780/5975 GC/MS  
Analyst: NRB  
Analytical Date/Time: 7/2/2013 2:44:00PM

Prep Batch: VXX24883  
Prep Method: Volatiles Extraction 8240/8260 FULL  
Prep Date/Time: 7/2/2013 9:01:00AM  
Prep Initial Wt./Vol.: 5.00mL  
Prep Extract Vol: 5.00mL

Print Date: 07/10/2013 4:12:30PM



**Method Blank**

Blank ID: MB for HBN 1458274 [XXX/29299]  
Blank Lab ID: 1156700

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1132776001, 1132776004, 1132776007, 1132776009, 1132776012

**Results by EPA 625M SIMS (PAH)**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	82	50-110		%
Terphenyl-d14	101	50-135		%

**Batch Information**

Analytical Batch: XMS7413  
Analytical Method: EPA 625M SIMS (PAH)  
Instrument: HP 6890/5973 MS SVQA  
Analyst: RTS  
Analytical Date/Time: 7/3/2013 5:04:00PM

Prep Batch: XXX29299  
Prep Method: SW3520C  
Prep Date/Time: 7/2/2013 10:05:00AM  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/10/2013 4:12:31PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [XXX29299]  
 Blank Spike Lab ID: 1156701  
 Date Analyzed: 07/03/2013 17:19

Spike Duplicate ID: LCSD for HBN 1132776 [XXX29299]  
 Spike Duplicate Lab ID: 1156702  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776007, 1132776009, 1132776012

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.394	79	0.5	0.382	77	( 45-110 )	2.90	(< 30 )
Acenaphthylene	0.5	0.398	80	0.5	0.389	78	( 50-105 )	2.20	(< 30 )
Anthracene	0.5	0.469	94	0.5	0.442	88	( 55-110 )	6.00	(< 30 )
Benzo(a)Anthracene	0.5	0.416	83	0.5	0.425	85	( 55-110 )	2.10	(< 30 )
Benzo[a]pyrene	0.5	0.433	87	0.5	0.451	90	( 55-110 )	4.00	(< 30 )
Benzo[b]Fluoranthene	0.5	0.395	79	0.5	0.396	79	( 45-120 )	0.33	(< 30 )
Benzo[g,h,i]perylene	0.5	0.384	77	0.5	0.410	82	( 40-125 )	6.60	(< 30 )
Benzo[k]fluoranthene	0.5	0.452	90	0.5	0.466	93	( 45-125 )	3.00	(< 30 )
Chrysene	0.5	0.447	89	0.5	0.426	85	( 55-110 )	4.60	(< 30 )
Dibenzo[a,h]anthracene	0.5	0.378	76	0.5	0.395	79	( 40-125 )	4.40	(< 30 )
Fluoranthene	0.5	0.444	89	0.5	0.491	98	( 55-115 )	10.00	(< 30 )
Fluorene	0.5	0.406	81	0.5	0.396	79	( 50-110 )	2.50	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.5	0.394	79	0.5	0.394	79	( 45-125 )	0.16	(< 30 )
Naphthalene	0.5	0.365	73	0.5	0.375	75	( 40-100 )	2.50	(< 30 )
Phenanthrene	0.5	0.394	79	0.5	0.383	77	( 50-115 )	3.00	(< 30 )
Pyrene	0.5	0.439	88	0.5	0.478	96	( 50-130 )	8.40	(< 30 )
<b>Surrogates</b>									
2-Fluorobiphenyl	0.5	83.6	84	0.5	84.6	85	( 50-110 )	1.20	
Terphenyl-d14	0.5	90.5	91	0.5	97.5	98	( 50-135 )	7.50	

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/2013 10:05  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL





### Billable Matrix Spike Summary

Original Sample ID: 1132776001  
 MS Sample ID: 1132776002 BMS  
 MSD Sample ID: 1132776003 BMSD

Analysis Date: 07/03/2013 18:20  
 Analysis Date: 07/03/2013 19:23  
 Analysis Date: 07/03/2013 19:38  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0500U	0.575	.358	62	0.500	0.306	61	45-110	15.60	(< 30 )
Acenaphthylene	0.0500U	0.575	.381	66	0.500	0.324	65	50-105	16.40	(< 30 )
Anthracene	0.0500U	0.575	.409	71	0.500	0.342	68	55-110	18.00	(< 30 )
Benzo(a)Anthracene	0.0500U	0.575	.456	79	0.500	0.371	74	55-110	20.70	(< 30 )
Benzo[a]pyrene	0.0500U	0.575	.418	73	0.500	0.315	63	55-110	28.10	(< 30 )
Benzo[b]Fluoranthene	0.0500U	0.575	.408	71	0.500	0.352	71	45-120	14.50	(< 30 )
Benzo[g,h,i]perylene	0.0500U	0.575	.382	67	0.500	0.310	62	40-125	20.70	(< 30 )
Benzo[k]fluoranthene	0.0500U	0.575	.42	73	0.500	0.315	63	45-125	28.40	(< 30 )
Chrysene	0.0500U	0.575	.381	66	0.500	0.341	68	55-110	11.10	(< 30 )
Dibenzo[a,h]anthracene	0.0500U	0.575	.372	65	0.500	0.309	62	40-125	18.60	(< 30 )
Fluoranthene	0.0500U	0.575	.485	84	0.500	0.386	77	55-115	22.80	(< 30 )
Fluorene	0.0500U	0.575	.408	71	0.500	0.329	66	50-110	21.60	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0500U	0.575	.387	67	0.500	0.311	62	45-125	21.80	(< 30 )
Naphthalene	0.100U	0.575	.326	57	0.500	0.274	55	40-100	17.10	(< 30 )
Phenanthrene	0.0500U	0.575	.458	80	0.500	0.380	76	50-115	18.70	(< 30 )
Pyrene	0.0500U	0.575	.472	82	0.500	0.371	74	50-130	23.90	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.575	.306	53	0.500	0.291	58	50-110	4.90	
Terphenyl-d14		0.575	.417	73	0.500	0.349	70	50-135	17.70	

### Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/3/2013 7:23:00PM

Prep Batch: XXX29299  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 7/2/2013 10:05:00AM  
 Prep Initial Wt./Vol.: 870.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 07/10/2013 4:12:32PM

### Chain of Custody Record

# 1132776



pg 1

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water Note: Samples contain sodium thiosulfate for dechlorination	<b>Project #:</b> 5078
-------------------------------------------------------------------	-------------------------------------------------------------------------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
SWM02-01	847-1	7/1/13	1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	①A	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④A	
SWM03-01	1224-1	7/1/13	1203	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③A	
SWM04-01	1224-2	7/1/13	1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥A	
SWM05-01	207-1	7/1/13	1233	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦A	

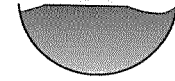
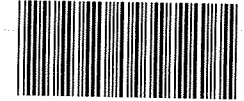
**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

**Special Instructions/Comments:**

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. Shoy</i>	7/1/13 1515	hand D		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			<i>Shoy</i>	7/1/13 15:15

1132776

pg. 2



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------

Project: **MOA Stormwater Management** Matrix: **Water** Project #: **5078**  
 Complete by: **2 weeks** Note: Samples contain sodium thiosulfate for dechlorination

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM06-01	314-22	7/1/13	1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM07-01	484-1	7/1/13	1330	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM08-01	86-1	7/1/13	1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ A	
SWM09-01	499-1	7/1/13	1415	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ A	
SWM10-01	525-2	7/1/13	1425	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬ A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A King</i>	7/1/13 1515	<i>head B</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 1515

**Chain of Custody Record**

**1132776**



pg 3

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
SWM02-01	847-1	7/1/13	1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM03-01	1224-1	7/1/13	1203	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM04-01	1224-2	7/1/13	1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM05-01	207-1	7/1/13	1233	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM06-01	314-22	7/1/13	1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM07-01	484-1	7/1/13	1330	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM08-01	86-1	7/1/13	1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM09-01	499-1	7/1/13	1415	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM10-01	525-2	7/1/13	1425	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A Long</i>	7/1/13 1515	hand $\Phi$	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:45

### Chain of Custody Record

# 1132776



4  
pg 1

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	HLL 7/1/13	
SWM02-01	847-1	7/1/13	1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	① B C	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	④ B C	
SWM03-01	1224-1	7/1/13	1203	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤ B C	
SWM04-01	1224-2	7/1/13	1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥ B C	
SWM05-01	207-1	7/1/13	1233	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦ B C	
SWM06-01	314-22	7/1/13	1316	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧ B C	
SWM07-01	484-1	7/1/13	1330	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨ B C	
SWM08-01	86-1	7/1/13	1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩ B C	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪ B C	
SWM09-01	499-1	7/1/13	1415	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑫ B C	
SWM10-01	525-2	7/1/13	1425	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑬ B C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>	7/1/13 1515	hand 1a	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

### Chain of Custody Record

# 1132776



pg 5

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-01	847-1	7/1/13	1115	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	6	⑧ D-F ⑨ A-B	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	④ D-F	
SWM05-01	207-1	7/1/13	1233	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑤ D-F	
SWM07-01	484-1	7/1/13	1330	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑨ D-F	
SWM09-01	499-1	7/1/13	1415	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑫ D-F	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑭ A-C	

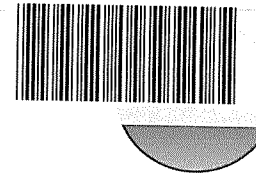
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. Almy</i>	7/1/13 1515	hand	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

### Chain of Custody Record

# 1132776



<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  Lab #:	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-01	847-1	7/1/13	1115	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	① F-G DC-1 ② C-B	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	④ G-H	
SWM05-01	207-1	7/1/13	1233	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑦ G-H	
SWM07-01	484-1	7/1/13	1330	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑨ G-H	
SWM09-01	499-1	7/1/13	1415	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑫ G-H	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>AA Long</i>	7/1/13 1515	<i>hand BL</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

## SAMPLE RECEIPT FORM

SGS WO#  
**1132776**

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <input checked="" type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	absent
Temperature blank compliant* (i.e., 0-6°C after CF)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: <u>1</u> @ <u>7.3</u> w/ Therm.ID: <u>205</u> Cooler ID: <u>2</u> @ <u>6.6</u> w/ Therm.ID: <u>205</u> Cooler ID: <u>3</u> @ <u>7.0</u> w/ Therm.ID: <u>205</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled." If temperature(s) <0°C, were all sample containers ice free?	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/> HLG Samples collected same day	
Delivery method (specify all that apply): USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/tracking # See Attached or <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: <u>HLG</u> <input checked="" type="radio"/> N/A <input type="radio"/> N/A
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ &lt;1hr; in that case, use times on COC.</i> Were analyses requested unambiguous?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <u>Bubble Wrap</u> Separate plastic bags Vermiculite Other:	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, <u>limited volume</u> , Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	limited volume for ms/msd
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	Fecal, BOD
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: <u>HLG</u> <input checked="" type="radio"/> N/A <input type="radio"/> N/A PM =
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: <input checked="" type="radio"/> N/A <input type="radio"/> N/A

Additional notes (if applicable):

*Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*



## **Appendix B2**

### **Laboratory Data Package Storm Event #2**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1133209**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 07/31/2013 3:37:18PM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

## Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**

SGS Project: **1133209**

Project Name/Site: **5078 MOA Stormwater Management**

Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM02-02 (1133209002) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**SWM02-02 Dup (1133209005) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**SWM07-02 (1133209010) PS**

8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria (biased low). Sample was re-extracted outside of hold time and results confirm. The initial results are reported.

**SWM09-02 (1133209013) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**1133300010DUP (1161103) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 07/31/2013 3:37:19PM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1133209002	SWM02-02	XMS7456	Benzo[b]Fluoranthene	IT
1133209004	SWM02-02 MSD	XMS7456	Benzo[k]fluoranthene	BLC
1133209005	SWM02-02 Dup	XMS7456	Benzo[b]Fluoranthene	IT
1133209010	SWM07-02	XMS7456	Pyrene	SP
1133209013	SWM09-02	XMS7456	Benzo[b]Fluoranthene	IT

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-02	1133209001	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02	1133209002	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 MS	1133209003	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 MSD	1133209004	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 Dup	1133209005	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM03-02	1133209006	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM04-02	1133209007	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM05-02	1133209008	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM06-02	1133209009	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM07-02	1133209010	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM08-02	1133209011	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM08-02 Dup	1133209012	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM09-02	1133209013	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM10-02	1133209014	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
Trip Blank	1133209015	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: **SWM01-02**

Lab Sample ID: 1133209001

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.06	mg/L
Fecal Coliform	332	col/100mL
Total Suspended Solids	44.0	mg/L

Client Sample ID: **SWM02-02**

Lab Sample ID: 1133209002

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	3.97	mg/L
Fecal Coliform	177	col/100mL
Benzo[a]pyrene	0.0962	ug/L
Benzo[b]Fluoranthene	0.519	ug/L
Benzo[g,h,i]perylene	0.167	ug/L
Chrysene	0.395	ug/L
Fluoranthene	0.768	ug/L
Indeno[1,2,3-c,d] pyrene	0.131	ug/L
Phenanthrene	0.268	ug/L
Pyrene	0.405	ug/L
Total Suspended Solids	18.5	mg/L

**Waters Department**

Client Sample ID: **SWM02-02 Dup**

Lab Sample ID: 1133209005

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	4.02	mg/L
Fecal Coliform	190	col/100mL
Benzo(a)Anthracene	0.0601	ug/L
Benzo[a]pyrene	0.0999	ug/L
Benzo[b]Fluoranthene	0.524	ug/L
Benzo[g,h,i]perylene	0.169	ug/L
Chrysene	0.423	ug/L
Fluoranthene	0.803	ug/L
Indeno[1,2,3-c,d] pyrene	0.135	ug/L
Phenanthrene	0.264	ug/L
Pyrene	0.399	ug/L
Total Suspended Solids	15.0	mg/L

**Waters Department**

Client Sample ID: **SWM03-02**

Lab Sample ID: 1133209006

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.45	mg/L
Fecal Coliform	172	col/100mL
Total Suspended Solids	34.0	mg/L

Client Sample ID: **SWM04-02**

Lab Sample ID: 1133209007

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	5.16	mg/L
Fecal Coliform	106	col/100mL
Total Suspended Solids	19.0	mg/L



### Detectable Results Summary

Client Sample ID: **SWM05-02**

Lab Sample ID: 1133209008

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.76	mg/L
Fecal Coliform	14900	col/100mL
Total Suspended Solids	36.0	mg/L

Client Sample ID: **SWM06-02**

Lab Sample ID: 1133209009

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	8.71	mg/L
Fecal Coliform	170	col/100mL
Total Suspended Solids	30.0	mg/L

Client Sample ID: **SWM07-02**

Lab Sample ID: 1133209010

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	18.2	mg/L
Fecal Coliform	2500	col/100mL
Pyrene	0.0595	ug/L
Total Suspended Solids	56.0	mg/L

Client Sample ID: **SWM08-02**

Lab Sample ID: 1133209011

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.30	mg/L
Fecal Coliform	682	col/100mL
Total Suspended Solids	34.0	mg/L

Client Sample ID: **SWM08-02 Dup**

Lab Sample ID: 1133209012

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.43	mg/L
Fecal Coliform	2100	col/100mL
Total Suspended Solids	20.0	mg/L

Client Sample ID: **SWM09-02**

Lab Sample ID: 1133209013

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	2.84	mg/L
Fecal Coliform	745	col/100mL
Benzo(a)Anthracene	0.0559	ug/L
Benzo[b]Fluoranthene	0.123	ug/L
Chrysene	0.0844	ug/L
Fluoranthene	0.276	ug/L
Phenanthrene	0.0768	ug/L
Pyrene	0.157	ug/L
Total Suspended Solids	8.84	mg/L

Client Sample ID: **SWM10-02**

Lab Sample ID: 1133209014

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	<2	mg/L
Fecal Coliform	4.00	col/100mL
Total Suspended Solids	4.95	mg/L

## Results of SWM01-02

Client Sample ID: **SWM01-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209001  
 Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1040-3

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.06		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209001-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	332		1.67	1.67	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209001-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 60 mL  
 Prep Extract Vol: 100 mL



**Results of SWM01-02**

Client Sample ID: **SWM01-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209001  
Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1040-3

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	44.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209001-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209002  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.97		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209002-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	177		1.64	1.64	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209002-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Acenaphthylene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo(a)Anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[a]pyrene	0.0962		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[b]Fluoranthene	0.519		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[g,h,i]perylene	0.167		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[k]fluoranthene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Chrysene	0.395		0.0581	0.0174	ug/L	1	07/24/13 14:59
Dibenzo[a,h]anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Fluoranthene	0.768		0.0581	0.0174	ug/L	1	07/24/13 14:59
Fluorene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Indeno[1,2,3-c,d] pyrene	0.131		0.0581	0.0174	ug/L	1	07/24/13 14:59
Naphthalene	0.116	U	0.116	0.0360	ug/L	1	07/24/13 14:59
Phenanthrene	0.268		0.0581	0.0174	ug/L	1	07/24/13 14:59
Pyrene	0.405		0.0581	0.0174	ug/L	1	07/24/13 14:59

**Surrogates**

2-Fluorobiphenyl	59.1		50-110		%	1	07/24/13 14:59
Terphenyl-d14	68.8		50-135		%	1	07/24/13 14:59

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 14:59  
Container ID: 1133209002-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 860 mL  
Prep Extract Vol: 1 mL

Print Date: 07/31/2013 3:37:22PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:13
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:13
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:13
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:13
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:13
4-Bromofluorobenzene	96.9		75-120		%	1	07/22/13 16:13
Toluene-d8	98.6		85-120		%	1	07/22/13 16:13

**Batch Information**

Analytical Batch: VMS13639  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 07/22/13 16:13  
Container ID: 1133209002-F

Prep Batch: VXX24965  
Prep Method: SW5030B  
Prep Date/Time: 07/22/13 12:46  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM02-02

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	18.5		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209002-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209005  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.02		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209005-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	190		1.64	1.64	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209005-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209005  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo(a)Anthracene	0.0601		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[a]pyrene	0.0999		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[b]Fluoranthene	0.524		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[g,h,i]perylene	0.169		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Chrysene	0.423		0.0500	0.0150	ug/L	1	07/24/13 15:45
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Fluoranthene	0.803		0.0500	0.0150	ug/L	1	07/24/13 15:45
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Indeno[1,2,3-c,d] pyrene	0.135		0.0500	0.0150	ug/L	1	07/24/13 15:45
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/24/13 15:45
Phenanthrene	0.264		0.0500	0.0150	ug/L	1	07/24/13 15:45
Pyrene	0.399		0.0500	0.0150	ug/L	1	07/24/13 15:45
<b>Surrogates</b>							
2-Fluorobiphenyl	66.1		50-110		%	1	07/24/13 15:45
Terphenyl-d14	75.6		50-135		%	1	07/24/13 15:45

## Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/24/13 15:45  
 Container ID: 1133209005-D

Prep Batch: XXX29444  
 Prep Method: SW3520C  
 Prep Date/Time: 07/23/13 11:45  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209005  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:30
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:30
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:30
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:30
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:30
4-Bromofluorobenzene	96.3		75-120		%	1	07/22/13 16:30
Toluene-d8	97.9		85-120		%	1	07/22/13 16:30

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 16:30  
 Container ID: 1133209005-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209005  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	15.0		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209005-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM03-02

Client Sample ID: **SWM03-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209006  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:40  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.45		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209006-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	172		1.64	1.64	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209006-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL

## Results of SWM03-02

Client Sample ID: **SWM03-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209006  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	34.0		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209006-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

## Results of SWM04-02

Client Sample ID: **SWM04-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209007  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:55  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	5.16		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209007-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	106		2.00	2.00	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209007-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 100 mL

## Results of SWM04-02

Client Sample ID: **SWM04-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209007  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:55  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	19.0		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/22/13 10:44  
 Container ID: 1133209007-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 200 mL  
 Prep Extract Vol: 1000 mL

## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.76		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209008-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	14900		100	100	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209008-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL



## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Acenaphthylene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo(a)Anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[a]pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[b]Fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[g,h,i]perylene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[k]fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Chrysene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Dibenzo[a,h]anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Fluorene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Indeno[1,2,3-c,d] pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Naphthalene	0.104	U	0.104	0.0323	ug/L	1	07/24/13 16:00
Phenanthrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00

### Surrogates

2-Fluorobiphenyl	50.2		50-110		%	1	07/24/13 16:00
Terphenyl-d14	77.5		50-135		%	1	07/24/13 16:00

## Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/24/13 16:00  
 Container ID: 1133209008-D

Prep Batch: XXX29444  
 Prep Method: SW3520C  
 Prep Date/Time: 07/23/13 11:45  
 Prep Initial Wt./Vol.: 960 mL  
 Prep Extract Vol: 1 mL



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209008  
Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 207-1

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:47
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:47
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:47
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:47
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:47
4-Bromofluorobenzene	97		75-120		%	1	07/22/13 16:47
Toluene-d8	98.6		85-120		%	1	07/22/13 16:47

**Batch Information**

Analytical Batch: VMS13639  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 07/22/13 16:47  
Container ID: 1133209008-F

Prep Batch: VXX24965  
Prep Method: SW5030B  
Prep Date/Time: 07/22/13 12:46  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	36.0		10.0	3.00	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/22/13 10:44  
 Container ID: 1133209008-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM06-02

Client Sample ID: **SWM06-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209009  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:45  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 314-22

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	8.71		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209009-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	170		1.64	1.64	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209009-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



**Results of SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209009  
Lab Project ID: 1133209

Collection Date: 07/20/13 13:45  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 314-22

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	30.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209009-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209010  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	18.2		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209010-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	2500		100	100	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209010-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL



Results of **SWM07-02**

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209010  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 484-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/24/13 16:16
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Pyrene	0.0595		0.0500	0.0150	ug/L	1	07/24/13 16:16

**Surrogates**

2-Fluorobiphenyl	41	*	50-110		%	1	07/24/13 16:16
Terphenyl-d14	65.9		50-135		%	1	07/24/13 16:16

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 16:16  
Container ID: 1133209010-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209010  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:04
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 17:04
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:04
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 17:04
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 17:04
4-Bromofluorobenzene	96.2		75-120		%	1	07/22/13 17:04
Toluene-d8	97.5		85-120		%	1	07/22/13 17:04

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 17:04  
 Container ID: 1133209010-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209010  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	56.0		10.0	3.00	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/22/13 10:44  
 Container ID: 1133209010-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM08-02

Client Sample ID: **SWM08-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209011  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.30		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209011-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	682		9.09	9.09	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209011-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 11 mL  
 Prep Extract Vol: 100 mL



Results of **SWM08-02**

Client Sample ID: **SWM08-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209011  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	34.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209011-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM08-02 Dup

Client Sample ID: **SWM08-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209012  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.43		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209012-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	2100		100	100	col/100mL	1	07/20/13 19:25

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:25  
 Container ID: 1133209012-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL



**Results of SWM08-02 Dup**

Client Sample ID: **SWM08-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209012  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	20.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209012-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209013  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.84		2.00	2.00	mg/L	1	07/22/13 09:50

**Batch Information**

Analytical Batch: BOD4743  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/22/13 09:50  
Container ID: 1133209013-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	745		9.09	9.09	col/100mL	1	07/20/13 19:25

**Batch Information**

Analytical Batch: BTF12953  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/20/13 19:25  
Container ID: 1133209013-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 07/31/2013 3:37:22PM



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209013  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Acenaphthylene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Anthracene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo(a)Anthracene	0.0559		0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[a]pyrene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[b]Fluoranthene	0.123		0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[g,h,i]perylene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[k]fluoranthene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Chrysene	0.0844		0.0556	0.0167	ug/L	1	07/24/13 16:31
Dibenzo[a,h]anthracene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Fluoranthene	0.276		0.0556	0.0167	ug/L	1	07/24/13 16:31
Fluorene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Indeno[1,2,3-c,d] pyrene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Naphthalene	0.111	U	0.111	0.0344	ug/L	1	07/24/13 16:31
Phenanthrene	0.0768		0.0556	0.0167	ug/L	1	07/24/13 16:31
Pyrene	0.157		0.0556	0.0167	ug/L	1	07/24/13 16:31

**Surrogates**

2-Fluorobiphenyl	62.3		50-110		%	1	07/24/13 16:31
Terphenyl-d14	83.8		50-135		%	1	07/24/13 16:31

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 16:31  
Container ID: 1133209013-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 900 mL  
Prep Extract Vol: 1 mL

## Results of SWM09-02

Client Sample ID: **SWM09-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209013  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:22
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 17:22
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:22
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 17:22
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
<b>Surrogates</b>							
1,2-Dichloroethane-D4	108		70-120		%	1	07/22/13 17:22
4-Bromofluorobenzene	96.6		75-120		%	1	07/22/13 17:22
Toluene-d8	97.9		85-120		%	1	07/22/13 17:22

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 17:22  
 Container ID: 1133209013-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Results of SWM09-02

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209013  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

### Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.84		1.16	0.349	mg/L	1	07/22/13 10:44

### Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209013-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 430 mL  
Prep Extract Vol: 1000 mL

## Results of SWM10-02

Client Sample ID: **SWM10-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209014  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 525-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	<2		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209014-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	4.00		2.00	2.00	col/100mL	1	07/20/13 19:25

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:25  
 Container ID: 1133209014-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 100 mL



**Results of SWM10-02**

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209014  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:50  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 525-2

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	4.95		0.495	0.149	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209014-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1010 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209015  
 Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 15:56
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 15:56
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 15:56
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 15:56
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/22/13 15:56
4-Bromofluorobenzene	97.8		75-120		%	1	07/22/13 15:56
Toluene-d8	97.4		85-120		%	1	07/22/13 15:56

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 15:56  
 Container ID: 1133209015-A

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1467797 [BOD/4743]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1162589

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4743

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 7/22/2013 9:50:00AM

Print Date: 07/31/2013 3:37:25PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [BOD4743]

Blank Spike Lab ID: 1162590

Date Analyzed: 07/22/2013 09:50

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	212	107	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4743**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

## Method Blank

Blank ID: MB for HBN 1466875 [BTF/12953]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1160684

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1U	1	1	col/100mL

## Batch Information

Analytical Batch: BTF12953

Analytical Method: SM21 9222D

Instrument:

Analyst: SDP

Analytical Date/Time: 7/20/2013 6:45:00PM

Print Date: 07/31/2013 3:37:27PM

## Method Blank

Blank ID: MB for HBN 1466882 [STS/4137]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1160699

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 7/22/2013 10:44:39AM

Print Date: 07/31/2013 3:37:29PM



## Duplicate Sample Summary

Original Sample ID: 1133209001

Analysis Date: 07/22/2013 10:44

Duplicate Sample ID: 1160702

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	44.0	46.0	4.40	5.00

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/31/2013 3:37:29PM

## Duplicate Sample Summary

Original Sample ID: 1133300010

Duplicate Sample ID: 1161103

Analysis Date: 07/22/2013 10:44

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	1.37	1.29	5.90*	5.00

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/31/2013 3:37:29PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [STS4137]  
 Blank Spike Lab ID: 1160700  
 Date Analyzed: 07/22/2013 10:44

Spike Duplicate ID: LCSD for HBN 1133209 [STS4137]  
 Spike Duplicate Lab ID: 1160701  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	46.8	94	50	47.4	95	( 75-125 )	1.30	(< 5 )

## Batch Information

Analytical Batch: **STS4137**  
 Analytical Method: **SM21 2540D**  
 Instrument:  
 Analyst: **MEV**

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1467098 [VXX/24965]  
 Blank Lab ID: 1161137

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1133209002, 1133209005, 1133209008, 1133209010, 1133209013, 1133209015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	108	70-120		%
4-Bromofluorobenzene	96.2	75-120		%
Toluene-d8	98.5	85-120		%

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: NRB  
 Analytical Date/Time: 7/22/2013 1:38:00PM

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 7/22/2013 12:46:00PM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [VXX24965]  
 Blank Spike Lab ID: 1161138  
 Date Analyzed: 07/22/2013 13:55

Spike Duplicate ID: LCSD for HBN 1133209 [VXX24965]  
 Spike Duplicate Lab ID: 1161139  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209002, 1133209005, 1133209008, 1133209010, 1133209013, 1133209015

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	28.8	96	30	30.5	102	( 70-120 )	5.70	(< 20 )
1,3-Dichlorobenzene	30	29.5	98	30	31.4	105	( 75-125 )	6.20	(< 20 )
1,4-Dichlorobenzene	30	29.5	99	30	31.6	105	( 75-125 )	6.60	(< 20 )
Benzene	30	29.6	99	30	31.2	104	( 80-120 )	5.00	(< 20 )
Chlorobenzene	30	30.5	102	30	32.0	107	( 80-120 )	4.70	(< 20 )
Ethylbenzene	30	32.0	107	30	33.4	111	( 75-125 )	4.30	(< 20 )
o-Xylene	30	31.9	106	30	33.3	111	( 80-120 )	4.40	(< 20 )
P & M -Xylene	60	64.3	107	60	67.3	112	( 75-130 )	4.70	(< 20 )
Toluene	30	30.0	100	30	31.5	105	( 75-120 )	4.90	(< 20 )

## Surrogates

1,2-Dichloroethane-D4		98	30	96.6	97	( 70-120 )	0.96
4-Bromofluorobenzene		94	30	95	95	( 75-120 )	1.00
Toluene-d8		100	30	99.7	100	( 85-120 )	0.70

## Batch Information

Analytical Batch: **VMS13639**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **NRB**

Prep Batch: **VXX24965**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **07/22/2013 12:46**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1133209002  
 MS Sample ID: 1133209003 BMS  
 MSD Sample ID: 1133209004 BMSD

Analysis Date: 07/22/2013 16:13  
 Analysis Date: 07/22/2013 19:56  
 Analysis Date: 07/22/2013 20:14  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	30.7	102	30.0	30.4	101	70-120	0.92	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	31.2	104	30.0	32.2	107	75-125	3.20	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	31.6	105	30.0	31.8	106	75-125	0.66	(< 20 )
Benzene	0.400U	30.0	31.6	105	30.0	32.0	107	80-120	1.30	(< 20 )
Chlorobenzene	0.500U	30.0	32.5	108	30.0	32.8	109	80-120	0.77	(< 20 )
Ethylbenzene	1.00U	30.0	34.1	114	30.0	34.5	115	75-125	1.40	(< 20 )
o-Xylene	1.00U	30.0	33.8	113	30.0	34.3	114	80-120	1.40	(< 20 )
P & M -Xylene	2.00U	60.0	68.8	115	60.0	69.1	115	75-130	0.46	(< 20 )
Toluene	1.00U	30.0	32.1	107	30.0	32.5	108	75-120	1.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	29.3	98	30.0	29.2	97	70-120	0.38	
4-Bromofluorobenzene		30.0	28.4	95	30.0	30.3	101	75-120	6.80	
Toluene-d8		30.0	30	100	30.0	30.1	100	85-120	0.23	

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: NRB  
 Analytical Date/Time: 7/22/2013 7:56:00PM

Prep Batch: VXX24965  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 7/22/2013 12:46:00PM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1467095 [XXX/29444]  
 Blank Lab ID: 1161130

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1133209002, 1133209005, 1133209008, 1133209010, 1133209013

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	70.4	50-110		%
Terphenyl-d14	81.3	50-135		%

## Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/24/2013 1:12:00PM

Prep Batch: XXX29444  
 Prep Method: SW3520C  
 Prep Date/Time: 7/23/2013 11:45:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [XXX29444]

Blank Spike Lab ID: 1161131

Date Analyzed: 07/24/2013 13:28

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209002, 1133209005, 1133209008, 1133209010, 1133209013

## Results by EPA 625M SIMS (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	0.5	0.333	67	(45-110)
Acenaphthylene	0.5	0.366	73	(50-105)
Anthracene	0.5	0.392	78	(55-110)
Benzo(a)Anthracene	0.5	0.454	91	(55-110)
Benzo[a]pyrene	0.5	0.478	96	(55-110)
Benzo[b]Fluoranthene	0.5	0.507	101	(45-120)
Benzo[g,h,i]perylene	0.5	0.503	101	(40-125)
Benzo[k]fluoranthene	0.5	0.408	82	(45-125)
Chrysene	0.5	0.415	83	(55-110)
Dibenzo[a,h]anthracene	0.5	0.488	98	(40-125)
Fluoranthene	0.5	0.395	79	(55-115)
Fluorene	0.5	0.375	75	(50-110)
Indeno[1,2,3-c,d] pyrene	0.5	0.506	101	(45-125)
Naphthalene	0.5	0.331	66	(40-100)
Phenanthrene	0.5	0.411	82	(50-115)
Pyrene	0.5	0.389	78	(50-130)

## Surrogates

2-Fluorobiphenyl			73	(50-110)
Terphenyl-d14			81	(50-135)

## Batch Information

Analytical Batch: XMS7456

Analytical Method: EPA 625M SIMS (PAH)

Instrument: HP 6890/5973 MS SVQA

Analyst: RTS

Prep Batch: XXX29444

Prep Method: SW3520C

Prep Date/Time: 07/23/2013 11:45

Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:





### Billable Matrix Spike Summary

Original Sample ID: 1133209002  
 MS Sample ID: 1133209003 BMS  
 MSD Sample ID: 1133209004 BMSD

Analysis Date: 07/24/2013 14:59  
 Analysis Date: 07/24/2013 15:14  
 Analysis Date: 07/24/2013 15:30  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0581U	0.510	.325	64	0.500	0.306	61	45-110	5.80	(< 30 )
Acenaphthylene	0.0581U	0.510	.347	68	0.500	0.328	66	50-105	5.70	(< 30 )
Anthracene	0.0581U	0.510	.411	81	0.500	0.383	77	55-110	7.00	(< 30 )
Benzo(a)Anthracene	0.0581U	0.510	.51	100	0.500	0.483	97	55-110	5.40	(< 30 )
Benzo[a]pyrene	0.0962	0.510	.477	75	0.500	0.464	74	55-110	2.80	(< 30 )
Benzo[b]Fluoranthene	0.519	0.510	.847	64	0.500	0.816	59	45-120	3.70	(< 30 )
Benzo[g,h,i]perylene	0.167	0.510	.555	76	0.500	0.549	77	40-125	1.00	(< 30 )
Benzo[k]fluoranthene	0.0581U	0.510	.428	84	0.500	0.435	87	45-125	1.50	(< 30 )
Chrysene	0.395	0.510	.746	69	0.500	0.740	69	55-110	0.69	(< 30 )
Dibenzo[a,h]anthracene	0.0581U	0.510	.422	83	0.500	0.404	81	40-125	4.40	(< 30 )
Fluoranthene	0.768	0.510	1.14	73	0.500	1.10	67	55-115	3.30	(< 30 )
Fluorene	0.0581U	0.510	.372	73	0.500	0.345	69	50-110	7.50	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.131	0.510	.527	78	0.500	0.514	77	45-125	2.50	(< 30 )
Naphthalene	0.116U	0.510	.289	57	0.500	0.272	54	40-100	6.30	(< 30 )
Phenanthrene	0.268	0.510	.67	79	0.500	0.642	75	50-115	4.30	(< 30 )
Pyrene	0.405	0.510	.776	73	0.500	0.760	71	50-130	2.20	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.510	.302	59	0.500	0.277	55	50-110	8.40	
Terphenyl-d14		0.510	.379	74	0.500	0.363	73	50-135	4.40	

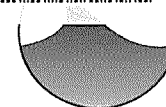
### Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/24/2013 3:14:00PM

Prep Batch: XXX29444  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 7/23/2013 11:45:00AM  
 Prep Initial Wt./Vol.: 980.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 07/31/2013 3:37:34PM

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water Note: Samples contain sodium thiosulfate for dechlorination	<b>Project #:</b> 5078
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	7/20/13	1150	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	① A	
SWM02-02	847-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	② A	
SWM02-02 Dup	847-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑤ A	
SWM03-02	1224-1		1240	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥ A	
SWM04-02	1224-2		1255	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦ A	
SWM05-02	207-1		1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM06-02	314-22		1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM07-02	484-1		1405	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM08-02	86-1		1420	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ A	
SWM08-02 Dup	86-1		1420	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ A	
SWM09-02	499-1	7/20/13	1440	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬ A	
SWM10-02	525-2		1450	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑭ A	

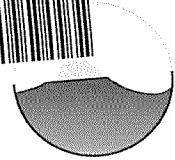
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b> 	<b>Date/Time:</b> 7/20 1507	<b>Transporter:</b> 	<b>Received By:</b> 	<b>Date/Time:</b>
<b>Relinquished By:</b> 	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b> E Decrest SGS	<b>Date/Time:</b> 7/20/13 1524

### Chain of Custody Record

1133209



<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
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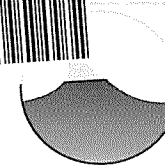
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	}	7/20/13 1150	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	①B	
SWM02-02	847-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	②B	
SWM02-02 Dup	847-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	③B	
SWM03-02	1224-1		1240	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	④B	
SWM04-02	1224-2		1255	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤B	
SWM05-02	207-1		1310	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥B	
SWM06-02	314-22		1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦B	
SWM07-02	484-1		1405	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧B	
SWM08-02	86-1		1420	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨B	
SWM08-02 Dup	86-1		1420	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩B	
SWM09-02	499-1	1440	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪B		
SWM10-02	525-2	7/20/13 1450	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑫B		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
	1527 7/20			
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
			Edoerest SGS	15:24 7/20/13

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

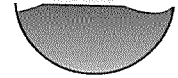
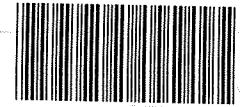
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	7/20/13	1150	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	① C	
SWM02-02	847-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	② C	
SWM02-02 Dup	847-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	③ C	
SWM03-02	1224-1		1240	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	④ C	
SWM04-02	1224-2		1255	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑤ C	
SWM05-02	207-1		1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑥ C	
SWM06-02	314-22		1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑦ C	
SWM07-02	484-1		1405	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑧ C	
SWM08-02	86-1		1420	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑨ C	
SWM08-02 Dup	86-1		1420	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑩ C	
SWM09-02	499-1		1440	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑪ C	
SWM10-02	525-2	7/20/13	1450	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑫ C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
	7/20 1527			
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
			E. Acrost SGS	7/20/13 1524

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

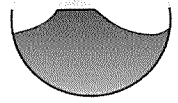
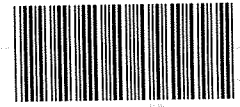
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-02	847-1	7/20/13	1205	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	② D-E ③ A-B ④ A+B	
SWM02-02 Dup	847-1	↙	1205	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑤ D-E	
SWM05-02	207-1	↙	1310	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑧ D-E	
SWM07-02	484-1	↙	1405	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑩ D-E	
SWM09-02	499-1	7/20/13	1440	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑬ D-E	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b> 	<b>Date/Time:</b> 7/20 1527	<b>Transporter:</b> 	<b>Received By:</b> 	<b>Date/Time:</b>
<b>Relinquished By:</b> 	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b> E. Accrest      SGS	<b>Date/Time:</b> 7/20/13 1524

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------

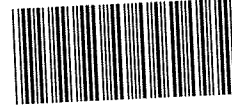
**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-02	847-1	7/20/13	1205	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	② F-H ③ C-E ④ C-E	
SWM02-02 Dup	847-1	↙	1205	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑤ F-H	
SWM05-02	207-1	↙	1310	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑧ F-H	
SWM07-02	484-1	↙	1405	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑩ F-H	
SWM09-02	499-1	7/20/13	1440	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑬ F-H	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑮ A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>ASG</i>	7/20 1527	<i>[Signature]</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>		<i>[Signature]</i>	<i>E Accest</i> <i>SGS</i>	7/20/13 1524



## SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <u>N/A</u> <u>Yes</u> No N/A	
<b>Temperature blank compliant*</b> (i.e., 0-6°C after CF)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: <u>1 of 6</u> @ <u>17.6</u> w/ Therm.ID: <u>203</u> Cooler ID: <u>2 of 6</u> @ <u>9.3</u> w/ Therm.ID: <u>11</u> Cooler ID: <u>3 of 6</u> @ <u>6.5</u> w/ Therm.ID: <u>239</u> Cooler ID: <u>4 of 6</u> @ <u>6.3</u> w/ Therm.ID: <u>11</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled." <b>If temperature(s) &lt;0°C, were all sample containers ice free?</b>	Yes No <u>N/A</u> Yes No <u>N/A</u>	<u>Taken within 8 hrs.</u>
Delivery method (specify all that apply): <u>Client</u> USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/ tracking #  See Attached or <u>N/A</u>  Yes No <u>N/A</u>	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: <u>N/A</u> → For samples received in FBKS, ANCH staff will verify all criteria are reviewed. SRF Initiated by: <u>MD</u> <u>N/A</u>		
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ &lt;1hr; in that case, use times on COC.</i> Were analyses requested unambiguous?	<u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <u>Bubble Wrap</u> Separate plastic bags Vermiculite Other:	<u>Yes</u> No N/A <u>Yes</u> No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<u>Yes</u> No N/A Yes No <u>N/A</u>	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<u>Yes</u> No N/A <u>Yes</u> No N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <u>N/A</u>	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <u>N/A</u> Yes No <u>N/A</u>	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<u>Yes</u> No N/A	<u>Fecal Coli, short hold BOD</u>
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	<u>Yes</u> No N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <u>N/A</u>	SRF Completed by: <u>MD</u> <u>07/20/13</u> PM = <u>SRC</u> N/A
Was PEER REVIEW of sample numbering/labeling completed?	<u>Yes</u> No N/A	Peer Reviewed by: <u>SLC</u> N/A

Additional notes (if applicable):

*Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

## **Appendix B3**

### **Laboratory Data Package Storm Event #3**







## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1134600**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 09/30/2013 2:56:34PM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

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## Case Narrative

**Customer: KINNETL**

**Kinnetic Laboratories, Inc.**

**Project: 1134600**

**5078 MOA Stormwater Management**

Refer to the sample receipt form for information on sample condition.

**1179542 DUP**

**1138465004DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1180107 DUP**

**1134600010DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1134600012	SWM02-04 MS	XMS7622	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 09/30/2013 2:56:35PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-04	1134600001	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04	1134600002	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 DUP	1134600003	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM03-04	1134600004	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM04-04	1134600005	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM05-04	1134600006	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM06-04	1134600007	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM07-04	1134600008	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM08-04	1134600009	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM08-04 Dup	1134600010	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM10-04	1134600011	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 MS	1134600012	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 MSD	1134600013	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
Trip Blank	1134600014	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: <b>SWM01-04</b>			
Lab Sample ID: 1134600001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1320	col/100mL
<b>Waters Department</b>	Total Suspended Solids	6.67	mg/L
Client Sample ID: <b>SWM02-04</b>			
Lab Sample ID: 1134600002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	3.0	col/100mL
Client Sample ID: <b>SWM02-04 DUP</b>			
Lab Sample ID: 1134600003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1.0	col/100mL
Client Sample ID: <b>SWM03-04</b>			
Lab Sample ID: 1134600004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	727	col/100mL
<b>Waters Department</b>	Total Suspended Solids	11.3	mg/L
Client Sample ID: <b>SWM04-04</b>			
Lab Sample ID: 1134600005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	387	col/100mL
<b>Waters Department</b>	Total Suspended Solids	8.35	mg/L
Client Sample ID: <b>SWM05-04</b>			
Lab Sample ID: 1134600006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	130	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.13	mg/L
Client Sample ID: <b>SWM06-04</b>			
Lab Sample ID: 1134600007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	8.0	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.00	mg/L
Client Sample ID: <b>SWM07-04</b>			
Lab Sample ID: 1134600008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	3.00	mg/L
	Fecal Coliform	173	col/100mL
<b>Waters Department</b>	Total Suspended Solids	16.8	mg/L
Client Sample ID: <b>SWM08-04</b>			
Lab Sample ID: 1134600009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	88	col/100mL
<b>Waters Department</b>	Total Suspended Solids	3.78	mg/L
Client Sample ID: <b>SWM08-04 Dup</b>			
Lab Sample ID: 1134600010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	116	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.25	mg/L

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## Detectable Results Summary

Client Sample ID: **SWM10-04**

Lab Sample ID: 1134600011

**Microbiology Laboratory**

**Waters Department**

Parameter

Fecal Coliform

Total Suspended Solids

Result

6.0

14.8

Units

col/100mL

mg/L

Print Date: 09/30/2013 2:56:37PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518  
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**Results of SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600001  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600001-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1320	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600001-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600001  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	6.67	0.641	0.192	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600001-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 780 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600002-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	3.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600002-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Acenaphthylene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo(a)Anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[a]pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[b]Fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[g,h,i]perylene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[k]fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Chrysene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Dibenzo[a,h]anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Fluorene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Indeno[1,2,3-c,d] pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Naphthalene	0.110 U	0.110	0.0343	ug/L	1		09/25/13 14:10
Phenanthrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
<b>Surrogates</b>							
2-Fluorobiphenyl	73.7	50-110		%	1		09/25/13 14:10
Terphenyl-d14	89.9	50-135		%	1		09/25/13 14:10

**Batch Information**

Analytical Batch: XMS7622  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/25/13 14:10  
Container ID: 1134600002-D

Prep Batch: XXX29980  
Prep Method: SW3520C  
Prep Date/Time: 09/22/13 10:02  
Prep Initial Wt./Vol.: 905 mL  
Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:32
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 16:32
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:32
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 16:32
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32

**Surrogates**

1,2-Dichloroethane-D4	99	70-120		%	1		09/27/13 16:32
4-Bromofluorobenzene	103	75-120		%	1		09/27/13 16:32
Toluene-d8	97.5	85-120		%	1		09/27/13 16:32

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 16:32  
Container ID: 1134600002-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.25 U	1.25	0.375	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600002-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600003  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600003-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600003-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600003  
 Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Acenaphthylene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo(a)Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[a]pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[b]Fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[g,h,i]perylene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[k]fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Chrysene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Dibenzo[a,h]anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Fluorene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Indeno[1,2,3-c,d] pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Naphthalene	0.105 U	0.105	0.0326	ug/L	1		09/25/13 14:24
Phenanthrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
<b>Surrogates</b>							
2-Fluorobiphenyl	74.1	50-110		%	1		09/25/13 14:24
Terphenyl-d14	93.5	50-135		%	1		09/25/13 14:24

**Batch Information**

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/25/13 14:24  
 Container ID: 1134600003-D

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 09/22/13 10:02  
 Prep Initial Wt./Vol.: 950 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM





Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600003  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:55
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 16:55
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:55
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 16:55
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
<b>Surrogates</b>							
1,2-Dichloroethane-D4	92	70-120		%	1		09/27/13 16:55
4-Bromofluorobenzene	105	75-120		%	1		09/27/13 16:55
Toluene-d8	97.8	85-120		%	1		09/27/13 16:55

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 16:55  
Container ID: 1134600003-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600003  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	0.524 U	0.524	0.157	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600003-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 955 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM03-04**

Client Sample ID: **SWM03-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600004  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600004-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	727	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600004-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM03-04**

Client Sample ID: **SWM03-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600004  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.3	0.490	0.147	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600004-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1020 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600005  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600005-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	387	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600005-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600005  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.35	0.549	0.165	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600005-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 910 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600006-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	130	1.64	1.64	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600006-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600006  
 Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/26/13 21:53
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
<b>Surrogates</b>							
2-Fluorobiphenyl	64.7	50-110		%	1		09/26/13 21:53
Terphenyl-d14	80.8	50-135		%	1		09/26/13 21:53

**Batch Information**

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/26/13 21:53  
 Container ID: 1134600006-E

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 09/23/13 09:40  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM





Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:18
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 17:18
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:18
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 17:18
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18

**Surrogates**

1,2-Dichloroethane-D4	102	70-120		%	1		09/27/13 17:18
4-Bromofluorobenzene	96.7	75-120		%	1		09/27/13 17:18
Toluene-d8	99.4	85-120		%	1		09/27/13 17:18

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 17:18  
Container ID: 1134600006-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.13	0.495	0.149	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600006-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1010 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600007  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:10  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600007-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	8.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600007-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



### Results of SWM06-04

Client Sample ID: **SWM06-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600007  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:10  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

### Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.00	0.500	0.150	mg/L	1		09/20/13 09:00

### Batch Information

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600007-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.00	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600008-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	173	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600008-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Acenaphthylene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo(a)Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[a]pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[b]Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[g,h,i]perylene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[k]fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Chrysene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Dibenzo[a,h]anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Fluorene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Indeno[1,2,3-c,d] pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Naphthalene	0.102 U	0.102	0.0316	ug/L	1		09/26/13 22:08
Phenanthrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
<b>Surrogates</b>							
2-Fluorobiphenyl	71.1	50-110		%	1		09/26/13 22:08
Terphenyl-d14	81.5	50-135		%	1		09/26/13 22:08

**Batch Information**

Analytical Batch: XMS7634  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/26/13 22:08  
Container ID: 1134600008-E

Prep Batch: XXX29986  
Prep Method: SW3520C  
Prep Date/Time: 09/23/13 09:40  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:42
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 17:42
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:42
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 17:42
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
<b>Surrogates</b>							
1,2-Dichloroethane-D4	99.7	70-120		%	1		09/27/13 17:42
4-Bromofluorobenzene	98.9	75-120		%	1		09/27/13 17:42
Toluene-d8	98.9	85-120		%	1		09/27/13 17:42

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 17:42  
Container ID: 1134600008-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	16.8	1.25	0.375	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600008-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM





Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600009  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600009-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	88	2.00	2.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600009-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600009  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	3.78	0.510	0.153	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600009-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM08-04 Dup**

Client Sample ID: **SWM08-04 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600010  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600010-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	116	1.64	1.64	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600010-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM08-04 Dup**

Client Sample ID: **SWM08-04 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600010  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.25	1.25	0.375	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600010-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600011  
Lab Project ID: 1134600

Collection Date: 09/19/13 13:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600011-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	6.0	2.00	2.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600011-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600011  
Lab Project ID: 1134600

Collection Date: 09/19/13 13:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.8	0.500	0.150	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600011-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600014  
 Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 13:24
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 13:24
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 13:24
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 13:24
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
<b>Surrogates</b>							
1,2-Dichloroethane-D4	93.3	70-120		%	1		09/27/13 13:24
4-Bromofluorobenzene	99.7	75-120		%	1		09/27/13 13:24
Toluene-d8	95.7	85-120		%	1		09/27/13 13:24

### Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Analyst: HM  
 Analytical Date/Time: 09/27/13 13:24  
 Container ID: 1134600014-B

Prep Batch: VXX25251  
 Prep Method: SW5030B  
 Prep Date/Time: 09/27/13 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM

## Method Blank

Blank ID: MB for HBN 1485814 [BOD/4796]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1180249

QC for Samples:

1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007, 1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4796

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 9/20/2013 3:25:00PM

Print Date: 09/30/2013 2:56:40PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [BOD4796]

Blank Spike Lab ID: 1180250

Date Analyzed: 09/20/2013 15:25

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007,  
1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	208	105	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4796**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/30/2013 2:56:41PM

## Method Blank

Blank ID: MB for HBN 1485215 [BTF/13090]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1179756

QC for Samples:

1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007, 1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF13090

Analytical Method: SM21 9222D

Instrument:

Analyst: SDP

Analytical Date/Time: 9/19/2013 3:20:00PM

Print Date: 09/30/2013 2:56:41PM

## Method Blank

Blank ID: MB for HBN 1485166 [STS/4228]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1179538

QC for Samples:

1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 9/20/2013 9:00:50AM

Print Date: 09/30/2013 2:56:42PM

## Duplicate Sample Summary

Original Sample ID: 1134600002

Duplicate Sample ID: 1179541

QC for Samples:

1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

Analysis Date: 09/20/2013 09:00

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	0.750U	0.750U	0.00	5.00

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:43PM

## Duplicate Sample Summary

Original Sample ID: 1138465004

Duplicate Sample ID: 1179542

QC for Samples:

1134600005, 1134600006, 1134600007, 1134600011

Analysis Date: 09/20/2013 09:00

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	3.50	2.75	24.00*	5.00

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:43PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [STS4228]  
Blank Spike Lab ID: 1179539  
Date Analyzed: 09/20/2013 09:00

Spike Duplicate ID: LCSD for HBN 1134600 [STS4228]  
Spike Duplicate Lab ID: 1179540  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	46.2	92	50	46.7	93	( 75-125 )	1.10	(< 5 )

### Batch Information

Analytical Batch: **STS4228**  
Analytical Method: **SM21 2540D**  
Instrument:  
Analyst: **MEV**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:43PM

## Method Blank

Blank ID: MB for HBN 1485778 [STS/4229]

Blank Lab ID: 1180103

QC for Samples:

1134600003, 1134600004, 1134600008, 1134600009, 1134600010

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 9/23/2013 10:40:50AM

Print Date: 09/30/2013 2:56:44PM

## Duplicate Sample Summary

Original Sample ID: 1134600008

Duplicate Sample ID: 1180106

QC for Samples:

1134600003, 1134600004, 1134600008, 1134600009, 1134600010

Analysis Date: 09/23/2013 10:40

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	16.8	17.0	1.50	5.00

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:44PM



## Duplicate Sample Summary

Original Sample ID: 1134600010

Duplicate Sample ID: 1180107

QC for Samples:

1134600009, 1134600010

Analysis Date: 09/23/2013 10:40

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	2.25	3.00	28.60*	5.00

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:44PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [STS4229]  
Blank Spike Lab ID: 1180104  
Date Analyzed: 09/23/2013 10:40

Spike Duplicate ID: LCSD for HBN 1134600 [STS4229]  
Spike Duplicate Lab ID: 1180105  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600003, 1134600004, 1134600008, 1134600009, 1134600010

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	45.1	90	50	45.6	91	( 75-125 )	1.10	(< 5 )

### Batch Information

Analytical Batch: **STS4229**  
Analytical Method: **SM21 2540D**  
Instrument:  
Analyst: **MEV**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:45PM

## Method Blank

Blank ID: MB for HBN 1486501 [VXX/25251]  
 Blank Lab ID: 1181642

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600002, 1134600003, 1134600006, 1134600008, 1134600014

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	106	70-120		%
4-Bromofluorobenzene	102	75-120		%
Toluene-d8	95.9	85-120		%

## Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: HM  
 Analytical Date/Time: 9/27/2013 11:27:01AM

Prep Batch: VXX25251  
 Prep Method: SW5030B  
 Prep Date/Time: 9/27/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [VXX25251]  
 Blank Spike Lab ID: 1181643  
 Date Analyzed: 09/27/2013 11:51

Spike Duplicate ID: LCSD for HBN 1134600 [VXX25251]  
 Spike Duplicate Lab ID: 1181644  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003, 1134600006, 1134600008, 1134600014

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2-Dichlorobenzene	30	28.8	96	30	29.2	98	( 70-120 )	1.40	(< 20 )
1,3-Dichlorobenzene	30	32.7	109	30	31.8	106	( 75-125 )	2.60	(< 20 )
1,4-Dichlorobenzene	30	29.2	97	30	29.3	98	( 75-125 )	0.44	(< 20 )
Benzene	30	29.2	97	30	29.7	99	( 80-120 )	1.90	(< 20 )
Chlorobenzene	30	28.2	94	30	28.5	95	( 80-120 )	0.95	(< 20 )
Ethylbenzene	30	28.2	94	30	28.3	94	( 75-125 )	0.50	(< 20 )
o-Xylene	30	28.2	94	30	28.9	96	( 80-120 )	2.50	(< 20 )
P & M -Xylene	60	56.4	94	60	58.1	97	( 75-130 )	3.00	(< 20 )
Toluene	30	27.4	91	30	28.5	95	( 75-120 )	4.00	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4	30	92.2	92	30	98	98	( 70-120 )	6.10	
4-Bromofluorobenzene	30	101	101	30	97.3	97	( 75-120 )	4.20	
Toluene-d8	30	91.5	92	30	96.8	97	( 85-120 )	5.60	

## Batch Information

Analytical Batch: **VMS13776**  
 Analytical Method: **EPA 602/624**  
 Instrument: **HP 5890 Series II MS1 VJA**  
 Analyst: **HM**

Prep Batch: **VXX25251**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/27/2013 08:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1134600002  
 MS Sample ID: 1134600012 BMS  
 MSD Sample ID: 1134600013 BMSD

Analysis Date: 09/27/2013 16:32  
 Analysis Date: 09/27/2013 20:26  
 Analysis Date: 09/27/2013 20:50  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	29.2	97	30.0	31.6	105	70-120	7.90	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	32.1	107	30.0	34.3	114	75-125	6.50	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	29.3	98	30.0	31.7	106	75-125	7.70	(< 20 )
Benzene	0.400U	30.0	31.1	104	30.0	31.2	104	80-120	0.32	(< 20 )
Chlorobenzene	0.500U	30.0	28.7	96	30.0	31.1	104	80-120	8.20	(< 20 )
Ethylbenzene	1.00U	30.0	28.4	95	30.0	31.0	103	75-125	8.60	(< 20 )
o-Xylene	1.00U	30.0	29.3	98	30.0	31.3	104	80-120	6.50	(< 20 )
P & M -Xylene	2.00U	60.0	58.8	98	60.0	63.9	106	75-130	8.30	(< 20 )
Toluene	1.00U	30.0	30.8	103	30.0	32.5	108	75-120	5.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	25.9	86	30.0	26.0	87	70-120	0.35	
4-Bromofluorobenzene		30.0	29.5	98	30.0	31.8	106	75-120	7.50	
Toluene-d8		30.0	29.4	98	30.0	30.5	102	85-120	3.70	

## Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: HM  
 Analytical Date/Time: 9/27/2013 8:26:00PM

Prep Batch: VXX25251  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 9/27/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1485562 [XXX/29980]  
 Blank Lab ID: 1179986

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	67.5	50-110		%
Terphenyl-d14	87.2	50-135		%

## Batch Information

Analytical Batch: XMS7618  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/24/2013 8:07:00PM

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [XXX29980]  
 Blank Spike Lab ID: 1179987  
 Date Analyzed: 09/24/2013 20:21

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Acenaphthene	0.5	0.313	63	( 45-110 )
Acenaphthylene	0.5	0.307	61	( 50-105 )
Anthracene	0.5	0.334	67	( 55-110 )
Benzo(a)Anthracene	0.5	0.389	78	( 55-110 )
Benzo[a]pyrene	0.5	0.327	66	( 55-110 )
Benzo[b]Fluoranthene	0.5	0.372	74	( 45-120 )
Benzo[g,h,i]perylene	0.5	0.293	59	( 40-125 )
Benzo[k]fluoranthene	0.5	0.328	66	( 45-125 )
Chrysene	0.5	0.359	72	( 55-110 )
Dibenzo[a,h]anthracene	0.5	0.289	58	( 40-125 )
Fluoranthene	0.5	0.383	77	( 55-115 )
Fluorene	0.5	0.319	64	( 50-110 )
Indeno[1,2,3-c,d] pyrene	0.5	0.310	62	( 45-125 )
Naphthalene	0.5	0.326	65	( 40-100 )
Phenanthrene	0.5	0.344	69	( 50-115 )
Pyrene	0.5	0.380	76	( 50-130 )
<b>Surrogates</b>				
2-Fluorobiphenyl	0.5	67.4	67	( 50-110 )
Terphenyl-d14	0.5	87.3	87	( 50-135 )

## Batch Information

Analytical Batch: XMS7618  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 09/22/2013 10:02  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1134581004  
 MS Sample ID: 1179988 MS  
 MSD Sample ID: 1179989 MSD

Analysis Date: 09/25/2013 13:12  
 Analysis Date: 09/25/2013 13:27  
 Analysis Date: 09/25/2013 13:41  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0300U	0.500	.305	61	0.510	0.350	69	45-110	13.70	(< 30 )
Acenaphthylene	0.0300U	0.500	.303	61	0.510	0.347	68	50-105	13.70	(< 30 )
Anthracene	0.0300U	0.500	.369	74	0.510	0.391	77	55-110	6.00	(< 30 )
Benzo(a)Anthracene	0.0300U	0.500	.376	75	0.510	0.405	79	55-110	7.50	(< 30 )
Benzo[a]pyrene	0.0300U	0.500	.388	78	0.510	0.405	79	55-110	4.30	(< 30 )
Benzo[b]Fluoranthene	0.0300U	0.500	.392	79	0.510	0.447	88	45-120	13.10	(< 30 )
Benzo[g,h,i]perylene	0.0300U	0.500	.43	86	0.510	0.438	86	40-125	1.80	(< 30 )
Benzo[k]fluoranthene	0.0300U	0.500	.407	81	0.510	0.396	78	45-125	2.70	(< 30 )
Chrysene	0.0300U	0.500	.398	80	0.510	0.417	82	55-110	4.60	(< 30 )
Dibenzo[a,h]anthracene	0.0300U	0.500	.43	86	0.510	0.451	89	40-125	4.80	(< 30 )
Fluoranthene	0.0300U	0.500	.377	75	0.510	0.398	78	55-115	5.30	(< 30 )
Fluorene	0.0300U	0.500	.328	66	0.510	0.345	68	50-110	5.00	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0300U	0.500	.432	86	0.510	0.450	88	45-125	3.90	(< 30 )
Naphthalene	0.0620U	0.500	.315	63	0.510	0.343	67	40-100	8.50	(< 30 )
Phenanthrene	0.0300U	0.500	.372	74	0.510	0.380	75	50-115	2.20	(< 30 )
Pyrene	0.0300U	0.500	.372	74	0.510	0.382	75	50-130	2.60	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.500	.299	60	0.510	0.362	71	50-110	19.00	
Terphenyl-d14		0.500	.433	87	0.510	0.437	86	50-135	0.95	

## Batch Information

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/25/2013 1:27:00PM

Prep Batch: XXX29980  
 Prep Method: 3520 Liquid/Liquid Ext for 8270 SIM  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 1,000.00mL  
 Prep Extract Vol: 1.00mL



## Billable Matrix Spike Summary

Original Sample ID: 1134600002  
 MS Sample ID: 1134600012 BMS  
 MSD Sample ID: 1134600013 BMSD

Analysis Date: 09/25/2013 14:10  
 Analysis Date: 09/25/2013 14:39  
 Analysis Date: 09/25/2013 14:54  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0552U	0.529	.335	63	0.526	0.375	71	45-110	11.20	(< 30 )
Acenaphthylene	0.0552U	0.529	.333	63	0.526	0.364	69	50-105	8.90	(< 30 )
Anthracene	0.0552U	0.529	.396	75	0.526	0.437	83	55-110	9.80	(< 30 )
Benzo(a)Anthracene	0.0552U	0.529	.416	79	0.526	0.438	83	55-110	5.10	(< 30 )
Benzo[a]pyrene	0.0552U	0.529	.424	80	0.526	0.452	86	55-110	6.40	(< 30 )
Benzo[b]Fluoranthene	0.0552U	0.529	.486	92	0.526	0.513	97	45-120	5.30	(< 30 )
Benzo[g,h,i]perylene	0.0552U	0.529	.468	89	0.526	0.490	93	40-125	4.60	(< 30 )
Benzo[k]fluoranthene	0.0552U	0.529	.437	83	0.526	0.443	84	45-125	1.40	(< 30 )
Chrysene	0.0552U	0.529	.448	85	0.526	0.458	87	55-110	2.20	(< 30 )
Dibenzo[a,h]anthracene	0.0552U	0.529	.469	89	0.526	0.499	95	40-125	6.20	(< 30 )
Fluoranthene	0.0552U	0.529	.438	83	0.526	0.435	83	55-115	0.52	(< 30 )
Fluorene	0.0552U	0.529	.349	66	0.526	0.377	72	50-110	7.70	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0552U	0.529	.48	91	0.526	0.505	96	45-125	5.00	(< 30 )
Naphthalene	0.110U	0.529	.32	60	0.526	0.358	68	40-100	11.30	(< 30 )
Phenanthrene	0.0552U	0.529	.407	77	0.526	0.433	82	50-115	6.10	(< 30 )
Pyrene	0.0552U	0.529	.424	80	0.526	0.425	81	50-130	0.17	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.529	.347	66	0.526	0.383	73	50-110	9.90	
Terphenyl-d14		0.529	.478	90	0.526	0.465	88	50-135	2.80	

## Batch Information

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/25/2013 2:39:00PM

Prep Batch: XXX29980  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 945.00mL  
 Prep Extract Vol: 1.00mL

## Method Blank

Blank ID: MB for HBN 1485790 [XXX/29986]  
 Blank Lab ID: 1180145

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600006, 1134600008

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	57.7	50-110		%
Terphenyl-d14	77.3	50-135		%

## Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/26/2013 6:16:00PM

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 9/23/2013 9:40:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [XXX29986]  
 Blank Spike Lab ID: 1180146  
 Date Analyzed: 09/26/2013 18:31

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600006, 1134600008

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Acenaphthene	0.5	0.325	65	( 45-110 )
Acenaphthylene	0.5	0.330	66	( 50-105 )
Anthracene	0.5	0.353	71	( 55-110 )
Benzo(a)Anthracene	0.5	0.348	70	( 55-110 )
Benzo[a]pyrene	0.5	0.352	70	( 55-110 )
Benzo[b]Fluoranthene	0.5	0.356	71	( 45-120 )
Benzo[g,h,i]perylene	0.5	0.324	65	( 40-125 )
Benzo[k]fluoranthene	0.5	0.349	70	( 45-125 )
Chrysene	0.5	0.382	76	( 55-110 )
Dibenzo[a,h]anthracene	0.5	0.323	65	( 40-125 )
Fluoranthene	0.5	0.359	72	( 55-115 )
Fluorene	0.5	0.340	68	( 50-110 )
Indeno[1,2,3-c,d] pyrene	0.5	0.353	71	( 45-125 )
Naphthalene	0.5	0.340	68	( 40-100 )
Phenanthrene	0.5	0.327	65	( 50-115 )
Pyrene	0.5	0.335	67	( 50-130 )
<b>Surrogates</b>				
2-Fluorobiphenyl	0.5	72	72	( 50-110 )
Terphenyl-d14	0.5	74.3	74	( 50-135 )

## Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 09/23/2013 09:40  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/30/2013 2:56:50PM



### Matrix Spike Summary

Original Sample ID: 1181960  
 MS Sample ID: 1180161 MS  
 MSD Sample ID: 1180162 MSD

Analysis Date: 09/26/2013 20:26  
 Analysis Date: 09/26/2013 20:41  
 Analysis Date: 09/26/2013 20:55  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600006, 1134600008

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0310U	0.500	.293	59	0.500	0.326	65	45-110	10.90	(< 30 )
Acenaphthylene	0.0310U	0.500	.279	56	0.500	0.309	62	50-105	10.30	(< 30 )
Anthracene	0.0310U	0.500	.335	67	0.500	0.351	70	55-110	4.70	(< 30 )
Benzo(a)Anthracene	0.0310U	0.500	.314	63	0.500	0.338	68	55-110	7.40	(< 30 )
Benzo[a]pyrene	0.0310U	0.500	.329	66	0.500	0.348	70	55-110	5.80	(< 30 )
Benzo[b]Fluoranthene	0.0310U	0.500	.321	64	0.500	0.338	68	45-120	5.10	(< 30 )
Benzo[g,h,i]perylene	0.0310U	0.500	.32	64	0.500	0.348	70	40-125	8.40	(< 30 )
Benzo[k]fluoranthene	0.0310U	0.500	.331	66	0.500	0.390	78	45-125	16.20	(< 30 )
Chrysene	0.0310U	0.500	.403	81	0.500	0.378	76	55-110	6.50	(< 30 )
Dibenzo[a,h]anthracene	0.0310U	0.500	.323	65	0.500	0.337	67	40-125	4.30	(< 30 )
Fluoranthene	0.0310U	0.500	.336	67	0.500	0.377	75	55-115	11.50	(< 30 )
Fluorene	0.0310U	0.500	.323	65	0.500	0.332	67	50-110	2.80	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0310U	0.500	.34	68	0.500	0.333	67	45-125	2.20	(< 30 )
Naphthalene	0.0640U	0.500	.28	56	0.500	0.316	63	40-100	12.00	(< 30 )
Phenanthrene	0.0310U	0.500	.282	56	0.500	0.324	65	50-115	13.70	(< 30 )
Pyrene	0.0310U	0.500	.329	66	0.500	0.370	74	50-130	11.80	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.500	.33	66	0.500	0.301	60	50-110	9.40	
Terphenyl-d14		0.500	.401	80	0.500	0.416	83	50-135	3.70	

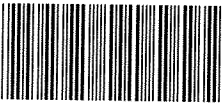
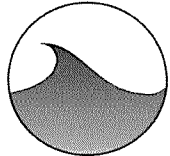
### Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/26/2013 8:41:01PM

Prep Batch: XXX29986  
 Prep Method: 3520 Liquid/Liquid Ext for 8270 SIM  
 Prep Date/Time: 9/23/2013 9:40:00AM  
 Prep Initial Wt./Vol.: 1,000.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 09/30/2013 2:56:50PM

### Chain of Custody Record



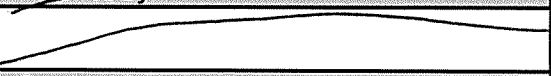


<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No.</b> 9901  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management <b>Complete by:</b> 2 weeks	<b>ix:</b> Water Sodium thiosulfate for dechlorination <b>Project #:</b> 5078
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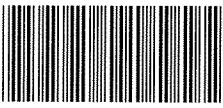
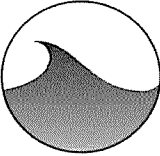
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	① A	
SWM02-04	847-1		1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	② A	
SWM02-04 Dup	847-1		1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③ A	
SWM03-04	1224-1		1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④ A	
SWM04-04	1224-2		1125	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑤ A	
SWM05-04	207-1		1140	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥ A	
SWM06-04	314-22		1210	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦ A	
SWM07-04	484-1		1225	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM08-04	86-1		1245	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM08-04 Dup	86-1		1245	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM09-04	499-1		1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ Es 9/19	
SWM10-04	525-2	9/19/13	1315	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ ⑪ A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
	9/19/13			
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
				9/19/13 13:59

## Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #: 1134600</b> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project: MOA Stormwater Management</b> <b>Complete by: 2 weeks</b>	<b>Matrix: Water</b> <b>Project #: 5078</b>
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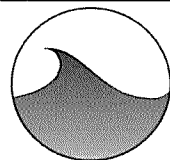
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	① B	
SWM02-04	847-1	}	1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	② B	
SWM02-04 Dup	847-1		1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	③ B	
SWM03-04	1224-1		1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	④ B	
SWM04-04	1224-2		1125	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤ B	
SWM05-04	207-1		1140	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥ B	
SWM06-04	314-22		1210	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦ B	
SWM07-04	484-1		1225	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧ B	
SWM08-04	86-1		1245	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨ B	
SWM08-04 Dup	86-1		1245	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩ B	
SWM09-04	499-1		1310	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM10-04	525-2	9/19/13	1315	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪ B	

**Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.**

**Special Instructions/Comments:**

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. K. H.</i>	9/19/13	<i>GLBW</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	09/19/13 13:59

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No.</b> 9901  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management <b>Complete by:</b> 2 weeks	<b>Matrix:</b> Water <span style="float: right;"><b>Project #:</b> 5078</span>
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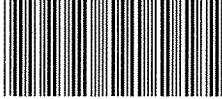
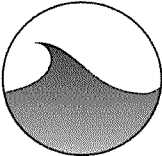
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	① C	
SWM02-04	847-1	~	1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	② C	
SWM02-04 Dup	847-1		1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	③ C	
SWM03-04	1224-1		1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	④ C	
SWM04-04	1224-2		1125	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑤ C	
SWM05-04	207-1		1140	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑥ C	
SWM06-04	314-22		1210	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑦ C	
SWM07-04	484-1		1225	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑧ C	
SWM08-04	86-1		1245	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑨ C	
SWM08-04 Dup	86-1		1245	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑩ C	
SWM09-04	499-1		9/19/13	1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	
SWM10-04	525-2	9/19/13	1315	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑪ C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>AA huy</i>	9/19/13	<i>A Lady</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
			<i>[Signature]</i>	9/19/13 13:58

### Chain of Custody Record




<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  Lab #: <span style="font-size: 24pt; font-weight: bold;">1134600</span> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water <span style="margin-left: 100px;"><b>Project #:</b> 5078</span>
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/19/13	1045	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	ES 9/19 ② D-E <del>⑩ A-G</del> <del>⑫ A-G</del> <del>⑬ A-G</del>	⑫ A-B ⑬ A-B
SWM02-04 Dup	847-1	✓	1045	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	③ D-E	
SWM05-04	207-1	↓	1140	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑥ D-E	
SWM07-04	484-1	↓	1225	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑧ D-E	
SWM09-04	499-1	9/19/13	1310	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
	9/19/13			
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
				09/19/13 13:59

7.8/#240      7.7/#35      7.4/#35      2.4/#35

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### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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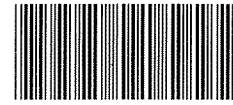
<b>Project:</b> MOA Stormwater Management  <b>Complete by:</b> 2 weeks	<b>Matrix:</b> Water  <b>Project #:</b> 5078
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/19/13	1045	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	ES 9/19 ② <del>F-H</del> ⑫ C-E	
SWM02-04 Dup	847-1	↙	1045	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	③ F-H	
SWM05-04	207-1	↙	1140	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑥ F-H	
SWM07-04	484-1	↙	1225	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑧ F-H	
SWM09-04	499-1	9/19/13	1310	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑭ A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>SAH</i>	9/19/13	<i>[Signature]</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>			<i>[Signature]</i>	09/19/13 13:59



## SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <input checked="" type="radio"/> N/A <input checked="" type="radio"/> Yes No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? * Note: Exemption permitted for chilled samples collected less than 8 hours ago. Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Note: If non-compliant, use form FS-0029 to document affected samples/analyses. If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	Yes No <input checked="" type="radio"/> N/A	Taken within 8 hrs
If temperature(s) <0°C, were all sample containers ice free?	Yes No <input checked="" type="radio"/> N/A	
Delivery method (specify all that apply): <input checked="" type="radio"/> Client USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/ tracking #  See Attached or <input checked="" type="radio"/> N/A  Yes No <input checked="" type="radio"/> N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		<input checked="" type="radio"/> N/A SRF Initiated by: <u>SLC</u> N/A
Were samples received within hold time? Note: Refer to form F-083 "Sample Guide" for hold time information.	<input checked="" type="radio"/> Yes No N/A	
Do samples match COC* (i.e., sample IDs, dates/times collected)? * Note: Exemption permitted if times differ <1hr; in that case, use times on COC.	<input checked="" type="radio"/> Yes No N/A	
Were analyses requested unambiguous?	<input checked="" type="radio"/> Yes No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <input checked="" type="radio"/> Bubble Wrap Separate plastic bags Vermiculite Other:	<input checked="" type="radio"/> Yes No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No <input checked="" type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative*) used? * Note: Exemption permitted for waters to be analyzed for metals.	<input checked="" type="radio"/> Yes No N/A	
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="radio"/> Yes No N/A	
For special handling (e.g., "MF" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <input checked="" type="radio"/> N/A	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="radio"/> Yes No N/A	Fecal, BOD
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No <input checked="" type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: <u>SLC</u> 9/19/13 PM = N/A
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: N/A

Additional notes (if applicable):

There was no sample SWM09-04. Client was unable to sample. SLC 9/19/13

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.



## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1134149**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 09/19/2013 8:50:08AM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

**Case Narrative**

SGS Client: **Kinnetic Laboratories, Inc.**  
SGS Project: **1134149**  
Project Name/Site: **5078 MOA Stormwater Management**  
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM01-03 (1134149001) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM02-03 (1134149002) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM02-03 Dup (1134149005) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM03-03 (1134149006) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM04-03 (1134149007) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM05-03 (1134149008) PS**

5210B - BOD LCS failed high. Result may be biased high.

**SWM06-03 (1134149009) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM07-03 (1134149010) PS**

5210B - BOD LCS failed high. Result may be biased high.

**SWM08-03 (1134149011) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM08-03 Dup (1134149012) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM09-03 (1134149013) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM10-03 (1134149014) PS**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**CCV for HBN 1479584 [VMS/13712 (1174102) CCV**

8260B - CCV recoveries for several analytes do not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

**CCV for HBN 1479699 [XMS/7564] (1174456) CCV**

8270D SIM - CCV recovery for indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene does not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

**1134149014DUP (1173489) DUP**

### Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**

SGS Project: **1134149**

Project Name/Site: **5078 MOA Stormwater Management**

Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**LCSS for HBN 1480973 [BOD/4779 (1175199) LCSS**

5210B - BOD LCS failed high. Results may be biased high.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/19/2013 8:50:09AM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1134149003	SWM02-03 MS	XMS7564	Benzo[k]fluoranthene	RP
1134149003	SWM02-03 MS	XMS7564	Chrysene	RP
1134149013	SWM09-03	XMS7564	Benzo[b]Fluoranthene	SP
1134149013	SWM09-03	XMS7564	Benzo[k]fluoranthene	SP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-03	1134149001	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03	1134149002	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 MS	1134149003	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 MSD	1134149004	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 Dup	1134149005	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM03-03	1134149006	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM04-03	1134149007	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM05-03	1134149008	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM06-03	1134149009	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM07-03	1134149010	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM08-03	1134149011	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM08-03 Dup	1134149012	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM09-03	1134149013	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM10-03	1134149014	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
Trip Blank	1134149015	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D



### Detectable Results Summary

Client Sample ID: <b>SWM01-03</b>			
Lab Sample ID: 1134149001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	360	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.16	mg/L
Client Sample ID: <b>SWM02-03</b>			
Lab Sample ID: 1134149002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	41	col/100mL
<b>Waters Department</b>	Total Suspended Solids	1.02	mg/L
Client Sample ID: <b>SWM02-03 Dup</b>			
Lab Sample ID: 1134149005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	50	col/100mL
<b>Waters Department</b>	Total Suspended Solids	0.761	mg/L
Client Sample ID: <b>SWM03-03</b>			
Lab Sample ID: 1134149006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	5400	col/100mL
<b>Waters Department</b>	Total Suspended Solids	5.96	mg/L
Client Sample ID: <b>SWM04-03</b>			
Lab Sample ID: 1134149007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1350	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.75	mg/L
Client Sample ID: <b>SWM05-03</b>			
Lab Sample ID: 1134149008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	2.92	mg/L
	Fecal Coliform	18500	col/100mL
<b>Waters Department</b>	Total Suspended Solids	5.75	mg/L
Client Sample ID: <b>SWM06-03</b>			
Lab Sample ID: 1134149009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	40	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.13	mg/L
Client Sample ID: <b>SWM07-03</b>			
Lab Sample ID: 1134149010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	4.24	mg/L
	Fecal Coliform	964	col/100mL
<b>Polynuclear Aromatics GC/MS</b>	Pyrene	0.0547	ug/L
<b>Waters Department</b>	Total Suspended Solids	24.3	mg/L
Client Sample ID: <b>SWM08-03</b>			
Lab Sample ID: 1134149011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	72	col/100mL
<b>Waters Department</b>	Total Suspended Solids	14.9	mg/L

Print Date: 09/19/2013 8:50:11AM

### Detectable Results Summary

Client Sample ID: **SWM08-03 Dup**

Lab Sample ID: 1134149012

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	92	col/100mL
Total Suspended Solids	16.3	mg/L

Client Sample ID: **SWM09-03**

Lab Sample ID: 1134149013

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	17	col/100mL
Benzo(a)Anthracene	0.180	ug/L
Benzo[a]pyrene	0.250	ug/L
Benzo[b]Fluoranthene	0.415	ug/L
Benzo[g,h,i]perylene	0.196	ug/L
Benzo[k]fluoranthene	0.113	ug/L
Chrysene	0.272	ug/L
Fluoranthene	0.532	ug/L
Indeno[1,2,3-c,d] pyrene	0.174	ug/L
Phenanthrene	0.209	ug/L
Pyrene	0.407	ug/L
Total Suspended Solids	19.9	mg/L

**Waters Department**

Client Sample ID: **SWM10-03**

Lab Sample ID: 1134149014

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	64	col/100mL
Total Suspended Solids	3.75	mg/L



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149001  
Lab Project ID: 1134149

Collection Date: 08/29/13 10:45  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	360	10.0	10.0	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 10 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149001  
Lab Project ID: 1134149

Collection Date: 08/29/13 10:45  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.16	0.676	0.203	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 740 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	41	1.64	1.64	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Acenaphthylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo(a)Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[a]pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[b]Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[g,h,i]perylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[k]fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Chrysene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Dibenzo[a,h]anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Fluorene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Indeno[1,2,3-c,d] pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Naphthalene	0.111 U	0.111	0.0344	ug/L	1		09/03/13 14:01
Phenanthrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
<b>Surrogates</b>							
2-Fluorobiphenyl	58.2	50-110		%	1		09/03/13 14:01
Terphenyl-d14	76.2	50-135		%	1		09/03/13 14:01

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 14:01

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 900 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 19:42
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 19:42
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 19:42
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 19:42
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
<b>Surrogates</b>							
1,2-Dichloroethane-D4	102	70-120		%	1		08/30/13 19:42
4-Bromofluorobenzene	104	75-120		%	1		08/30/13 19:42
Toluene-d8	99.7	85-120		%	1		08/30/13 19:42

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 19:42

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.02	0.508	0.152	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 985 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM





Results of **SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	50	2.00	2.00	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149005  
 Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Acenaphthylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo(a)Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[a]pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[b]Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[g,h,i]perylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[k]fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Chrysene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Dibenzo[a,h]anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Fluorene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Indeno[1,2,3-c,d] pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Naphthalene	0.111 U	0.111	0.0344	ug/L	1		09/03/13 14:45
Phenanthrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
<b>Surrogates</b>							
2-Fluorobiphenyl	51	50-110		%	1		09/03/13 14:45
Terphenyl-d14	67.2	50-135		%	1		09/03/13 14:45

**Batch Information**

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/03/13 14:45

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/13 09:50  
 Prep Initial Wt./Vol.: 900 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:05
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:05
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:05
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:05
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
<b>Surrogates</b>							
1,2-Dichloroethane-D4	102	70-120		%	1		08/30/13 20:05
4-Bromofluorobenzene	99.2	75-120		%	1		08/30/13 20:05
Toluene-d8	100	85-120		%	1		08/30/13 20:05

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:05

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



### Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

### Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	0.761	0.543	0.163	mg/L	1		08/30/13 08:49

### Batch Information

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 920 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149006  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:38  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	5400	100	100	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149006  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:38  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.96	0.505	0.152	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149007  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1350	9.09	9.09	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149007  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.75	0.562	0.169	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 890 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM





**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.92	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	18500	100	100	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/03/13 15:00
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
<b>Surrogates</b>							
2-Fluorobiphenyl	58.6	50-110		%	1		09/03/13 15:00
Terphenyl-d14	69.8	50-135		%	1		09/03/13 15:00

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 15:00

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:28
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:28
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:28
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:28
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
<b>Surrogates</b>							
1,2-Dichloroethane-D4	99.1	70-120		%	1		08/30/13 20:28
4-Bromofluorobenzene	100	75-120		%	1		08/30/13 20:28
Toluene-d8	97.8	85-120		%	1		08/30/13 20:28

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:28

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.75	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149009  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	40	2.00	2.00	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149009  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.13	0.532	0.160	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 940 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.24	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	964	9.09	9.09	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



### Results of SWM07-03

Client Sample ID: **SWM07-03**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149010  
 Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

### Results by Polynuclear Aromatics GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/03/13 15:14
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Pyrene	0.0547	0.0500	0.0150	ug/L	1		09/03/13 15:14
<b>Surrogates</b>							
2-Fluorobiphenyl	64.3	50-110		%	1		09/03/13 15:14
Terphenyl-d14	72.2	50-135		%	1		09/03/13 15:14

### Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/03/13 15:14

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/13 09:50  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM





Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:51
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:51
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:51
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:51
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105	70-120		%	1		08/30/13 20:51
4-Bromofluorobenzene	100	75-120		%	1		08/30/13 20:51
Toluene-d8	100	85-120		%	1		08/30/13 20:51

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:51

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	24.3	1.43	0.429	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 350 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149011  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	72	2.00	2.00	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149011  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.9	0.820	0.246	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 610 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM08-03 Dup**

Client Sample ID: **SWM08-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149012  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	92	2.00	2.00	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM08-03 Dup**

Client Sample ID: **SWM08-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149012  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	16.3	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	17	1.67	1.67	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 60 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Acenaphthylene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Anthracene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo(a)Anthracene	0.180	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[a]pyrene	0.250	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[b]Fluoranthene	0.415	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[g,h,i]perylene	0.196	0.0513	0.0154	ug/L	1		09/06/13 19:04
Benzo[k]fluoranthene	0.113	0.0513	0.0154	ug/L	1		09/03/13 15:29
Chrysene	0.272	0.0513	0.0154	ug/L	1		09/03/13 15:29
Dibenzo[a,h]anthracene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Fluoranthene	0.532	0.0513	0.0154	ug/L	1		09/03/13 15:29
Fluorene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Indeno[1,2,3-c,d] pyrene	0.174	0.0513	0.0154	ug/L	1		09/06/13 19:04
Naphthalene	0.103 U	0.103	0.0318	ug/L	1		09/03/13 15:29
Phenanthrene	0.209	0.0513	0.0154	ug/L	1		09/03/13 15:29
Pyrene	0.407	0.0513	0.0154	ug/L	1		09/03/13 15:29
<b>Surrogates</b>							
2-Fluorobiphenyl	52.4	50-110		%	1		09/03/13 15:29
Terphenyl-d14	76.6	50-135		%	1		09/03/13 15:29

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 15:29

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 975 mL  
Prep Extract Vol: 1 mL

Analytical Batch: XMS7572  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/06/13 19:04

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 975 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM





Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 21:14
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 21:14
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 21:14
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 21:14
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
<b>Surrogates</b>							
1,2-Dichloroethane-D4	103	70-120		%	1		08/30/13 21:14
4-Bromofluorobenzene	102	75-120		%	1		08/30/13 21:14
Toluene-d8	98.8	85-120		%	1		08/30/13 21:14

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 21:14

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	19.9	0.510	0.153	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149014  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:50  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	64	2.00	2.00	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149014  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:50  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	3.75	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149015  
 Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 16:15
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 16:15
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 16:15
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 16:15
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105	70-120		%	1		08/30/13 16:15
4-Bromofluorobenzene	97.8	75-120		%	1		08/30/13 16:15
Toluene-d8	98.6	85-120		%	1		08/30/13 16:15

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 08/30/13 16:15

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 08/30/13 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1480973 [BOD/4779]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1175198

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4779

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 8/29/2013 7:40:00PM

Print Date: 09/19/2013 8:50:14AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [BOD4779]

Blank Spike Lab ID: 1175199

Date Analyzed: 08/29/2013 19:40

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009,  
1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	239	121 *	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4779**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

## Method Blank

Blank ID: MB for HBN 1479682 [BTF/13041]  
Blank Lab ID: 1174394

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Instrument:  
Analyst: SDP  
Analytical Date/Time: 8/29/2013 4:55:00PM

Print Date: 09/19/2013 8:50:16AM



## Method Blank

Blank ID: MB for HBN 1479034 [STS/4205]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1173485

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 8/30/2013 8:49:51AM

Print Date: 09/19/2013 8:50:17AM

## Duplicate Sample Summary

Original Sample ID: 1134149008

Analysis Date: 08/30/2013 08:49

Duplicate Sample ID: 1173488

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	5.75	5.75	0.00	5.00

## Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/19/2013 8:50:17AM

## Duplicate Sample Summary

Original Sample ID: 1134149014

Duplicate Sample ID: 1173489

QC for Samples:

1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

Analysis Date: 08/30/2013 08:49

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	3.75	3.50	6.90*	5.00

## Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/19/2013 8:50:17AM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [STS4205]  
Blank Spike Lab ID: 1173486  
Date Analyzed: 08/30/2013 08:49

Spike Duplicate ID: LCSD for HBN 1134149 [STS4205]  
Spike Duplicate Lab ID: 1173487  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	47.1	94	50	47.8	96	( 75-125 )	1.50	(< 5 )

### Batch Information

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Instrument:  
Analyst: MEV

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:18AM

## Method Blank

Blank ID: MB for HBN 1479583 [VXX/25132]  
 Blank Lab ID: 1174098

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	103	70-120		%
4-Bromofluorobenzene	102	75-120		%
Toluene-d8	101	85-120		%

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 1:11:00PM

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Leaching Blank

Blank ID: LB for HBN 1478716 [TCLP/6951]  
 Blank Lab ID: 1173056

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,4-Dichlorobenzene	60.0U	100	30.0	ug/L
Benzene	48.0U	80.0	24.0	ug/L
Chlorobenzene	60.0U	100	30.0	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	101	70-120		%
4-Bromofluorobenzene	100	75-120		%
Toluene-d8	101	85-120		%

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 4:38:00PM

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [VXX25132]  
 Blank Spike Lab ID: 1174099  
 Date Analyzed: 08/30/2013 14:19

Spike Duplicate ID: LCSD for HBN 1134149 [VXX25132]  
 Spike Duplicate Lab ID: 1174100  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

### Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2-Dichlorobenzene	30	32.6	109	30	33.4	111	( 70-120 )	2.50	(< 20 )
1,3-Dichlorobenzene	30	33.9	113	30	33.3	111	( 75-125 )	1.60	(< 20 )
1,4-Dichlorobenzene	30	33.4	111	30	34.4	115	( 75-125 )	3.00	(< 20 )
Benzene	30	33.1	110	30	31.9	106	( 80-120 )	3.60	(< 20 )
Chlorobenzene	30	33.1	110	30	32.4	108	( 80-120 )	1.90	(< 20 )
Ethylbenzene	30	33.2	111	30	32.6	109	( 75-125 )	1.90	(< 20 )
o-Xylene	30	33.5	112	30	32.2	107	( 80-120 )	3.90	(< 20 )
P & M -Xylene	60	66.5	111	60	63.5	106	( 75-130 )	4.70	(< 20 )
Toluene	30	32.0	107	30	31.2	104	( 75-120 )	2.50	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4	30	98.6	99	30	100	100	( 70-120 )	1.90	
4-Bromofluorobenzene	30	96	96	30	102	102	( 75-120 )	6.00	
Toluene-d8	30	99.8	100	30	99.3	99	( 85-120 )	0.47	

### Batch Information

Analytical Batch: **VMS13712**  
 Analytical Method: **EPA 602/624**  
 Instrument: **HP 5890 Series II MS1 VJA**  
 Analyst: **NRB**

Prep Batch: **VXX25132**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/30/2013 08:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:19AM

## Billable Matrix Spike Summary

Original Sample ID: 1134149002  
 MS Sample ID: 1134149003 BMS  
 MSD Sample ID: 1134149004 BMSD

Analysis Date: 08/30/2013 19:42  
 Analysis Date: 08/30/2013 21:37  
 Analysis Date: 08/30/2013 22:00  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	35.4	118	30.0	33.9	113	70-120	4.30	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	34.4	115	30.0	34.4	115	75-125	0.09	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	35.6	119	30.0	35.1	117	75-125	1.50	(< 20 )
Benzene	0.400U	30.0	33.9	113	30.0	32.7	109	80-120	3.40	(< 20 )
Chlorobenzene	0.500U	30.0	34.6	115	30.0	32.6	109	80-120	6.00	(< 20 )
Ethylbenzene	1.00U	30.0	33.7	112	30.0	32.0	107	75-125	5.20	(< 20 )
o-Xylene	1.00U	30.0	34.7	116	30.0	32.2	107	80-120	7.30	(< 20 )
P & M -Xylene	2.00U	60.0	68.4	114	60.0	64.3	107	75-130	6.10	(< 20 )
Toluene	1.00U	30.0	32.9	110	30.0	31.4	105	75-120	4.50	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	29.9	100	30.0	29.6	99	70-120	0.84	
4-Bromofluorobenzene		30.0	29.2	97	30.0	30.2	101	75-120	3.30	
Toluene-d8		30.0	30.3	101	30.0	29.6	99	85-120	2.30	

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 9:37:00PM

Prep Batch: VXX25132  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL



## Method Blank

Blank ID: MB for HBN 1479044 [XXX/29790]  
 Blank Lab ID: 1173540

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	54.6	50-110		%
Terphenyl-d14	68.3	50-135		%

## Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/3/2013 12:34:00PM

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 8/30/2013 9:50:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [XXX29790]  
 Blank Spike Lab ID: 1173541  
 Date Analyzed: 09/03/2013 12:49

Spike Duplicate ID: LCSD for HBN 1134149  
 [XXX29790]  
 Spike Duplicate Lab ID: 1173542  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149002, 1134149005, 1134149008, 1134149010, 1134149013

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.314	63	0.5	0.331	66	( 45-110 )	5.30	(< 30 )
Acenaphthylene	0.5	0.308	62	0.5	0.332	66	( 50-105 )	7.40	(< 30 )
Anthracene	0.5	0.360	72	0.5	0.358	72	( 55-110 )	0.51	(< 30 )
Benzo(a)Anthracene	0.5	0.395	79	0.5	0.374	75	( 55-110 )	5.50	(< 30 )
Benzo[a]pyrene	0.5	0.431	86	0.5	0.404	81	( 55-110 )	6.30	(< 30 )
Benzo[b]Fluoranthene	0.5	0.466	93	0.5	0.424	85	( 45-120 )	9.40	(< 30 )
Benzo[g,h,i]perylene	0.5	0.515	103	0.5	0.487	98	( 40-125 )	5.50	(< 30 )
Benzo[k]fluoranthene	0.5	0.425	85	0.5	0.425	85	( 45-125 )	0.06	(< 30 )
Chrysene	0.5	0.425	85	0.5	0.405	81	( 55-110 )	4.70	(< 30 )
Dibenzo[a,h]anthracene	0.5	0.497	99	0.5	0.455	91	( 40-125 )	8.70	(< 30 )
Fluoranthene	0.5	0.382	76	0.5	0.370	74	( 55-115 )	3.30	(< 30 )
Fluorene	0.5	0.332	66	0.5	0.339	68	( 50-110 )	1.90	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.5	0.518	104	0.5	0.493	99	( 45-125 )	4.80	(< 30 )
Naphthalene	0.5	0.292	58	0.5	0.309	62	( 40-100 )	5.70	(< 30 )
Phenanthrene	0.5	0.365	73	0.5	0.363	73	( 50-115 )	0.52	(< 30 )
Pyrene	0.5	0.388	78	0.5	0.355	71	( 50-130 )	8.80	(< 30 )
<b>Surrogates</b>									
2-Fluorobiphenyl	0.5	62.7	63	0.5	67.1	67	( 50-110 )	6.80	
Terphenyl-d14	0.5	76.9	77	0.5	73.9	74	( 50-135 )	4.00	

## Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/2013 09:50  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL



### Billable Matrix Spike Summary

Original Sample ID: 1134149002  
MS Sample ID: 1134149003 BMS  
MSD Sample ID: 1134149004 BMSD

Analysis Date: 09/03/2013 14:01  
Analysis Date: 09/03/2013 14:16  
Analysis Date: 09/03/2013 14:31  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0556U	0.549	.31	56	0.556	0.331	60	45-110	6.50	(< 30 )
Acenaphthylene	0.0556U	0.549	.319	58	0.556	0.334	60	50-105	4.70	(< 30 )
Anthracene	0.0556U	0.549	.368	67	0.556	0.371	67	55-110	0.91	(< 30 )
Benzo(a)Anthracene	0.0556U	0.549	.361	66	0.556	0.413	74	55-110	13.60	(< 30 )
Benzo[a]pyrene	0.0556U	0.549	.389	71	0.556	0.433	78	55-110	10.90	(< 30 )
Benzo[b]Fluoranthene	0.0556U	0.549	.412	75	0.556	0.453	82	45-120	9.50	(< 30 )
Benzo[g,h,i]perylene	0.0556U	0.549	.456	83	0.556	0.511	92	40-125	11.40	(< 30 )
Benzo[k]fluoranthene	0.0556U	0.549	.402	73	0.556	0.428	77	45-125	6.10	(< 30 )
Chrysene	0.0556U	0.549	.395	72	0.556	0.421	76	55-110	6.50	(< 30 )
Dibenzo[a,h]anthracene	0.0556U	0.549	.435	79	0.556	0.486	88	40-125	11.30	(< 30 )
Fluoranthene	0.0556U	0.549	.387	71	0.556	0.419	76	55-115	7.90	(< 30 )
Fluorene	0.0556U	0.549	.333	61	0.556	0.347	62	50-110	4.10	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0556U	0.549	.452	82	0.556	0.499	90	45-125	9.90	(< 30 )
Naphthalene	0.111U	0.549	.293	53	0.556	0.314	57	40-100	6.70	(< 30 )
Phenanthrene	0.0556U	0.549	.379	69	0.556	0.393	71	50-115	3.80	(< 30 )
Pyrene	0.0556U	0.549	.363	66	0.556	0.401	72	50-130	10.00	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.549	.304	55	0.556	0.323	58	50-110	6.10	
Terphenyl-d14		0.549	.358	65	0.556	0.394	71	50-135	9.60	

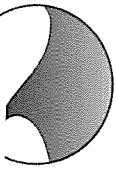
### Batch Information

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Instrument: HP 6890/5973 MS SVQA  
Analyst: RTS  
Analytical Date/Time: 9/3/2013 2:16:00PM

Prep Batch: XXX29790  
Prep Method: Liquid/Liquid Extraction for 625 SIMS  
Prep Date/Time: 8/30/2013 9:50:00AM  
Prep Initial Wt./Vol.: 910.00mL  
Prep Extract Vol: 1.00mL

Print Date: 09/19/2013 8:50:21AM

1134149



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
Contact: Steve Crupi

From: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907) 276-6178  
(907) 278-6881 Fax  
Contact: Mark Savoie

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Note: Samples contain sodium thiosulfate for dechlorination

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	①A	
SWM02-03	847-1		1110	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	②A	
SWM02-03 Dup	847-1		1116	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③A	
SWM03-03	1224-1		1138	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④A	
SWM04-03	1224-2		1140	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦A	
SWM05-03	207-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧A	
SWM06-03	314-22		1240	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨A	
SWM07-03	484-1		1255	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩A	
SWM08-03	86-1		1320	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪A	
SWM08-03 Dup	86-1		1320	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫A	
SWM09-03	499-1		1340	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬A	
SWM10-03	525-2	8/29/13	1358	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑭A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

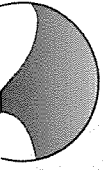
Special Instructions/Comments:

Sampled and Relinquished By: *AA* Date/Time: 8/29/13 Received By: *[Signature]* Date/Time: 8/29/13 1438

Relinquished By: *[Signature]* Date/Time: 8/29/13 1438

9.6 #238 11.1 #238

1134149



Chain of Custody Record

To: SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Steve Crupi

SGS Quote No. 9901

Date Received:

Lab #:

From: Kinnetic Laboratories, Inc.  
 1102 West 7th Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 (907) 278-6881 Fax  
 Contact: Mark Savoie

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	1B	
SWM02-03	847-1		1110	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	2B	
SWM02-03 Dup	847-1		1110	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	5B	
SWM03-03	1224-1		1138	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	6B	
SWM04-03	1224-2		1140	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	7B	
SWM05-03	207-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	8B	
SWM06-03	314-22		1240	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	9B	
SWM07-03	484-1		1255	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	10B	
SWM08-03	86-1		1320	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	11B	
SWM08-03 Dup	86-1		1320	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	12B	
SWM09-03	499-1		1340	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	13B	
SWM10-03	525-2	9/29/13	1350	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	14B	

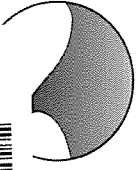
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
AACW	8/29/13	bc		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			Cherest	8/29/13 1438

9.6 #238 0.4 #205 11.1 #238

1134149



Chain of Custody Record

**To:**  
 SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Steve Crupi

**From:**  
 Kinnetic Laboratories, Inc  
 1102 West 7th Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 (907) 278-6881 Fax  
 Contact: Mark Savoie

Project #: 5078

Matrix: Water

MOA Stormwater Management

Project:  
 Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	1C	
SWM02-03	847-1		1110	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	2C	
SWM02-03 Dup	847-1		1110	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	5C	
SWM03-03	1224-1		1138	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	6C	
SWM04-03	1224-2		1148	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	7C	
SWM05-03	207-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	8C	
SWM06-03	314-22		1240	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	9C	
SWM07-03	484-1		1255	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	10C	
SWM08-03	86-1		1320	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	11C	
SWM08-03 Dup	86-1		1320	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	12C	
SWM09-03	499-1		1340	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	13C	
SWM10-03	525-2	8/29/13	1350	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	14C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLL. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>Steve Crupi</i>	8/29	6C	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>Edoest</i>	8/29/13 1438

9.6 #238

0.4 #205

11.1

#238









### SGS North America Inc.

200 W. Potter Dr., Anchorage, AK 99518 (ph) 907-562-2343, (fax) 907-561-5301  
3180 Peger Rd., Fairbanks, AK 99701 (ph) 907-474-8656, (fax) 907-474-9685

### Sample Kit Request

Client pickup Date: 7/25/2013 Time: noon

Deliver to client:  
 Shipment Method:  
 Airline Carrier:  
Airbill Number:  
Date to ship by:

Client Name: Kinnetics Laboratories  
Ordered By: Mark Savoie e-mail: 276-6178  
Project Name: MOA Stormwater Sampling  
Quote #: 9901 (LJMS Profile# 169214)  
Delivery:

Notes:  
Kit request taken by: SRC Date: 7/23/2013  
Kit prepared by: NEG Date: 24 July 13  
Kit checked by: AMB Date: 7/24/13  
Kit shipped by: Date:

Estimated date for samples returning to the lab:  
 Total # Bottles includes bottles for % Solids  
 Regulatory/Special Requirements  
 DQOs  
 Problem Matrix

SOW/SAP/QAPP  
 Profile Build/Project Notice

#### PM Reminders:

Track all Lot#

#### Notes:

No. Samples	Matrix	Analysis	Container Size & Type	Pres.	Bottle Lot #	Pres. Lot #	Hold Time	# QC Bottles	Total Bottles
12	water	BOD	1 x 1-L HDPE	none			48 hours		12
12	water	TSS	1 x 1-L HDPE	none			7 days		12
12	water	fecal coli	120-mL sterile	Na2S2O3			8 hours		12
5	water	TAH (VOC624)	3 x 40-mL VOA vials	HCl			14 days	6	21
5	water	TAqH (PAH SIM 625)	2 x 1-L amber	none			7 days	4	14

#### Attention Client/Sampler: Please remember the following sampling guidelines -

1. Do not rinse container before filling and be aware of any acid preservative in container.
2. Fill container to top, but do not overfill (except volatiles which should be headspace free).
3. Label the container with your sample/site ID, as well as the date & time of collection.
4. Fill in the Chain of Custody.
5. Add frozen gel packs or ice to your cooler & pack to prevent breakage.

**Provide gel ice in a box. Client will be making his own bottle labels.**

#### Other Notes/Reminders for Kit Prep:

- Pack for Shipping via air carrier
  - 125mL Temperature Blank
  - 500mL Temperature Blank
  - Soil VOA Trip Blank - Lot#:
  - Water VOA Trip Blank - Lot#: 1158934
  - 524 VOA Trip Blank - Lot#:
  - Low Level Mercury Trip Blank- Lot#:
  - SGS COCs - Circle req'd format:
    - \* Blank COC
    - \* Drinking Water COC template
    - \* UST COC template
    - \* Landfill COC template
  - Custody Seals
  - Labels
  - Coolers
  - Bubble Wrap
  - Gel Ice (circle one: in each cooler OR in a separate cooler)
  - Pack similar bottles together OR custom packing (circle one)
  - Send Instructions
  - Include Foreign Soil Permit
- \* COC initiated by PM (attached)  
\* Waste Water COC template  
\* Mining COC template  
\* TCLP COC template
- Note: Charges may be invoiced for bottles which are unused or improperly used.**  
**If you have any questions concerning this sample kit, please contact your Project Manager for assistance. Thank you.**



## **Appendix B4**

### **Laboratory Data Package Storm Event #4**



**Appendix C**  
**Field & Laboratory Data Validation**



## Field & Laboratory Data Validation

Data review focused on the following quality control (QC) parameters and their overall effects on the data:

- Physical parameter replicate comparisons
- Sample handling and holding time compliance
- Field replicate comparison for conventional and organic constituents
- Comparisons of laboratory controls (e.g., matrix spike/matrix spike duplicates).

### 1. Physical Parameters Replicate Comparisons

Precipitation was measured at three locations within the Anchorage basin using tipping bucket rain gages. The QAPP (MOA, 2012) specifies that storm events must meet the following criteria: a storm event must be greater than 0.1 inch of rain in 24 hours and be preceded by 24 hours of dry weather (less than 0.1 inch of rain). Due to the nature of storm patterns in the Anchorage Bowl, some rain gauges showed that the criteria preceding dry weather was met for the first storm while the criteria for the amount of rain fallen did not. The other storm events did meet all criteria.

Rain gauges were deployed June 19, 2013. For the July 1, 2013 storm event, the three rain gauges registered 0.12, 0.05, and 0.02 inch preceded by no precipitation in the 24 hours before the storm began on July 1, 2013. While the dry weather precipitation records do not exceed the criterion, the amount of precipitation during the storm did not meet the criteria of 0.1 inch. However, it is important to note that other studies indicate runoff can occur with as little as 0.02 inch of rain (MOA 2013). The recorded precipitation at these rain gauges did not adversely affect the results of the monitoring since runoff was occurring at all the sample locations. The July 20, 2013 event, rain gauges registered 0.24, 0.32, and 0.28 inch. In the preceding 24 hrs all three rain gauges read no precipitation. For the August 29, 2013 event, the three rain gauges registered 0.17, 0.22, and 0.23 inch. The preceding calendar day registered 0.44, 0.42, and 0.37 inch. Although the previous calendar day 24-hour period did not meet the criteria for this storm, the sampling actually did meet the criteria since it took place within the first 24-hr period after the beginning the storm. The storm began on the evening of 28 August and the sampling was initiated the following morning within the 24-hr criteria. For the September 19, 2013 event rain gauges registered 0.23, 0.25, and 0.27 inch preceded by 0.16, 0.17, and 0.02 inch in the preceding calendar 24-hr period. The preceding day was part of the same storm as it came in just prior to midnight and was preceded by 24-hour period of dry weather.

Grab samples were obtained during four storm events from the flowing water discharging from the storm drain outfalls prior to mixing with the stream water. Flows were monitored using the acoustic doppler flow meter, except at stations SWM07. At SWM07, the volume/ time method was repeated four times and the average measurement used. The coefficient of variation (CV) was calculated to determine variability of the measurement technique. The CV is a percentage representing the standard deviation divided by the mean of a population. The CVs varied between 1.5% and 4.5% and are presented in Table 1. During the last sampling event the volume/time method was not carried out four consecutive times due to the slow rate of flow.

**Table 1. Coefficients of Variation for Volume/Time Flow Measurements**

<b>Storm Event Date</b>	<b>Station SWM07</b>
July 1, 2013	4.0%
July 20, 2013	4.5%
August 29, 2013	1.5%
September 19, 2013	-

## **2. Sample Handling and Holding Time Compliance**

Samples were taken directly from the stormwater flow into laboratory-cleaned sample bottles that had the appropriate preservatives. For every storm event, all samples were appropriately labeled and the chains of custody completed as prescribed in the QAPP. For all storm events, samples were maintained in the coolers at the less than 6° C. Sample custody was maintained; samples were delivered directly to the laboratory by the sample crew within hours of sample collection. For fecal coliform, the parameter with the shortest holding time (8 hours), samples were processed by the laboratory immediately and within the prescribed holding time. For all parameters, the holding times specified in the QAPP (MOA, 2012) were met.

## **3. Comparisons of Field Replicate Analyses**

### ***Conventional Parameters***

Replicates of parameters analyzed in the field were taken as a measure of field variability/precision, where precision was calculated as either a relative percent difference (RPD) or the difference between measurements as defined in the QAPP. However, it should be noted that the precision values listed in the QAPP for field instruments were usually the precision of the instrument and not realistic goals for natural variability of stormwater field measurements. For example, in a highly turbid sample, turbidity in the same sample will vary over time as suspended particles settle and move which, in turn, affects light reflection and the turbidity concentration of the sample.

Field analyses included dissolved oxygen, pH, temperature, turbidity and specific conductivity. Each sampling event included field replicates at two stations: SWM02 and SWM08. Table 2 provides the field variability/precision for parameters measured in the field.



**Table 2. Precision and Variability of Field Parameters**

Parameter	QAPP Standard	July 1, 2013		July 20, 2013		August 29, 2013		Sept 19, 2013	
		SWM02	SWM08	SWM02	SWM08	SWM02	SWM08	SWM02	SWM08
DO	± 10%	0.24%	*	0.62%	1.17%	0.17%	*	*	*
pH	± 0.2 units	0.01	*	0.06	0.02	0.02	*	*	*
Turbidity	± 1NTU	0.09	*	0.4	0.6	0.35	*	0.16	0.72
Temperature	0.4° C	0.02	*	0.01	0	0	*	*	*
Conductivity	± 1µS/cm	<b>4</b>	*	0	<b>5</b>	<b>2</b>	*	*	*

Values in bold and red exceeded the precision or accuracy specified in the QAPP. \* Denotes that a replicate sample was not taken and therefore could not be compared for precision and variability.

Field analyses did not consistently meet the precision goals prescribed in the QAPP since the measurements and samples that were taken were not true splits, but were replicate field samples that were obtained a few minutes apart and represented potentially different water masses. The relative percent differences that were calculated for the field replicates are a reflection of field and sampling variability, where the outfall's discharge may be quite variable over time. Conductivity was the field parameter that most frequently did not meet the precision limits due to the variability of the discharge. Although not specified in the outfall monitoring plan, conductivity was monitored to provide additional information to the field crew. The precision requirements for conductivity were surpassed, but remain low and with the nature of storm water are group tightly together for each storm at each location. Temperature met the precision during all sampling events. These failures to meet the precision sensitivities prescribed in the QAPP likely reflect the heterogeneous nature of stormwater flow.

Replicate samples were taken for laboratory analyses for BOD, TSS, and fecal coliform as a measure of field variability/precision. Replicate samples were taken and relative percent differences (RPDs) were calculated at SWM02 and at SWM08. Replicates were taken at a rate of 20% for BOD, TSS, and fecal coliform. This rate exceeded the 15% prescribed for all parameters in the QAPP.

For the conventional parameters, the precision of the replicate samples met the standard prescribed in the QAPP for some events (Table 3). Because turbidity and TSS are frequently correlated, the elevated RPDs are believed to reflect the heterogeneity of stormwater quality rather than the precision of the sampling. Also due to how RPD is calculated, samples with low concentrations will have a higher probability of increased RPD as compared to samples with higher concentrations. For example, TSS during the first storm event at SWM02 was measured at 1.1 and 1.77 mg/L. The calculated RPD for these samples is 47%. Another example is during the last storm event for fecal coliform at SWM02. The results for the primary and replicate samples were 3 and 1 for a calculated RPD of 100%. Where as the fecal coliform results at SWM08 for the primary sample and replicate sample results were 682 and 2100 for an RPD of 102%. The laboratory duplicate samples were also outside the laboratory set RPD limits. However, with field variability potentially being an issue, it could further inflate the RPD value. In the future it may be desirable to split a sample or have the laboratory perform duplicate analysis on a sample to differentiate between laboratory precision and field variability/precision

that is reflected in the 2011, 2012, and 2013 data. Sampling protocol may also be changed to include sampling duplicate parameters at near the same time. For example, fill the TSS bottles from both the primary and duplicate set one right after the other.

**Table 3. Precision (RPDs ) for Conventional Parameters Compared with QAPP Standard**

Parameter	QAPP Precision (RPD)	Outfall Location	Storm Event Date			
			1-Jul-13	20-Jul-13	29-Aug-13	19-Sept-13
TSS	25%	SWM02	<b>47%</b>	21%	<b>29%</b>	<b>82%</b>
		SWM08	0%	<b>52%</b>	9%	<b>51%</b>
BOD	NA	SWM02	5%	1%	0%	0%
		SWM08	3%	13%	0%	0%
FC	60%	SWM02	9%	7%	20%	<b>100%</b>
		SWM08	6%	<b>102%</b>	24%	27%

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).

### ***Organic Parameters***

Field replicates for the TAH and TAqH constituents were obtained at station SWM02 during each of the four storm events. This represents a replication rate of 25%, which greatly exceeds the 15% prescribed in the QAPP.

The field precision RPD between sample and field replicates for the TAH analyses were low, reflecting low field variability across all storm events. None of the TAH constituents were qualified for field precision. The field precision RPDs are presented in Table 4.

For TAqH, higher field variability was seen between the field replicates during the second storm event (July 20, 2013). However, the variability was fairly low compared to the QAPP standard. During the remaining sampling events TAqH was not detected in either the primary or replicate samples (Table 4).

## **4. Comparisons of Laboratory Controls**

Verification analyses for laboratory parameters were conducted by SGS North America, Inc., the laboratory performing the analyses. SGS is certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with the QAPP, standard methods, and EPA-approved protocols and guidelines.

### ***Conventional Parameters***

Laboratory method blanks were performed for the three conventional parameters BOD, TSS, and fecal coliform. None of the method blanks had any detections. The laboratory control sample for all storm events were within the laboratory control limits.

## ***Organic Parameters***

Trip blanks were collected for the TAH analyses to ascertain whether the handling of the samples introduced contaminants. The trip blank samples showed no evidence of contamination. All TAH constituents were undetected.

Precision measured as the RPD between the matrix spikes (MS) and matrix spike duplicates (MSD) was within the QAPP specifications. Similarly, the accuracy of TAH analyses was measured as percent recovery for the MS/MSD samples. Accuracies were within the QAPP specifications. None of these TAH data were qualified. The matrix spike/matrix spike duplicate RPDs and percent recoveries are presented in Table 4.

In its internal validation of the TAqH data, the laboratory did not use the precision and accuracy criteria specified in the QAPP when comparing matrix spikes (MS) and matrix spike duplicates (MSD) results. The laboratory's qualifications were revised to meet the QAPP requirements that determines when a value should be flagged or not and with which flag to use. The specific RPDs and percent recoveries identified in the QAPP were calculated from the MS/MSD results and are presented in Table 4. Values for each of the constituents not within the QAPP criteria were qualified as estimated (J flagged).

For the TAqH constituents, some parameters required qualification. The July 1, 2013 storm event had three TAqH constituents that exceeded the QAPP-specified percent recovery for the MS/MSD analyses. The results were qualified accordingly.

For the July 20, 2013 storm event, three constituents were not within the accuracy criteria specified in the QAPP. These results were qualified.

For the August 29, 2013 storm event, the laboratory MS/MSD precision was within the limits specified in the QAPP. The percent recovery was just below the recovery requirements for acenaphthene and was qualified for this storm event as estimated (J flagged).

For the final storm event on September 19, 2013, all of the TAqH constituents were within the QAPP-specified precision and accuracy requirements.

In qualifying the TAqH data it is important to note that the TAqH constituents are hydrophobic and are likely to sorb or otherwise associate with particles in the stormwater. Thus, where the quality of the stormwater is highly variable with respect to particulates, TAqH constituent exceedances of precision and accuracy limits may be expected. In addition, it should be noted that the MS/MSD analyses for TAqH were based on separate field replicates that were obtained for this purpose. Therefore, it is expected that there may be differences in the analyses that are the result of field variability and not due to any issues with the laboratory analysis.



Table 4. Field and Laboratory Precision and Accuracy for TAH and TAqH

Parameter	QAPP Standard		1-Jul-13			20-Jul-13			29-Aug-13			19-Sept-13		
	Precision	Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy
	RPD	% Recovery	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD
<b>TAH</b>														
Benzene	20%	80-120%	0	6	118-112	0	1	105-107	0	3	113-109	0	0.3	104-104
Chlorobenzene	20%	80-120%	0	4	109-105	0	1	108-109	0	6	115-109	0	8	96-104
1,2-Dichlorobenzene	20%	80-120%	0	4	103-99	0	1	102-101	0	4	118-113	0	8	97-105
1,3-Dichlorobenzene	20%	80-120%	0	4	104-100	0	3	104-107	0	0	115-115	0	7	107-114
1,4-Dichlorobenzene	20%	80-120%	0	6	106-100	0	1	105-106	0	2	119-117	0	8	98-106
Ethylbenzene	20%	80-120%	0	5	114-109	0	1	114-115	0	5	112-107	0	9	95-103
Toluene	20%	77-120%	0	5	112-107	0	1	107-108	0	5	110-105	0	5	103-108
o-Xylene	20%	80-120%	0	5	110-105	0	1	113-114	0	7	116-107	0	7	98-104
p & m-Xylenes	20%	80-120%	0	5	114-108	0	0.5	115-115	0	6	114-107	0	8	98-106
<b>TAqH</b>														
Acenaphthene	30%	58-105%	0	16	62-61	0	6	64-61	0	7	<b>56-60</b>	0	14	61-69
Acenaphthylene	30%	57-110%	0	16	66-65	0	6	68-66	0	5	58-60	0	14	61-68
Anthracene	30%	63-120%	0	18	71-68	0	7	81-77	0	1	67-67	0	6	74-77
Benzo (a) anthracene	30%	61-120%	0	21	79-74	3	5	100-97	0	14	66-74	0	8	75-79
Benzo(a)pyrene	30%	57-120%	0	28	73-63	4	3	75-74	0	11	71-78	0	4	78-79
Benzo(b)fluoranthene	30%	66-130%	0	15	71-71	1	4	<b>64-59</b>	0	10	75-82	0	13	79-88
Benzo(g,h,i,l)perylene	30%	60-125%	0	21	67-62	1	1	76-77	0	11	83-92	0	2	86-86
Benzo(k)fluoranthene	30%	67-120%	0	28	<b>73-63</b>	0	2	84-87	0	6	73-77	0	3	81-78
Chrysene	30%	71-120%	0	11	<b>66-68</b>	7	1	<b>69-69</b>	0	7	72-76	0	5	80-82
Dibenz(a,h)anthracene	30%	56-125%	0	19	65-62	0	4	83-81	0	11	79-88	0	5	86-89
Fluoranthene	30%	63-125%	0	23	84-77	4	3	73-67	0	8	71-76	0	5	75-78
Fluorene	30%	59-120%	0	22	71-66	0	8	73-69	0	4	61-62	0	5	66-68
Indeno(1,2,3-cd)pyrene	30%	59-125%	0	22	67-62	3	3	78-77	0	10	82-90	0	4	86-88
Naphthalene	30%	56-108%	0	17	<b>57-55</b>	0	6	<b>57-54</b>	0	7	53-57	0	9	63-67
Phenanthrene	30%	60-115%	0	19	80-76	2	4	79-75	0	4	69-71	0	2	74-75
Pyrene	30%	62-130%	0	24	82-74	1	2	73-71	0	10	66-72	0	3	74-75

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).

## **Appendix D**

### **Field Logs**



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #1

STATION ID: SWM <u>01</u>	DATE: <u>07/1/13</u>	SAMPLE START TIME:
OUTFALL/NODE ID: <u>1040-3</u>	PHYSICAL LOCATION: <u>LK 0113 + O'malley 1040-3</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time:	
Flow Meter		Flow Speed (ft/s):		Water Depth (in): <u>&lt;.25</u>	Pipe Diam (in):	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT						
FIELD REPLICATE						

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM__-01						
SWM__-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR		
COLOR		
CLARITY		<u>clear</u>
FLOATABLES		<u>sheen</u>
DEPOSITS or STAINS		
SHEEN		
SURFACE SCUM		
DEBRIS		

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>- streets dry, no flow, did not sample</u>
<u>- no flow.</u>

Photos:  Yes  No



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>11:15</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>11:15</u>	
Flow Meter	Flow Speed (ft/s): <u>1.51</u>		Water Depth (in): <u>5/8</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>11:15</u>	<u>6.80</u>	<u>350</u>	<u>12.93</u>	<u>7.51</u>	<u>2.66</u>
FIELD REPLICATE	<u>11:26</u>	<u>6.78</u>	<u>346</u>	<u>12.90</u>	<u>7.52</u>	<u>2.58</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-01</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>0.6/6</u>	<input checked="" type="checkbox"/>
<u>SWM02-01 Dup</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>1/2/2</u>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>JA</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR						
CLARITY	<u>clean</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>- rain ceased, streets drying</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: 07/1/13	SAMPLE START TIME: 12:05			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: 12:05	
Flow Meter	Flow Speed (ft/s): <u>0.01</u>	Water Depth (in): <u>3/4"</u>		Pipe Diam (in): <u>18</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>12:05</u>	<u>11.63</u>	<u>996</u>	<u>6.98</u>	<u>7.38</u>	<u>19.8</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-01</u>	<u>12:05</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>none</u>			
COLOR						
CLARITY			<u>Clear</u>			
FLOATABLES			<u>none</u>			
DEPOSITS or STAINS						
SHEEN			<u>none</u>			
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Streets wet, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: 07 / 1 / 13		SAMPLE START TIME: 1233		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow <u>Meter</u>		Time: 1233	
Flow Meter	Flow Speed (ft/s): <u>0.13</u>	Water Depth (in): <u>5.8"</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>12:33</u>	<u>10.92</u>	<u>415</u>	<u>9.85</u>	<u>7.4</u>	<u>86.1</u>
FIELD REPLICATE						<u>84.2</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM05-01</u>	<u>12:33</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM__-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>none</u>				
COLOR		<u>slightly murky</u>				
CLARITY		<u>slightly murky</u>				
FLOATABLES		<u>Foam - significant</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>wet pavement w/ ponding, no recip.</u>						
<u>~Foam in pipe (in Q)</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>1310</u>		
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow <u>Flow Meter</u>	Time: <u>1310</u>		
Flow Meter	Flow Speed (ft/s): <u>0.11</u>		Water Depth (in): <u>0.25</u>		Pipe Diam (in): <u>24"</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1310</u>	<u>9.99</u>	<u>1x31</u>	<u>9.18</u>	<u>7.27</u>	<u>28.6</u>
FIELD REPLICATE						<u>27.8</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM06-01</u>	<u>1310</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM__-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>odor present</u>				
COLOR						
CLARITY		<u>clear</u>				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN		<u>whitish</u>				
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>streets wet, no precip</u>						
Photos: Yes No						

Reviewed By: GR

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: 07/1/13		SAMPLE START TIME: 1330	
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION:			
<b>OUTFALL FLOW MEASUREMENTS</b>					
Flow Method (circle)		Bucket		Flow Meter	
				Time: <u>1330</u>	
Flow Meter		Flow Speed (ft/s):		Water Depth (in):	
				Pipe Diam (in): <u>24</u>	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)
Bucket: <u>1</u> -gal 5-gal		<u>56 sec</u>	<u>56</u>	<u>58</u>	<u>61</u>
		Total Time		Rate (gal/s)	
		<u>231s</u>		<u>0.0173</u>	
<b>IN SITU WATER QUALITY MEASUREMENTS</b>					
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833	
		TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)
MEASUREMENT		<u>1330</u>	<u>9.84</u>	<u>295</u>	<u>10.66</u>
FIELD REPLICATE					<u>7.51</u>
					<u>320</u>
					<u>322</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>					
SAMPLE NUMBER		TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)		
			FECAL	BOD	TSS
			TAqH	TAH	
<u>SWM 07-01</u>		<u>1330</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM ___-01 Dup</u>					
MS/MSD SAMPLES					
FIELD QC (Trip/Equip)					
Description of QC Samples:					Sampler's Initials:
<b>STANDARD OBSERVATIONS</b>					
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS	
ODOR					
COLOR				<u>Tea</u>	
CLARITY				<u>murky (slightly)</u>	
FLOATABLES				<u>Foam present</u>	
DEPOSITS or STAINS					
SHEEN					
SURFACE SCUM					
DEBRIS					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>					
<u>Pavement wet - drying. no precip.</u>					
Photos: Yes No					

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/1/13		SAMPLE START TIME: 1345		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow <u>Flow Meter</u>		
				Time: 1345		
Flow Meter	Flow Speed (ft/s): <u>2.12</u>	Water Depth (in): <u>1 1/2"</u>		Pipe Diam (in): <u>40</u>		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1345</u>	<u>9.41</u>	<u>3x47</u>	<u>10.59</u>	<u>7.15</u>	<u>80.7</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-01</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-01 Dup</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>mild organic smell</u>				
COLOR		<u>tea</u>				
CLARITY		<u>mucky</u>				
FLOATABLES		<u>significant foam</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Pavement wet-drying. No precip.</u>						
<u>Dup velocity: 2.12 second time.</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: 07/1/13		SAMPLE START TIME: 1415		
OUTFALL/NODE ID: 499-1		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: 1415	
Flow Meter	Flow Speed (ft/s): 0.30	Water Depth (in): 1 1/4"		Pipe Diam (in): 24		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	14:15	10.97	386	10.72	7.36	36.1
FIELD REPLICATE	14:15					38.6
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>09</u> -01	14:15	✓	✓	✓	✓	✓
SWM ___-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		none				
COLOR						
CLARITY		clear				
FLOATABLES		none				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Pavement Drying, no precip.						
Photos: Yes No						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: 07/1/13		SAMPLE START TIME: <u>1425</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow <u>Meter</u>	Time: <u>1425</u>		
Flow Meter	Flow Speed (ft/s): <u>1.98</u>	Water Depth (in): <u>1.38</u>		Pipe Diam (in): <u>24"</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1425</u>	<u>8.98</u>	<u>351</u>	<u>12.35</u>	<u>7.17</u>	<u>14.2</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -01	<u>1425</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>None</u>				
COLOR						
CLARITY		<u>Clear</u>				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Rowe street pavement drying, no precip.</u>						
<u>Dup velocity: 1.96</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #2

STATION ID: SWM <u>01</u>	DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1145</u>
---------------------------	-----------------------	--------------------------------

OUTFALL/NODE ID: <u>1040-3</u>	PHYSICAL LOCATION: <u>L. OTIS E O'Malley</u>
--------------------------------	----------------------------------------------

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	<u>Flow Meter</u>	Time: <u>1150</u>
Flow Meter	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>1.5</u>	Pipe Diam (in):
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1155</u>	<u>18.03</u>	<u>149</u>	<u>8.58</u>	<u>7.01</u>	<u>83.9</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>01</u> -02	<u>1150</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	—	
COLOR	<del>CLAR</del> NC	
CLARITY	CLEAR	
FLOATABLES	NONE	
DEPOSITS or STAINS	—	
SHEEN	YES	
SURFACE SCUM	YES	
DEBRIS	YES	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

STOPPED RAINING BUT RUNOFF STILL OCCURRING

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1206</u>			
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot-Abbot</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1223</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>1.42</u> <u>1.28</u>	Water Depth (in): <u>0.50</u>		Pipe Diam (in):		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gall/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
<b>INSTRUMENT/SERIAL #</b>	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1215</u>	<u>13.96</u>	<u>107</u>	<u>9.73</u>	<u>6.96</u>	<u>35.3</u>
FIELD REPLICATE	<u>1220</u>	<u>13.95</u>	<u>107</u>	<u>9.67</u>	<u>7.02</u>	<u>34.9</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02</u> -02	<u>1205</u>	X	X	X	X	X
SWM <u>02</u> -02 Dup	<u>1205</u>	X	X	X	X	X
MS/MSD SAMPLES	<u>1205</u>				X	X
FIELD QC (Trip/Equip)						X
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>—</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>—</u>					
DEPOSITS or STAINS	<u>—</u>					
SHEEN	<u>—</u>					
SURFACE SCUM	<u>—</u>					
DEBRIS	<u>—</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Larger quantity of vegetation around ramped to last year.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Am

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1235</u>			
OUTFALL/NODE ID: <u>0.1224 E. Sullivan</u>		PHYSICAL LOCATION: <u>0. Seward &amp; Sullivan</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1245</u>	
Flow Meter	Flow Speed (ft/s): <u>6.80</u>		Water Depth (in): <u>23 1/2</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1242</u>	<u>14.28</u>	<u>186</u>	<u>7.87</u>	<u>7.18</u>	<u>49.3</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 03-02</u>	<u>1240</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>NONE</u>					
COLOR	<u>TAN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM 04      DATE: 07/20/13      SAMPLE START TIME: ~~1235~~ 1248

OUTFALL/NODE ID: 1224-2      PHYSICAL LOCATION: O. Seward & Sylvan

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1250</u>
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>1 5/8</u>	Pipe Diam (in):
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1248</u>	<u>15.75</u>	<u>278</u>	<u>6.58</u>	<u>7.15</u>	<u>48.1</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-02</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:		Sampler's Initials:				

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>NONE</u>	
COLOR	<u>SLIGHT TAN</u>	
CLARITY	<u>CLEAR</u>	
FLOATABLES	<u>NONE</u>	
DEPOSITS or STAINS	<u>NONE</u>	
SHEEN	<u>NONE</u>	
SURFACE SCUM	<u>NONE</u>	
DEBRIS	<u>NONE</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Photos:  Yes     No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1300</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E. 56th @ Save School</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1315</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.27</u>		Water Depth (in): <u>7/8"</u>		Pipe Diam (in):	
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1305</u>	<u>15.22</u>	<u>137</u>	<u>8.69</u>	<u>7.23</u>	<u>122</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 05-02</u>	<u>1310</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY						
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM		<u>SUDS, LOTS OF LOTS OF SUDS</u>				
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS</b>						
Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No						

Reviewed By: M Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>6-2</u>		DATE: 07/20/13	SAMPLE START TIME: 1340			
OUTFALL/NODE ID: <u>814-22</u>		PHYSICAL LOCATION: <u>Manterwood</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1348</u>	
Flow Meter	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>1/4"</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1350</u>	<u>14.96</u>	<u>11.3</u>	<u>8.74</u>	<u>7.48</u>	<u>56.4</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>06-02</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	NONE					
COLOR	SLIGHT TAN					
CLARITY	CLEAR					
FLOATABLES	NONE					
DEPOSITS or STAINS	NONE					
SHEEN	<del>NONE</del> YES	slight oily sheen coming from outfall				
SURFACE SCUM	NONE					
DEBRIS	NONE					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Awan

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1358</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>N. Seward North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u>		Flow Meter		Time: <u>1400</u>		
Flow Meter	Flow Speed (ft/s):		Water Depth (in):		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket <u>1-gal</u> 5-gal	<u>43</u>	<u>44</u>	<u>47</u>	<u>47</u>		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1408</u>	<u>13.05</u>	<u>197</u>	<u>9.25</u>	<u>7.52</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-02</u>	<u>1405</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___ -02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>water depth is so low took TD from inside culvert - the rest of the parameters from bucket filled w/ outfall water</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Amos

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/20/13		SAMPLE START TIME: 1415		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>N. Seward (south)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Time: <u>1417</u>		
Flow Method: <u>Flow Meter</u>		Bucket: <u>Flow Meter</u>		<u>gauge pool</u>		
Flow Meter	Flow Speed (ft/s): <u>2.29/230</u>	Water Depth (in): <u>0.275</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1415</u>	<u>13.08</u>	<u>191</u>	<u>9.34</u>	<u>6.88</u>	<u>77.2</u>
FIELD REPLICATE	<u>1420</u>	<u>13.08</u>	<u>196</u>	<u>9.45</u>	<u>6.86</u>	<u>77.8</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-02</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-02 Dup</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Anon

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1439</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boeke (north bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1447</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.02</u>		Water Depth (in): <u>0.8"</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1445</u>	<u>13.03</u>	<u>335</u>	<u>9.62</u>	<u>7.57</u>	<u>18.3</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM <u>09</u>-02</u>	<u>1440</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>Doppler registering 0.00 flow but there was visible flow</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1450</u>			
OUTFALL/NODE ID: <u>5252</u>		PHYSICAL LOCATION: <u>Becker (south bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1459</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>2.32</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in):	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: <u>1 1/2</u> gal <u>5</u> -gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1455</u>	<u>9.98</u>	<u>357</u>	<u>10.93</u>	<u>7.27</u>	<u>17.10</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 10-02</u>	<u>1450</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <u>Yes</u> No						

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm # 3

STATION ID: SWM <u>01</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1045</u>
OUTFALL/NODE ID: <u>1090-3</u>	PHYSICAL LOCATION: <u>L. Otis &amp; Dunley</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: <u>1045</u>
Flow Speed (ft/s): <u>0.12</u>	Water Depth (in): <u>0.3</u>		Pipe Diam (in): <u>24</u>
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>12.51</u>	<u>475</u>	<u>9.5</u>	<u>7.86</u>	<u>10.7</u>
FIELD REPLICATE						<u>10.6</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>01</u> -03	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___ -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>clear/none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS**

Cloudy, no precip.

Photos: Yes No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1110</u>
OUTFALL/NODE ID: <u>847-1</u>	PHYSICAL LOCATION: <u>Home Depot - ABBOT</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1110</u>			
Flow Meter	Flow Speed (ft/s): <u>2.00</u>	Water Depth (in): <u>5/8</u>	Pipe Diam (in): <u>18</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1120</u>	<u>9.35</u>	<u>348</u>	<u>11.90</u>	<u>8.05</u>	<u>2.23</u>
FIELD REPLICATE	<u>1120</u>	<u>9.35</u>	<u>350</u>	<u>11.88</u>	<u>8.03</u>	<u>2.58</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-03</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM02-03 Dup</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	↓				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)	↓					<input checked="" type="checkbox"/>
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no active Accip.

Photos: Yes No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

1138

STATION ID: SWM <u>03</u>	DATE: 08/29/13	SAMPLE START TIME: <del>1138</del>
OUTFALL/NODE ID: 1224-1	PHYSICAL LOCATION: old Seward @ Sylvia North	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: 1138			
Flow Meter	Flow Speed (ft/s): 0.12	Water Depth (in): 2.7	Pipe Diam (in): 36			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	11:38	11.31	276	8.48	7.80	8.96
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>03</u> -03	1138	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	none	
COLOR	none	
CLARITY	clear	
FLOATABLES	Light Foam	
DEPOSITS or STAINS	none	
SHEEN	none	
SURFACE SCUM	Light Foam	
DEBRIS	none	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

cloudy/overcast - no precip.

Photos:  Yes No Gary's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1140</u>
OUTFALL/NODE ID: <u>1224-2</u>	PHYSICAL LOCATION: <u>Old Sewer @ SW Van South</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow <u>Meter</u>	Time: <u>1140</u>
Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>1 1/8</u>		Pipe Diam (in): <u>18</u>
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			
	Time 4 (s)	Total Time	Rate (gal/s)

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1140</u>	<u>13.33</u>	<u>436</u>	<u>9.08</u>	<u>7.60</u>	<u>6.17</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04</u> -03	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no precip

Photos:  Yes  No Gary's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1205</u>
OUTFALL/NODE ID: <u>207-1</u>	PHYSICAL LOCATION: <u>E 56th @ Saxe School</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: <u>1205</u>			
Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>7/8</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1205</u>	<u>12.8</u>	<u>293</u>	<u>9.43</u>	<u>7.61</u>	<u>12.7</u>
FIELD REPLICATE						<u>13.3</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>05</u> -03	<u>1205</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>none</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Overcast / light Rain.

Photos:  Yes  No Greg's Phone



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1240</u>
OUTFALL/NODE ID: <u>319-22</u>	PHYSICAL LOCATION: <u>M. New Wood</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)	Bucket	Flow Meter	Time: <u>1240</u>			
Flow Meter	Flow Speed (ft/s): <u>0.28</u>	Water Depth (in): <u>3/8</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1240</u>	<u>11.43</u>	<u>190</u>	<u>4.79</u>	<u>7.60</u>	<u>4.15</u>
FIELD REPLICATE				<u>9.51</u>		<u>4.55</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM06-03</u>	<u>1240</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM__-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>musty smell</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>Light sheen downstr.</u>	<u>@ pool just downstream of outfall</u>
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>overcast - light precip.</u>

Photos:  Yes  No Gary's Photo

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1255</u>
OUTFALL/NODE ID: <u>484-1</u>	PHYSICAL LOCATION: <u>Newsewer North</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Flow Meter			Time: <u>1255</u>	
<u>Bucket</u>						
Flow Meter	Flow Speed (ft/s):	Water Depth (in): <u>1/16</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: <u>1-gal</u> 5-gal	<u>743</u>	<u>140</u>	<u>140</u>	<u>144</u>	<u>567<sup>sec</sup></u>	

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1255</u>	<u>12.23</u>	<u>78</u>	<u>10.16<sup>58</sup></u>	<u>7.71</u>	<u>88.2</u>
FIELD REPLICATE			<u>52</u>	<u>9.95</u>		<u>89.1</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM07-03</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM07-03 Dup</u>	<u>1255</u>					
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>None</u>	
COLOR	<u>Brown</u>	<u>as seen in white bucket</u>
CLARITY	<u>opaque</u>	<u>as seen in white bucket.</u>
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>overcast - no precip.</u>

Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gray's Photo</u>
-------------------------------------------------------------------------------------------------

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1320</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Survey 42"</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1320</u>	
Flow Meter		Flow Speed (ft/s): <u>1.59</u>	Water Depth (in): <u>1.34</u>		Pipe Diam (in): <u>42</u>	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time / Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833.	
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1320</u>	<u>10.86</u>	<u>374</u>	<u>10.8</u>	<u>7.29</u>	<u>13.4</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 08-03</u>	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM 08-03 Dup</u>	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Strong Fecal odor</u>					
COLOR	<u>none</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>rusty stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gross' s Plu</u>						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1340</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>BOEKE North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1340</u>	
Flow Meter	Flow Speed (ft/s): <u>0.06</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1340</u>	<u>11.97</u>	<u>371</u>	<u>10.51</u>	<u>7.50</u>	<u>6.43</u>
FIELD REPLICATE						<u>6.16</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM09-03</u>	<u>1340</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>still drizzly</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gary's Phone</u>						

Reviewed By: [Signature]

Date: 8/29/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>08/29/13</u>		SAMPLE START TIME: <u>1350</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>BOEKO South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1350</u>		
Flow Meter	Flow Speed (ft/s): <u>0.52</u>		Water Depth (in): <u>13 1/2</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time / Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1350</u>	<u>11.03</u>	<u>317</u>	<u>11.20</u>	<u>7.34</u>	<u>3.83</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM10-03</u>	<u>1350</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>very clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>Rust stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						

Photos:  Yes  No GATYS Photo

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #4

STATION ID: SWM <u>01</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1030</u>			
OUTFALL/NODE ID: <u>1040-3</u>		PHYSICAL LOCATION: <u>L. O'Neil &amp; O'Malley</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>	Time: <u>1030</u>		
Flow Meter	Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>0.4</u>		Pipe Diam (in): <u>18</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1030</u>	<u>9.25</u>	<u>419</u>	<u>10.69</u>	<u>8.70</u>	<u>23.8</u>
FIELD REPLICATE						<u>23.6</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM01-04</u>	<u>1030</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM__-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>None</u>					
COLOR	<u>Clear</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>Visible Foam</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low Flow, No Precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Ann

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME:		
OUTFALL/NODE ID: <u>8471</u>		PHYSICAL LOCATION: <u>Home Depot - Abbot</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1045</u>		
Flow Meter	Flow Speed (ft/s): <u>3.94</u>	Water Depth (in): <u>11 1/8</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>8.43</u>	<u>305</u>	<u>12.52</u>	<u>8.11</u>	<u>0.93</u>
FIELD REPLICATE						<u>1.09</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02</u> -04	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>02</u> -04 Dup		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>green algae @ Rocks, no precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1115</u>	
OUTFALL/NODE ID: <u>1724-1</u>		PHYSICAL LOCATION: <u>O. Seward @ Sylvan North</u>			
OUTFALL FLOW MEASUREMENTS					
Flow Method (circle)		Bucket		Flow Meter	
Flow Meter		Flow Speed (ft/s): <u>0.28</u>		Water Depth (in): <u>3.0</u>	
Pipe Diam (in):		Time 1 (s)		Time 2 (s)	
Bucket Measurements		Time 3 (s)		Time 4 (s)	
Bucket: 1-gal 5-gal		Total Time		Rate (gals)	
IN SITU WATER QUALITY MEASUREMENTS					
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833	
TIME (ADT)		TEMP (°C)		COND (µS/cm)	
DO (mg/L)		pH		TURB (ntu)	
MEASUREMENT		<u>9/15</u>		<u>8.30</u>	
FIELD REPLICATE		<u>261</u>		<u>9.34</u>	
				<u>7.80</u>	
				<u>15.0</u>	
DISCRETE WATER QUALITY SAMPLES					
SAMPLE NUMBER		TIME (ADT)		SAMPLES COLLECTED (CHECK BOX)	
				FECAL	
				BOD	
				TSS	
				TAqH	
				TAH	
SWM <u>03</u> -04		<u>1115</u>		<input checked="" type="checkbox"/>	
SWM <u>   </u> -04 Dup				<input checked="" type="checkbox"/>	
MS/MSD SAMPLES				<input checked="" type="checkbox"/>	
FIELD QC (Trip/Equip)				<input type="checkbox"/>	
Description of QC Samples:				Sampler's Initials:	
STANDARD OBSERVATIONS					
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS	
ODOR		<u>none</u>			
COLOR		<u>Dark/Dark</u>		<u>slight dark color to water</u>	
CLARITY		<u>opaque</u>		<u>slight</u>	
FLOATABLES		<u>some foam</u>		<u>light foam near rocks</u>	
DEPOSITS or STAINS		<u>none</u>			
SHEEN		<u>none</u>			
SURFACE SCUM		<u>none</u>			
DEBRIS		<u>none</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:					
<u>No precip. Evidence of significant flow. Missed portion</u>					
<u>of main runoff event.</u>					
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

Reviewed By: M. [Signature]

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1125</u>		
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward @ S. Sullivan South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1125</u>	
Flow Meter	Flow Speed (ft/s): <u>0.09</u>		Water Depth (in): <u>2.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1125</u>	<u>10.58</u>	<u>371</u>	<u>10.31</u>	<u>7.62</u>	<u>4.82</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04-04</u>	<u>1125</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>blue</u>					
DEBRIS	<u>man</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>no reports</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1140</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E 56<sup>th</sup>, Save School</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1140</u>		
Flow Meter		Flow Speed (ft/s): <u>0.12</u>	Water Depth (in): <u>1.4</u>		Pipe Diam (in):		
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)	
MEASUREMENT	<u>1140</u>	<u>10.08</u>	<u>315</u>	<u>11.12</u>	<u>7.60</u>	<u>16.1</u>	
FIELD REPLICATE						<u>16.6</u>	
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)					
		FECAL	BOD	TSS	TAqH	TAH	
<u>SWM 05-04</u>	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<u>SWM ___-04 Dup</u>							
MS/MSD SAMPLES							
FIELD QC (Trip/Equip)							
Description of QC Samples:					Sampler's Initials:		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS					
ODOR	<u>none</u>						
COLOR	<u>none</u>						
CLARITY	<u>clear</u>						
FLOATABLES	<u>None Found</u>	<u>Downstream of outfall, minor.</u>					
DEPOSITS or STAINS	<u>none</u>						
SHEEN	<u>none</u>						
SURFACE SCUM	<u>none</u>						
DEBRIS	<u>none</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
<u>NO PREIP.</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1210</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1210</u>		
Flow Meter	Flow Speed (ft/s): <u>0.21</u>	Water Depth (in): <u>6.5</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1210</u>	<u>9.03</u>	<u>163</u>	<u>12.00</u> <sup>BOD</sup>	<u>7.60</u>	<u>3.35</u>
FIELD REPLICATE				<u>10.55</u>		<u>3.36</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>06</u> -04	<u>1210</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Present</u>	<u>not pleasant, no fuel smell, but strong present decay odor.</u>				
COLOR	<u>None</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>No Precip</u>						
Photos: Yes No						

Reviewed By: M. [Signature]

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1225</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>New Seward North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1225</u>	
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>1/16</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gals)
Bucket: <u>5-gal</u>	<u>8m 24sec</u>				<u>564sec</u>	
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT <u>*</u>	<u>1225</u>	<u>9.36</u>	<u>48</u>	<u>11.74*</u>	<u>7.96</u>	<u>54.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-04</u>	<u>1225</u>					
<u>SWM ___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low flow, sunny w/ no precip.</u>						
<u>* Measurements in Bucket, due to very low flow</u>						
Photos: <u>Yes</u> No	<u>* Enriched DO due to a mixing/aeration in bucket.</u>					

Reviewed By: M Jovan

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1245</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Seward South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1245</u>	
Flow Meter		Flow Speed (ft/s): <u>2.55</u>		Water Depth (in): <u>2.5</u>		
Pipe Diam (in):						
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
Total Time		Rate (gal/s)				
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1245</u>	<u>9.17</u>	<u>394</u>	<u>11.53</u>	<u>7.39</u>	
FIELD REPLICATE					<u>8.44</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 08-04</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM 08-04 Dup</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Organic/Fuel</u>	<u>Strong Fuel smell,</u>				
COLOR	<u>None</u>					
CLARITY	<u>Clear</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Sunny, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Awan

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1310</u>	
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boyle North</u>			
OUTFALL FLOW MEASUREMENTS					
Flow Method (circle)		Bucket		Flow Meter	
Time:					
Flow Meter	Flow Speed (ft/s):		Water Depth (in):		Pipe Diam (in):
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: 1-gal 5-gal					
IN-SITU WATER QUALITY MEASUREMENTS					
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833	
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH
MEASUREMENT	/				
FIELD REPLICATE					
DISCRETE WATER QUALITY SAMPLES					
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)			
		FECAL	BOD	TSS	TAqH
SWM___-04	/				
SWM___-04 Dup					
MS/MSD SAMPLES					
FIELD QC (Trip/Equip)					
Description of QC Samples:					Sampler's Initials:
STANDARD OBSERVATIONS					
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS		
ODOR					
COLOR					
CLARITY					
FLOATABLES					
DEPOSITS or STAINS					
SHEEN					
SURFACE SCUM					
DEBRIS					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:					
<u>No samples taken, stormwater maintenance in progress</u>					
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1315</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Booke south</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1315</u>	
Flow Meter	Flow Speed (ft/s): <u>6.45</u>		Water Depth (in): <u>2.0</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1315</u>	<u>10.51</u>	<u>347</u>	<u>11.78</u>	<u>7.32</u>	<u>10.5</u>
FIELD REPLICATE						<u>9.11</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -04	<u>1315</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>sunny, no降水</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**Appendix C**  
**Field & Laboratory Data Validation**





## Field & Laboratory Data Validation

Data review focused on the following quality control (QC) parameters and their overall effects on the data:

- Physical parameter replicate comparisons
- Sample handling and holding time compliance
- Field replicate comparison for conventional and organic constituents
- Comparisons of laboratory controls (e.g., matrix spike/matrix spike duplicates).

### 1. Physical Parameters Replicate Comparisons

Precipitation was measured at three locations within the Anchorage basin using tipping bucket rain gages. The QAPP (MOA, 2012) specifies that storm events must meet the following criteria: a storm event must be greater than 0.1 inch of rain in 24 hours and be preceded by 24 hours of dry weather (less than 0.1 inch of rain). Due to the nature of storm patterns in the Anchorage Bowl, some rain gauges showed that the criteria preceding dry weather was met for the first storm while the criteria for the amount of rain fallen did not. The other storm events did meet all criteria.

Rain gauges were deployed June 19, 2013. For the July 1, 2013 storm event, the three rain gauges registered 0.12, 0.05, and 0.02 inch preceded by no precipitation in the 24 hours before the storm began on July 1, 2013. While the dry weather precipitation records do not exceed the criterion, the amount of precipitation during the storm did not meet the criteria of 0.1 inch. However, it is important to note that other studies indicate runoff can occur with as little as 0.02 inch of rain (MOA 2013). The recorded precipitation at these rain gauges did not adversely affect the results of the monitoring since runoff was occurring at all the sample locations. The July 20, 2013 event, rain gauges registered 0.24, 0.32, and 0.28 inch. In the preceding 24 hrs all three rain gauges read no precipitation. For the August 29, 2013 event, the three rain gauges registered 0.17, 0.22, and 0.23 inch. The preceding calendar day registered 0.44, 0.42, and 0.37 inch. Although the previous calendar day 24-hour period did not meet the criteria for this storm, the sampling actually did meet the criteria since it took place within the first 24-hr period after the beginning the storm. The storm began on the evening of 28 August and the sampling was initiated the following morning within the 24-hr criteria. For the September 19, 2013 event rain gauges registered 0.23, 0.25, and 0.27 inch preceded by 0.16, 0.17, and 0.02 inch in the preceding calendar 24-hr period. The preceding day was part of the same storm as it came in just prior to midnight and was preceded by 24-hour period of dry weather.

Grab samples were obtained during four storm events from the flowing water discharging from the storm drain outfalls prior to mixing with the stream water. Flows were monitored using the acoustic doppler flow meter, except at stations SWM07. At SWM07, the volume/ time method was repeated four times and the average measurement used. The coefficient of variation (CV) was calculated to determine variability of the measurement technique. The CV is a percentage representing the standard deviation divided by the mean of a population. The CVs varied between 1.5% and 4.5% and are presented in Table 1. During the last sampling event the volume/time method was not carried out four consecutive times due to the slow rate of flow.

**Table 1. Coefficients of Variation for Volume/Time Flow Measurements**

<b>Storm Event Date</b>	<b>Station SWM07</b>
July 1, 2013	4.0%
July 20, 2013	4.5%
August 29, 2013	1.5%
September 19, 2013	-

## **2. Sample Handling and Holding Time Compliance**

Samples were taken directly from the stormwater flow into laboratory-cleaned sample bottles that had the appropriate preservatives. For every storm event, all samples were appropriately labeled and the chains of custody completed as prescribed in the QAPP. For all storm events, samples were maintained in the coolers at the less than 6° C. Sample custody was maintained; samples were delivered directly to the laboratory by the sample crew within hours of sample collection. For fecal coliform, the parameter with the shortest holding time (8 hours), samples were processed by the laboratory immediately and within the prescribed holding time. For all parameters, the holding times specified in the QAPP (MOA, 2012) were met.

## **3. Comparisons of Field Replicate Analyses**

### ***Conventional Parameters***

Replicates of parameters analyzed in the field were taken as a measure of field variability/precision, where precision was calculated as either a relative percent difference (RPD) or the difference between measurements as defined in the QAPP. However, it should be noted that the precision values listed in the QAPP for field instruments were usually the precision of the instrument and not realistic goals for natural variability of stormwater field measurements. For example, in a highly turbid sample, turbidity in the same sample will vary over time as suspended particles settle and move which, in turn, affects light reflection and the turbidity concentration of the sample.

Field analyses included dissolved oxygen, pH, temperature, turbidity and specific conductivity. Each sampling event included field replicates at two stations: SWM02 and SWM08. Table 2 provides the field variability/precision for parameters measured in the field.

**Table 2. Precision and Variability of Field Parameters**

Parameter	QAPP Standard	July 1, 2013		July 20, 2013		August 29, 2013		Sept 19, 2013	
		SWM02	SWM08	SWM02	SWM08	SWM02	SWM08	SWM02	SWM08
<b>DO</b>	± 10%	0.24%	*	0.62%	1.17%	0.17%	*	*	*
<b>pH</b>	± 0.2 units	0.01	*	0.06	0.02	0.02	*	*	*
<b>Turbidity</b>	± 1NTU	0.09	*	0.4	0.6	0.35	*	0.16	0.72
<b>Temperature</b>	0.4° C	0.02	*	0.01	0	0	*	*	*
<b>Conductivity</b>	± 1µS/cm	<b>4</b>	*	0	<b>5</b>	<b>2</b>	*	*	*

Values in bold and red exceeded the precision or accuracy specified in the QAPP. \* Denotes that a replicate sample was not taken and therefore could not be compared for precision and variability.

Field analyses did not consistently meet the precision goals prescribed in the QAPP since the measurements and samples that were taken were not true splits, but were replicate field samples that were obtained a few minutes apart and represented potentially different water masses. The relative percent differences that were calculated for the field replicates are a reflection of field and sampling variability, where the outfall's discharge may be quite variable over time. Conductivity was the field parameter that most frequently did not meet the precision limits due to the variability of the discharge. Although not specified in the outfall monitoring plan, conductivity was monitored to provide additional information to the field crew. The precision requirements for conductivity were surpassed, but remain low and with the nature of storm water are group tightly together for each storm at each location. Temperature met the precision during all sampling events. These failures to meet the precision sensitivities prescribed in the QAPP likely reflect the heterogeneous nature of stormwater flow.

Replicate samples were taken for laboratory analyses for BOD, TSS, and fecal coliform as a measure of field variability/precision. Replicate samples were taken and relative percent differences (RPDs) were calculated at SWM02 and at SWM08. Replicates were taken at a rate of 20% for BOD, TSS, and fecal coliform. This rate exceeded the 15% prescribed for all parameters in the QAPP.

For the conventional parameters, the precision of the replicate samples met the standard prescribed in the QAPP for some events (Table 3). Because turbidity and TSS are frequently correlated, the elevated RPDs are believed to reflect the heterogeneity of stormwater quality rather than the precision of the sampling. Also due to how RPD is calculated, samples with low concentrations will have a higher probability of increased RPD as compared to samples with higher concentrations. For example, TSS during the first storm event at SWM02 was measured at 1.1 and 1.77 mg/L. The calculated RPD for these samples is 47%. Another example is during the last storm event for fecal coliform at SWM02. The results for the primary and replicate samples were 3 and 1 for a calculated RPD of 100%. Where as the fecal coliform results at SWM08 for the primary sample and replicate sample results were 682 and 2100 for an RPD of 102%. The laboratory duplicate samples were also outside the laboratory set RPD limits. However, with field variability potentially being an issue, it could further inflate the RPD value. In the future it may be desirable to split a sample or have the laboratory perform duplicate analysis on a sample to differentiate between laboratory precision and field variability/precision

that is reflected in the 2011, 2012, and 2013 data. Sampling protocol may also be changed to include sampling duplicate parameters at near the same time. For example, fill the TSS bottles from both the primary and duplicate set one right after the other.

**Table 3. Precision (RPDs ) for Conventional Parameters Compared with QAPP Standard**

Parameter	QAPP Precision (RPD)	Outfall Location	Storm Event Date			
			1-Jul-13	20-Jul-13	29-Aug-13	19-Sept-13
TSS	25%	SWM02	<b>47%</b>	21%	<b>29%</b>	<b>82%</b>
		SWM08	0%	<b>52%</b>	9%	<b>51%</b>
BOD	NA	SWM02	5%	1%	0%	0%
		SWM08	3%	13%	0%	0%
FC	60%	SWM02	9%	7%	20%	<b>100%</b>
		SWM08	6%	<b>102%</b>	24%	27%

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).

### ***Organic Parameters***

Field replicates for the TAH and TAqH constituents were obtained at station SWM02 during each of the four storm events. This represents a replication rate of 25%, which greatly exceeds the 15% prescribed in the QAPP.

The field precision RPD between sample and field replicates for the TAH analyses were low, reflecting low field variability across all storm events. None of the TAH constituents were qualified for field precision. The field precision RPDs are presented in Table 4.

For TAqH, higher field variability was seen between the field replicates during the second storm event (July 20, 2013). However, the variability was fairly low compared to the QAPP standard. During the remaining sampling events TAqH was not detected in either the primary or replicate samples (Table 4).

## **4. Comparisons of Laboratory Controls**

Verification analyses for laboratory parameters were conducted by SGS North America, Inc., the laboratory performing the analyses. SGS is certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with the QAPP, standard methods, and EPA-approved protocols and guidelines.

### ***Conventional Parameters***

Laboratory method blanks were performed for the three conventional parameters BOD, TSS, and fecal coliform. None of the method blanks had any detections. The laboratory control sample for all storm events were within the laboratory control limits.

## ***Organic Parameters***

Trip blanks were collected for the TAH analyses to ascertain whether the handling of the samples introduced contaminants. The trip blank samples showed no evidence of contamination. All TAH constituents were undetected.

Precision measured as the RPD between the matrix spikes (MS) and matrix spike duplicates (MSD) was within the QAPP specifications. Similarly, the accuracy of TAH analyses was measured as percent recovery for the MS/MSD samples. Accuracies were within the QAPP specifications. None of these TAH data were qualified. The matrix spike/matrix spike duplicate RPDs and percent recoveries are presented in Table 4.

In its internal validation of the TAqH data, the laboratory did not use the precision and accuracy criteria specified in the QAPP when comparing matrix spikes (MS) and matrix spike duplicates (MSD) results. The laboratory's qualifications were revised to meet the QAPP requirements that determines when a value should be flagged or not and with which flag to use. The specific RPDs and percent recoveries identified in the QAPP were calculated from the MS/MSD results and are presented in Table 4. Values for each of the constituents not within the QAPP criteria were qualified as estimated (J flagged).

For the TAqH constituents, some parameters required qualification. The July 1, 2013 storm event had three TAqH constituents that exceeded the QAPP-specified percent recovery for the MS/MSD analyses. The results were qualified accordingly.

For the July 20, 2013 storm event, three constituents were not within the accuracy criteria specified in the QAPP. These results were qualified.

For the August 29, 2013 storm event, the laboratory MS/MSD precision was within the limits specified in the QAPP. The percent recovery was just below the recovery requirements for acenaphthene and was qualified for this storm event as estimated (J flagged).

For the final storm event on September 19, 2013, all of the TAqH constituents were within the QAPP-specified precision and accuracy requirements.

In qualifying the TAqH data it is important to note that the TAqH constituents are hydrophobic and are likely to sorb or otherwise associate with particles in the stormwater. Thus, where the quality of the stormwater is highly variable with respect to particulates, TAqH constituent exceedances of precision and accuracy limits may be expected. In addition, it should be noted that the MS/MSD analyses for TAqH were based on separate field replicates that were obtained for this purpose. Therefore, it is expected that there may be differences in the analyses that are the result of field variability and not due to any issues with the laboratory analysis.



Table 4. Field and Laboratory Precision and Accuracy for TAH and TAqH

Parameter	QAPP Standard		1-Jul-13			20-Jul-13			29-Aug-13			19-Sept-13		
	Precision	Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy
	RPD	% Recovery	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD
<b>TAH</b>														
Benzene	20%	80-120%	0	6	118-112	0	1	105-107	0	3	113-109	0	0.3	104-104
Chlorobenzene	20%	80-120%	0	4	109-105	0	1	108-109	0	6	115-109	0	8	96-104
1,2-Dichlorobenzene	20%	80-120%	0	4	103-99	0	1	102-101	0	4	118-113	0	8	97-105
1,3-Dichlorobenzene	20%	80-120%	0	4	104-100	0	3	104-107	0	0	115-115	0	7	107-114
1,4-Dichlorobenzene	20%	80-120%	0	6	106-100	0	1	105-106	0	2	119-117	0	8	98-106
Ethylbenzene	20%	80-120%	0	5	114-109	0	1	114-115	0	5	112-107	0	9	95-103
Toluene	20%	77-120%	0	5	112-107	0	1	107-108	0	5	110-105	0	5	103-108
o-Xylene	20%	80-120%	0	5	110-105	0	1	113-114	0	7	116-107	0	7	98-104
p & m-Xylenes	20%	80-120%	0	5	114-108	0	0.5	115-115	0	6	114-107	0	8	98-106
<b>TAqH</b>														
Acenaphthene	30%	58-105%	0	16	62-61	0	6	64-61	0	7	<b>56-60</b>	0	14	61-69
Acenaphthylene	30%	57-110%	0	16	66-65	0	6	68-66	0	5	58-60	0	14	61-68
Anthracene	30%	63-120%	0	18	71-68	0	7	81-77	0	1	67-67	0	6	74-77
Benzo (a) anthracene	30%	61-120%	0	21	79-74	3	5	100-97	0	14	66-74	0	8	75-79
Benzo(a)pyrene	30%	57-120%	0	28	73-63	4	3	75-74	0	11	71-78	0	4	78-79
Benzo(b)fluoranthene	30%	66-130%	0	15	71-71	1	4	<b>64-59</b>	0	10	75-82	0	13	79-88
Benzo(g,h,i,l)perylene	30%	60-125%	0	21	67-62	1	1	76-77	0	11	83-92	0	2	86-86
Benzo(k)fluoranthene	30%	67-120%	0	28	<b>73-63</b>	0	2	84-87	0	6	73-77	0	3	81-78
Chrysene	30%	71-120%	0	11	<b>66-68</b>	7	1	<b>69-69</b>	0	7	72-76	0	5	80-82
Dibenz(a,h)anthracene	30%	56-125%	0	19	65-62	0	4	83-81	0	11	79-88	0	5	86-89
Fluoranthene	30%	63-125%	0	23	84-77	4	3	73-67	0	8	71-76	0	5	75-78
Fluorene	30%	59-120%	0	22	71-66	0	8	73-69	0	4	61-62	0	5	66-68
Indeno(1,2,3-cd)pyrene	30%	59-125%	0	22	67-62	3	3	78-77	0	10	82-90	0	4	86-88
Naphthalene	30%	56-108%	0	17	<b>57-55</b>	0	6	<b>57-54</b>	0	7	53-57	0	9	63-67
Phenanthrene	30%	60-115%	0	19	80-76	2	4	79-75	0	4	69-71	0	2	74-75
Pyrene	30%	62-130%	0	24	82-74	1	2	73-71	0	10	66-72	0	3	74-75

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).



## **Appendix D**

### **Field Logs**



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #1

STATION ID: SWM <u>01</u>	DATE: <u>07/1/13</u>	SAMPLE START TIME:
OUTFALL/NODE ID: <u>1040-3</u>	PHYSICAL LOCATION: <u>LK 0113 + O'malley 1040-3</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	Flow Meter	Time:
<u>Flow Meter</u>	Flow Speed (ft/s):	Water Depth (in): <u>&lt;.25</u>	Pipe Diam (in):
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN-SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH
MEASUREMENT					
FIELD REPLICATE					

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM__-01						
SWM__-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR		
COLOR		
CLARITY		<u>clear</u>
FLOATABLES		<u>sheen</u>
DEPOSITS or STAINS		
SHEEN		
SURFACE SCUM		
DEBRIS		

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

- streets dry, no flow, did not sample  
- no flow.

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>11:15</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>11:15</u>	
Flow Meter	Flow Speed (ft/s): <u>1.51</u>		Water Depth (in): <u>5/8</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>11:15</u>	<u>6.80</u>	<u>350</u>	<u>12.93</u>	<u>7.51</u>	<u>2.66</u>
FIELD REPLICATE	<u>11:26</u>	<u>6.78</u>	<u>346</u>	<u>12.90</u>	<u>7.52</u>	<u>2.58</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-01</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>0.6/6</u>	<input checked="" type="checkbox"/>
<u>SWM02-01 Dup</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>1/2/2</u>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>JA</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR						
CLARITY	<u>clean</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>- rain ceased, streets drying</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: 07/1/13		SAMPLE START TIME: 12:03		
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow <u>meter</u>		Time:	
Flow Meter		Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>1.0</u>		Pipe Diam (in): <u>36</u>	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>12:03</u>	<u>7.25</u>	<u>574</u>	<u>6.93</u>	<u>7.47</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM03-01</u>	<u>12:03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM03-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR		<u>none</u>				
CLARITY		<u>clear</u>				
FLOATABLES		<u>foam - significant amount - see photos</u>				
DEPOSITS or STAINS						
SHEEN		<u>none.</u>				
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>streets wet, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: 07/1/13	SAMPLE START TIME: 12:05			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: 12:05	
Flow Meter	Flow Speed (ft/s): <u>0.01</u>	Water Depth (in): <u>3/4"</u>		Pipe Diam (in): <u>18</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>12:05</u>	<u>11.63</u>	<u>996</u>	<u>6.98</u>	<u>7.38</u>	<u>19.8</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-01</u>	<u>12:05</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>none</u>			
COLOR						
CLARITY			<u>Clear</u>			
FLOATABLES			<u>none</u>			
DEPOSITS or STAINS						
SHEEN			<u>none</u>			
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Streets wet, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: 07 / 1 / 13		SAMPLE START TIME: 1233		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow <u>Meter</u>		
Time: 1233						
Flow Meter	Flow Speed (ft/s): <u>0.13</u>	Water Depth (in): <u>5.8"</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>12:33</u>	<u>10.92</u>	<u>415</u>	<u>9.85</u>	<u>7.4</u>	<u>86.1</u>
FIELD REPLICATE						<u>84.2</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM05-01</u>	<u>12:33</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM__-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>none</u>				
COLOR		<u>slightly murky</u>				
CLARITY		<u>slightly murky</u>				
FLOATABLES		<u>Foam - significant</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>wet pavement w/ ponding, no recip.</u>						
<u>~Foam in pipe (in Q)</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>1310</u>		
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow <u>Ⓜ</u> Meter	Time: <u>1310</u>		
Flow Meter	Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>0.25"</u>		Pipe Diam (in): <u>24"</u>		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN-SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1310</u>	<u>9.99</u>	<u>1x31</u>	<u>9.18</u>	<u>7.27</u>	<u>28.6</u>
FIELD REPLICATE						<u>27.8</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM06-01</u>	<u>1310</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM__-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>odor present</u>				
COLOR						
CLARITY		<u>clear</u>				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN		<u>whitish</u>				
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>streets wet, no precip</u>						
Photos: Yes No						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: 07/1/13		SAMPLE START TIME: 1330		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow Meter		
				Time: <u>1330</u>		
Flow Meter		Flow Speed (ft/s):		Water Depth (in):		
				Pipe Diam (in): <u>24</u>		
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: <u>1</u> -gal 5-gal		<u>56 sec</u>	<u>56</u>	<u>58</u>	<u>61</u>	
		Total Time		Rate (gal/s)		
		<u>231s</u>		<u>0.0173</u>		
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
		TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	
MEASUREMENT		<u>1330</u>	<u>9.84</u>	<u>295</u>	<u>10.66</u>	
FIELD REPLICATE					<u>7.51</u>	
					<u>320</u>	
					<u>322</u>	
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-01</u>	<u>1330</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR						
COLOR			<u>Tea</u>			
CLARITY			<u>murky (slightly)</u>			
FLOATABLES			<u>Foam present</u>			
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Pavement wet - drying. no precip.</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/1/13		SAMPLE START TIME: 1345		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow <u>Flow Meter</u>		
				Time: 1345		
Flow Meter	Flow Speed (ft/s): <u>2.12</u>	Water Depth (in): <u>1 1/2"</u>		Pipe Diam (in): <u>40</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1345</u>	<u>9.41</u>	<u>3x47</u>	<u>10.59</u>	<u>7.15</u>	<u>80.7</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-01</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-01 Dup</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>mild organic smell</u>				
COLOR		<u>tea</u>				
CLARITY		<u>murky</u>				
FLOATABLES		<u>significant foam</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Pavement wet-drying. No precip.</u>						
<u>Dup velocity: 2.12 second time.</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: 07/1/13		SAMPLE START TIME: 1415		
OUTFALL/NODE ID: 499-1		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: 1415	
Flow Meter	Flow Speed (ft/s): 0.30	Water Depth (in): 1 1/4"		Pipe Diam (in): 24		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	14:15	10.97	386	10.72	7.36	36.1
FIELD REPLICATE	14:15					38.6
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>09</u> -01	14:15	✓	✓	✓	✓	✓
SWM ___-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		none				
COLOR						
CLARITY		clear				
FLOATABLES		none				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Pavement Drying, no precip.						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: 07/1/13		SAMPLE START TIME: <u>1425</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow <u>Meter</u>	Time: <u>1425</u>		
Flow Meter	Flow Speed (ft/s): <u>1.98</u>	Water Depth (in): <u>1.38</u>		Pipe Diam (in): <u>24"</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1425</u>	<u>8.98</u>	<u>351</u>	<u>12.35</u>	<u>7.17</u>	<u>14.2</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -01	<u>1425</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>None</u>				
COLOR						
CLARITY		<u>Clear</u>				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Row 1 pavement drying, no precip.</u>						
<u>Dup velocity: 1.96</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #2

STATION ID: SWM 01      DATE: 07/20/13      SAMPLE START TIME: 1145

OUTFALL/NODE ID: 1040-3      PHYSICAL LOCATION: L. OTIS E. O'Malley

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: 1150
<u>Flow Meter</u>	Flow Speed (ft/s): 0.17	Water Depth (in): 1.5	Pipe Diam (in):
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	1155	18.03	149	8.58	7.01	83.9
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM 01-02	1150	X	X	X		
SWM ___-02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	—	
COLOR	<del>CLAR</del> NC	
CLARITY	CLEAR	
FLOATABLES	NONE	
DEPOSITS or STAINS	—	
SHEEN	YES	
SURFACE SCUM	YES	
DEBRIS	YES	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

STOPPED RAINING BUT RUNOFF STILL OCCURRING

Photos:  Yes     No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1206</u>			
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot-Abbot</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1223</u>	
Flow Meter	Flow Speed (ft/s): <u>1.42</u> <u>1.28</u>		Water Depth (in): <u>0.50</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gall/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1215</u>	<u>13.96</u>	<u>107</u>	<u>9.73</u>	<u>6.96</u>	<u>35.3</u>
FIELD REPLICATE	<u>1220</u>	<u>13.95</u>	<u>107</u>	<u>9.67</u>	<u>7.02</u>	<u>34.9</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02</u> -02	<u>1205</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>02</u> -02 Dup	<u>1205</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	<u>1202</u>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>---</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>---</u>					
DEPOSITS or STAINS	<u>---</u>					
SHEEN	<u>---</u>					
SURFACE SCUM	<u>---</u>					
DEBRIS	<u>---</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Larger quantity of vegetation around compared to last year.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Am

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1235</u>			
OUTFALL/NODE ID: <u>0.1224 E. Sullivan</u>		PHYSICAL LOCATION: <u>0. Seward &amp; Sullivan</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1245</u>	
Flow Meter	Flow Speed (ft/s): <u>6.80</u>	Water Depth (in): <u>23 1/2</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1242</u>	<u>14.28</u>	<u>186</u>	<u>7.87</u>	<u>7.18</u>	<u>49.3</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 03-02</u>	<u>1240</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>TAN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM 04      DATE: 07/20/13      SAMPLE START TIME: ~~1235~~ 1248

OUTFALL/NODE ID: 1224-2      PHYSICAL LOCATION: O. Seward & Sylvan

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1250</u>
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>15/8</u>	Pipe Diam (in):
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1248</u>	<u>15.75</u>	<u>278</u>	<u>6.58</u>	<u>7.15</u>	<u>48.1</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-02</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>NONE</u>	
COLOR	<u>SLIGHT TAN</u>	
CLARITY	<u>CLEAR</u>	
FLOATABLES	<u>NONE</u>	
DEPOSITS or STAINS	<u>NONE</u>	
SHEEN	<u>NONE</u>	
SURFACE SCUM	<u>NONE</u>	
DEBRIS	<u>NONE</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Photos:  Yes     No



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>	DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1300</u>				
OUTFALL/NODE ID: <u>207-1</u>	PHYSICAL LOCATION: <u>E. 56th @ Save School</u>					
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)	Bucket	<u>Flow Meter</u>				
		Time: <u>1315</u>				
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.27</u>	Water Depth (in): <u>7/8"</u>				
		Pipe Diam (in):				
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)				
	Time 3 (s)	Time 4 (s)				
Bucket: 1-gal 5-gal						
	Total Time	Rate (gal/s)				
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939	HACH 2100P/Q TURBIDIMETER: KLI #0833				
	TIME (ADT)	TEMP (°C)				
	COND (µS/cm)	DO (mg/L)				
MEASUREMENT	<u>1305</u>	<u>15.22</u>				
	<u>137</u>	<u>8.69</u>				
FIELD REPLICATE		<u>7.23</u>				
		<u>122</u>				
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 05-02</u>	<u>1310</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY						
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM		<u>SUDS, LOTS OF LOTS OF SUDS</u>				
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS</b>						
Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No						

Reviewed By: M Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 6-2</u>		DATE: <u>07/20/13</u>		SAMPLE START TIME: <u>1340</u>		
OUTFALL/NODE ID: <u>814-22</u>		PHYSICAL LOCATION: <u>Manterwood</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1348</u>	
Flow Meter	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>1/4"</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1350</u>	<u>14.96</u>	<u>11.3</u>	<u>8.74</u>	<u>7.48</u>	<u>56.4</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 6-02</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___ -02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	NONE					
COLOR	SLIGHT TAN					
CLARITY	CLEAR					
FLOATABLES	NONE					
DEPOSITS or STAINS	NONE					
SHEEN	<del>NONE</del> YES	slight oily sheen coming from outfall				
SURFACE SCUM	NONE					
DEBRIS	NONE					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Awan

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1358</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>N. Seward North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u>		Flow Meter			Time: <u>1400</u>	
Flow Meter	Flow Speed (ft/s):		Water Depth (in):		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket <u>1-gal</u> 5-gal	<u>43</u>	<u>44</u>	<u>47</u>	<u>47</u>		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1408</u>	<u>13.05</u>	<u>197</u>	<u>9.25</u>	<u>7.52</u>	<u>263</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-02</u>	<u>1405</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___ -02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>water depth is so low took TD from inside culvert - the rest of the parameters from bucket filled w/ outfall water</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Amos

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/20/13		SAMPLE START TIME: 1415		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>N. Seward (south)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Time: <u>1417</u>		
Flow Method: <u>Flow Meter</u>		Bucket: <u>Flow Meter</u>		<u>gauge pool</u>		
Flow Meter	Flow Speed (ft/s): <u>2.29/230</u>	Water Depth (in): <u>0.275</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1415</u>	<u>13.08</u>	<u>191</u>	<u>9.34</u>	<u>6.88</u>	<u>77.2</u>
FIELD REPLICATE	<u>1420</u>	<u>13.08</u>	<u>196</u>	<u>9.45</u>	<u>6.86</u>	<u>77.8</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-02</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-02 Dup</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Anon

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1439</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boeke (north bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1447</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.02</u>		Water Depth (in): <u>0.8"</u>		Pipe Diam (in):	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1445</u>	<u>13.03</u>	<u>335</u>	<u>9.62</u>	<u>7.57</u>	<u>18.3</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM <u>09</u>-02</u>	<u>1440</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>Doppler registering 0.00 flow but there was visible flow</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1450</u>			
OUTFALL/NODE ID: <u>5252</u>		PHYSICAL LOCATION: <u>Becker (south bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1459</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>2.32</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: <u>1 1/2</u> gal <u>5</u> -gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1455</u>	<u>9.98</u>	<u>357</u>	<u>10.93</u>	<u>7.27</u>	<u>17.10</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 10-02</u>	<u>1450</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <u>Yes</u> No						

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm # 3

STATION ID: SWM <u>01</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1045</u>
---------------------------	-----------------------	--------------------------------

OUTFALL/NODE ID: <u>1090-3</u>	PHYSICAL LOCATION: <u>L. Otis &amp; Dunley</u>
--------------------------------	------------------------------------------------

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: <u>1045</u>
Flow Speed (ft/s): <u>0.12</u>	Water Depth (in): <u>0.3</u>		Pipe Diam (in): <u>24</u>
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>12.51</u>	<u>475</u>	<u>9.5</u>	<u>7.86</u>	<u>10.7</u>
FIELD REPLICATE						<u>10.6</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>01</u> -03	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___ -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>clear/none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS**

<u>Cloudy, no precip.</u>
---------------------------

Photos: Yes No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1110</u>
OUTFALL/NODE ID: <u>847-1</u>	PHYSICAL LOCATION: <u>Home Depot - ABBOT</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1110</u>			
Flow Meter	Flow Speed (ft/s): <u>2.00</u>	Water Depth (in): <u>5/8</u>	Pipe Diam (in): <u>18</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1120</u>	<u>9.35</u>	<u>348</u>	<u>11.90</u>	<u>8.05</u>	<u>2.23</u>
FIELD REPLICATE	<u>1120</u>	<u>9.35</u>	<u>350</u>	<u>11.88</u>	<u>8.03</u>	<u>2.58</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-03</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM02-03 Dup</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	↓				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)	↓					<input checked="" type="checkbox"/>
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no active precip.

Photos: Yes No



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

1138

STATION ID: SWM <u>03</u>	DATE: 08/29/13	SAMPLE START TIME: <del>1138</del>
OUTFALL/NODE ID: 1224-1	PHYSICAL LOCATION: old Seward @ Sylvia North	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: 1138			
Flow Meter	Flow Speed (ft/s): 0.12	Water Depth (in): 2.7	Pipe Diam (in): 36			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	11:38	11.31	276	8.48	7.80	8.96
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>03</u> -03	1138	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	none	
COLOR	none	
CLARITY	clear	
FLOATABLES	Light Foam	
DEPOSITS or STAINS	none	
SHEEN	none	
SURFACE SCUM	Light Foam	
DEBRIS	none	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

cloudy/overcast - no precip.

Photos:  No Gary's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1140</u>
OUTFALL/NODE ID: <u>1224-2</u>	PHYSICAL LOCATION: <u>Old Sewer @ SW Van South</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow <u>Meter</u>	Time: <u>1140</u>
Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>1 1/8</u>	Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1140</u>	<u>13.33</u>	<u>436</u>	<u>9.08</u>	<u>7.60</u>	<u>6.17</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04</u> -03	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no precip

Photos:  Yes  No Gary's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1205</u>
OUTFALL/NODE ID: <u>207-1</u>	PHYSICAL LOCATION: <u>E 56th @ Saxe School</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: <u>1205</u>			
Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>7/8</u>		Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1205</u>	<u>12.8</u>	<u>293</u>	<u>9.43</u>	<u>7.61</u>	<u>12.7</u>
FIELD REPLICATE						<u>13.3</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>05</u> -03	<u>1205</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>none</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Overcast / light Rain.

Photos:  Yes  No Greg's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1240</u>
OUTFALL/NODE ID: <u>319-22</u>	PHYSICAL LOCATION: <u>M. New Wood</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)	Bucket	Flow Meter	Time: <u>1240</u>			
Flow Meter	Flow Speed (ft/s): <u>0.28</u>	Water Depth (in): <u>3/8</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1240</u>	<u>11.43</u>	<u>190</u>	<u>4.79</u>	<u>7.60</u>	<u>4.15</u>
FIELD REPLICATE				<u>9.51</u>		<u>4.55</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>06</u> -03	<u>1240</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>musty smell</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>Light sheen down stream</u>	<u>@ pool just downstream of outlet</u>
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>overcast - light precip.</u>

Photos:  Yes  No Gary's Photo

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1255</u>
OUTFALL/NODE ID: <u>484-1</u>	PHYSICAL LOCATION: <u>Newsewer North</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u>		Flow Meter			Time: <u>1255</u>	
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>1/16</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: <u>1-gal</u> 5-gal	<u>743</u>	<u>140</u>	<u>140</u>	<u>144</u>	<u>567<sup>sec</sup></u>	

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1255</u>	<u>12.23</u>	<u>78</u>	<u>10.16<sup>58</sup></u>	<u>7.71</u>	<u>88.2</u>
FIELD REPLICATE			<u>52</u>	<u>9.95</u>		<u>89.1</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM07-03</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM07-03 Dup</u>	<u>1255</u>					
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>None</u>	
COLOR	<u>Brown</u>	<u>as seen in white bucket</u>
CLARITY	<u>opaque</u>	<u>as seen in white bucket.</u>
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>overcast - no precip.</u>

Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gray's Photo</u>
-------------------------------------------------------------------------------------------------

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1320</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Survey 42"</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1320</u>	
Flow Meter	Flow Speed (ft/s): <u>1.59</u>		Water Depth (in): <u>1.74</u>		Pipe Diam (in): <u>42</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833.		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1320</u>	<u>10.86</u>	<u>374</u>	<u>10.8</u>	<u>7.29</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08</u> -03	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08</u> -03 Dup	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Strong Fuel odor</u>					
COLOR	<u>none</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>rusty stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gross' s Plu</u>						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>08/29/13</u>		SAMPLE START TIME: <u>1340</u>		
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>BOEKE North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1340</u>	
Flow Meter	Flow Speed (ft/s): <u>0.06</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1340</u>	<u>11.97</u>	<u>371</u>	<u>10.51</u>	<u>7.50</u>	
FIELD REPLICATE					<u>6.16</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM09-03</u>	<u>1340</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>still drizzly</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gary's Phone</u>						

Reviewed By: [Signature]

Date: 8/29/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>08/29/13</u>		SAMPLE START TIME: <u>1350</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>BOEKO South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1350</u>		
Flow Meter	Flow Speed (ft/s): <u>0.52</u>		Water Depth (in): <u>13 1/2</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time / Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1350</u>	<u>11.03</u>	<u>317</u>	<u>11.20</u>	<u>7.34</u>	<u>3.83</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM10-03</u>	<u>1350</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>very clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>Rust stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>GATYS Photo</u>						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #4

STATION ID: SWM <u>01</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1030</u>		
OUTFALL/NODE ID: <u>1040-3</u>		PHYSICAL LOCATION: <u>L. O'Neil &amp; O'Malley</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Time: <u>1030</u>		
Flow Meter		Flow Speed (ft/s): <u>0.11</u>		Water Depth (in): <u>0.4</u>		
Pipe Diam (in): <u>18</u>						
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1030</u>	<u>9.25</u>	<u>419</u>	<u>10.69</u>	<u>8.70</u>	
FIELD REPLICATE					<u>23.6</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM01-04</u>	<u>1030</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>None</u>					
COLOR	<u>Clear</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>Visible Foam</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low Flow, No Precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME:			
OUTFALL/NODE ID: <u>8471</u>		PHYSICAL LOCATION: <u>Home Depot - Abbot</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1045</u>		
Flow Meter	Flow Speed (ft/s): <u>3.94</u>	Water Depth (in): <u>11 1/8</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>8.43</u>	<u>305</u>	<u>12.52</u>	<u>8.11</u>	<u>0.93</u>
FIELD REPLICATE						<u>1.09</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02</u> -04	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>02</u> -04 Dup		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>green algae @ Rocks, no precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1115</u>		
OUTFALL/NODE ID: <u>1724-1</u>		PHYSICAL LOCATION: <u>O. Seward @ Sylvan North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter		Flow Speed (ft/s): <u>0.28</u>		Water Depth (in): <u>3.0</u>		
Pipe Diam (in):		Time 1 (s)		Time 2 (s)		
Bucket Measurements		Time 3 (s)		Time 4 (s)		
Bucket: 1-gal 5-gal		Total Time		Rate (gals)		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
TIME (ADT)		TEMP (°C)		COND (µS/cm)		
DO (mg/L)		pH		TURB (ntu)		
MEASUREMENT		<u>9/15</u>		<u>8.30</u>		
FIELD REPLICATE		<u>261</u>		<u>9.34</u>		
				<u>7.80</u>		
				<u>15.0</u>		
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>03</u> -04	<u>1115</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>Dark/Dark</u>	<u>Slight dark color to water</u>				
CLARITY	<u>opaque</u>	<u>slight</u>				
FLOATABLES	<u>some foam</u>	<u>light foam near rocks</u>				
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>No precip. Evidence of significant flow. Missed portion</u>						
<u>of main runoff event.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1125</u>		
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward @ S. Sullivan South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1125</u>	
Flow Meter	Flow Speed (ft/s): <u>0.09</u>		Water Depth (in): <u>2.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1125</u>	<u>10.58</u>	<u>371</u>	<u>10.31</u>	<u>7.62</u>	<u>4.82</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04-04</u>	<u>1125</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>blue</u>					
DEBRIS	<u>man</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>no reports</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1140</u>		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E 56<sup>th</sup>, Save School</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1140</u>	
Flow Meter	Flow Speed (ft/s): <u>0.12</u>		Water Depth (in): <u>1.4</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1140</u>	<u>10.08</u>	<u>315</u>	<u>11.12</u>	<u>7.60</u>	<u>16.1</u>
FIELD REPLICATE						<u>16.6</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>05</u> -04	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>None</u>	<u>Downstream of outfall, minor.</u>				
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>NO PRECIP.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1210</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1210</u>		
Flow Meter	Flow Speed (ft/s): <u>0.21</u>	Water Depth (in): <u>6.5</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1210</u>	<u>9.03</u>	<u>163</u>	<u>12.00</u> <sup>BOD</sup>	<u>7.60</u>	<u>3.35</u>
FIELD REPLICATE				<u>10.55</u>		<u>3.36</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>06</u> -04	<u>1210</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Present</u>	<u>not pleasant, no fuel smell, but strong present decay odor.</u>				
COLOR	<u>None</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>No Precip</u>						
Photos: Yes No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1225</u>			
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>New Seward North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1225</u>	
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>1/16</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gals)
Bucket: <u>5-gal</u>	<u>8m 24sec</u>				<u>564sec</u>	
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT <u>*</u>	<u>1225</u>	<u>9.36</u>	<u>48</u>	<u>11.74*</u>	<u>7.96</u>	<u>54.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-04</u>	<u>1225</u>					
<u>SWM ___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low Flow, Sunny w/ no precip.</u>						
<u>* Measurements in Bucket, due to very low flow</u>						
Photos: <u>Yes</u> No	<u>* Enriched DO due to a mixing/lacation in bucket.</u>					

Reviewed By: M Jovan

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1245</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Seward South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1245</u>	
Flow Meter		Flow Speed (ft/s): <u>2.55</u>		Water Depth (in): <u>2.5</u>		
Pipe Diam (in):						
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
Total Time		Rate (gal/s)				
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1245</u>	<u>9.17</u>	<u>394</u>	<u>11.53</u>	<u>7.39</u>	
FIELD REPLICATE					<u>8.44</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 08-04</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM 08-04 Dup</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Organic/Fuel</u>	<u>Strong Fuel smell,</u>				
COLOR	<u>None</u>					
CLARITY	<u>Clear</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Sunny, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Awan

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1310</u>	
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boyle North</u>			
<b>OUTFALL FLOW MEASUREMENTS</b>					
Flow Method (circle)		Bucket		Flow Meter	
Time:					
Flow Meter	Flow Speed (ft/s):		Water Depth (in):		Pipe Diam (in):
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: 1-gal 5-gal					
<b>IN-SITU WATER QUALITY MEASUREMENTS</b>					
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833	
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH
MEASUREMENT	/				
FIELD REPLICATE					
<b>DISCRETE WATER QUALITY SAMPLES</b>					
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)			
		FECAL	BOD	TSS	TAqH
SWM ___ -04	/				
SWM ___ -04 Dup					
MS/MSD SAMPLES					
FIELD QC (Trip/Equip)					
Description of QC Samples:					Sampler's Initials:
<b>STANDARD OBSERVATIONS</b>					
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS			
ODOR					
COLOR					
CLARITY					
FLOATABLES					
DEPOSITS or STAINS					
SHEEN					
SURFACE SCUM					
DEBRIS					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>					
<u>No samples taken, stormwater maintenance in progress</u>					
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1315</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Booke south</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1315</u>	
Flow Meter	Flow Speed (ft/s): <u>6.45</u>		Water Depth (in): <u>2.0</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1315</u>	<u>10.51</u>	<u>347</u>	<u>11.78</u>	<u>7.32</u>	<u>10.5</u>
FIELD REPLICATE						<u>9.11</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -04	<u>1315</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>sunny, no降水</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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**Appendix A**

**Photographs**





**Photograph 1. Outfall SWM01 (1040-3), Ridgemont Drive.**



**Photograph 2. Outfall SWM02 (847-1), Home Depot on Abbott Road.**



**Photograph 3. Outfall SWM03 (1224-1), Fairweather Loop off Sylvan Drive.**



**Photograph 4. Outfall SWM04 (1224-2), Fairweather Loop off Sylvan Drive.**



**Photograph 5. Outfall SWM05 (207-1), East 56<sup>th</sup> Avenue at Save School.**



**Photograph 6. Outfall SWM06 (314-22), Maplewood Street off of Northern Lights Boulevard.**



**Photograph 7. Outfall SWM07 (484-1), New Seward Highway at Chester Creek.**



**Photograph 8. Outfall SWM08 (86-1), New Seward Highway at Chester Creek.**





**Photograph 9. Outfall SWM09 (499-1), Anchorage Football Stadium & Ben Boeke Ice Arena.**



**Photograph 10. Outfall SWM10 (525-2), Eagle Street at Chester Creek.**



**Photograph 11. Station SWM01, Storm #1 – No flow or samples taken.**



**Photograph 12. Storm Drain Cleaning, Station SWM09, Storm #4.**

## **Appendix B**

### **Laboratory Data Packages & Chain of Custodies**



## **Appendix B1**

### **Laboratory Data Package Storm Event #1**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1132776**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 07/10/2013 4:12:20PM

## Case Narrative

**Customer: KINNETL**

**Kinnetic Laboratories, Inc.**

**Project: 1132776**

**5078 MOA Stormwater Management**

Refer to the sample receipt form for information on sample condition.

**1132776009 PS**

**SWM07-01**

8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample matrix.

**1157083 DUP**

**1137969021DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1157472 DUP**

**1132776006DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1157473 DUP**

**1132776007DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

\* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.



### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1132776003	SWM02-01 MSD	XMS7413	Benzo(a)Anthracene	RP
1132776003	SWM02-01 MSD	XMS7413	Benzo[b]Fluoranthene	RP
1132776003	SWM02-01 MSD	XMS7413	Chrysene	BLC
1132776012	SWM09-01	XMS7413	Chrysene	BLC

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM02-01	1132776001	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 MS	1132776002	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 MSD	1132776003	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM02-01 Dup	1132776004	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM03-01	1132776005	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM04-01	1132776006	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM05-01	1132776007	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM06-01	1132776008	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM07-01	1132776009	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM08-01	1132776010	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM08-01 Dup	1132776011	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM09-01	1132776012	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
SWM10-01	1132776013	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)
Trip Blank	1132776014	07/01/2013	07/01/2013	Water (Surface, Eff., Ground)

#### Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

#### Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: **SWM02-01**

Lab Sample ID: 1132776001

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.93	mg/L
Fecal Coliform	213	col/100mL
Total Suspended Solids	1.10	mg/L

Client Sample ID: **SWM02-01 Dup**

Lab Sample ID: 1132776004

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.56	mg/L
Fecal Coliform	233	col/100mL
Total Suspended Solids	1.77	mg/L

Client Sample ID: **SWM03-01**

Lab Sample ID: 1132776005

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	4.79	mg/L
Fecal Coliform	470	col/100mL
Total Suspended Solids	2.37	mg/L

Client Sample ID: **SWM04-01**

Lab Sample ID: 1132776006

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	11.6	mg/L
Fecal Coliform	147	col/100mL
Total Suspended Solids	29.0	mg/L

Client Sample ID: **SWM05-01**

Lab Sample ID: 1132776007

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	33.3	mg/L
Fecal Coliform	209	col/100mL
Benzo(a)Anthracene	0.0867	ug/L
Chrysene	0.0595	ug/L
Fluoranthene	0.274	ug/L
Total Suspended Solids	30.0	mg/L

Client Sample ID: **SWM06-01**

Lab Sample ID: 1132776008

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	34.8	mg/L
Fecal Coliform	564	col/100mL
Total Suspended Solids	10.0	mg/L

Client Sample ID: **SWM07-01**

Lab Sample ID: 1132776009

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	57.9	mg/L
Fecal Coliform	32300	col/100mL
Total Suspended Solids	85.0	mg/L

Client Sample ID: **SWM08-01**

Lab Sample ID: 1132776010

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	26.5	mg/L
Fecal Coliform	791	col/100mL
Total Suspended Solids	21.0	mg/L

### Detectable Results Summary

Client Sample ID: **SWM08-01 Dup**

Lab Sample ID: 1132776011

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM09-01**

Lab Sample ID: 1132776012

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM10-01**

Lab Sample ID: 1132776013

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	25.6	mg/L
Fecal Coliform	745	col/100mL
Total Suspended Solids	21.0	mg/L
<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	9.30	mg/L
Fecal Coliform	275	col/100mL
Benzo(a)Anthracene	0.0596	ug/L
Benzo[b]Fluoranthene	0.0872	ug/L
Chrysene	0.0838	ug/L
Fluoranthene	0.332	ug/L
Phenanthrene	0.206	ug/L
Pyrene	0.171	ug/L
Total Suspended Solids	32.0	mg/L
<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	25	col/100mL
Total Suspended Solids	8.18	mg/L

## Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776001  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.93		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776001-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	213		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776001-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL

## Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776001  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 18:20
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 18:20

## Surrogates

2-Fluorobiphenyl	51		50-110		%	1	07/03/13 18:20
Terphenyl-d14	70		50-135		%	1	07/03/13 18:20

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 18:20  
 Container ID: 1132776001-F

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776001  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:27
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 14:27
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:27
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 14:27
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:27
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/02/13 14:27
4-Bromofluorobenzene	103		75-120		%	1	07/02/13 14:27
Toluene-d8	95.6		85-120		%	1	07/02/13 14:27

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 14:27  
 Container ID: 1132776001-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL





**Results of SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776001  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.10		0.549	0.165	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776001-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 910 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776004  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.56		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776004-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	233		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776004-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



**Results of SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776004  
Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 19:53
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 19:53

**Surrogates**

2-Fluorobiphenyl	56		50-110		%	1	07/03/13 19:53
Terphenyl-d14	82.6		50-135		%	1	07/03/13 19:53

**Batch Information**

Analytical Batch: XMS7413  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/03/13 19:53  
Container ID: 1132776004-F

Prep Batch: XXX29299  
Prep Method: SW3520C  
Prep Date/Time: 07/02/13 10:05  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776004  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:01
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:01
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:01
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:01
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:01
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105		70-120		%	1	07/02/13 13:01
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 13:01
Toluene-d8	96.7		85-120		%	1	07/02/13 13:01

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:01  
 Container ID: 1132776004-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776004  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.77		0.521	0.156	mg/L	1	07/05/13 12:14

## Batch Information

Analytical Batch: STS4117  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/05/13 12:14  
 Container ID: 1132776004-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 960 mL  
 Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM03-01

Client Sample ID: **SWM03-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776005  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:03  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.79		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776005-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	470		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776005-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



**Results of SWM03-01**

Client Sample ID: **SWM03-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776005  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:03  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.37		0.515	0.155	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776005-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 970 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM04-01

Client Sample ID: **SWM04-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776006  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:05  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	11.6		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776006-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	147		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776006-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL





Results of **SWM04-01**

Client Sample ID: **SWM04-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776006  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:05  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-2

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	29.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776006-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776007  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	33.3		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776007-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	209		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776007-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



### Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776007  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

### Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo(a)Anthracene	0.0867		0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Chrysene	0.0595		0.0500	0.0150	ug/L	1	07/03/13 20:09
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Fluoranthene	0.274		0.0500	0.0150	ug/L	1	07/03/13 20:09
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:09
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:09

### Surrogates

2-Fluorobiphenyl	52		50-110		%	1	07/03/13 20:09
Terphenyl-d14	68.2		50-135		%	1	07/03/13 20:09

### Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 20:09  
 Container ID: 1132776007-G

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776007  
 Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:19
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:19
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:19
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:19
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:19
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/02/13 13:19
4-Bromofluorobenzene	106		75-120		%	1	07/02/13 13:19
Toluene-d8	96.1		85-120		%	1	07/02/13 13:19

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:19  
 Container ID: 1132776007-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776007  
Lab Project ID: 1132776

Collection Date: 07/01/13 12:33  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 207-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	30.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776007-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776008  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:10  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 314-22

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	34.8		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776008-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	564		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776008-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776008  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:10  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 314-22

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	10.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776008-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776009  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 484-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	57.9		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776009-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	32300		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776009-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM



## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:24
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:24

## Surrogates

2-Fluorobiphenyl	38.4	*	50-110		%	1	07/03/13 20:24
Terphenyl-d14	71.4		50-135		%	1	07/03/13 20:24

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 20:24  
 Container ID: 1132776009-G

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:36
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 13:36
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 13:36
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 13:36
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 13:36
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/02/13 13:36
4-Bromofluorobenzene	107		75-120		%	1	07/02/13 13:36
Toluene-d8	96		85-120		%	1	07/02/13 13:36

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 13:36  
 Container ID: 1132776009-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776009  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:30  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	85.0		25.0	7.50	mg/L	1	07/03/13 11:17

## Batch Information

Analytical Batch: STS4114  
 Analytical Method: SM21 2540D  
 Analyst: J.C  
 Analytical Date/Time: 07/03/13 11:17  
 Container ID: 1132776009-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776010  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	26.5		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776010-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	791		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776010-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM08-01

Client Sample ID: **SWM08-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776010  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.0		5.00	1.50	mg/L	1	07/05/13 12:14

## Batch Information

Analytical Batch: STS4117  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/05/13 12:14  
 Container ID: 1132776010-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776011  
 Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	25.6		2.00	2.00	mg/L	1	07/02/13 11:30

## Batch Information

Analytical Batch: BOD4725  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/02/13 11:30  
 Container ID: 1132776011-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	745		1	1	col/100mL	1	07/01/13 18:10

## Batch Information

Analytical Batch: BTF12911  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/01/13 18:10  
 Container ID: 1132776011-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 100 mL  
 Prep Extract Vol: 100 mL



Results of **SWM08-01 Dup**

Client Sample ID: **SWM08-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776011  
Lab Project ID: 1132776

Collection Date: 07/01/13 13:45  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.0		5.00	1.50	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776011-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776012  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	9.30		2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776012-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	275		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776012-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM



## Results of SWM09-01

Client Sample ID: **SWM09-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776012  
 Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo(a)Anthracene	0.0596		0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[b]Fluoranthene	0.0872		0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Chrysene	0.0838		0.0500	0.0150	ug/L	1	07/03/13 20:39
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Fluoranthene	0.332		0.0500	0.0150	ug/L	1	07/03/13 20:39
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/03/13 20:39
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/03/13 20:39
Phenanthrene	0.206		0.0500	0.0150	ug/L	1	07/03/13 20:39
Pyrene	0.171		0.0500	0.0150	ug/L	1	07/03/13 20:39

## Surrogates

2-Fluorobiphenyl	64.7		50-110		%	1	07/03/13 20:39
Terphenyl-d14	76.9		50-135		%	1	07/03/13 20:39

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/03/13 20:39  
 Container ID: 1132776012-G

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/13 10:05  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Results of SWM09-01

Client Sample ID: **SWM09-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776012  
 Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:10
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 14:10
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 14:10
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 14:10
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 14:10
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/02/13 14:10
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 14:10
Toluene-d8	95.9		85-120		%	1	07/02/13 14:10

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 14:10  
 Container ID: 1132776012-D

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM09-01

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776012  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:15  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	32.0		10.0	3.00	mg/L	1	07/03/13 11:17

## Batch Information

Analytical Batch: STS4114  
Analytical Method: SM21 2540D  
Analyst: J.C  
Analytical Date/Time: 07/03/13 11:17  
Container ID: 1132776012-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM10-01**

Client Sample ID: **SWM10-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776013  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:25  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 525-2

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00	U	2.00	2.00	mg/L	1	07/02/13 11:30

**Batch Information**

Analytical Batch: BOD4725  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/02/13 11:30  
Container ID: 1132776013-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	25		1	1	col/100mL	1	07/01/13 18:10

**Batch Information**

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/01/13 18:10  
Container ID: 1132776013-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 07/10/2013 4:12:22PM



Results of **SWM10-01**

Client Sample ID: **SWM10-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1132776013  
Lab Project ID: 1132776

Collection Date: 07/01/13 14:25  
Received Date: 07/01/13 15:15  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 525-2

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.18		0.505	0.152	mg/L	1	07/05/13 12:14

**Batch Information**

Analytical Batch: STS4117  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/05/13 12:14  
Container ID: 1132776013-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/10/2013 4:12:22PM

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1132776014  
 Lab Project ID: 1132776

Collection Date: 07/01/13 11:25  
 Received Date: 07/01/13 15:15  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 11:53
Benzene	0.400	U	0.400	0.120	ug/L	1	07/02/13 11:53
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/02/13 11:53
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/02/13 11:53
Toluene	1.00	U	1.00	0.310	ug/L	1	07/02/13 11:53
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105		70-120		%	1	07/02/13 11:53
4-Bromofluorobenzene	104		75-120		%	1	07/02/13 11:53
Toluene-d8	96.4		85-120		%	1	07/02/13 11:53

## Batch Information

Analytical Batch: VMS13598  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/02/13 11:53  
 Container ID: 1132776014-A

Prep Batch: VXX24883  
 Prep Method: SW5030B  
 Prep Date/Time: 07/02/13 09:01  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1458428 [BOD/4725]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1157270

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4725

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 7/2/2013 11:30:00AM

Print Date: 07/10/2013 4:12:24PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [BOD4725]

Blank Spike Lab ID: 1157271

Date Analyzed: 07/02/2013 11:30

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	207	105	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4725**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:



## Method Blank

Blank ID: MB for HBN 1458660 [BTF/12911]  
Blank Lab ID: 1157324

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776009, 1132776010, 1132776011, 1132776012, 1132776013

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1U	1	1	col/100mL

## Batch Information

Analytical Batch: BTF12911  
Analytical Method: SM21 9222D  
Instrument:  
Analyst: SDP  
Analytical Date/Time: 7/1/2013 6:10:00PM

Print Date: 07/10/2013 4:12:26PM

## Method Blank

Blank ID: MB for HBN 1458393 [STS/4114]

Blank Lab ID: 1157080

QC for Samples:

1132776009, 1132776012

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4114

Analytical Method: SM21 2540D

Instrument:

Analyst: J.C

Analytical Date/Time: 7/3/2013 11:17:10AM

Print Date: 07/10/2013 4:12:26PM

## Duplicate Sample Summary

Original Sample ID: 1137969021

Duplicate Sample ID: 1157083

QC for Samples:

1132776009, 1132776012

Analysis Date: 07/03/2013 11:17

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	10.0	11.0	9.50*	5.00

## Batch Information

Analytical Batch: STS4114

Analytical Method: SM21 2540D

Instrument:

Analyst: J.C

Print Date: 07/10/2013 4:12:27PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [STS4114]  
 Blank Spike Lab ID: 1157081  
 Date Analyzed: 07/03/2013 11:17

Spike Duplicate ID: LCSD for HBN 1132776 [STS4114]  
 Spike Duplicate Lab ID: 1157082  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776009, 1132776012

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	45.2	90	50	46.1	92	( 75-125 )	2.00	(< 5 )

## Batch Information

Analytical Batch: STS4114  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: J.C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1458778 [STS/4117]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1157469

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776010, 1132776011, 1132776013

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 7/5/2013 12:14:52PM

Print Date: 07/10/2013 4:12:28PM

## Duplicate Sample Summary

Original Sample ID: 1132776006

Duplicate Sample ID: 1157472

QC for Samples:

1132776001, 1132776004, 1132776005, 1132776006, 1132776007

Analysis Date: 07/05/2013 12:14

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	29.0	26.0	10.90*	5.00

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/10/2013 4:12:28PM

## Duplicate Sample Summary

Original Sample ID: 1132776007

Duplicate Sample ID: 1157473

QC for Samples:

1132776007, 1132776008, 1132776010, 1132776011, 1132776013

Analysis Date: 07/05/2013 12:14

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original (5.00)</u>	<u>Duplicate (5.00)</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	30.0	33.0	9.50*	5.00

## Batch Information

Analytical Batch: STS4117

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/10/2013 4:12:28PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [STS4117]  
 Blank Spike Lab ID: 1157470  
 Date Analyzed: 07/05/2013 12:14

Spike Duplicate ID: LCSD for HBN 1132776 [STS4117]  
 Spike Duplicate Lab ID: 1157471  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776005, 1132776006, 1132776007, 1132776008, 1132776010, 1132776011, 1132776013

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	44.9	90	50	45.3	91	( 75-125 )	0.89	(< 5 )

## Batch Information

Analytical Batch: STS4117  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: MEV

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL





### Method Blank

Blank ID: MB for HBN 1458313 [VXX/24883]  
Blank Lab ID: 1156861

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1132776001, 1132776004, 1132776007, 1132776009, 1132776012, 1132776014

### Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	104	70-120		%
4-Bromofluorobenzene	104	75-120		%
Toluene-d8	96.6	85-120		%

### Batch Information

Analytical Batch: VMS13598  
Analytical Method: EPA 602/624  
Instrument: VPA 780/5975 GC/MS  
Analyst: NRB  
Analytical Date/Time: 7/2/2013 10:09:00AM

Prep Batch: VXX24883  
Prep Method: SW5030B  
Prep Date/Time: 7/2/2013 9:01:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 07/10/2013 4:12:29PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [VXX24883]  
 Blank Spike Lab ID: 1156862  
 Date Analyzed: 07/02/2013 10:27

Spike Duplicate ID: LCSD for HBN 1132776  
 [VXX24883]  
 Spike Duplicate Lab ID: 1156863  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776007, 1132776009, 1132776012, 1132776014

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	30.8	103	30	30.1	100	( 70-120 )	2.30	(< 20 )
1,3-Dichlorobenzene	30	31.3	104	30	30.5	102	( 75-125 )	2.60	(< 20 )
1,4-Dichlorobenzene	30	31.4	105	30	30.6	102	( 75-125 )	2.70	(< 20 )
Benzene	30	34.6	115	30	33.0	110	( 80-120 )	4.80	(< 20 )
Chlorobenzene	30	32.6	109	30	31.6	105	( 80-120 )	3.30	(< 20 )
Ethylbenzene	30	33.5	112	30	32.4	108	( 75-125 )	3.20	(< 20 )
o-Xylene	30	33.0	110	30	31.9	106	( 80-120 )	3.30	(< 20 )
P & M -Xylene	60	67.1	112	60	64.8	108	( 75-130 )	3.60	(< 20 )
Toluene	30	33.2	111	30	32.0	107	( 75-120 )	3.80	(< 20 )

## Surrogates

1,2-Dichloroethane-D4	30	93.4	93	30	92.9	93	( 70-120 )	0.47
4-Bromofluorobenzene	30	100	100	30	100	100	( 75-120 )	0.37
Toluene-d8	30	98.3	98	30	98.3	98	( 85-120 )	0.03

## Batch Information

Analytical Batch: **VMS13598**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **NRB**

Prep Batch: **VXX24883**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **07/02/2013 09:01**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



### Billable Matrix Spike Summary

Original Sample ID: 1132776001  
MS Sample ID: 1132776002 BMS  
MSD Sample ID: 1132776003 BMSD

Analysis Date: 07/02/2013 14:27  
Analysis Date: 07/02/2013 14:44  
Analysis Date: 07/02/2013 15:02  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	30.9	103	30.0	29.6	99	70-120	4.20	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	31.3	104	30.0	30.0	100	75-125	4.10	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	31.8	106	30.0	30.0	100	75-125	6.00	(< 20 )
Benzene	0.400U	30.0	35.3	118	30.0	33.5	112	80-120	5.50	(< 20 )
Chlorobenzene	0.500U	30.0	32.8	109	30.0	31.5	105	80-120	4.00	(< 20 )
Ethylbenzene	1.00U	30.0	34.2	114	30.0	32.7	109	75-125	4.60	(< 20 )
o-Xylene	1.00U	30.0	33	110	30.0	31.6	105	80-120	4.50	(< 20 )
P & M -Xylene	2.00U	60.0	68.2	114	60.0	64.9	108	75-130	5.00	(< 20 )
Toluene	1.00U	30.0	33.6	112	30.0	32.1	107	75-120	4.50	(< 20 )

### Surrogates

1,2-Dichloroethane-D4		30.0	28.8	96	30.0	28.6	95	70-120	0.73
4-Bromofluorobenzene		30.0	30.3	101	30.0	30.0	100	75-120	0.73
Toluene-d8		30.0	29.2	97	30.0	29.7	99	85-120	1.90

### Batch Information

Analytical Batch: VMS13598  
Analytical Method: EPA 602/624  
Instrument: VPA 780/5975 GC/MS  
Analyst: NRB  
Analytical Date/Time: 7/2/2013 2:44:00PM

Prep Batch: VXX24883  
Prep Method: Volatiles Extraction 8240/8260 FULL  
Prep Date/Time: 7/2/2013 9:01:00AM  
Prep Initial Wt./Vol.: 5.00mL  
Prep Extract Vol: 5.00mL

Print Date: 07/10/2013 4:12:30PM



**Method Blank**

Blank ID: MB for HBN 1458274 [XXX/29299]  
Blank Lab ID: 1156700

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1132776001, 1132776004, 1132776007, 1132776009, 1132776012

**Results by EPA 625M SIMS (PAH)**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	82	50-110		%
Terphenyl-d14	101	50-135		%

**Batch Information**

Analytical Batch: XMS7413  
Analytical Method: EPA 625M SIMS (PAH)  
Instrument: HP 6890/5973 MS SVQA  
Analyst: RTS  
Analytical Date/Time: 7/3/2013 5:04:00PM

Prep Batch: XXX29299  
Prep Method: SW3520C  
Prep Date/Time: 7/2/2013 10:05:00AM  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/10/2013 4:12:31PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1132776 [XXX29299]  
 Blank Spike Lab ID: 1156701  
 Date Analyzed: 07/03/2013 17:19

Spike Duplicate ID: LCSD for HBN 1132776  
 [XXX29299]  
 Spike Duplicate Lab ID: 1156702  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1132776001, 1132776004, 1132776007, 1132776009, 1132776012

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.394	79	0.5	0.382	77	( 45-110 )	2.90	(< 30 )
Acenaphthylene	0.5	0.398	80	0.5	0.389	78	( 50-105 )	2.20	(< 30 )
Anthracene	0.5	0.469	94	0.5	0.442	88	( 55-110 )	6.00	(< 30 )
Benzo(a)Anthracene	0.5	0.416	83	0.5	0.425	85	( 55-110 )	2.10	(< 30 )
Benzo[a]pyrene	0.5	0.433	87	0.5	0.451	90	( 55-110 )	4.00	(< 30 )
Benzo[b]Fluoranthene	0.5	0.395	79	0.5	0.396	79	( 45-120 )	0.33	(< 30 )
Benzo[g,h,i]perylene	0.5	0.384	77	0.5	0.410	82	( 40-125 )	6.60	(< 30 )
Benzo[k]fluoranthene	0.5	0.452	90	0.5	0.466	93	( 45-125 )	3.00	(< 30 )
Chrysene	0.5	0.447	89	0.5	0.426	85	( 55-110 )	4.60	(< 30 )
Dibenzo[a,h]anthracene	0.5	0.378	76	0.5	0.395	79	( 40-125 )	4.40	(< 30 )
Fluoranthene	0.5	0.444	89	0.5	0.491	98	( 55-115 )	10.00	(< 30 )
Fluorene	0.5	0.406	81	0.5	0.396	79	( 50-110 )	2.50	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.5	0.394	79	0.5	0.394	79	( 45-125 )	0.16	(< 30 )
Naphthalene	0.5	0.365	73	0.5	0.375	75	( 40-100 )	2.50	(< 30 )
Phenanthrene	0.5	0.394	79	0.5	0.383	77	( 50-115 )	3.00	(< 30 )
Pyrene	0.5	0.439	88	0.5	0.478	96	( 50-130 )	8.40	(< 30 )
<b>Surrogates</b>									
2-Fluorobiphenyl	0.5	83.6	84	0.5	84.6	85	( 50-110 )	1.20	
Terphenyl-d14	0.5	90.5	91	0.5	97.5	98	( 50-135 )	7.50	

## Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29299  
 Prep Method: SW3520C  
 Prep Date/Time: 07/02/2013 10:05  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL



### Billable Matrix Spike Summary

Original Sample ID: 1132776001  
 MS Sample ID: 1132776002 BMS  
 MSD Sample ID: 1132776003 BMSD

Analysis Date: 07/03/2013 18:20  
 Analysis Date: 07/03/2013 19:23  
 Analysis Date: 07/03/2013 19:38  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0500U	0.575	.358	62	0.500	0.306	61	45-110	15.60	(< 30 )
Acenaphthylene	0.0500U	0.575	.381	66	0.500	0.324	65	50-105	16.40	(< 30 )
Anthracene	0.0500U	0.575	.409	71	0.500	0.342	68	55-110	18.00	(< 30 )
Benzo(a)Anthracene	0.0500U	0.575	.456	79	0.500	0.371	74	55-110	20.70	(< 30 )
Benzo[a]pyrene	0.0500U	0.575	.418	73	0.500	0.315	63	55-110	28.10	(< 30 )
Benzo[b]Fluoranthene	0.0500U	0.575	.408	71	0.500	0.352	71	45-120	14.50	(< 30 )
Benzo[g,h,i]perylene	0.0500U	0.575	.382	67	0.500	0.310	62	40-125	20.70	(< 30 )
Benzo[k]fluoranthene	0.0500U	0.575	.42	73	0.500	0.315	63	45-125	28.40	(< 30 )
Chrysene	0.0500U	0.575	.381	66	0.500	0.341	68	55-110	11.10	(< 30 )
Dibenzo[a,h]anthracene	0.0500U	0.575	.372	65	0.500	0.309	62	40-125	18.60	(< 30 )
Fluoranthene	0.0500U	0.575	.485	84	0.500	0.386	77	55-115	22.80	(< 30 )
Fluorene	0.0500U	0.575	.408	71	0.500	0.329	66	50-110	21.60	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0500U	0.575	.387	67	0.500	0.311	62	45-125	21.80	(< 30 )
Naphthalene	0.100U	0.575	.326	57	0.500	0.274	55	40-100	17.10	(< 30 )
Phenanthrene	0.0500U	0.575	.458	80	0.500	0.380	76	50-115	18.70	(< 30 )
Pyrene	0.0500U	0.575	.472	82	0.500	0.371	74	50-130	23.90	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.575	.306	53	0.500	0.291	58	50-110	4.90	
Terphenyl-d14		0.575	.417	73	0.500	0.349	70	50-135	17.70	

### Batch Information

Analytical Batch: XMS7413  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/3/2013 7:23:00PM

Prep Batch: XXX29299  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 7/2/2013 10:05:00AM  
 Prep Initial Wt./Vol.: 870.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 07/10/2013 4:12:32PM

### Chain of Custody Record

# 1132776



pg 1

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water Note: Samples contain sodium thiosulfate for dechlorination	<b>Project #:</b> 5078
-------------------------------------------------------------------	-------------------------------------------------------------------------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
SWM02-01	847-1	7/1/13	1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	①A	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④A	
SWM03-01	1224-1	7/1/13	1203	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③A	
SWM04-01	1224-2	7/1/13	1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥A	
SWM05-01	207-1	7/1/13	1233	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦A	

**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

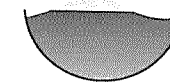
**Special Instructions/Comments:**

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. Shy</i>	7/1/13 1515	hand D		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			<i>Shy</i>	7/1/13 15:15

1132776

pg. 2

Chain of Custody Record



To:  
 SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Steve Crupi

SGS Quote No. 9901  
 Date Received:  
 Lab #:

From:  
 Kinnetic Laboratories, Inc  
 1102 West 7th Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 (907) 278-6881 Fax  
 Contact: Mark Savoie

Project: **MOA Stormwater Management** Matrix: **Water** Project #: **5078**  
 Complete by: **2 weeks** Note: Samples contain sodium thiosulfate for dechlorination

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM06-01	314-22	7/1/13	1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM07-01	484-1	7/1/13	1330	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM08-01	86-1	7/1/13	1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ A	
SWM09-01	499-1	7/1/13	1415	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ A	
SWM10-01	525-2	7/1/13	1425	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬ A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A King</i>	7/1/13 1515	head B	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 1515



**Chain of Custody Record**

**1132776**



pg 3

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------

<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
SWM02-01	847-1	7/1/13	1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM03-01	1224-1	7/1/13	1203	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM04-01	1224-2	7/1/13	1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM05-01	207-1	7/1/13	1233	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DCB	
SWM06-01	314-22	7/1/13	1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM07-01	484-1	7/1/13	1330	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM08-01	86-1	7/1/13	1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM09-01	499-1	7/1/13	1415	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	
SWM10-01	525-2	7/1/13	1425	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	DB	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A Long</i>	7/1/13 1515	hand <i>D</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>		<i>[Signature]</i>	<i>[Signature]</i>	7/1/13 15:45

### Chain of Custody Record

# 1132776



4  
pg 1

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-01	1040-3	7/1/13	NA	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	HLL 7/1/13	
SWM02-01	847-1	7/1/13	1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	① B C	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	④ B C	
SWM03-01	1224-1	7/1/13	1203	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤ B C	
SWM04-01	1224-2	7/1/13	1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥ B C	
SWM05-01	207-1	7/1/13	1233	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦ B C	
SWM06-01	314-22	7/1/13	1316	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧ B C	
SWM07-01	484-1	7/1/13	1330	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨ B C	
SWM08-01	86-1	7/1/13	1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩ B C	
SWM08-01 Dup	86-1	7/1/13	1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪ B C	
SWM09-01	499-1	7/1/13	1415	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑫ B C	
SWM10-01	525-2	7/1/13	1425	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑬ B C	

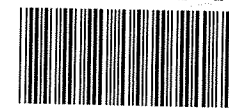
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>	7/1/13 1515	hand 1a	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

### Chain of Custody Record

# 1132776



pg 5

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-01	847-1	7/1/13	1115	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	6	⑧ D-F ⑨ A-B	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	④ D-F	
SWM05-01	207-1	7/1/13	1233	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑤ D-F	
SWM07-01	484-1	7/1/13	1330	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑨ D-F	
SWM09-01	499-1	7/1/13	1415	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑫ D-F	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑭ A-C	

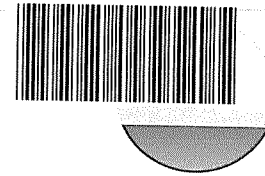
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. Almy</i>	7/1/13 1515	hand	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

### Chain of Custody Record

# 1132776



<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  Lab #:	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
-------------------------------------------------------------------	----------------------	------------------------

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-01	847-1	7/1/13	1115	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	① F-G DC-1 ② C-B	
SWM02-01 Dup	847-1	7/1/13	1115	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	④ G-H	
SWM05-01	207-1	7/1/13	1233	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑦ G-H	
SWM07-01	484-1	7/1/13	1330	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑨ G-H	
SWM09-01	499-1	7/1/13	1415	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑫ G-H	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>AA Long</i>	7/1/13 1515	<i>hand BL</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	7/1/13 15:15

## SAMPLE RECEIPT FORM

SGS WO#  
1132776

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <input checked="" type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	absent
Temperature blank compliant* (i.e., 0-6°C after CF)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: <u>1</u> @ <u>7.3</u> w/ Therm.ID: <u>ZOS</u> Cooler ID: <u>2</u> @ <u>6.6</u> w/ Therm.ID: <u>ZOS</u> Cooler ID: <u>3</u> @ <u>7.0</u> w/ Therm.ID: <u>ZOS</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled." If temperature(s) <0°C, were all sample containers ice free?	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/> HLG Samples collected same day	
Delivery method (specify all that apply): USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/tracking # See Attached or <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: HLG <input checked="" type="radio"/> N/A <input type="radio"/> N/A
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ &lt;1hr; in that case, use times on COC.</i> Were analyses requested unambiguous?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <u>Bubble Wrap</u> Separate plastic bags Vermiculite Other:	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, <u>limited volume</u> , Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	limited volume for ms/msd
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	Fecal, BOD
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: HLG <input checked="" type="radio"/> N/A <input type="radio"/> N/A PM =
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: <input checked="" type="radio"/> N/A <input type="radio"/> N/A

Additional notes (if applicable):

*Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

## **Appendix B2**

### **Laboratory Data Package Storm Event #2**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1133209**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 07/31/2013 3:37:18PM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group



## Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**

SGS Project: **1133209**

Project Name/Site: **5078 MOA Stormwater Management**

Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM02-02 (1133209002) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**SWM02-02 Dup (1133209005) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**SWM07-02 (1133209010) PS**

8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria (biased low). Sample was re-extracted outside of hold time and results confirm. The initial results are reported.

**SWM09-02 (1133209013) PS**

8270D-SIM – Coeluting peak for benzo(b)fluoranthene and benzo(k)fluoranthene has been quantified as benzo(b)fluoranthene.

**1133300010DUP (1161103) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 07/31/2013 3:37:19PM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1133209002	SWM02-02	XMS7456	Benzo[b]Fluoranthene	IT
1133209004	SWM02-02 MSD	XMS7456	Benzo[k]fluoranthene	BLC
1133209005	SWM02-02 Dup	XMS7456	Benzo[b]Fluoranthene	IT
1133209010	SWM07-02	XMS7456	Pyrene	SP
1133209013	SWM09-02	XMS7456	Benzo[b]Fluoranthene	IT

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-02	1133209001	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02	1133209002	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 MS	1133209003	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 MSD	1133209004	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM02-02 Dup	1133209005	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM03-02	1133209006	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM04-02	1133209007	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM05-02	1133209008	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM06-02	1133209009	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM07-02	1133209010	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM08-02	1133209011	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM08-02 Dup	1133209012	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM09-02	1133209013	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
SWM10-02	1133209014	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)
Trip Blank	1133209015	07/20/2013	07/20/2013	Water (Surface, Eff., Ground)

#### Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

#### Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: **SWM01-02**

Lab Sample ID: 1133209001

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.06	mg/L
Fecal Coliform	332	col/100mL
Total Suspended Solids	44.0	mg/L

Client Sample ID: **SWM02-02**

Lab Sample ID: 1133209002

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	3.97	mg/L
Fecal Coliform	177	col/100mL
Benzo[a]pyrene	0.0962	ug/L
Benzo[b]Fluoranthene	0.519	ug/L
Benzo[g,h,i]perylene	0.167	ug/L
Chrysene	0.395	ug/L
Fluoranthene	0.768	ug/L
Indeno[1,2,3-c,d] pyrene	0.131	ug/L
Phenanthrene	0.268	ug/L
Pyrene	0.405	ug/L
Total Suspended Solids	18.5	mg/L

**Waters Department**

Client Sample ID: **SWM02-02 Dup**

Lab Sample ID: 1133209005

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	4.02	mg/L
Fecal Coliform	190	col/100mL
Benzo(a)Anthracene	0.0601	ug/L
Benzo[a]pyrene	0.0999	ug/L
Benzo[b]Fluoranthene	0.524	ug/L
Benzo[g,h,i]perylene	0.169	ug/L
Chrysene	0.423	ug/L
Fluoranthene	0.803	ug/L
Indeno[1,2,3-c,d] pyrene	0.135	ug/L
Phenanthrene	0.264	ug/L
Pyrene	0.399	ug/L
Total Suspended Solids	15.0	mg/L

**Waters Department**

Client Sample ID: **SWM03-02**

Lab Sample ID: 1133209006

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.45	mg/L
Fecal Coliform	172	col/100mL
Total Suspended Solids	34.0	mg/L

Client Sample ID: **SWM04-02**

Lab Sample ID: 1133209007

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	5.16	mg/L
Fecal Coliform	106	col/100mL
Total Suspended Solids	19.0	mg/L

### Detectable Results Summary

Client Sample ID: **SWM05-02**

Lab Sample ID: 1133209008

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.76	mg/L
Fecal Coliform	14900	col/100mL
Total Suspended Solids	36.0	mg/L

Client Sample ID: **SWM06-02**

Lab Sample ID: 1133209009

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	8.71	mg/L
Fecal Coliform	170	col/100mL
Total Suspended Solids	30.0	mg/L

Client Sample ID: **SWM07-02**

Lab Sample ID: 1133209010

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	18.2	mg/L
Fecal Coliform	2500	col/100mL
Pyrene	0.0595	ug/L
Total Suspended Solids	56.0	mg/L

Client Sample ID: **SWM08-02**

Lab Sample ID: 1133209011

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	7.30	mg/L
Fecal Coliform	682	col/100mL
Total Suspended Solids	34.0	mg/L

Client Sample ID: **SWM08-02 Dup**

Lab Sample ID: 1133209012

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	6.43	mg/L
Fecal Coliform	2100	col/100mL
Total Suspended Solids	20.0	mg/L

Client Sample ID: **SWM09-02**

Lab Sample ID: 1133209013

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	2.84	mg/L
Fecal Coliform	745	col/100mL
Benzo(a)Anthracene	0.0559	ug/L
Benzo[b]Fluoranthene	0.123	ug/L
Chrysene	0.0844	ug/L
Fluoranthene	0.276	ug/L
Phenanthrene	0.0768	ug/L
Pyrene	0.157	ug/L
Total Suspended Solids	8.84	mg/L

Client Sample ID: **SWM10-02**

Lab Sample ID: 1133209014

**Microbiology Laboratory**

**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Biochemical Oxygen Demand	<2	mg/L
Fecal Coliform	4.00	col/100mL
Total Suspended Solids	4.95	mg/L

## Results of SWM01-02

Client Sample ID: **SWM01-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209001  
 Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1040-3

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.06		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209001-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	332		1.67	1.67	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209001-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 60 mL  
 Prep Extract Vol: 100 mL



**Results of SWM01-02**

Client Sample ID: **SWM01-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209001  
Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1040-3

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	44.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209001-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



## Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209002  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.97		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209002-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	177		1.64	1.64	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209002-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Acenaphthylene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo(a)Anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[a]pyrene	0.0962		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[b]Fluoranthene	0.519		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[g,h,i]perylene	0.167		0.0581	0.0174	ug/L	1	07/24/13 14:59
Benzo[k]fluoranthene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Chrysene	0.395		0.0581	0.0174	ug/L	1	07/24/13 14:59
Dibenzo[a,h]anthracene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Fluoranthene	0.768		0.0581	0.0174	ug/L	1	07/24/13 14:59
Fluorene	0.0581	U	0.0581	0.0174	ug/L	1	07/24/13 14:59
Indeno[1,2,3-c,d] pyrene	0.131		0.0581	0.0174	ug/L	1	07/24/13 14:59
Naphthalene	0.116	U	0.116	0.0360	ug/L	1	07/24/13 14:59
Phenanthrene	0.268		0.0581	0.0174	ug/L	1	07/24/13 14:59
Pyrene	0.405		0.0581	0.0174	ug/L	1	07/24/13 14:59

**Surrogates**

2-Fluorobiphenyl	59.1		50-110		%	1	07/24/13 14:59
Terphenyl-d14	68.8		50-135		%	1	07/24/13 14:59

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 14:59  
Container ID: 1133209002-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 860 mL  
Prep Extract Vol: 1 mL



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:13
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:13
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:13
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:13
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:13
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:13
4-Bromofluorobenzene	96.9		75-120		%	1	07/22/13 16:13
Toluene-d8	98.6		85-120		%	1	07/22/13 16:13

**Batch Information**

Analytical Batch: VMS13639  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 07/22/13 16:13  
Container ID: 1133209002-F

Prep Batch: VXX24965  
Prep Method: SW5030B  
Prep Date/Time: 07/22/13 12:46  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM02-02

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209002  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	18.5		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209002-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209005  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.02		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209005-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	190		1.64	1.64	col/100mL	1	07/20/13 18:45

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:45  
 Container ID: 1133209005-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



Results of **SWM02-02 Dup**

Client Sample ID: **SWM02-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209005  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo(a)Anthracene	0.0601		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[a]pyrene	0.0999		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[b]Fluoranthene	0.524		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[g,h,i]perylene	0.169		0.0500	0.0150	ug/L	1	07/24/13 15:45
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Chrysene	0.423		0.0500	0.0150	ug/L	1	07/24/13 15:45
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Fluoranthene	0.803		0.0500	0.0150	ug/L	1	07/24/13 15:45
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 15:45
Indeno[1,2,3-c,d] pyrene	0.135		0.0500	0.0150	ug/L	1	07/24/13 15:45
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/24/13 15:45
Phenanthrene	0.264		0.0500	0.0150	ug/L	1	07/24/13 15:45
Pyrene	0.399		0.0500	0.0150	ug/L	1	07/24/13 15:45

**Surrogates**

2-Fluorobiphenyl	66.1		50-110		%	1	07/24/13 15:45
Terphenyl-d14	75.6		50-135		%	1	07/24/13 15:45

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 15:45  
Container ID: 1133209005-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209005  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 847-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:30
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:30
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:30
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:30
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:30
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:30
4-Bromofluorobenzene	96.3		75-120		%	1	07/22/13 16:30
Toluene-d8	97.9		85-120		%	1	07/22/13 16:30

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 16:30  
 Container ID: 1133209005-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of SWM02-02 Dup**

Client Sample ID: **SWM02-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209005  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 847-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	15.0		2.50	0.750	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209005-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



## Results of SWM03-02

Client Sample ID: **SWM03-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209006  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:40  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.45		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209006-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	172		1.64	1.64	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209006-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL

## Results of SWM03-02

Client Sample ID: **SWM03-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209006  
Lab Project ID: 1133209

Collection Date: 07/20/13 12:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 1224-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	34.0		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209006-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 200 mL  
Prep Extract Vol: 1000 mL

## Results of SWM04-02

Client Sample ID: **SWM04-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209007  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:55  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	5.16		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209007-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	106		2.00	2.00	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209007-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 100 mL

## Results of SWM04-02

Client Sample ID: **SWM04-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209007  
 Lab Project ID: 1133209

Collection Date: 07/20/13 12:55  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 1224-2

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	19.0		2.50	0.750	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/22/13 10:44  
 Container ID: 1133209007-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 200 mL  
 Prep Extract Vol: 1000 mL

## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.76		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209008-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	14900		100	100	col/100mL	1	07/20/13 18:55

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 18:55  
 Container ID: 1133209008-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL

## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Acenaphthylene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo(a)Anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[a]pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[b]Fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[g,h,i]perylene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Benzo[k]fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Chrysene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Dibenzo[a,h]anthracene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Fluoranthene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Fluorene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Indeno[1,2,3-c,d] pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Naphthalene	0.104	U	0.104	0.0323	ug/L	1	07/24/13 16:00
Phenanthrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00
Pyrene	0.0521	U	0.0521	0.0156	ug/L	1	07/24/13 16:00

### Surrogates

2-Fluorobiphenyl	50.2		50-110		%	1	07/24/13 16:00
Terphenyl-d14	77.5		50-135		%	1	07/24/13 16:00

## Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 07/24/13 16:00  
 Container ID: 1133209008-D

Prep Batch: XXX29444  
 Prep Method: SW3520C  
 Prep Date/Time: 07/23/13 11:45  
 Prep Initial Wt./Vol.: 960 mL  
 Prep Extract Vol: 1 mL

## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209008  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 207-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:47
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 16:47
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 16:47
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 16:47
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 16:47
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 16:47
4-Bromofluorobenzene	97		75-120		%	1	07/22/13 16:47
Toluene-d8	98.6		85-120		%	1	07/22/13 16:47

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 16:47  
 Container ID: 1133209008-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209008  
Lab Project ID: 1133209

Collection Date: 07/20/13 13:10  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 207-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	36.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209008-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



## Results of SWM06-02

Client Sample ID: **SWM06-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209009  
 Lab Project ID: 1133209

Collection Date: 07/20/13 13:45  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 314-22

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	8.71		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209009-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	170		1.64	1.64	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209009-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 61 mL  
 Prep Extract Vol: 100 mL



**Results of SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209009  
Lab Project ID: 1133209

Collection Date: 07/20/13 13:45  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 314-22

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	30.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209009-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209010  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	18.2		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209010-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	2500		100	100	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209010-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL



Results of **SWM07-02**

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209010  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 484-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Fluorene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Naphthalene	0.100	U	0.100	0.0310	ug/L	1	07/24/13 16:16
Phenanthrene	0.0500	U	0.0500	0.0150	ug/L	1	07/24/13 16:16
Pyrene	0.0595		0.0500	0.0150	ug/L	1	07/24/13 16:16

**Surrogates**

2-Fluorobiphenyl	41	*	50-110		%	1	07/24/13 16:16
Terphenyl-d14	65.9		50-135		%	1	07/24/13 16:16

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 16:16  
Container ID: 1133209010-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209010  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 484-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:04
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 17:04
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:04
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 17:04
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:04
<b>Surrogates</b>							
1,2-Dichloroethane-D4	107		70-120		%	1	07/22/13 17:04
4-Bromofluorobenzene	96.2		75-120		%	1	07/22/13 17:04
Toluene-d8	97.5		85-120		%	1	07/22/13 17:04

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 17:04  
 Container ID: 1133209010-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209010  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:05  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 484-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	56.0		10.0	3.00	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209010-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM

## Results of SWM08-02

Client Sample ID: **SWM08-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209011  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.30		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209011-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	682		9.09	9.09	col/100mL	1	07/20/13 19:05

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:05  
 Container ID: 1133209011-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 11 mL  
 Prep Extract Vol: 100 mL



Results of **SWM08-02**

Client Sample ID: **SWM08-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209011  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

Results by **Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	34.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209011-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



## Results of SWM08-02 Dup

Client Sample ID: **SWM08-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209012  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 86-1

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	6.43		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209012-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	2100		100	100	col/100mL	1	07/20/13 19:25

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:25  
 Container ID: 1133209012-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 1 mL  
 Prep Extract Vol: 100 mL



**Results of SWM08-02 Dup**

Client Sample ID: **SWM08-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209012  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:20  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 86-1

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	20.0		10.0	3.00	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209012-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209013  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.84		2.00	2.00	mg/L	1	07/22/13 09:50

**Batch Information**

Analytical Batch: BOD4743  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 07/22/13 09:50  
Container ID: 1133209013-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	745		9.09	9.09	col/100mL	1	07/20/13 19:25

**Batch Information**

Analytical Batch: BTF12953  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 07/20/13 19:25  
Container ID: 1133209013-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 07/31/2013 3:37:22PM



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209013  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 499-1

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
Acenaphthene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Acenaphthylene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Anthracene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo(a)Anthracene	0.0559		0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[a]pyrene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[b]Fluoranthene	0.123		0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[g,h,i]perylene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Benzo[k]fluoranthene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Chrysene	0.0844		0.0556	0.0167	ug/L	1	07/24/13 16:31
Dibenzo[a,h]anthracene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Fluoranthene	0.276		0.0556	0.0167	ug/L	1	07/24/13 16:31
Fluorene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Indeno[1,2,3-c,d] pyrene	0.0556	U	0.0556	0.0167	ug/L	1	07/24/13 16:31
Naphthalene	0.111	U	0.111	0.0344	ug/L	1	07/24/13 16:31
Phenanthrene	0.0768		0.0556	0.0167	ug/L	1	07/24/13 16:31
Pyrene	0.157		0.0556	0.0167	ug/L	1	07/24/13 16:31

**Surrogates**

2-Fluorobiphenyl	62.3		50-110		%	1	07/24/13 16:31
Terphenyl-d14	83.8		50-135		%	1	07/24/13 16:31

**Batch Information**

Analytical Batch: XMS7456  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 07/24/13 16:31  
Container ID: 1133209013-D

Prep Batch: XXX29444  
Prep Method: SW3520C  
Prep Date/Time: 07/23/13 11:45  
Prep Initial Wt./Vol.: 900 mL  
Prep Extract Vol: 1 mL

## Results of SWM09-02

Client Sample ID: **SWM09-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209013  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:22
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 17:22
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 17:22
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 17:22
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 17:22
<b>Surrogates</b>							
1,2-Dichloroethane-D4	108		70-120		%	1	07/22/13 17:22
4-Bromofluorobenzene	96.6		75-120		%	1	07/22/13 17:22
Toluene-d8	97.9		85-120		%	1	07/22/13 17:22

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 17:22  
 Container ID: 1133209013-F

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM09-02

Client Sample ID: **SWM09-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209013  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:40  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 499-1

## Results by Waters Department

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.84		1.16	0.349	mg/L	1	07/22/13 10:44

## Batch Information

Analytical Batch: STS4137  
 Analytical Method: SM21 2540D  
 Analyst: MEV  
 Analytical Date/Time: 07/22/13 10:44  
 Container ID: 1133209013-C

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 430 mL  
 Prep Extract Vol: 1000 mL

## Results of SWM10-02

Client Sample ID: **SWM10-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209014  
 Lab Project ID: 1133209

Collection Date: 07/20/13 14:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location: 525-2

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	<2		2.00	2.00	mg/L	1	07/22/13 09:50

## Batch Information

Analytical Batch: BOD4743  
 Analytical Method: SM21 5210B  
 Analyst: ACE  
 Analytical Date/Time: 07/22/13 09:50  
 Container ID: 1133209014-B

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 300 mL  
 Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Fecal Coliform	4.00		2.00	2.00	col/100mL	1	07/20/13 19:25

## Batch Information

Analytical Batch: BTF12953  
 Analytical Method: SM21 9222D  
 Analyst: SDP  
 Analytical Date/Time: 07/20/13 19:25  
 Container ID: 1133209014-A

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 50 mL  
 Prep Extract Vol: 100 mL



**Results of SWM10-02**

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1133209014  
Lab Project ID: 1133209

Collection Date: 07/20/13 14:50  
Received Date: 07/20/13 15:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location: 525-2

**Results by Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Total Suspended Solids	4.95		0.495	0.149	mg/L	1	07/22/13 10:44

**Batch Information**

Analytical Batch: STS4137  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 07/22/13 10:44  
Container ID: 1133209014-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1010 mL  
Prep Extract Vol: 1000 mL

Print Date: 07/31/2013 3:37:22PM



## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1133209015  
 Lab Project ID: 1133209

Collection Date: 07/20/13 11:50  
 Received Date: 07/20/13 15:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Date Analyzed
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 15:56
Benzene	0.400	U	0.400	0.120	ug/L	1	07/22/13 15:56
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	07/22/13 15:56
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
o-Xylene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	07/22/13 15:56
Toluene	1.00	U	1.00	0.310	ug/L	1	07/22/13 15:56
<b>Surrogates</b>							
1,2-Dichloroethane-D4	106		70-120		%	1	07/22/13 15:56
4-Bromofluorobenzene	97.8		75-120		%	1	07/22/13 15:56
Toluene-d8	97.4		85-120		%	1	07/22/13 15:56

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 07/22/13 15:56  
 Container ID: 1133209015-A

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 07/22/13 12:46  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1467797 [BOD/4743]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1162589

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4743

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 7/22/2013 9:50:00AM

Print Date: 07/31/2013 3:37:25PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [BOD4743]

Blank Spike Lab ID: 1162590

Date Analyzed: 07/22/2013 09:50

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	212	107	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4743**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

## Method Blank

Blank ID: MB for HBN 1466875 [BTF/12953]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1160684

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1U	1	1	col/100mL

## Batch Information

Analytical Batch: BTF12953

Analytical Method: SM21 9222D

Instrument:

Analyst: SDP

Analytical Date/Time: 7/20/2013 6:45:00PM

Print Date: 07/31/2013 3:37:27PM

## Method Blank

Blank ID: MB for HBN 1466882 [STS/4137]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1160699

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 7/22/2013 10:44:39AM

Print Date: 07/31/2013 3:37:29PM

## Duplicate Sample Summary

Original Sample ID: 1133209001

Duplicate Sample ID: 1160702

Analysis Date: 07/22/2013 10:44

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	44.0	46.0	4.40	5.00

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/31/2013 3:37:29PM

## Duplicate Sample Summary

Original Sample ID: 1133300010

Duplicate Sample ID: 1161103

Analysis Date: 07/22/2013 10:44

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	1.37	1.29	5.90*	5.00

## Batch Information

Analytical Batch: STS4137

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 07/31/2013 3:37:29PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [STS4137]  
 Blank Spike Lab ID: 1160700  
 Date Analyzed: 07/22/2013 10:44

Spike Duplicate ID: LCSD for HBN 1133209 [STS4137]  
 Spike Duplicate Lab ID: 1160701  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209001, 1133209002, 1133209005, 1133209006, 1133209007, 1133209008, 1133209009, 1133209010, 1133209011, 1133209012, 1133209013, 1133209014

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	46.8	94	50	47.4	95	( 75-125 )	1.30	(< 5 )

## Batch Information

Analytical Batch: **STS4137**  
 Analytical Method: **SM21 2540D**  
 Instrument:  
 Analyst: **MEV**

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL



## Method Blank

Blank ID: MB for HBN 1467098 [VXX/24965]  
 Blank Lab ID: 1161137

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1133209002, 1133209005, 1133209008, 1133209010, 1133209013, 1133209015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	108	70-120		%
4-Bromofluorobenzene	96.2	75-120		%
Toluene-d8	98.5	85-120		%

## Batch Information

Analytical Batch: VMS13639  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: NRB  
 Analytical Date/Time: 7/22/2013 1:38:00PM

Prep Batch: VXX24965  
 Prep Method: SW5030B  
 Prep Date/Time: 7/22/2013 12:46:00PM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [VXX24965]  
 Blank Spike Lab ID: 1161138  
 Date Analyzed: 07/22/2013 13:55

Spike Duplicate ID: LCSD for HBN 1133209 [VXX24965]  
 Spike Duplicate Lab ID: 1161139  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209002, 1133209005, 1133209008, 1133209010, 1133209013, 1133209015

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	28.8	96	30	30.5	102	( 70-120 )	5.70	(< 20 )
1,3-Dichlorobenzene	30	29.5	98	30	31.4	105	( 75-125 )	6.20	(< 20 )
1,4-Dichlorobenzene	30	29.5	99	30	31.6	105	( 75-125 )	6.60	(< 20 )
Benzene	30	29.6	99	30	31.2	104	( 80-120 )	5.00	(< 20 )
Chlorobenzene	30	30.5	102	30	32.0	107	( 80-120 )	4.70	(< 20 )
Ethylbenzene	30	32.0	107	30	33.4	111	( 75-125 )	4.30	(< 20 )
o-Xylene	30	31.9	106	30	33.3	111	( 80-120 )	4.40	(< 20 )
P & M -Xylene	60	64.3	107	60	67.3	112	( 75-130 )	4.70	(< 20 )
Toluene	30	30.0	100	30	31.5	105	( 75-120 )	4.90	(< 20 )

## Surrogates

1,2-Dichloroethane-D4		98	30	96.6	97	( 70-120 )	0.96
4-Bromofluorobenzene		94	30	95	95	( 75-120 )	1.00
Toluene-d8		100	30	99.7	100	( 85-120 )	0.70

## Batch Information

Analytical Batch: **VMS13639**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **NRB**

Prep Batch: **VXX24965**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **07/22/2013 12:46**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



### Billable Matrix Spike Summary

Original Sample ID: 1133209002  
MS Sample ID: 1133209003 BMS  
MSD Sample ID: 1133209004 BMSD

Analysis Date: 07/22/2013 16:13  
Analysis Date: 07/22/2013 19:56  
Analysis Date: 07/22/2013 20:14  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	30.7	102	30.0	30.4	101	70-120	0.92	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	31.2	104	30.0	32.2	107	75-125	3.20	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	31.6	105	30.0	31.8	106	75-125	0.66	(< 20 )
Benzene	0.400U	30.0	31.6	105	30.0	32.0	107	80-120	1.30	(< 20 )
Chlorobenzene	0.500U	30.0	32.5	108	30.0	32.8	109	80-120	0.77	(< 20 )
Ethylbenzene	1.00U	30.0	34.1	114	30.0	34.5	115	75-125	1.40	(< 20 )
o-Xylene	1.00U	30.0	33.8	113	30.0	34.3	114	80-120	1.40	(< 20 )
P & M -Xylene	2.00U	60.0	68.8	115	60.0	69.1	115	75-130	0.46	(< 20 )
Toluene	1.00U	30.0	32.1	107	30.0	32.5	108	75-120	1.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	29.3	98	30.0	29.2	97	70-120	0.38	
4-Bromofluorobenzene		30.0	28.4	95	30.0	30.3	101	75-120	6.80	
Toluene-d8		30.0	30	100	30.0	30.1	100	85-120	0.23	

### Batch Information

Analytical Batch: VMS13639  
Analytical Method: EPA 602/624  
Instrument: VPA 780/5975 GC/MS  
Analyst: NRB  
Analytical Date/Time: 7/22/2013 7:56:00PM

Prep Batch: VXX24965  
Prep Method: Volatiles Extraction 8240/8260 FULL  
Prep Date/Time: 7/22/2013 12:46:00PM  
Prep Initial Wt./Vol.: 5.00mL  
Prep Extract Vol: 5.00mL

Print Date: 07/31/2013 3:37:32PM

## Method Blank

Blank ID: MB for HBN 1467095 [XXX/29444]  
 Blank Lab ID: 1161130

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1133209002, 1133209005, 1133209008, 1133209010, 1133209013

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	70.4	50-110		%
Terphenyl-d14	81.3	50-135		%

## Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/24/2013 1:12:00PM

Prep Batch: XXX29444  
 Prep Method: SW3520C  
 Prep Date/Time: 7/23/2013 11:45:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1133209 [XXX29444]

Blank Spike Lab ID: 1161131

Date Analyzed: 07/24/2013 13:28

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133209002, 1133209005, 1133209008, 1133209010, 1133209013

## Results by EPA 625M SIMS (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Acenaphthene	0.5	0.333	67	(45-110)
Acenaphthylene	0.5	0.366	73	(50-105)
Anthracene	0.5	0.392	78	(55-110)
Benzo(a)Anthracene	0.5	0.454	91	(55-110)
Benzo[a]pyrene	0.5	0.478	96	(55-110)
Benzo[b]Fluoranthene	0.5	0.507	101	(45-120)
Benzo[g,h,i]perylene	0.5	0.503	101	(40-125)
Benzo[k]fluoranthene	0.5	0.408	82	(45-125)
Chrysene	0.5	0.415	83	(55-110)
Dibenzo[a,h]anthracene	0.5	0.488	98	(40-125)
Fluoranthene	0.5	0.395	79	(55-115)
Fluorene	0.5	0.375	75	(50-110)
Indeno[1,2,3-c,d] pyrene	0.5	0.506	101	(45-125)
Naphthalene	0.5	0.331	66	(40-100)
Phenanthrene	0.5	0.411	82	(50-115)
Pyrene	0.5	0.389	78	(50-130)

## Surrogates

2-Fluorobiphenyl			73	(50-110)
Terphenyl-d14			81	(50-135)

## Batch Information

Analytical Batch: XMS7456

Analytical Method: EPA 625M SIMS (PAH)

Instrument: HP 6890/5973 MS SVQA

Analyst: RTS

Prep Batch: XXX29444

Prep Method: SW3520C

Prep Date/Time: 07/23/2013 11:45

Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:



### Billable Matrix Spike Summary

Original Sample ID: 1133209002  
 MS Sample ID: 1133209003 BMS  
 MSD Sample ID: 1133209004 BMSD

Analysis Date: 07/24/2013 14:59  
 Analysis Date: 07/24/2013 15:14  
 Analysis Date: 07/24/2013 15:30  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0581U	0.510	.325	64	0.500	0.306	61	45-110	5.80	(< 30 )
Acenaphthylene	0.0581U	0.510	.347	68	0.500	0.328	66	50-105	5.70	(< 30 )
Anthracene	0.0581U	0.510	.411	81	0.500	0.383	77	55-110	7.00	(< 30 )
Benzo(a)Anthracene	0.0581U	0.510	.51	100	0.500	0.483	97	55-110	5.40	(< 30 )
Benzo[a]pyrene	0.0962	0.510	.477	75	0.500	0.464	74	55-110	2.80	(< 30 )
Benzo[b]Fluoranthene	0.519	0.510	.847	64	0.500	0.816	59	45-120	3.70	(< 30 )
Benzo[g,h,i]perylene	0.167	0.510	.555	76	0.500	0.549	77	40-125	1.00	(< 30 )
Benzo[k]fluoranthene	0.0581U	0.510	.428	84	0.500	0.435	87	45-125	1.50	(< 30 )
Chrysene	0.395	0.510	.746	69	0.500	0.740	69	55-110	0.69	(< 30 )
Dibenzo[a,h]anthracene	0.0581U	0.510	.422	83	0.500	0.404	81	40-125	4.40	(< 30 )
Fluoranthene	0.768	0.510	1.14	73	0.500	1.10	67	55-115	3.30	(< 30 )
Fluorene	0.0581U	0.510	.372	73	0.500	0.345	69	50-110	7.50	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.131	0.510	.527	78	0.500	0.514	77	45-125	2.50	(< 30 )
Naphthalene	0.116U	0.510	.289	57	0.500	0.272	54	40-100	6.30	(< 30 )
Phenanthrene	0.268	0.510	.67	79	0.500	0.642	75	50-115	4.30	(< 30 )
Pyrene	0.405	0.510	.776	73	0.500	0.760	71	50-130	2.20	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.510	.302	59	0.500	0.277	55	50-110	8.40	
Terphenyl-d14		0.510	.379	74	0.500	0.363	73	50-135	4.40	

### Batch Information

Analytical Batch: XMS7456  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 7/24/2013 3:14:00PM

Prep Batch: XXX29444  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 7/23/2013 11:45:00AM  
 Prep Initial Wt./Vol.: 980.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 07/31/2013 3:37:34PM

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks      **Note:** Samples contain sodium thiosulfate for dechlorination

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	7/20/13	1150	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	① A	
SWM02-02	847-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	② A	
SWM02-02 Dup	847-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑤ A	
SWM03-02	1224-1		1240	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥ A	
SWM04-02	1224-2		1255	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦ A	
SWM05-02	207-1		1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM06-02	314-22		1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM07-02	484-1		1405	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM08-02	86-1		1420	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ A	
SWM08-02 Dup	86-1		1420	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ A	
SWM09-02	499-1	7/20/13	1440	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬ A	
SWM10-02	525-2		1450	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑭ A	

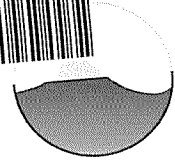
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>JAK</i>	7/20 1507	<i>[Signature]</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>			<i>E. Decrest</i> <i>SGS</i>	7/20/13 1524

### Chain of Custody Record

1133209



<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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<b>Project:</b> MOA Stormwater Management Complete by: 2 weeks	<b>Matrix:</b> Water	<b>Project #:</b> 5078
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	7/20/13	1150	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	①B	
SWM02-02	847-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	②B	
SWM02-02 Dup	847-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤B	
SWM03-02	1224-1		1240	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥B	
SWM04-02	1224-2		1255	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦B	
SWM05-02	207-1		1310	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧B	
SWM06-02	314-22		1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨B	
SWM07-02	484-1		1405	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩B	
SWM08-02	86-1		1420	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪B	
SWM08-02 Dup	86-1		1420	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑫B	
SWM09-02	499-1	1440	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑬B		
SWM10-02	525-2	7/20/13	1450	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑭B	

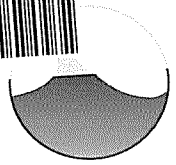
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
	1527 7/20			
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
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1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

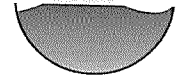
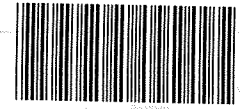
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	7/20/13	1150	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	① C	
SWM02-02	847-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	② C	
SWM02-02 Dup	847-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	③ C	
SWM03-02	1224-1		1240	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	④ C	
SWM04-02	1224-2		1255	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑤ C	
SWM05-02	207-1		1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑥ C	
SWM06-02	314-22		1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑦ C	
SWM07-02	484-1		1405	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑧ C	
SWM08-02	86-1		1420	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑨ C	
SWM08-02 Dup	86-1		1420	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑩ C	
SWM09-02	499-1	7/20/13	1440	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑪ C	
SWM10-02	525-2		1450	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑫ C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>	7/20 1527	<i>[Signature]</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>			Mark Savoie SGS	7/20/13 1524

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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Project: MOA Stormwater Management Matrix: Water Project #: 5078  
 Complete by: 2 weeks

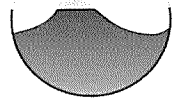
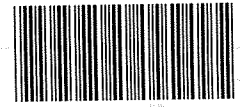
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-02	847-1	7/20/13	1205	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	② D-E ③ A-B ④ A+B	
SWM02-02 Dup	847-1		1205	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑤ D-E	
SWM05-02	207-1		1310	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑧ D-E	
SWM07-02	484-1		1405	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑩ D-E	
SWM09-02	499-1	7/20/13	1440	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑬ D-E	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time: 7/20 1527	Transporter:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Transporter:	Received By: E. Accrest	Date/Time: 7/20/13 1524

1133209



Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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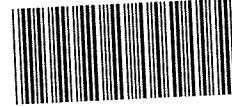
**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-02	847-1	7/20/13	1205	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	② F-H ③ C-E ④ C-E	
SWM02-02 Dup	847-1	↙	1205	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑤ F-H	
SWM05-02	207-1	↙	1310	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑧ F-H	
SWM07-02	484-1	↙	1405	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑩ F-H	
SWM09-02	499-1	7/20/13	1440	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑬ F-H	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑮ A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b> A & G	<b>Date/Time:</b> 7/20 1527	<b>Transporter:</b> Ø	<b>Received By:</b> _____	<b>Date/Time:</b> _____
<b>Relinquished By:</b> _____	<b>Date/Time:</b> _____	<b>Transporter:</b> _____	<b>Received By:</b> E Accest      SGS	<b>Date/Time:</b> 7/20/13 1524



## SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <u>N/A</u> <u>Yes</u> No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: <u>1 of 6</u> @ <u>17.6</u> w/ Therm.ID: <u>203</u> Cooler ID: <u>2 of 6</u> @ <u>9.3</u> w/ Therm.ID: <u>11</u> Cooler ID: <u>3 of 6</u> @ <u>6.5</u> w/ Therm.ID: <u>239</u> Cooler ID: <u>4 of 6</u> @ <u>6.3</u> w/ Therm.ID: <u>11</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled." If temperature(s) <0°C, were all sample containers ice free?	Yes No <u>N/A</u> <u>Yes</u> No N/A <i>Taken within 8 hrs.</i>	
Delivery method (specify all that apply): <u>Client</u> USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/ tracking # See Attached or <u>N/A</u> Yes No <u>N/A</u>	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: <u>N/A</u> → For samples received in FBKS, ANCH staff will verify all criteria are reviewed. SRF Initiated by: <u>MD</u> <u>N/A</u>		
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ &lt;1hr; in that case, use times on COC.</i> Were analyses requested unambiguous?	<u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <u>Bubble Wrap</u> Separate plastic bags Vermiculite Other:	<u>Yes</u> No N/A <u>Yes</u> No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<u>Yes</u> No N/A Yes No <u>N/A</u>	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<u>Yes</u> No N/A <u>Yes</u> No N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <u>N/A</u>	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <u>N/A</u> Yes No <u>N/A</u>	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<u>Yes</u> No N/A	<i>Fecal Coli, short hold BOD</i>
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	<u>Yes</u> No N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <u>N/A</u>	SRF Completed by: <u>MD</u> 07/20/13 PM = <u>SRC</u> N/A
Was PEER REVIEW of sample numbering/labeling completed?	<u>Yes</u> No N/A	Peer Reviewed by: <u>SLC</u> N/A

Additional notes (if applicable):

*Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

## **Appendix B3**

### **Laboratory Data Package Storm Event #3**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1134600**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 09/30/2013 2:56:34PM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

## Case Narrative

**Customer: KINNETL**

**Kinnetic Laboratories, Inc.**

**Project: 1134600**

**5078 MOA Stormwater Management**

Refer to the sample receipt form for information on sample condition.

**1179542 DUP**

**1138465004DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**1180107 DUP**

**1134600010DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.



### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1134600012	SWM02-04 MS	XMS7622	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 09/30/2013 2:56:35PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-04	1134600001	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04	1134600002	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 DUP	1134600003	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM03-04	1134600004	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM04-04	1134600005	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM05-04	1134600006	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM06-04	1134600007	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM07-04	1134600008	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM08-04	1134600009	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM08-04 Dup	1134600010	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM10-04	1134600011	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 MS	1134600012	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
SWM02-04 MSD	1134600013	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)
Trip Blank	1134600014	09/19/2013	09/19/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: <b>SWM01-04</b>			
Lab Sample ID: 1134600001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1320	col/100mL
<b>Waters Department</b>	Total Suspended Solids	6.67	mg/L
Client Sample ID: <b>SWM02-04</b>			
Lab Sample ID: 1134600002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	3.0	col/100mL
Client Sample ID: <b>SWM02-04 DUP</b>			
Lab Sample ID: 1134600003	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1.0	col/100mL
Client Sample ID: <b>SWM03-04</b>			
Lab Sample ID: 1134600004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	727	col/100mL
<b>Waters Department</b>	Total Suspended Solids	11.3	mg/L
Client Sample ID: <b>SWM04-04</b>			
Lab Sample ID: 1134600005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	387	col/100mL
<b>Waters Department</b>	Total Suspended Solids	8.35	mg/L
Client Sample ID: <b>SWM05-04</b>			
Lab Sample ID: 1134600006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	130	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.13	mg/L
Client Sample ID: <b>SWM06-04</b>			
Lab Sample ID: 1134600007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	8.0	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.00	mg/L
Client Sample ID: <b>SWM07-04</b>			
Lab Sample ID: 1134600008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	3.00	mg/L
	Fecal Coliform	173	col/100mL
<b>Waters Department</b>	Total Suspended Solids	16.8	mg/L
Client Sample ID: <b>SWM08-04</b>			
Lab Sample ID: 1134600009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	88	col/100mL
<b>Waters Department</b>	Total Suspended Solids	3.78	mg/L
Client Sample ID: <b>SWM08-04 Dup</b>			
Lab Sample ID: 1134600010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	116	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.25	mg/L

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## Detectable Results Summary

Client Sample ID: **SWM10-04**

Lab Sample ID: 1134600011

**Microbiology Laboratory**

**Waters Department**

Parameter

Fecal Coliform

Total Suspended Solids

Result

6.0

14.8

Units

col/100mL

mg/L



**Results of SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600001  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600001-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1320	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600001-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600001  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	6.67	0.641	0.192	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600001-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 780 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600002-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	3.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600002-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM





**Results of SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Acenaphthylene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo(a)Anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[a]pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[b]Fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[g,h,i]perylene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Benzo[k]fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Chrysene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Dibenzo[a,h]anthracene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Fluoranthene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Fluorene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Indeno[1,2,3-c,d] pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Naphthalene	0.110 U	0.110	0.0343	ug/L	1		09/25/13 14:10
Phenanthrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
Pyrene	0.0552 U	0.0552	0.0166	ug/L	1		09/25/13 14:10
<b>Surrogates</b>							
2-Fluorobiphenyl	73.7	50-110		%	1		09/25/13 14:10
Terphenyl-d14	89.9	50-135		%	1		09/25/13 14:10

**Batch Information**

Analytical Batch: XMS7622  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/25/13 14:10  
Container ID: 1134600002-D

Prep Batch: XXX29980  
Prep Method: SW3520C  
Prep Date/Time: 09/22/13 10:02  
Prep Initial Wt./Vol.: 905 mL  
Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:32
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 16:32
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:32
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 16:32
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:32
<b>Surrogates</b>							
1,2-Dichloroethane-D4	99	70-120		%	1		09/27/13 16:32
4-Bromofluorobenzene	103	75-120		%	1		09/27/13 16:32
Toluene-d8	97.5	85-120		%	1		09/27/13 16:32

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 16:32  
Container ID: 1134600002-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600002  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.25 U	1.25	0.375	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600002-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600003  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600003-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600003-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600003  
 Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Acenaphthylene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo(a)Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[a]pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[b]Fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[g,h,i]perylene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Benzo[k]fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Chrysene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Dibenzo[a,h]anthracene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Fluorene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Indeno[1,2,3-c,d] pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Naphthalene	0.105 U	0.105	0.0326	ug/L	1		09/25/13 14:24
Phenanthrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
Pyrene	0.0526 U	0.0526	0.0158	ug/L	1		09/25/13 14:24
<b>Surrogates</b>							
2-Fluorobiphenyl	74.1	50-110		%	1		09/25/13 14:24
Terphenyl-d14	93.5	50-135		%	1		09/25/13 14:24

**Batch Information**

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/25/13 14:24  
 Container ID: 1134600003-D

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 09/22/13 10:02  
 Prep Initial Wt./Vol.: 950 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



### Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600003  
 Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:55
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 16:55
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 16:55
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 16:55
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 16:55
<b>Surrogates</b>							
1,2-Dichloroethane-D4	92	70-120		%	1		09/27/13 16:55
4-Bromofluorobenzene	105	75-120		%	1		09/27/13 16:55
Toluene-d8	97.8	85-120		%	1		09/27/13 16:55

### Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Analyst: HM  
 Analytical Date/Time: 09/27/13 16:55  
 Container ID: 1134600003-F

Prep Batch: VXX25251  
 Prep Method: SW5030B  
 Prep Date/Time: 09/27/13 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600003  
Lab Project ID: 1134600

Collection Date: 09/19/13 10:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	0.524 U	0.524	0.157	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600003-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 955 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM03-04**

Client Sample ID: **SWM03-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600004  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600004-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	727	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600004-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM





### Results of SWM03-04

Client Sample ID: **SWM03-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600004  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

### Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.3	0.490	0.147	mg/L	1		09/23/13 10:40

### Batch Information

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600004-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1020 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600005  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600005-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	387	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600005-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600005  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.35	0.549	0.165	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600005-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 910 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600006-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	130	1.64	1.64	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600006-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600006  
 Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/26/13 21:53
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
Pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/26/13 21:53
<b>Surrogates</b>							
2-Fluorobiphenyl	64.7	50-110		%	1		09/26/13 21:53
Terphenyl-d14	80.8	50-135		%	1		09/26/13 21:53

**Batch Information**

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/26/13 21:53  
 Container ID: 1134600006-E

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 09/23/13 09:40  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:18
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 17:18
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:18
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 17:18
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:18
<b>Surrogates</b>							
1,2-Dichloroethane-D4	102	70-120		%	1		09/27/13 17:18
4-Bromofluorobenzene	96.7	75-120		%	1		09/27/13 17:18
Toluene-d8	99.4	85-120		%	1		09/27/13 17:18

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 17:18  
Container ID: 1134600006-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600006  
Lab Project ID: 1134600

Collection Date: 09/19/13 11:40  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.13	0.495	0.149	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600006-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1010 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600007  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:10  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600007-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	8.0	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600007-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM





Results of **SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600007  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:10  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.00	0.500	0.150	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600007-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.00	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600008-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	173	1.00	1.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600008-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 100 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Acenaphthylene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo(a)Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[a]pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[b]Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[g,h,i]perylene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Benzo[k]fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Chrysene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Dibenzo[a,h]anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Fluorene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Indeno[1,2,3-c,d] pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Naphthalene	0.102 U	0.102	0.0316	ug/L	1		09/26/13 22:08
Phenanthrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
Pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/26/13 22:08
<b>Surrogates</b>							
2-Fluorobiphenyl	71.1	50-110		%	1		09/26/13 22:08
Terphenyl-d14	81.5	50-135		%	1		09/26/13 22:08

**Batch Information**

Analytical Batch: XMS7634  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/26/13 22:08  
Container ID: 1134600008-E

Prep Batch: XXX29986  
Prep Method: SW3520C  
Prep Date/Time: 09/23/13 09:40  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:42
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 17:42
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 17:42
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 17:42
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 17:42
<b>Surrogates</b>							
1,2-Dichloroethane-D4	99.7	70-120		%	1		09/27/13 17:42
4-Bromofluorobenzene	98.9	75-120		%	1		09/27/13 17:42
Toluene-d8	98.9	85-120		%	1		09/27/13 17:42

**Batch Information**

Analytical Batch: VMS13776  
Analytical Method: EPA 602/624  
Analyst: HM  
Analytical Date/Time: 09/27/13 17:42  
Container ID: 1134600008-F

Prep Batch: VXX25251  
Prep Method: SW5030B  
Prep Date/Time: 09/27/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600008  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:25  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	16.8	1.25	0.375	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600008-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600009  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600009-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	88	2.00	2.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600009-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600009  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	3.78	0.510	0.153	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600009-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



Results of **SWM08-04 Dup**

Client Sample ID: **SWM08-04 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600010  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600010-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	116	1.64	1.64	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600010-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM





**Results of SWM08-04 Dup**

Client Sample ID: **SWM08-04 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600010  
Lab Project ID: 1134600

Collection Date: 09/19/13 12:45  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.25	1.25	0.375	mg/L	1		09/23/13 10:40

**Batch Information**

Analytical Batch: STS4229  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/23/13 10:40  
Container ID: 1134600010-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600011  
Lab Project ID: 1134600

Collection Date: 09/19/13 13:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/20/13 15:25

**Batch Information**

Analytical Batch: BOD4796  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 09/20/13 15:25  
Container ID: 1134600011-B

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	6.0	2.00	2.00	col/100mL	1		09/19/13 15:20

**Batch Information**

Analytical Batch: BTF13090  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 09/19/13 15:20  
Container ID: 1134600011-A

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/30/2013 2:56:37PM



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134600011  
Lab Project ID: 1134600

Collection Date: 09/19/13 13:15  
Received Date: 09/19/13 13:59  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.8	0.500	0.150	mg/L	1		09/20/13 09:00

**Batch Information**

Analytical Batch: STS4228  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 09/20/13 09:00  
Container ID: 1134600011-C

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:37PM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134600014  
 Lab Project ID: 1134600

Collection Date: 09/19/13 10:30  
 Received Date: 09/19/13 13:59  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 13:24
Benzene	0.400 U	0.400	0.120	ug/L	1		09/27/13 13:24
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/27/13 13:24
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/27/13 13:24
Toluene	1.00 U	1.00	0.310	ug/L	1		09/27/13 13:24
<b>Surrogates</b>							
1,2-Dichloroethane-D4	93.3	70-120		%	1		09/27/13 13:24
4-Bromofluorobenzene	99.7	75-120		%	1		09/27/13 13:24
Toluene-d8	95.7	85-120		%	1		09/27/13 13:24

### Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Analyst: HM  
 Analytical Date/Time: 09/27/13 13:24  
 Container ID: 1134600014-B

Prep Batch: VXX25251  
 Prep Method: SW5030B  
 Prep Date/Time: 09/27/13 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/30/2013 2:56:37PM

## Method Blank

Blank ID: MB for HBN 1485814 [BOD/4796]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1180249

QC for Samples:

1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007, 1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4796

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 9/20/2013 3:25:00PM

Print Date: 09/30/2013 2:56:40PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [BOD4796]

Blank Spike Lab ID: 1180250

Date Analyzed: 09/20/2013 15:25

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007,  
1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 5210B

<u>Parameter</u>	Blank Spike (mg/L)			<u>CL</u>
	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	
Biochemical Oxygen Demand	198	208	105	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4796**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/30/2013 2:56:41PM

## Method Blank

Blank ID: MB for HBN 1485215 [BTF/13090]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1179756

QC for Samples:

1134600001, 1134600002, 1134600003, 1134600004, 1134600005, 1134600006, 1134600007, 1134600008, 1134600009, 1134600010, 1134600011

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF13090

Analytical Method: SM21 9222D

Instrument:

Analyst: SDP

Analytical Date/Time: 9/19/2013 3:20:00PM

Print Date: 09/30/2013 2:56:41PM

## Method Blank

Blank ID: MB for HBN 1485166 [STS/4228]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1179538

QC for Samples:

1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 9/20/2013 9:00:50AM

Print Date: 09/30/2013 2:56:42PM



## Duplicate Sample Summary

Original Sample ID: 1134600002

Analysis Date: 09/20/2013 09:00

Duplicate Sample ID: 1179541

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	0.750U	0.750U	0.00	5.00

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:43PM

## Duplicate Sample Summary

Original Sample ID: 1138465004

Duplicate Sample ID: 1179542

QC for Samples:

1134600005, 1134600006, 1134600007, 1134600011

Analysis Date: 09/20/2013 09:00

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	3.50	2.75	24.00*	5.00

## Batch Information

Analytical Batch: STS4228

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:43PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [STS4228]  
Blank Spike Lab ID: 1179539  
Date Analyzed: 09/20/2013 09:00

Spike Duplicate ID: LCSD for HBN 1134600 [STS4228]  
Spike Duplicate Lab ID: 1179540  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600001, 1134600002, 1134600005, 1134600006, 1134600007, 1134600011

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	46.2	92	50	46.7	93	( 75-125 )	1.10	(< 5 )

### Batch Information

Analytical Batch: **STS4228**  
Analytical Method: **SM21 2540D**  
Instrument:  
Analyst: **MEV**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:43PM

## Method Blank

Blank ID: MB for HBN 1485778 [STS/4229]

Blank Lab ID: 1180103

QC for Samples:

1134600003, 1134600004, 1134600008, 1134600009, 1134600010

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 9/23/2013 10:40:50AM

Print Date: 09/30/2013 2:56:44PM

## Duplicate Sample Summary

Original Sample ID: 1134600008

Duplicate Sample ID: 1180106

QC for Samples:

1134600003, 1134600004, 1134600008, 1134600009, 1134600010

Analysis Date: 09/23/2013 10:40

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ()</u>	<u>Duplicate ()</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	16.8	17.0	1.50	5.00

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:44PM

## Duplicate Sample Summary

Original Sample ID: 1134600010

Duplicate Sample ID: 1180107

QC for Samples:

1134600009, 1134600010

Analysis Date: 09/23/2013 10:40

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	2.25	3.00	28.60*	5.00

## Batch Information

Analytical Batch: STS4229

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/30/2013 2:56:44PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [STS4229]  
Blank Spike Lab ID: 1180104  
Date Analyzed: 09/23/2013 10:40

Spike Duplicate ID: LCSD for HBN 1134600 [STS4229]  
Spike Duplicate Lab ID: 1180105  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600003, 1134600004, 1134600008, 1134600009, 1134600010

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	45.1	90	50	45.6	91	( 75-125 )	1.10	(< 5 )

### Batch Information

Analytical Batch: **STS4229**  
Analytical Method: **SM21 2540D**  
Instrument:  
Analyst: **MEV**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/30/2013 2:56:45PM

## Method Blank

Blank ID: MB for HBN 1486501 [VXX/25251]  
 Blank Lab ID: 1181642

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600002, 1134600003, 1134600006, 1134600008, 1134600014

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	106	70-120		%
4-Bromofluorobenzene	102	75-120		%
Toluene-d8	95.9	85-120		%

## Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: HM  
 Analytical Date/Time: 9/27/2013 11:27:01AM

Prep Batch: VXX25251  
 Prep Method: SW5030B  
 Prep Date/Time: 9/27/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [VXX25251]  
 Blank Spike Lab ID: 1181643  
 Date Analyzed: 09/27/2013 11:51

Spike Duplicate ID: LCSD for HBN 1134600 [VXX25251]  
 Spike Duplicate Lab ID: 1181644  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003, 1134600006, 1134600008, 1134600014

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2-Dichlorobenzene	30	28.8	96	30	29.2	98	( 70-120 )	1.40	(< 20 )
1,3-Dichlorobenzene	30	32.7	109	30	31.8	106	( 75-125 )	2.60	(< 20 )
1,4-Dichlorobenzene	30	29.2	97	30	29.3	98	( 75-125 )	0.44	(< 20 )
Benzene	30	29.2	97	30	29.7	99	( 80-120 )	1.90	(< 20 )
Chlorobenzene	30	28.2	94	30	28.5	95	( 80-120 )	0.95	(< 20 )
Ethylbenzene	30	28.2	94	30	28.3	94	( 75-125 )	0.50	(< 20 )
o-Xylene	30	28.2	94	30	28.9	96	( 80-120 )	2.50	(< 20 )
P & M -Xylene	60	56.4	94	60	58.1	97	( 75-130 )	3.00	(< 20 )
Toluene	30	27.4	91	30	28.5	95	( 75-120 )	4.00	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4	30	92.2	92	30	98	98	( 70-120 )	6.10	
4-Bromofluorobenzene	30	101	101	30	97.3	97	( 75-120 )	4.20	
Toluene-d8	30	91.5	92	30	96.8	97	( 85-120 )	5.60	

## Batch Information

Analytical Batch: **VMS13776**  
 Analytical Method: **EPA 602/624**  
 Instrument: **HP 5890 Series II MS1 VJA**  
 Analyst: **HM**

Prep Batch: **VXX25251**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/27/2013 08:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1134600002  
 MS Sample ID: 1134600012 BMS  
 MSD Sample ID: 1134600013 BMSD

Analysis Date: 09/27/2013 16:32  
 Analysis Date: 09/27/2013 20:26  
 Analysis Date: 09/27/2013 20:50  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	29.2	97	30.0	31.6	105	70-120	7.90	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	32.1	107	30.0	34.3	114	75-125	6.50	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	29.3	98	30.0	31.7	106	75-125	7.70	(< 20 )
Benzene	0.400U	30.0	31.1	104	30.0	31.2	104	80-120	0.32	(< 20 )
Chlorobenzene	0.500U	30.0	28.7	96	30.0	31.1	104	80-120	8.20	(< 20 )
Ethylbenzene	1.00U	30.0	28.4	95	30.0	31.0	103	75-125	8.60	(< 20 )
o-Xylene	1.00U	30.0	29.3	98	30.0	31.3	104	80-120	6.50	(< 20 )
P & M -Xylene	2.00U	60.0	58.8	98	60.0	63.9	106	75-130	8.30	(< 20 )
Toluene	1.00U	30.0	30.8	103	30.0	32.5	108	75-120	5.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	25.9	86	30.0	26.0	87	70-120	0.35	
4-Bromofluorobenzene		30.0	29.5	98	30.0	31.8	106	75-120	7.50	
Toluene-d8		30.0	29.4	98	30.0	30.5	102	85-120	3.70	

## Batch Information

Analytical Batch: VMS13776  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: HM  
 Analytical Date/Time: 9/27/2013 8:26:00PM

Prep Batch: VXX25251  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 9/27/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1485562 [XXX/29980]  
 Blank Lab ID: 1179986

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	67.5	50-110		%
Terphenyl-d14	87.2	50-135		%

## Batch Information

Analytical Batch: XMS7618  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/24/2013 8:07:00PM

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [XXX29980]  
 Blank Spike Lab ID: 1179987  
 Date Analyzed: 09/24/2013 20:21

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Acenaphthene	0.5	0.313	63	(45-110)
Acenaphthylene	0.5	0.307	61	(50-105)
Anthracene	0.5	0.334	67	(55-110)
Benzo(a)Anthracene	0.5	0.389	78	(55-110)
Benzo[a]pyrene	0.5	0.327	66	(55-110)
Benzo[b]Fluoranthene	0.5	0.372	74	(45-120)
Benzo[g,h,i]perylene	0.5	0.293	59	(40-125)
Benzo[k]fluoranthene	0.5	0.328	66	(45-125)
Chrysene	0.5	0.359	72	(55-110)
Dibenzo[a,h]anthracene	0.5	0.289	58	(40-125)
Fluoranthene	0.5	0.383	77	(55-115)
Fluorene	0.5	0.319	64	(50-110)
Indeno[1,2,3-c,d] pyrene	0.5	0.310	62	(45-125)
Naphthalene	0.5	0.326	65	(40-100)
Phenanthrene	0.5	0.344	69	(50-115)
Pyrene	0.5	0.380	76	(50-130)
<b>Surrogates</b>				
2-Fluorobiphenyl	0.5	67.4	67	(50-110)
Terphenyl-d14	0.5	87.3	87	(50-135)

## Batch Information

Analytical Batch: XMS7618  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29980  
 Prep Method: SW3520C  
 Prep Date/Time: 09/22/2013 10:02  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1134581004  
 MS Sample ID: 1179988 MS  
 MSD Sample ID: 1179989 MSD

Analysis Date: 09/25/2013 13:12  
 Analysis Date: 09/25/2013 13:27  
 Analysis Date: 09/25/2013 13:41  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600002, 1134600003

## Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0300U	0.500	.305	61	0.510	0.350	69	45-110	13.70	(< 30 )
Acenaphthylene	0.0300U	0.500	.303	61	0.510	0.347	68	50-105	13.70	(< 30 )
Anthracene	0.0300U	0.500	.369	74	0.510	0.391	77	55-110	6.00	(< 30 )
Benzo(a)Anthracene	0.0300U	0.500	.376	75	0.510	0.405	79	55-110	7.50	(< 30 )
Benzo[a]pyrene	0.0300U	0.500	.388	78	0.510	0.405	79	55-110	4.30	(< 30 )
Benzo[b]Fluoranthene	0.0300U	0.500	.392	79	0.510	0.447	88	45-120	13.10	(< 30 )
Benzo[g,h,i]perylene	0.0300U	0.500	.43	86	0.510	0.438	86	40-125	1.80	(< 30 )
Benzo[k]fluoranthene	0.0300U	0.500	.407	81	0.510	0.396	78	45-125	2.70	(< 30 )
Chrysene	0.0300U	0.500	.398	80	0.510	0.417	82	55-110	4.60	(< 30 )
Dibenzo[a,h]anthracene	0.0300U	0.500	.43	86	0.510	0.451	89	40-125	4.80	(< 30 )
Fluoranthene	0.0300U	0.500	.377	75	0.510	0.398	78	55-115	5.30	(< 30 )
Fluorene	0.0300U	0.500	.328	66	0.510	0.345	68	50-110	5.00	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0300U	0.500	.432	86	0.510	0.450	88	45-125	3.90	(< 30 )
Naphthalene	0.0620U	0.500	.315	63	0.510	0.343	67	40-100	8.50	(< 30 )
Phenanthrene	0.0300U	0.500	.372	74	0.510	0.380	75	50-115	2.20	(< 30 )
Pyrene	0.0300U	0.500	.372	74	0.510	0.382	75	50-130	2.60	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.500	.299	60	0.510	0.362	71	50-110	19.00	
Terphenyl-d14		0.500	.433	87	0.510	0.437	86	50-135	0.95	

## Batch Information

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/25/2013 1:27:00PM

Prep Batch: XXX29980  
 Prep Method: 3520 Liquid/Liquid Ext for 8270 SIM  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 1,000.00mL  
 Prep Extract Vol: 1.00mL



### Billable Matrix Spike Summary

Original Sample ID: 1134600002  
 MS Sample ID: 1134600012 BMS  
 MSD Sample ID: 1134600013 BMSD

Analysis Date: 09/25/2013 14:10  
 Analysis Date: 09/25/2013 14:39  
 Analysis Date: 09/25/2013 14:54  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0552U	0.529	.335	63	0.526	0.375	71	45-110	11.20	(< 30 )
Acenaphthylene	0.0552U	0.529	.333	63	0.526	0.364	69	50-105	8.90	(< 30 )
Anthracene	0.0552U	0.529	.396	75	0.526	0.437	83	55-110	9.80	(< 30 )
Benzo(a)Anthracene	0.0552U	0.529	.416	79	0.526	0.438	83	55-110	5.10	(< 30 )
Benzo[a]pyrene	0.0552U	0.529	.424	80	0.526	0.452	86	55-110	6.40	(< 30 )
Benzo[b]Fluoranthene	0.0552U	0.529	.486	92	0.526	0.513	97	45-120	5.30	(< 30 )
Benzo[g,h,i]perylene	0.0552U	0.529	.468	89	0.526	0.490	93	40-125	4.60	(< 30 )
Benzo[k]fluoranthene	0.0552U	0.529	.437	83	0.526	0.443	84	45-125	1.40	(< 30 )
Chrysene	0.0552U	0.529	.448	85	0.526	0.458	87	55-110	2.20	(< 30 )
Dibenzo[a,h]anthracene	0.0552U	0.529	.469	89	0.526	0.499	95	40-125	6.20	(< 30 )
Fluoranthene	0.0552U	0.529	.438	83	0.526	0.435	83	55-115	0.52	(< 30 )
Fluorene	0.0552U	0.529	.349	66	0.526	0.377	72	50-110	7.70	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0552U	0.529	.48	91	0.526	0.505	96	45-125	5.00	(< 30 )
Naphthalene	0.110U	0.529	.32	60	0.526	0.358	68	40-100	11.30	(< 30 )
Phenanthrene	0.0552U	0.529	.407	77	0.526	0.433	82	50-115	6.10	(< 30 )
Pyrene	0.0552U	0.529	.424	80	0.526	0.425	81	50-130	0.17	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.529	.347	66	0.526	0.383	73	50-110	9.90	
Terphenyl-d14		0.529	.478	90	0.526	0.465	88	50-135	2.80	

### Batch Information

Analytical Batch: XMS7622  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/25/2013 2:39:00PM

Prep Batch: XXX29980  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 9/22/2013 10:02:00AM  
 Prep Initial Wt./Vol.: 945.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 09/30/2013 2:56:48PM

## Method Blank

Blank ID: MB for HBN 1485790 [XXX/29986]  
 Blank Lab ID: 1180145

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134600006, 1134600008

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	57.7	50-110		%
Terphenyl-d14	77.3	50-135		%

## Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/26/2013 6:16:00PM

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 9/23/2013 9:40:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134600 [XXX29986]  
 Blank Spike Lab ID: 1180146  
 Date Analyzed: 09/26/2013 18:31

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600006, 1134600008

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Acenaphthene	0.5	0.325	65	( 45-110 )
Acenaphthylene	0.5	0.330	66	( 50-105 )
Anthracene	0.5	0.353	71	( 55-110 )
Benzo(a)Anthracene	0.5	0.348	70	( 55-110 )
Benzo[a]pyrene	0.5	0.352	70	( 55-110 )
Benzo[b]Fluoranthene	0.5	0.356	71	( 45-120 )
Benzo[g,h,i]perylene	0.5	0.324	65	( 40-125 )
Benzo[k]fluoranthene	0.5	0.349	70	( 45-125 )
Chrysene	0.5	0.382	76	( 55-110 )
Dibenzo[a,h]anthracene	0.5	0.323	65	( 40-125 )
Fluoranthene	0.5	0.359	72	( 55-115 )
Fluorene	0.5	0.340	68	( 50-110 )
Indeno[1,2,3-c,d] pyrene	0.5	0.353	71	( 45-125 )
Naphthalene	0.5	0.340	68	( 40-100 )
Phenanthrene	0.5	0.327	65	( 50-115 )
Pyrene	0.5	0.335	67	( 50-130 )
<b>Surrogates</b>				
2-Fluorobiphenyl	0.5	72	72	( 50-110 )
Terphenyl-d14	0.5	74.3	74	( 50-135 )

## Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29986  
 Prep Method: SW3520C  
 Prep Date/Time: 09/23/2013 09:40  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/30/2013 2:56:50PM





### Matrix Spike Summary

Original Sample ID: 1181960  
 MS Sample ID: 1180161 MS  
 MSD Sample ID: 1180162 MSD

Analysis Date: 09/26/2013 20:26  
 Analysis Date: 09/26/2013 20:41  
 Analysis Date: 09/26/2013 20:55  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134600006, 1134600008

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0310U	0.500	.293	59	0.500	0.326	65	45-110	10.90	(< 30 )
Acenaphthylene	0.0310U	0.500	.279	56	0.500	0.309	62	50-105	10.30	(< 30 )
Anthracene	0.0310U	0.500	.335	67	0.500	0.351	70	55-110	4.70	(< 30 )
Benzo(a)Anthracene	0.0310U	0.500	.314	63	0.500	0.338	68	55-110	7.40	(< 30 )
Benzo[a]pyrene	0.0310U	0.500	.329	66	0.500	0.348	70	55-110	5.80	(< 30 )
Benzo[b]Fluoranthene	0.0310U	0.500	.321	64	0.500	0.338	68	45-120	5.10	(< 30 )
Benzo[g,h,i]perylene	0.0310U	0.500	.32	64	0.500	0.348	70	40-125	8.40	(< 30 )
Benzo[k]fluoranthene	0.0310U	0.500	.331	66	0.500	0.390	78	45-125	16.20	(< 30 )
Chrysene	0.0310U	0.500	.403	81	0.500	0.378	76	55-110	6.50	(< 30 )
Dibenzo[a,h]anthracene	0.0310U	0.500	.323	65	0.500	0.337	67	40-125	4.30	(< 30 )
Fluoranthene	0.0310U	0.500	.336	67	0.500	0.377	75	55-115	11.50	(< 30 )
Fluorene	0.0310U	0.500	.323	65	0.500	0.332	67	50-110	2.80	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0310U	0.500	.34	68	0.500	0.333	67	45-125	2.20	(< 30 )
Naphthalene	0.0640U	0.500	.28	56	0.500	0.316	63	40-100	12.00	(< 30 )
Phenanthrene	0.0310U	0.500	.282	56	0.500	0.324	65	50-115	13.70	(< 30 )
Pyrene	0.0310U	0.500	.329	66	0.500	0.370	74	50-130	11.80	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.500	.33	66	0.500	0.301	60	50-110	9.40	
Terphenyl-d14		0.500	.401	80	0.500	0.416	83	50-135	3.70	

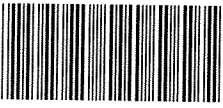
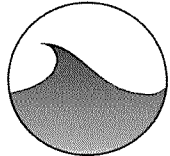
### Batch Information

Analytical Batch: XMS7634  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/26/2013 8:41:01PM

Prep Batch: XXX29986  
 Prep Method: 3520 Liquid/Liquid Ext for 8270 SIM  
 Prep Date/Time: 9/23/2013 9:40:00AM  
 Prep Initial Wt./Vol.: 1,000.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 09/30/2013 2:56:50PM

### Chain of Custody Record



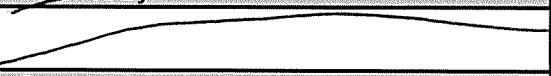


<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No.</b> 9901  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management <b>Complete by:</b> 2 weeks	<b>ix:</b> Water Sodium thiosulfate for dechlorination <b>Project #:</b> 5078
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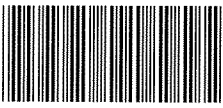
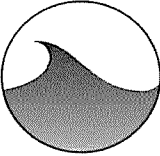
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	① A	
SWM02-04	847-1		1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	② A	
SWM02-04 Dup	847-1		1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③ A	
SWM03-04	1224-1		1115	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④ A	
SWM04-04	1224-2		1125	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑤ A	
SWM05-04	207-1		1140	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥ A	
SWM06-04	314-22		1210	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦ A	
SWM07-04	484-1		1225	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧ A	
SWM08-04	86-1		1245	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨ A	
SWM08-04 Dup	86-1		1245	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩ A	
SWM09-04	499-1		1310	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪ Es 9/19	
SWM10-04	525-2	9/19/13	1315	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫ ⑪ A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
	9/19/13			
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
				9/19/13 13:59

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #: 1134600</b> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project: MOA Stormwater Management</b> <b>Complete by: 2 weeks</b>	<b>Matrix: Water</b> <b>Project #: 5078</b>
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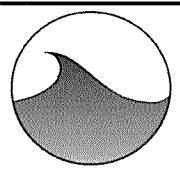
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	① B	
SWM02-04	847-1	}	1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	② B	
SWM02-04 Dup	847-1		1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	③ B	
SWM03-04	1224-1		1115	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	④ B	
SWM04-04	1224-2		1125	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤ B	
SWM05-04	207-1		1140	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥ B	
SWM06-04	314-22		1210	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦ B	
SWM07-04	484-1		1225	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧ B	
SWM08-04	86-1		1245	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨ B	
SWM08-04 Dup	86-1		1245	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩ B	
SWM09-04	499-1		1310	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM10-04	525-2	9/19/13	1315	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪ B	

**Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.**

**Special Instructions/Comments:**

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>A. K. H.</i>	9/19/13	<i>GLBW</i>	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	09/19/13 13:59

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management <b>Complete by:</b> 2 weeks	<b>Matrix:</b> Water <span style="float: right;"><b>Project #:</b> 5078</span>
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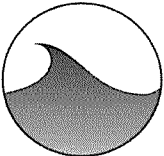
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/19/13	1030	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	① C	
SWM02-04	847-1	~	1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	② C	
SWM02-04 Dup	847-1		1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	③ C	
SWM03-04	1224-1		1115	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	④ C	
SWM04-04	1224-2		1125	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑤ C	
SWM05-04	207-1		1140	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑥ C	
SWM06-04	314-22		1210	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑦ C	
SWM07-04	484-1		1225	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑧ C	
SWM08-04	86-1		1245	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑨ C	
SWM08-04 Dup	86-1		1245	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑩ C	
SWM09-04	499-1		9/19/13	1310	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	
SWM10-04	525-2	9/19/13	1315	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑪ C	

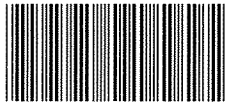
Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>AA huy</i>	9/19/13	<i>A Lady</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
			<i>[Signature]</i>	9/19/13 13:58

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	SGS Quote No. 9901  <b>Date Received:</b>  Lab #: <span style="font-size: 2em; font-weight: bold;">1134600</span>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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<b>Project:</b> MOA Stormwater Management <b>Complete by:</b> 2 weeks	<b>Matrix:</b> Water <span style="float: right;"><b>Project #:</b> 5078</span>
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/19/13	1045	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	ES 9/19 ② D-E <del>⑫ G</del> <del>⑬ A-G</del>	⑫ A-B ⑬ A-B
SWM02-04 Dup	847-1	✓	1045	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	③ D-E	
SWM05-04	207-1	↓	1140	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑥ D-E	
SWM07-04	484-1	↓	1225	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑧ D-E	
SWM09-04	499-1	9/19/13	1310	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>AAH</i>	9/19/13	<i>[Signature]</i>		
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
			<i>[Signature]</i>	09/19/13 13:59

7.8/#240      7.7/#35      7.4/#35      2.4/#35

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Steve Crupi	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b> <span style="font-size: 2em; font-weight: bold;">1134600</span> 	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie	
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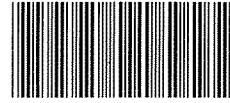
<b>Project:</b> MOA Stormwater Management  <b>Complete by:</b> 2 weeks	<b>Matrix:</b> Water  <b>Project #:</b> 5078
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Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/19/13	1045	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	ES 9/19 ② <del>F-H</del> ⑫ C-E	
SWM02-04 Dup	847-1	↙	1045	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	③ F-H	
SWM05-04	207-1	↙	1140	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑥ F-H	
SWM07-04	484-1	↙	1225	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑧ F-H	
SWM09-04	499-1	9/19/13	1310	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	⑭ A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>SAH</i>	9/19/13	<i>[Signature]</i>	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>			<i>[Signature]</i>	09/19/13 13:59



## SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <input checked="" type="radio"/> N/A <input checked="" type="radio"/> Yes No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? * Note: Exemption permitted for chilled samples collected less than 8 hours ago. Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Note: If non-compliant, use form FS-0029 to document affected samples/analyses. If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	Yes No <input checked="" type="radio"/> N/A	Taken within 8 hrs
If temperature(s) <0°C, were all sample containers ice free?	Yes No <input checked="" type="radio"/> N/A	
Delivery method (specify all that apply): <input checked="" type="radio"/> Client USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/ tracking #  See Attached or <input checked="" type="radio"/> N/A  Yes No <input checked="" type="radio"/> N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		<input checked="" type="radio"/> N/A SRF Initiated by: <u>SLC</u> N/A
Were samples received within hold time? Note: Refer to form F-083 "Sample Guide" for hold time information.	<input checked="" type="radio"/> Yes No N/A	
Do samples match COC* (i.e., sample IDs, dates/times collected)? * Note: Exemption permitted if times differ <1hr; in that case, use times on COC.	<input checked="" type="radio"/> Yes No N/A	
Were analyses requested unambiguous?	<input checked="" type="radio"/> Yes No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): <input checked="" type="radio"/> Bubble Wrap Separate plastic bags Vermiculite Other:	<input checked="" type="radio"/> Yes No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No <input checked="" type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative*) used? * Note: Exemption permitted for waters to be analyzed for metals.	<input checked="" type="radio"/> Yes No N/A	
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="radio"/> Yes No N/A	
For special handling (e.g., "MF" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <input checked="" type="radio"/> N/A	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="radio"/> Yes No N/A	Fecal, BOD
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No <input checked="" type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: <u>SLC</u> 9/19/13 PM = N/A
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: N/A

Additional notes (if applicable):

There was no sample SWM09-04. Client was unable to sample. SLC 9/19/13

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.



## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1134149**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Steve at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Steve Crupi  
Project Manager  
steven.crupi@sgs.com

Date

Print Date: 09/19/2013 8:50:08AM



**Case Narrative**

SGS Client: **Kinnetic Laboratories, Inc.**  
SGS Project: **1134149**  
Project Name/Site: **5078 MOA Stormwater Management**  
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM01-03 (1134149001) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM02-03 (1134149002) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM02-03 Dup (1134149005) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM03-03 (1134149006) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM04-03 (1134149007) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM05-03 (1134149008) PS**

5210B - BOD LCS failed high. Result may be biased high.

**SWM06-03 (1134149009) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM07-03 (1134149010) PS**

5210B - BOD LCS failed high. Result may be biased high.

**SWM08-03 (1134149011) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM08-03 Dup (1134149012) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM09-03 (1134149013) PS**

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**SWM10-03 (1134149014) PS**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

5210B - BOD LCS failed high and may bias results high. However, result is less than 2 mg/L.

**CCV for HBN 1479584 [VMS/13712 (1174102) CCV**

8260B - CCV recoveries for several analytes do not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

**CCV for HBN 1479699 [XMS/7564] (1174456) CCV**

8270D SIM - CCV recovery for indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene does not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

**1134149014DUP (1173489) DUP**

### Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**

SGS Project: **1134149**

Project Name/Site: **5078 MOA Stormwater Management**

Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

**LCSS for HBN 1480973 [BOD/4779 (1175199) LCSS**

5210B - BOD LCS failed high. Results may be biased high.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/19/2013 8:50:09AM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIMS (PAH)</b>				
1134149003	SWM02-03 MS	XMS7564	Benzo[k]fluoranthene	RP
1134149003	SWM02-03 MS	XMS7564	Chrysene	RP
1134149013	SWM09-03	XMS7564	Benzo[b]Fluoranthene	SP
1134149013	SWM09-03	XMS7564	Benzo[k]fluoranthene	SP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<[http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm)>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-03	1134149001	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03	1134149002	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 MS	1134149003	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 MSD	1134149004	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM02-03 Dup	1134149005	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM03-03	1134149006	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM04-03	1134149007	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM05-03	1134149008	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM06-03	1134149009	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM07-03	1134149010	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM08-03	1134149011	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM08-03 Dup	1134149012	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM09-03	1134149013	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
SWM10-03	1134149014	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)
Trip Blank	1134149015	08/29/2013	08/29/2013	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIMS (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Total Suspended Solids SM20 2540D

### Detectable Results Summary

Client Sample ID: <b>SWM01-03</b>			
Lab Sample ID: 1134149001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	360	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.16	mg/L
Client Sample ID: <b>SWM02-03</b>			
Lab Sample ID: 1134149002	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	41	col/100mL
<b>Waters Department</b>	Total Suspended Solids	1.02	mg/L
Client Sample ID: <b>SWM02-03 Dup</b>			
Lab Sample ID: 1134149005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	50	col/100mL
<b>Waters Department</b>	Total Suspended Solids	0.761	mg/L
Client Sample ID: <b>SWM03-03</b>			
Lab Sample ID: 1134149006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	5400	col/100mL
<b>Waters Department</b>	Total Suspended Solids	5.96	mg/L
Client Sample ID: <b>SWM04-03</b>			
Lab Sample ID: 1134149007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	1350	col/100mL
<b>Waters Department</b>	Total Suspended Solids	7.75	mg/L
Client Sample ID: <b>SWM05-03</b>			
Lab Sample ID: 1134149008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	2.92	mg/L
	Fecal Coliform	18500	col/100mL
<b>Waters Department</b>	Total Suspended Solids	5.75	mg/L
Client Sample ID: <b>SWM06-03</b>			
Lab Sample ID: 1134149009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	40	col/100mL
<b>Waters Department</b>	Total Suspended Solids	2.13	mg/L
Client Sample ID: <b>SWM07-03</b>			
Lab Sample ID: 1134149010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	4.24	mg/L
	Fecal Coliform	964	col/100mL
<b>Polynuclear Aromatics GC/MS</b>	Pyrene	0.0547	ug/L
<b>Waters Department</b>	Total Suspended Solids	24.3	mg/L
Client Sample ID: <b>SWM08-03</b>			
Lab Sample ID: 1134149011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Microbiology Laboratory</b>	Fecal Coliform	72	col/100mL
<b>Waters Department</b>	Total Suspended Solids	14.9	mg/L

Print Date: 09/19/2013 8:50:11AM

### Detectable Results Summary

Client Sample ID: **SWM08-03 Dup**

Lab Sample ID: 1134149012

**Microbiology Laboratory**  
**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	92	col/100mL
Total Suspended Solids	16.3	mg/L

Client Sample ID: **SWM09-03**

Lab Sample ID: 1134149013

**Microbiology Laboratory**  
**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	17	col/100mL
Benzo(a)Anthracene	0.180	ug/L
Benzo[a]pyrene	0.250	ug/L
Benzo[b]Fluoranthene	0.415	ug/L
Benzo[g,h,i]perylene	0.196	ug/L
Benzo[k]fluoranthene	0.113	ug/L
Chrysene	0.272	ug/L
Fluoranthene	0.532	ug/L
Indeno[1,2,3-c,d] pyrene	0.174	ug/L
Phenanthrene	0.209	ug/L
Pyrene	0.407	ug/L
Total Suspended Solids	19.9	mg/L

**Waters Department**

Client Sample ID: **SWM10-03**

Lab Sample ID: 1134149014

**Microbiology Laboratory**  
**Waters Department**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fecal Coliform	64	col/100mL
Total Suspended Solids	3.75	mg/L



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149001  
Lab Project ID: 1134149

Collection Date: 08/29/13 10:45  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	360	10.0	10.0	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 10 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM





**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149001  
Lab Project ID: 1134149

Collection Date: 08/29/13 10:45  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.16	0.676	0.203	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 740 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	41	1.64	1.64	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 61 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Acenaphthylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo(a)Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[a]pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[b]Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[g,h,i]perylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Benzo[k]fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Chrysene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Dibenzo[a,h]anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Fluorene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Indeno[1,2,3-c,d] pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Naphthalene	0.111 U	0.111	0.0344	ug/L	1		09/03/13 14:01
Phenanthrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
Pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:01
<b>Surrogates</b>							
2-Fluorobiphenyl	58.2	50-110		%	1		09/03/13 14:01
Terphenyl-d14	76.2	50-135		%	1		09/03/13 14:01

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 14:01

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 900 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 19:42
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 19:42
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 19:42
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 19:42
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 19:42

**Surrogates**

1,2-Dichloroethane-D4	102	70-120		%	1		08/30/13 19:42
4-Bromofluorobenzene	104	75-120		%	1		08/30/13 19:42
Toluene-d8	99.7	85-120		%	1		08/30/13 19:42

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 19:42

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149002  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.02	0.508	0.152	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 985 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	50	2.00	2.00	col/100mL	1		08/29/13 17:10

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:10

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149005  
 Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Acenaphthylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo(a)Anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[a]pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[b]Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[g,h,i]perylene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Benzo[k]fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Chrysene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Dibenzo[a,h]anthracene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Fluoranthene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Fluorene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Indeno[1,2,3-c,d] pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Naphthalene	0.111 U	0.111	0.0344	ug/L	1		09/03/13 14:45
Phenanthrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
Pyrene	0.0556 U	0.0556	0.0167	ug/L	1		09/03/13 14:45
<b>Surrogates</b>							
2-Fluorobiphenyl	51	50-110		%	1		09/03/13 14:45
Terphenyl-d14	67.2	50-135		%	1		09/03/13 14:45

**Batch Information**

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/03/13 14:45

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/13 09:50  
 Prep Initial Wt./Vol.: 900 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM02-03 Dup**

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:05
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:05
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:05
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:05
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:05
<b>Surrogates</b>							
1,2-Dichloroethane-D4	102	70-120		%	1		08/30/13 20:05
4-Bromofluorobenzene	99.2	75-120		%	1		08/30/13 20:05
Toluene-d8	100	85-120		%	1		08/30/13 20:05

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:05

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM





### Results of SWM02-03 Dup

Client Sample ID: **SWM02-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149005  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

### Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	0.761	0.543	0.163	mg/L	1		08/30/13 08:49

### Batch Information

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 920 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149006  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:38  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	5400	100	100	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149006  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:38  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.96	0.505	0.152	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149007  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1350	9.09	9.09	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149007  
Lab Project ID: 1134149

Collection Date: 08/29/13 11:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	7.75	0.562	0.169	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 890 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.92	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	18500	100	100	col/100mL	1		08/29/13 17:35

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:35

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 1 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/03/13 15:00
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
Pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:00
<b>Surrogates</b>							
2-Fluorobiphenyl	58.6	50-110		%	1		09/03/13 15:00
Terphenyl-d14	69.8	50-135		%	1		09/03/13 15:00

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 15:00

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:28
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:28
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:28
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:28
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:28
<b>Surrogates</b>							
1,2-Dichloroethane-D4	99.1	70-120		%	1		08/30/13 20:28
4-Bromofluorobenzene	100	75-120		%	1		08/30/13 20:28
Toluene-d8	97.8	85-120		%	1		08/30/13 20:28

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:28

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM





**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149008  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:05  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.75	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149009  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	40	2.00	2.00	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149009  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.13	0.532	0.160	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 940 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.24	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	964	9.09	9.09	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 11 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



### Results of SWM07-03

Client Sample ID: **SWM07-03**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149010  
 Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

### Results by Polynuclear Aromatics GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Acenaphthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Acenaphthylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo(a)Anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[a]pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[b]Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[g,h,i]perylene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Benzo[k]fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Chrysene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Dibenzo[a,h]anthracene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Fluoranthene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Fluorene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Indeno[1,2,3-c,d] pyrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Naphthalene	0.100 U	0.100	0.0310	ug/L	1		09/03/13 15:14
Phenanthrene	0.0500 U	0.0500	0.0150	ug/L	1		09/03/13 15:14
Pyrene	0.0547	0.0500	0.0150	ug/L	1		09/03/13 15:14
<b>Surrogates</b>							
2-Fluorobiphenyl	64.3	50-110		%	1		09/03/13 15:14
Terphenyl-d14	72.2	50-135		%	1		09/03/13 15:14

### Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Analyst: RTS  
 Analytical Date/Time: 09/03/13 15:14

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/13 09:50  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:51
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 20:51
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 20:51
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 20:51
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 20:51
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105	70-120		%	1		08/30/13 20:51
4-Bromofluorobenzene	100	75-120		%	1		08/30/13 20:51
Toluene-d8	100	85-120		%	1		08/30/13 20:51

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 20:51

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149010  
Lab Project ID: 1134149

Collection Date: 08/29/13 12:55  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	24.3	1.43	0.429	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 350 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149011  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	72	2.00	2.00	col/100mL	1		08/29/13 17:55

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 17:55

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM





Results of **SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149011  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.9	0.820	0.246	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 610 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM08-03 Dup**

Client Sample ID: **SWM08-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149012  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	92	2.00	2.00	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM08-03 Dup**

Client Sample ID: **SWM08-03 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149012  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:20  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	16.3	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	17	1.67	1.67	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 60 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Acenaphthylene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Anthracene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo(a)Anthracene	0.180	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[a]pyrene	0.250	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[b]Fluoranthene	0.415	0.0513	0.0154	ug/L	1		09/03/13 15:29
Benzo[g,h,i]perylene	0.196	0.0513	0.0154	ug/L	1		09/06/13 19:04
Benzo[k]fluoranthene	0.113	0.0513	0.0154	ug/L	1		09/03/13 15:29
Chrysene	0.272	0.0513	0.0154	ug/L	1		09/03/13 15:29
Dibenzo[a,h]anthracene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Fluoranthene	0.532	0.0513	0.0154	ug/L	1		09/03/13 15:29
Fluorene	0.0513 U	0.0513	0.0154	ug/L	1		09/03/13 15:29
Indeno[1,2,3-c,d] pyrene	0.174	0.0513	0.0154	ug/L	1		09/06/13 19:04
Naphthalene	0.103 U	0.103	0.0318	ug/L	1		09/03/13 15:29
Phenanthrene	0.209	0.0513	0.0154	ug/L	1		09/03/13 15:29
Pyrene	0.407	0.0513	0.0154	ug/L	1		09/03/13 15:29
<b>Surrogates</b>							
2-Fluorobiphenyl	52.4	50-110		%	1		09/03/13 15:29
Terphenyl-d14	76.6	50-135		%	1		09/03/13 15:29

**Batch Information**

Analytical Batch: XMS7564  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/03/13 15:29

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 975 mL  
Prep Extract Vol: 1 mL

Analytical Batch: XMS7572  
Analytical Method: EPA 625M SIMS (PAH)  
Analyst: RTS  
Analytical Date/Time: 09/06/13 19:04

Prep Batch: XXX29790  
Prep Method: SW3520C  
Prep Date/Time: 08/30/13 09:50  
Prep Initial Wt./Vol.: 975 mL  
Prep Extract Vol: 1 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 21:14
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 21:14
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 21:14
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 21:14
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 21:14
<b>Surrogates</b>							
1,2-Dichloroethane-D4	103	70-120		%	1		08/30/13 21:14
4-Bromofluorobenzene	102	75-120		%	1		08/30/13 21:14
Toluene-d8	98.8	85-120		%	1		08/30/13 21:14

**Batch Information**

Analytical Batch: VMS13712  
Analytical Method: EPA 602/624  
Analyst: NRB  
Analytical Date/Time: 08/30/13 21:14

Prep Batch: VXX25132  
Prep Method: SW5030B  
Prep Date/Time: 08/30/13 08:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/19/2013 8:50:12AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149013  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:40  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	19.9	0.510	0.153	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149014  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:50  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/29/13 19:40

**Batch Information**

Analytical Batch: BOD4779  
Analytical Method: SM21 5210B  
Analyst: ACE  
Analytical Date/Time: 08/29/13 19:40

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 300 mL  
Prep Extract Vol: 300 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	64	2.00	2.00	col/100mL	1		08/29/13 18:05

**Batch Information**

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Analyst: SDP  
Analytical Date/Time: 08/29/13 18:05

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 50 mL  
Prep Extract Vol: 100 mL

Print Date: 09/19/2013 8:50:12AM





Results of **SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1134149014  
Lab Project ID: 1134149

Collection Date: 08/29/13 13:50  
Received Date: 08/29/13 14:38  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	3.75	1.25	0.375	mg/L	1		08/30/13 08:49

**Batch Information**

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Analyst: MEV  
Analytical Date/Time: 08/30/13 08:49

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 400 mL  
Prep Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:12AM

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1134149015  
 Lab Project ID: 1134149

Collection Date: 08/29/13 11:10  
 Received Date: 08/29/13 14:38  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 16:15
Benzene	0.400 U	0.400	0.120	ug/L	1		08/30/13 16:15
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/30/13 16:15
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/30/13 16:15
Toluene	1.00 U	1.00	0.310	ug/L	1		08/30/13 16:15
<b>Surrogates</b>							
1,2-Dichloroethane-D4	105	70-120		%	1		08/30/13 16:15
4-Bromofluorobenzene	97.8	75-120		%	1		08/30/13 16:15
Toluene-d8	98.6	85-120		%	1		08/30/13 16:15

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Analyst: NRB  
 Analytical Date/Time: 08/30/13 16:15

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 08/30/13 08:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1480973 [BOD/4779]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1175198

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD4779

Analytical Method: SM21 5210B

Instrument:

Analyst: ACE

Analytical Date/Time: 8/29/2013 7:40:00PM

Print Date: 09/19/2013 8:50:14AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [BOD4779]

Blank Spike Lab ID: 1175199

Date Analyzed: 08/29/2013 19:40

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009,  
1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	239	121 *	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD4779**

Analytical Method: **SM21 5210B**

Instrument:

Analyst: **ACE**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL

Dupe Init Wt./Vol.: Extract Vol:

## Method Blank

Blank ID: MB for HBN 1479682 [BTF/13041]  
Blank Lab ID: 1174394

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011,  
1134149012, 1134149013, 1134149014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF13041  
Analytical Method: SM21 9222D  
Instrument:  
Analyst: SDP  
Analytical Date/Time: 8/29/2013 4:55:00PM

Print Date: 09/19/2013 8:50:16AM



### Method Blank

Blank ID: MB for HBN 1479034 [STS/4205]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1173485

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

### Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.300U	0.500	0.150	mg/L

### Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Analytical Date/Time: 8/30/2013 8:49:51AM

Print Date: 09/19/2013 8:50:17AM

## Duplicate Sample Summary

Original Sample ID: 1134149008

Analysis Date: 08/30/2013 08:49

Duplicate Sample ID: 1173488

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	5.75	5.75	0.00	5.00

## Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/19/2013 8:50:17AM

## Duplicate Sample Summary

Original Sample ID: 1134149014

Duplicate Sample ID: 1173489

QC for Samples:

1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

Analysis Date: 08/30/2013 08:49

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original ( )</u>	<u>Duplicate ( )</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	3.75	3.50	6.90*	5.00

## Batch Information

Analytical Batch: STS4205

Analytical Method: SM21 2540D

Instrument:

Analyst: MEV

Print Date: 09/19/2013 8:50:17AM





### Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [STS4205]  
Blank Spike Lab ID: 1173486  
Date Analyzed: 08/30/2013 08:49

Spike Duplicate ID: LCSD for HBN 1134149 [STS4205]  
Spike Duplicate Lab ID: 1173487  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149001, 1134149002, 1134149005, 1134149006, 1134149007, 1134149008, 1134149009, 1134149010, 1134149011, 1134149012, 1134149013, 1134149014

### Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	47.1	94	50	47.8	96	( 75-125 )	1.50	(< 5 )

### Batch Information

Analytical Batch: STS4205  
Analytical Method: SM21 2540D  
Instrument:  
Analyst: MEV

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

Print Date: 09/19/2013 8:50:18AM

## Method Blank

Blank ID: MB for HBN 1479583 [VXX/25132]  
 Blank Lab ID: 1174098

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	103	70-120		%
4-Bromofluorobenzene	102	75-120		%
Toluene-d8	101	85-120		%

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 1:11:00PM

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Leaching Blank

Blank ID: LB for HBN 1478716 [TCLP/6951]  
 Blank Lab ID: 1173056

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,4-Dichlorobenzene	60.0U	100	30.0	ug/L
Benzene	48.0U	80.0	24.0	ug/L
Chlorobenzene	60.0U	100	30.0	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4	101	70-120		%
4-Bromofluorobenzene	100	75-120		%
Toluene-d8	101	85-120		%

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 4:38:00PM

Prep Batch: VXX25132  
 Prep Method: SW5030B  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [VXX25132]  
 Blank Spike Lab ID: 1174099  
 Date Analyzed: 08/30/2013 14:19

Spike Duplicate ID: LCSD for HBN 1134149 [VXX25132]  
 Spike Duplicate Lab ID: 1174100  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149002, 1134149005, 1134149008, 1134149010, 1134149013, 1134149015

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2-Dichlorobenzene	30	32.6	109	30	33.4	111	( 70-120 )	2.50	(< 20 )
1,3-Dichlorobenzene	30	33.9	113	30	33.3	111	( 75-125 )	1.60	(< 20 )
1,4-Dichlorobenzene	30	33.4	111	30	34.4	115	( 75-125 )	3.00	(< 20 )
Benzene	30	33.1	110	30	31.9	106	( 80-120 )	3.60	(< 20 )
Chlorobenzene	30	33.1	110	30	32.4	108	( 80-120 )	1.90	(< 20 )
Ethylbenzene	30	33.2	111	30	32.6	109	( 75-125 )	1.90	(< 20 )
o-Xylene	30	33.5	112	30	32.2	107	( 80-120 )	3.90	(< 20 )
P & M -Xylene	60	66.5	111	60	63.5	106	( 75-130 )	4.70	(< 20 )
Toluene	30	32.0	107	30	31.2	104	( 75-120 )	2.50	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4	30	98.6	99	30	100	100	( 70-120 )	1.90	
4-Bromofluorobenzene	30	96	96	30	102	102	( 75-120 )	6.00	
Toluene-d8	30	99.8	100	30	99.3	99	( 85-120 )	0.47	

## Batch Information

Analytical Batch: **VMS13712**  
 Analytical Method: **EPA 602/624**  
 Instrument: **HP 5890 Series II MS1 VJA**  
 Analyst: **NRB**

Prep Batch: **VXX25132**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/30/2013 08:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1134149002  
 MS Sample ID: 1134149003 BMS  
 MSD Sample ID: 1134149004 BMSD

Analysis Date: 08/30/2013 19:42  
 Analysis Date: 08/30/2013 21:37  
 Analysis Date: 08/30/2013 22:00  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	35.4	118	30.0	33.9	113	70-120	4.30	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	34.4	115	30.0	34.4	115	75-125	0.09	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	35.6	119	30.0	35.1	117	75-125	1.50	(< 20 )
Benzene	0.400U	30.0	33.9	113	30.0	32.7	109	80-120	3.40	(< 20 )
Chlorobenzene	0.500U	30.0	34.6	115	30.0	32.6	109	80-120	6.00	(< 20 )
Ethylbenzene	1.00U	30.0	33.7	112	30.0	32.0	107	75-125	5.20	(< 20 )
o-Xylene	1.00U	30.0	34.7	116	30.0	32.2	107	80-120	7.30	(< 20 )
P & M -Xylene	2.00U	60.0	68.4	114	60.0	64.3	107	75-130	6.10	(< 20 )
Toluene	1.00U	30.0	32.9	110	30.0	31.4	105	75-120	4.50	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4		30.0	29.9	100	30.0	29.6	99	70-120	0.84	
4-Bromofluorobenzene		30.0	29.2	97	30.0	30.2	101	75-120	3.30	
Toluene-d8		30.0	30.3	101	30.0	29.6	99	85-120	2.30	

## Batch Information

Analytical Batch: VMS13712  
 Analytical Method: EPA 602/624  
 Instrument: HP 5890 Series II MS1 VJA  
 Analyst: NRB  
 Analytical Date/Time: 8/30/2013 9:37:00PM

Prep Batch: VXX25132  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 8/30/2013 8:00:00AM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1479044 [XXX/29790]  
 Blank Lab ID: 1173540

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1134149002, 1134149005, 1134149008, 1134149010, 1134149013

## Results by EPA 625M SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl	54.6	50-110		%
Terphenyl-d14	68.3	50-135		%

## Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/3/2013 12:34:00PM

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 8/30/2013 9:50:00AM  
 Prep Initial Wt./Vol.: 1000 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1134149 [XXX29790]  
 Blank Spike Lab ID: 1173541  
 Date Analyzed: 09/03/2013 12:49

Spike Duplicate ID: LCSD for HBN 1134149 [XXX29790]  
 Spike Duplicate Lab ID: 1173542  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1134149002, 1134149005, 1134149008, 1134149010, 1134149013

## Results by EPA 625M SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.314	63	0.5	0.331	66	( 45-110 )	5.30	(< 30 )
Acenaphthylene	0.5	0.308	62	0.5	0.332	66	( 50-105 )	7.40	(< 30 )
Anthracene	0.5	0.360	72	0.5	0.358	72	( 55-110 )	0.51	(< 30 )
Benzo(a)Anthracene	0.5	0.395	79	0.5	0.374	75	( 55-110 )	5.50	(< 30 )
Benzo[a]pyrene	0.5	0.431	86	0.5	0.404	81	( 55-110 )	6.30	(< 30 )
Benzo[b]Fluoranthene	0.5	0.466	93	0.5	0.424	85	( 45-120 )	9.40	(< 30 )
Benzo[g,h,i]perylene	0.5	0.515	103	0.5	0.487	98	( 40-125 )	5.50	(< 30 )
Benzo[k]fluoranthene	0.5	0.425	85	0.5	0.425	85	( 45-125 )	0.06	(< 30 )
Chrysene	0.5	0.425	85	0.5	0.405	81	( 55-110 )	4.70	(< 30 )
Dibenzo[a,h]anthracene	0.5	0.497	99	0.5	0.455	91	( 40-125 )	8.70	(< 30 )
Fluoranthene	0.5	0.382	76	0.5	0.370	74	( 55-115 )	3.30	(< 30 )
Fluorene	0.5	0.332	66	0.5	0.339	68	( 50-110 )	1.90	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.5	0.518	104	0.5	0.493	99	( 45-125 )	4.80	(< 30 )
Naphthalene	0.5	0.292	58	0.5	0.309	62	( 40-100 )	5.70	(< 30 )
Phenanthrene	0.5	0.365	73	0.5	0.363	73	( 50-115 )	0.52	(< 30 )
Pyrene	0.5	0.388	78	0.5	0.355	71	( 50-130 )	8.80	(< 30 )
<b>Surrogates</b>									
2-Fluorobiphenyl	0.5	62.7	63	0.5	67.1	67	( 50-110 )	6.80	
Terphenyl-d14	0.5	76.9	77	0.5	73.9	74	( 50-135 )	4.00	

## Batch Information

Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS

Prep Batch: XXX29790  
 Prep Method: SW3520C  
 Prep Date/Time: 08/30/2013 09:50  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL



### Billable Matrix Spike Summary

Original Sample ID: 1134149002  
 MS Sample ID: 1134149003 BMS  
 MSD Sample ID: 1134149004 BMSD

Analysis Date: 09/03/2013 14:01  
 Analysis Date: 09/03/2013 14:16  
 Analysis Date: 09/03/2013 14:31  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIMS (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0556U	0.549	.31	56	0.556	0.331	60	45-110	6.50	(< 30 )
Acenaphthylene	0.0556U	0.549	.319	58	0.556	0.334	60	50-105	4.70	(< 30 )
Anthracene	0.0556U	0.549	.368	67	0.556	0.371	67	55-110	0.91	(< 30 )
Benzo(a)Anthracene	0.0556U	0.549	.361	66	0.556	0.413	74	55-110	13.60	(< 30 )
Benzo[a]pyrene	0.0556U	0.549	.389	71	0.556	0.433	78	55-110	10.90	(< 30 )
Benzo[b]Fluoranthene	0.0556U	0.549	.412	75	0.556	0.453	82	45-120	9.50	(< 30 )
Benzo[g,h,i]perylene	0.0556U	0.549	.456	83	0.556	0.511	92	40-125	11.40	(< 30 )
Benzo[k]fluoranthene	0.0556U	0.549	.402	73	0.556	0.428	77	45-125	6.10	(< 30 )
Chrysene	0.0556U	0.549	.395	72	0.556	0.421	76	55-110	6.50	(< 30 )
Dibenzo[a,h]anthracene	0.0556U	0.549	.435	79	0.556	0.486	88	40-125	11.30	(< 30 )
Fluoranthene	0.0556U	0.549	.387	71	0.556	0.419	76	55-115	7.90	(< 30 )
Fluorene	0.0556U	0.549	.333	61	0.556	0.347	62	50-110	4.10	(< 30 )
Indeno[1,2,3-c,d] pyrene	0.0556U	0.549	.452	82	0.556	0.499	90	45-125	9.90	(< 30 )
Naphthalene	0.111U	0.549	.293	53	0.556	0.314	57	40-100	6.70	(< 30 )
Phenanthrene	0.0556U	0.549	.379	69	0.556	0.393	71	50-115	3.80	(< 30 )
Pyrene	0.0556U	0.549	.363	66	0.556	0.401	72	50-130	10.00	(< 30 )
<b>Surrogates</b>										
2-Fluorobiphenyl		0.549	.304	55	0.556	0.323	58	50-110	6.10	
Terphenyl-d14		0.549	.358	65	0.556	0.394	71	50-135	9.60	

### Batch Information

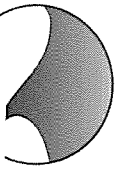
Analytical Batch: XMS7564  
 Analytical Method: EPA 625M SIMS (PAH)  
 Instrument: HP 6890/5973 MS SVQA  
 Analyst: RTS  
 Analytical Date/Time: 9/3/2013 2:16:00PM

Prep Batch: XXX29790  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 8/30/2013 9:50:00AM  
 Prep Initial Wt./Vol.: 910.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 09/19/2013 8:50:21AM



1134149



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
Contact: Steve Crupi

From: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907) 276-6178  
(907) 278-6881 Fax  
Contact: Mark Savoie

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	①A	
SWM02-03	847-1		1110	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	②A	
SWM02-03 Dup	847-1		1116	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	③A	
SWM03-03	1224-1		1138	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	④A	
SWM04-03	1224-2		1140	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦A	
SWM05-03	207-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧A	
SWM06-03	314-22		1240	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨A	
SWM07-03	484-1		1255	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩A	
SWM08-03	86-1		1320	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪A	
SWM08-03 Dup	86-1		1320	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫A	
SWM09-03	499-1		1340	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬A	
SWM10-03	525-2	8/29/13	1358	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑭A	

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Complete by: 2 weeks Note: Samples contain sodium thiosulfate for dechlorination

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

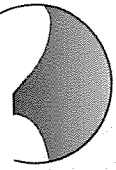
Special Instructions/Comments:

Sampled and Relinquished By: AAKW Date/Time: 8/29/13 Received By: [Signature] Date/Time: 8/29/13 1438

Relinquished By: [Signature] Date/Time: 8/29/13 1438

9.6 #238 11.1 #238

1134149



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Steve Crupi

SGS Quote No. 9901

Date Received:

Lab #:

From: Kinnetic Laboratories, Inc.  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907) 276-6178  
(907) 278-6881 Fax  
Contact: Mark Savoie

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	1B	
SWM02-03	847-1		1110	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	2B	
SWM02-03 Dup	847-1		1110	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	5B	
SWM03-03	1224-1		1138	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	6B	
SWM04-03	1224-2		1140	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	7B	
SWM05-03	207-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	8B	
SWM06-03	314-22		1240	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	9B	
SWM07-03	484-1		1255	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	10B	
SWM08-03	86-1		1320	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	11B	
SWM08-03 Dup	86-1		1320	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	12B	
SWM09-03	499-1		1340	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	13B	
SWM10-03	525-2	9/29/13	1350	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	14B	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
AACW	8/29/13	bc		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			CSavoie	8/29/13 1438

9.6 #238 0.4 #205 11.1 #238

1134149



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
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Anchorage, AK 99501  
(907) 276-6178  
(907) 278-6881 Fax  
Contact: Mark Savoie

SGS Quote No. 9901  
Date Received:  
Lab #:

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	8/29/13	1045	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	1C	
SWM02-03	847-1		1110	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	2C	
SWM02-03 Dup	847-1		1110	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	5C	
SWM03-03	1224-1		1138	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	6C	
SWM04-03	1224-2		1148	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	7C	
SWM05-03	207-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	8C	
SWM06-03	314-22		1240	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	9C	
SWM07-03	484-1		1255	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	10C	
SWM08-03	86-1		1320	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	11C	
SWM08-03 Dup	86-1		1320	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	12C	
SWM09-03	499-1		1340	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	13C	
SWM10-03	525-2	8/29/13	1350	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	14C	

Project #: 5078

Matrix: Water

MOA Stormwater Management

Complete by: 2 weeks

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLL. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>	8/29	6C	<i>[Signature]</i>	
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>[Signature]</i>			<i>[Signature]</i>	8/29/13 1438

9.6 #238

0.4 #205

11.1 #238

#238

#238









## **Appendix B4**

### **Laboratory Data Package Storm Event #4**





**Appendix C**  
**Field & Laboratory Data Validation**



## Field & Laboratory Data Validation

Data review focused on the following quality control (QC) parameters and their overall effects on the data:

- Physical parameter replicate comparisons
- Sample handling and holding time compliance
- Field replicate comparison for conventional and organic constituents
- Comparisons of laboratory controls (e.g., matrix spike/matrix spike duplicates).

### 1. Physical Parameters Replicate Comparisons

Precipitation was measured at three locations within the Anchorage basin using tipping bucket rain gages. The QAPP (MOA, 2012) specifies that storm events must meet the following criteria: a storm event must be greater than 0.1 inch of rain in 24 hours and be preceded by 24 hours of dry weather (less than 0.1 inch of rain). Due to the nature of storm patterns in the Anchorage Bowl, some rain gauges showed that the criteria preceding dry weather was met for the first storm while the criteria for the amount of rain fallen did not. The other storm events did meet all criteria.

Rain gauges were deployed June 19, 2013. For the July 1, 2013 storm event, the three rain gauges registered 0.12, 0.05, and 0.02 inch preceded by no precipitation in the 24 hours before the storm began on July 1, 2013. While the dry weather precipitation records do not exceed the criterion, the amount of precipitation during the storm did not meet the criteria of 0.1 inch. However, it is important to note that other studies indicate runoff can occur with as little as 0.02 inch of rain (MOA 2013). The recorded precipitation at these rain gauges did not adversely affect the results of the monitoring since runoff was occurring at all the sample locations. The July 20, 2013 event, rain gauges registered 0.24, 0.32, and 0.28 inch. In the preceding 24 hrs all three rain gauges read no precipitation. For the August 29, 2013 event, the three rain gauges registered 0.17, 0.22, and 0.23 inch. The preceding calendar day registered 0.44, 0.42, and 0.37 inch. Although the previous calendar day 24-hour period did not meet the criteria for this storm, the sampling actually did meet the criteria since it took place within the first 24-hr period after the beginning the storm. The storm began on the evening of 28 August and the sampling was initiated the following morning within the 24-hr criteria. For the September 19, 2013 event rain gauges registered 0.23, 0.25, and 0.27 inch preceded by 0.16, 0.17, and 0.02 inch in the preceding calendar 24-hr period. The preceding day was part of the same storm as it came in just prior to midnight and was preceded by 24-hour period of dry weather.

Grab samples were obtained during four storm events from the flowing water discharging from the storm drain outfalls prior to mixing with the stream water. Flows were monitored using the acoustic doppler flow meter, except at stations SWM07. At SWM07, the volume/ time method was repeated four times and the average measurement used. The coefficient of variation (CV) was calculated to determine variability of the measurement technique. The CV is a percentage representing the standard deviation divided by the mean of a population. The CVs varied between 1.5% and 4.5% and are presented in Table 1. During the last sampling event the volume/time method was not carried out four consecutive times due to the slow rate of flow.

**Table 1. Coefficients of Variation for Volume/Time Flow Measurements**

<b>Storm Event Date</b>	<b>Station SWM07</b>
July 1, 2013	4.0%
July 20, 2013	4.5%
August 29, 2013	1.5%
September 19, 2013	-

## **2. Sample Handling and Holding Time Compliance**

Samples were taken directly from the stormwater flow into laboratory-cleaned sample bottles that had the appropriate preservatives. For every storm event, all samples were appropriately labeled and the chains of custody completed as prescribed in the QAPP. For all storm events, samples were maintained in the coolers at the less than 6° C. Sample custody was maintained; samples were delivered directly to the laboratory by the sample crew within hours of sample collection. For fecal coliform, the parameter with the shortest holding time (8 hours), samples were processed by the laboratory immediately and within the prescribed holding time. For all parameters, the holding times specified in the QAPP (MOA, 2012) were met.

## **3. Comparisons of Field Replicate Analyses**

### ***Conventional Parameters***

Replicates of parameters analyzed in the field were taken as a measure of field variability/precision, where precision was calculated as either a relative percent difference (RPD) or the difference between measurements as defined in the QAPP. However, it should be noted that the precision values listed in the QAPP for field instruments were usually the precision of the instrument and not realistic goals for natural variability of stormwater field measurements. For example, in a highly turbid sample, turbidity in the same sample will vary over time as suspended particles settle and move which, in turn, affects light reflection and the turbidity concentration of the sample.

Field analyses included dissolved oxygen, pH, temperature, turbidity and specific conductivity. Each sampling event included field replicates at two stations: SWM02 and SWM08. Table 2 provides the field variability/precision for parameters measured in the field.

**Table 2. Precision and Variability of Field Parameters**

Parameter	QAPP Standard	July 1, 2013		July 20, 2013		August 29, 2013		Sept 19, 2013	
		SWM02	SWM08	SWM02	SWM08	SWM02	SWM08	SWM02	SWM08
DO	± 10%	0.24%	*	0.62%	1.17%	0.17%	*	*	*
pH	± 0.2 units	0.01	*	0.06	0.02	0.02	*	*	*
Turbidity	± 1NTU	0.09	*	0.4	0.6	0.35	*	0.16	0.72
Temperature	0.4° C	0.02	*	0.01	0	0	*	*	*
Conductivity	± 1µS/cm	<b>4</b>	*	0	<b>5</b>	<b>2</b>	*	*	*

Values in bold and red exceeded the precision or accuracy specified in the QAPP. \* Denotes that a replicate sample was not taken and therefore could not be compared for precision and variability.

Field analyses did not consistently meet the precision goals prescribed in the QAPP since the measurements and samples that were taken were not true splits, but were replicate field samples that were obtained a few minutes apart and represented potentially different water masses. The relative percent differences that were calculated for the field replicates are a reflection of field and sampling variability, where the outfall's discharge may be quite variable over time. Conductivity was the field parameter that most frequently did not meet the precision limits due to the variability of the discharge. Although not specified in the outfall monitoring plan, conductivity was monitored to provide additional information to the field crew. The precision requirements for conductivity were surpassed, but remain low and with the nature of storm water are group tightly together for each storm at each location. Temperature met the precision during all sampling events. These failures to meet the precision sensitivities prescribed in the QAPP likely reflect the heterogeneous nature of stormwater flow.

Replicate samples were taken for laboratory analyses for BOD, TSS, and fecal coliform as a measure of field variability/precision. Replicate samples were taken and relative percent differences (RPDs) were calculated at SWM02 and at SWM08. Replicates were taken at a rate of 20% for BOD, TSS, and fecal coliform. This rate exceeded the 15% prescribed for all parameters in the QAPP.

For the conventional parameters, the precision of the replicate samples met the standard prescribed in the QAPP for some events (Table 3). Because turbidity and TSS are frequently correlated, the elevated RPDs are believed to reflect the heterogeneity of stormwater quality rather than the precision of the sampling. Also due to how RPD is calculated, samples with low concentrations will have a higher probability of increased RPD as compared to samples with higher concentrations. For example, TSS during the first storm event at SWM02 was measured at 1.1 and 1.77 mg/L. The calculated RPD for these samples is 47%. Another example is during the last storm event for fecal coliform at SWM02. The results for the primary and replicate samples were 3 and 1 for a calculated RPD of 100%. Where as the fecal coliform results at SWM08 for the primary sample and replicate sample results were 682 and 2100 for an RPD of 102%. The laboratory duplicate samples were also outside the laboratory set RPD limits. However, with field variability potentially being an issue, it could further inflate the RPD value. In the future it may be desirable to split a sample or have the laboratory perform duplicate analysis on a sample to differentiate between laboratory precision and field variability/precision

that is reflected in the 2011, 2012, and 2013 data. Sampling protocol may also be changed to include sampling duplicate parameters at near the same time. For example, fill the TSS bottles from both the primary and duplicate set one right after the other.

**Table 3. Precision (RPDs ) for Conventional Parameters Compared with QAPP Standard**

Parameter	QAPP Precision (RPD)	Outfall Location	Storm Event Date			
			1-Jul-13	20-Jul-13	29-Aug-13	19-Sept-13
TSS	25%	SWM02	<b>47%</b>	21%	<b>29%</b>	<b>82%</b>
		SWM08	0%	<b>52%</b>	9%	<b>51%</b>
BOD	NA	SWM02	5%	1%	0%	0%
		SWM08	3%	13%	0%	0%
FC	60%	SWM02	9%	7%	20%	<b>100%</b>
		SWM08	6%	<b>102%</b>	24%	27%

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).

### ***Organic Parameters***

Field replicates for the TAH and TAqH constituents were obtained at station SWM02 during each of the four storm events. This represents a replication rate of 25%, which greatly exceeds the 15% prescribed in the QAPP.

The field precision RPD between sample and field replicates for the TAH analyses were low, reflecting low field variability across all storm events. None of the TAH constituents were qualified for field precision. The field precision RPDs are presented in Table 4.

For TAqH, higher field variability was seen between the field replicates during the second storm event (July 20, 2013). However, the variability was fairly low compared to the QAPP standard. During the remaining sampling events TAqH was not detected in either the primary or replicate samples (Table 4).

## **4. Comparisons of Laboratory Controls**

Verification analyses for laboratory parameters were conducted by SGS North America, Inc., the laboratory performing the analyses. SGS is certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with the QAPP, standard methods, and EPA-approved protocols and guidelines.

### ***Conventional Parameters***

Laboratory method blanks were performed for the three conventional parameters BOD, TSS, and fecal coliform. None of the method blanks had any detections. The laboratory control sample for all storm events were within the laboratory control limits.

## ***Organic Parameters***

Trip blanks were collected for the TAH analyses to ascertain whether the handling of the samples introduced contaminants. The trip blank samples showed no evidence of contamination. All TAH constituents were undetected.

Precision measured as the RPD between the matrix spikes (MS) and matrix spike duplicates (MSD) was within the QAPP specifications. Similarly, the accuracy of TAH analyses was measured as percent recovery for the MS/MSD samples. Accuracies were within the QAPP specifications. None of these TAH data were qualified. The matrix spike/matrix spike duplicate RPDs and percent recoveries are presented in Table 4.

In its internal validation of the TAqH data, the laboratory did not use the precision and accuracy criteria specified in the QAPP when comparing matrix spikes (MS) and matrix spike duplicates (MSD) results. The laboratory's qualifications were revised to meet the QAPP requirements that determines when a value should be flagged or not and with which flag to use. The specific RPDs and percent recoveries identified in the QAPP were calculated from the MS/MSD results and are presented in Table 4. Values for each of the constituents not within the QAPP criteria were qualified as estimated (J flagged).

For the TAqH constituents, some parameters required qualification. The July 1, 2013 storm event had three TAqH constituents that exceeded the QAPP-specified percent recovery for the MS/MSD analyses. The results were qualified accordingly.

For the July 20, 2013 storm event, three constituents were not within the accuracy criteria specified in the QAPP. These results were qualified.

For the August 29, 2013 storm event, the laboratory MS/MSD precision was within the limits specified in the QAPP. The percent recovery was just below the recovery requirements for acenaphthene and was qualified for this storm event as estimated (J flagged).

For the final storm event on September 19, 2013, all of the TAqH constituents were within the QAPP-specified precision and accuracy requirements.

In qualifying the TAqH data it is important to note that the TAqH constituents are hydrophobic and are likely to sorb or otherwise associate with particles in the stormwater. Thus, where the quality of the stormwater is highly variable with respect to particulates, TAqH constituent exceedances of precision and accuracy limits may be expected. In addition, it should be noted that the MS/MSD analyses for TAqH were based on separate field replicates that were obtained for this purpose. Therefore, it is expected that there may be differences in the analyses that are the result of field variability and not due to any issues with the laboratory analysis.





Table 4. Field and Laboratory Precision and Accuracy for TAH and TAqH

Parameter	QAPP Standard		1-Jul-13			20-Jul-13			29-Aug-13			19-Sept-13		
	Precision	Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy
	RPD	% Recovery	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD
<b>TAH</b>														
Benzene	20%	80-120%	0	6	118-112	0	1	105-107	0	3	113-109	0	0.3	104-104
Chlorobenzene	20%	80-120%	0	4	109-105	0	1	108-109	0	6	115-109	0	8	96-104
1,2-Dichlorobenzene	20%	80-120%	0	4	103-99	0	1	102-101	0	4	118-113	0	8	97-105
1,3-Dichlorobenzene	20%	80-120%	0	4	104-100	0	3	104-107	0	0	115-115	0	7	107-114
1,4-Dichlorobenzene	20%	80-120%	0	6	106-100	0	1	105-106	0	2	119-117	0	8	98-106
Ethylbenzene	20%	80-120%	0	5	114-109	0	1	114-115	0	5	112-107	0	9	95-103
Toluene	20%	77-120%	0	5	112-107	0	1	107-108	0	5	110-105	0	5	103-108
o-Xylene	20%	80-120%	0	5	110-105	0	1	113-114	0	7	116-107	0	7	98-104
p & m-Xylenes	20%	80-120%	0	5	114-108	0	0.5	115-115	0	6	114-107	0	8	98-106
<b>TAqH</b>														
Acenaphthene	30%	58-105%	0	16	62-61	0	6	64-61	0	7	<b>56-60</b>	0	14	61-69
Acenaphthylene	30%	57-110%	0	16	66-65	0	6	68-66	0	5	58-60	0	14	61-68
Anthracene	30%	63-120%	0	18	71-68	0	7	81-77	0	1	67-67	0	6	74-77
Benzo (a) anthracene	30%	61-120%	0	21	79-74	3	5	100-97	0	14	66-74	0	8	75-79
Benzo(a)pyrene	30%	57-120%	0	28	73-63	4	3	75-74	0	11	71-78	0	4	78-79
Benzo(b)fluoranthene	30%	66-130%	0	15	71-71	1	4	<b>64-59</b>	0	10	75-82	0	13	79-88
Benzo(g,h,i,l)perylene	30%	60-125%	0	21	67-62	1	1	76-77	0	11	83-92	0	2	86-86
Benzo(k)fluoranthene	30%	67-120%	0	28	<b>73-63</b>	0	2	84-87	0	6	73-77	0	3	81-78
Chrysene	30%	71-120%	0	11	<b>66-68</b>	7	1	<b>69-69</b>	0	7	72-76	0	5	80-82
Dibenz(a,h)anthracene	30%	56-125%	0	19	65-62	0	4	83-81	0	11	79-88	0	5	86-89
Fluoranthene	30%	63-125%	0	23	84-77	4	3	73-67	0	8	71-76	0	5	75-78
Fluorene	30%	59-120%	0	22	71-66	0	8	73-69	0	4	61-62	0	5	66-68
Indeno(1,2,3-cd)pyrene	30%	59-125%	0	22	67-62	3	3	78-77	0	10	82-90	0	4	86-88
Naphthalene	30%	56-108%	0	17	<b>57-55</b>	0	6	<b>57-54</b>	0	7	53-57	0	9	63-67
Phenanthrene	30%	60-115%	0	19	80-76	2	4	79-75	0	4	69-71	0	2	74-75
Pyrene	30%	62-130%	0	24	82-74	1	2	73-71	0	10	66-72	0	3	74-75

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).

## **Appendix D**

### **Field Logs**



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #1

STATION ID: SWM <u>01</u>	DATE: <u>07/1/13</u>	SAMPLE START TIME:
OUTFALL/NODE ID: <u>1040-3</u>	PHYSICAL LOCATION: <u>LK 0113 + O'malley 1040-3</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time:	
Flow Meter		Flow Speed (ft/s):	Water Depth (in): <u>&lt;.25</u>		Pipe Diam (in):	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time
Bucket: 1-gal 5-gal						

IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT						
FIELD REPLICATE						

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM__-01						
SWM__-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR		
COLOR		
CLARITY		<u>clear</u>
FLOATABLES		<u>sheen</u>
DEPOSITS or STAINS		
SHEEN		
SURFACE SCUM		
DEBRIS		

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>- streets dry, no flow, did not sample</u>
<u>- no flow.</u>

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>11:15</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>11:15</u>	
Flow Meter	Flow Speed (ft/s): <u>1.51</u>		Water Depth (in): <u>5/8</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>11:15</u>	<u>6.80</u>	<u>350</u>	<u>12.93</u>	<u>7.51</u>	<u>2.66</u>
FIELD REPLICATE	<u>11:26</u>	<u>6.78</u>	<u>346</u>	<u>12.90</u>	<u>7.52</u>	<u>2.58</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-01</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>0.6/6</u>	<input checked="" type="checkbox"/>
<u>SWM02-01 Dup</u>	<u>11:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>1/2/2</u>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>JA</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR						
CLARITY	<u>clean</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
<u>- RAIN ceased, streets drying</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: 07/1/13		SAMPLE START TIME: 12:03		
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow <u>meter</u>		Time:	
Flow Meter		Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>1.0</u>		Pipe Diam (in): <u>36</u>	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>12:03</u>	<u>7.25</u>	<u>574</u>	<u>6.93</u>	<u>7.47</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM03-01</u>	<u>12:03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM03-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR		<u>none</u>				
CLARITY		<u>clear</u>				
FLOATABLES		<u>foam - significant amount - see photos</u>				
DEPOSITS or STAINS						
SHEEN		<u>none.</u>				
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>streets wet, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 7/3/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: 07/1/13	SAMPLE START TIME: 12:05			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION:				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>12:05</u>	
Flow Meter	Flow Speed (ft/s): <u>0.01</u>		Water Depth (in): <u>3/4"</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>12:05</u>	<u>11.63</u>	<u>996</u>	<u>6.98</u>	<u>7.38</u>	<u>19.8</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-01</u>	<u>12:05</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>none</u>			
COLOR						
CLARITY			<u>Clear</u>			
FLOATABLES			<u>none</u>			
DEPOSITS or STAINS						
SHEEN			<u>none</u>			
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Streets wet, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: 07 / 1 / 13		SAMPLE START TIME: 1233		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow <u>Meter</u>		
Time: 1233						
Flow Meter	Flow Speed (ft/s): <u>0.13</u>	Water Depth (in): <u>5.8"</u>		Pipe Diam (in): <u>24</u>		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>12:33</u>	<u>10.92</u>	<u>415</u>	<u>9.85</u>	<u>7.4</u>	
FIELD REPLICATE					<u>86.1</u>	
					<u>84.2</u>	
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM05-01</u>	<u>12:33</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM__-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>none</u>				
COLOR		<u>slightly murky</u>				
CLARITY		<u>slightly murky</u>				
FLOATABLES		<u>Foam - significant</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>wet pavement w/ ponding, no recip.</u>						
<u>-Foam in pipe (in Q)</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>1310</u>		
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow <u>Flow Meter</u>	Time: <u>1310</u>		
Flow Meter	Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>0.25"</u>		Pipe Diam (in): <u>24"</u>		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN-SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1310</u>	<u>9.99</u>	<u>1x31</u>	<u>9.18</u>	<u>7.27</u>	<u>28.6</u>
FIELD REPLICATE						<u>27.8</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM06-01</u>	<u>1310</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM__-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>odor present</u>				
COLOR						
CLARITY		<u>clear</u>				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN		<u>whitish</u>				
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>streets wet, no precip</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: 07/1/13		SAMPLE START TIME: 1330	
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION:			
<b>OUTFALL FLOW MEASUREMENTS</b>					
Flow Method (circle)		Bucket		Flow Meter	
				Time: <u>1330</u>	
Flow Meter		Flow Speed (ft/s):		Water Depth (in):	
				Pipe Diam (in): <u>24</u>	
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)
Bucket: <u>1</u> -gal 5-gal		<u>56 sec</u>	<u>56</u>	<u>58</u>	<u>61</u>
					Total Time
					<u>231s</u>
					Rate (gal/s)
					<u>0.0173</u>
<b>IN SITU WATER QUALITY MEASUREMENTS</b>					
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833	
		TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)
MEASUREMENT		<u>1330</u>	<u>9.84</u>	<u>295</u>	<u>10.66</u>
FIELD REPLICATE					pH
					<u>7.51</u>
					TURB (ntu)
					<u>320</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>					
SAMPLE NUMBER		TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)		
			FECAL	BOD	TSS
			TAqH	TAH	
<u>SWM 07-01</u>		<u>1330</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM ___-01 Dup</u>					
MS/MSD SAMPLES					
FIELD QC (Trip/Equip)					
Description of QC Samples:					Sampler's Initials:
<b>STANDARD OBSERVATIONS</b>					
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS	
ODOR					
COLOR				<u>Tea</u>	
CLARITY				<u>murky (slightly)</u>	
FLOATABLES				<u>Foam present</u>	
DEPOSITS or STAINS					
SHEEN					
SURFACE SCUM					
DEBRIS					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>					
<u>Pavement wet - drying. no precip.</u>					
Photos: Yes No					

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/1/13		SAMPLE START TIME: 1345		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow <u>Flow Meter</u>		
				Time: 1345		
Flow Meter	Flow Speed (ft/s): <u>2.12</u>	Water Depth (in): <u>1 1/2"</u>		Pipe Diam (in): <u>40</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1345</u>	<u>9.41</u>	<u>3x47</u>	<u>10.59</u>	<u>7.15</u>	
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-01</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-01 Dup</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>mild organic smell</u>				
COLOR		<u>tea</u>				
CLARITY		<u>mucky</u>				
FLOATABLES		<u>significant foam</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Pavement wet-drying. No precip.</u>						
<u>Dup velocity: 2.12 second time.</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>07/1/13</u>		SAMPLE START TIME: <u>1415</u>		
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1415</u>	
Flow Meter	Flow Speed (ft/s): <u>0.30</u>	Water Depth (in): <u>1 1/4"</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>14:15</u>	<u>10.97</u>	<u>386</u>	<u>10.72</u>	<u>7.36</u>	<u>36.1</u>
FIELD REPLICATE	<u>14:15</u>					<u>38.6</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM09-01</u>	<u>14:15</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		<u>none</u>				
COLOR						
CLARITY		<u>clear</u>				
FLOATABLES		<u>none</u>				
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Prevent Drying, no precip.</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: 07 / 1 / 13		SAMPLE START TIME: <u>1425</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION:				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow <u>Meter</u>	Time: <u>1425</u>		
Flow Meter	Flow Speed (ft/s): <u>1.98</u>	Water Depth (in): <u>1.38</u>		Pipe Diam (in): <u>24"</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1425</u>	<u>8.98</u>	<u>351</u>	<u>12.35</u>	<u>7.17</u>	<u>14.2</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -01	<u>1425</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR		None				
COLOR						
CLARITY		Clear				
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>Rowe street pavement drying, no precip.</u>						
<u>Dup velocity: 1.96</u>						
Photos: Yes No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #2

STATION ID: SWM 01	DATE: 07/20/13	SAMPLE START TIME: 1145
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OUTFALL/NODE ID: 1040-3	PHYSICAL LOCATION: L. OTIS E O'Malley
-------------------------	---------------------------------------

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <b>Flow Meter</b>	Bucket	<b>Flow Meter</b>	Time: 1150
Flow Speed (ft/s): 0.17	Water Depth (in): 1.5	Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	1155	18.03	149	8.58	7.01	83.9
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM 01-02	1150	X	X	X		
SWM ___-02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	—	
COLOR	CLEAR	
CLARITY	CLEAR	
FLOATABLES	NONE	
DEPOSITS or STAINS	—	
SHEEN	YES	
SURFACE SCUM	YES	
DEBRIS	YES	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

STOPPED RAINING BUT RUNOFF STILL OCCURRING

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1206</u>			
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot-Abbot</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1223</u>	
Flow Meter	Flow Speed (ft/s): <u>1.42</u> <u>1.28</u>		Water Depth (in): <u>0.50</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gall/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1215</u>	<u>13.96</u>	<u>107</u>	<u>9.73</u>	<u>6.96</u>	<u>35.3</u>
FIELD REPLICATE	<u>1220</u>	<u>13.95</u>	<u>107</u>	<u>9.67</u>	<u>7.02</u>	<u>34.9</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02</u> -02	<u>1205</u>	X	X	X	X	X
SWM <u>02</u> -02 Dup	<u>1205</u>	X	X	X	X	X
MS/MSD SAMPLES	<u>1205</u>				X	X
FIELD QC (Trip/Equip)						X
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>—</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>—</u>					
DEPOSITS or STAINS	<u>—</u>					
SHEEN	<u>—</u>					
SURFACE SCUM	<u>—</u>					
DEBRIS	<u>—</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Larger quantity of vegetation around compared to last year.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Am

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1235</u>			
OUTFALL/NODE ID: <u>0.1224 E. Sullivan</u>		PHYSICAL LOCATION: <u>0. Seward &amp; Sullivan</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1245</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>6.80</u>	Water Depth (in): <u>23 1/2</u>		Pipe Diam (in):		
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1242</u>	<u>14.28</u>	<u>186</u>	<u>7.87</u>	<u>7.18</u>	<u>49.3</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 03-02</u>	<u>1240</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>TAN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM 04      DATE: 07/20/13      SAMPLE START TIME: ~~1235~~ 1248

OUTFALL/NODE ID: 1224-2      PHYSICAL LOCATION: O. Seward & Sylvan

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1250</u>
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.17</u>	Water Depth (in): <u>1 5/8</u>	Pipe Diam (in):
<b>Bucket Measurements</b>	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1248</u>	<u>15.75</u>	<u>278</u>	<u>6.58</u>	<u>7.15</u>	<u>48.1</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 04-02</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>NONE</u>	
COLOR	<u>SLIGHT TAN</u>	
CLARITY	<u>CLEAR</u>	
FLOATABLES	<u>NONE</u>	
DEPOSITS or STAINS	<u>NONE</u>	
SHEEN	<u>NONE</u>	
SURFACE SCUM	<u>NONE</u>	
DEBRIS	<u>NONE</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Photos:  Yes     No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1300</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E. 56th @ Save School</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1315</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>0.27</u>		Water Depth (in): <u>7/8"</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1305</u>	<u>15.22</u>	<u>137</u>	<u>8.69</u>	<u>7.23</u>	<u>122</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM05-02</u>	<u>1310</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
<u>SWM__-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY						
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM		<u>SUDS, LOTS OF LOTS OF SUDS</u>				
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS						
Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No						

Reviewed By: M Ann

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>6-2</u>		DATE: 07/20/13		SAMPLE START TIME: 1340			
OUTFALL/NODE ID: <u>814-22</u>		PHYSICAL LOCATION: <u>Manterwood</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket		Time: <u>1348</u>			
Flow Meter		Flow Meter					
Flow Speed (ft/s): <u>0.17</u>		Water Depth (in): <u>1/4"</u>		Pipe Diam (in):			
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)	
MEASUREMENT	<u>1350</u>	<u>14.96</u>	<u>11.3</u>	<u>8.74</u>	<u>7.48</u>	<u>56.4</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)					
		FECAL	BOD	TSS	TAqH	TAH	
SWM <u>6-02</u>	<u>1345</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
SWM <u>    </u> -02 Dup							
MS/MSD SAMPLES							
FIELD QC (Trip/Equip)							
Description of QC Samples:					Sampler's Initials:		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS					
ODOR	NONE						
COLOR	<u>SLIGHT TAN</u>						
CLARITY	<u>CLEAR</u>						
FLOATABLES	NONE						
DEPOSITS or STAINS	NONE						
SHEEN	<del>NONE</del> YES	<u>slight oily sheen coming from outfall</u>					
SURFACE SCUM	NONE						
DEBRIS	NONE						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

Reviewed By: M. Awan

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM 07		DATE: 07/20/13	SAMPLE START TIME: 1358			
OUTFALL/NODE ID: 484-1		PHYSICAL LOCATION: N. Seward North				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u> Flow Meter		Time: 1400				
Flow Meter	Flow Speed (ft/s):	Water Depth (in):		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket <u>1-gal</u> 5-gal	43	44	47	47		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	1408	13.05	197	9.25	7.52	263
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM 07-02	1405	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___ -02 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	NONE					
COLOR	BROWN					
CLARITY	CLEAR					
FLOATABLES	NONE					
DEPOSITS or STAINS	NONE					
SHEEN	NONE					
SURFACE SCUM	NONE					
DEBRIS	NONE					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
water depth is so low took TD from inside culvert. the rest of the parameters from bucket filled w/ outfall water						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Amos

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 07/20/13		SAMPLE START TIME: 1415		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>N. Seward (south)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Time: <u>1417</u>		
Flow Method: <u>Flow Meter</u>		Bucket: <u>Flow Meter</u>		<u>gauge pool</u>		
Flow Meter	Flow Speed (ft/s): <u>2.29/230</u>	Water Depth (in): <u>0.275</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1415</u>	<u>13.08</u>	<u>191</u>	<u>9.34</u>	<u>6.88</u>	<u>77.2</u>
FIELD REPLICATE	<u>1420</u>	<u>13.08</u>	<u>196</u>	<u>9.45</u>	<u>6.86</u>	<u>77.8</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-02</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-02 Dup</u>	<u>1420</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>BROWN</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Anon

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1439</u>				
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boeke (north bank)</u>					
OUTFALL FLOW MEASUREMENTS							
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1447</u>		
<u>Flow Meter</u>		Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>0.8"</u>		Pipe Diam (in):		
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal							
IN SITU WATER QUALITY MEASUREMENTS							
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)	
MEASUREMENT	<u>1445</u>	<u>13.03</u>	<u>335</u>	<u>9.62</u>	<u>7.57</u>	<u>18.3</u>	
FIELD REPLICATE							
DISCRETE WATER QUALITY SAMPLES							
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)					
		FECAL	BOD	TSS	TAqH	TAH	
<u>SWM <u>09</u>-02</u>	<u>1440</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<u>SWM ___-02 Dup</u>							
MS/MSD SAMPLES							
FIELD QC (Trip/Equip)							
Description of QC Samples:					Sampler's Initials:		
STANDARD OBSERVATIONS							
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS					
ODOR	<u>NONE</u>						
COLOR	<u>NONE</u>						
CLARITY	<u>CLEAR</u>						
FLOATABLES	<u>NONE</u>						
DEPOSITS or STAINS	<u>NONE</u>						
SHEEN	<u>NONE</u>						
SURFACE SCUM	<u>NONE</u>						
DEBRIS	<u>NONE</u>						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS							
<u>Doppler registering 0.00 flow but there was visible flow</u>							
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>07/20/13</u>	SAMPLE START TIME: <u>1450</u>			
OUTFALL/NODE ID: <u>5252</u>		PHYSICAL LOCATION: <u>Becker (south bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>		Time: <u>1459</u>	
<u>Flow Meter</u>	Flow Speed (ft/s): <u>2.32</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: <u>1 1/2</u> gal <u>5</u> -gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1455</u>	<u>9.98</u>	<u>357</u>	<u>10.93</u>	<u>7.27</u>	<u>17.10</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 10-02</u>	<u>1450</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>SWM ___-02 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NONE</u>					
COLOR	<u>NONE</u>					
CLARITY	<u>CLEAR</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS	<u>NONE</u>					
SHEEN	<u>NONE</u>					
SURFACE SCUM	<u>NONE</u>					
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <u>Yes</u> No						

Reviewed By: M. [Signature]

Date: 8/21/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm # 3

STATION ID: SWM <u>01</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1045</u>
OUTFALL/NODE ID: <u>1090-3</u>	PHYSICAL LOCATION: <u>L. Otis &amp; Dunley</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)	Bucket	Flow Meter	Time: <u>1045</u>			
Flow Meter	Flow Speed (ft/s): <u>0.12</u>	Water Depth (in): <u>0.3</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>12.51</u>	<u>475</u>	<u>9.5</u>	<u>7.86</u>	<u>10.7</u>
FIELD REPLICATE						<u>10.6</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>01</u> -03	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___ -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>clear/none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>Cloudy, no precip.</u>

Photos: Yes No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1110</u>
OUTFALL/NODE ID: <u>847-1</u>	PHYSICAL LOCATION: <u>Home Depot - ABBOT</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>	Time: <u>1110</u>			
Flow Meter	Flow Speed (ft/s): <u>2.00</u>	Water Depth (in): <u>5/8</u>	Pipe Diam (in): <u>18</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1120</u>	<u>9.35</u>	<u>348</u>	<u>11.90</u>	<u>8.05</u>	<u>2.23</u>
FIELD REPLICATE	<u>1120</u>	<u>9.35</u>	<u>350</u>	<u>11.88</u>	<u>8.03</u>	<u>2.58</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM02-03</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM02-03 Dup</u>	<u>1110</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	↓				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)	↓					<input checked="" type="checkbox"/>
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no active Accip.

Photos: Yes No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

1138

STATION ID: SWM <u>03</u>	DATE: 08/29/13	SAMPLE START TIME: <del>1138</del>
OUTFALL/NODE ID: 1224-1	PHYSICAL LOCATION: old Seward @ Sylvia North	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: 1138
Flow Meter	Flow Speed (ft/s): 0.12	Water Depth (in): 2.7	Pipe Diam (in): 36
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	11:38	11.31	276	8.48	7.80	8.96
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>03</u> -03	1138	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	none	
COLOR	none	
CLARITY	clear	
FLOATABLES	Light Foam	
DEPOSITS or STAINS	none	
SHEEN	none	
SURFACE SCUM	Light Foam	
DEBRIS	none	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

cloudy/overcast - no precip.

Photos:  Yes No Gary's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1140</u>
OUTFALL/NODE ID: <u>1224-2</u>	PHYSICAL LOCATION: <u>Old Seward @ SW Van South</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow <u>Meter</u>	Time: <u>1140</u>
Flow Speed (ft/s): <u>0.02</u>	Water Depth (in): <u>1 1/8</u>	Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1140</u>	<u>13.33</u>	<u>436</u>	<u>9.08</u>	<u>7.60</u>	<u>6.17</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04</u> -03	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Cloudy / overcast - no precip

Photos:  Yes  No Gary's phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1205</u>
OUTFALL/NODE ID: <u>207-1</u>	PHYSICAL LOCATION: <u>E 56th @ Saxe School</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Flow Meter</u>	Bucket	Flow Meter	Time: <u>1205</u>		
Flow Speed (ft/s): <u>0.11</u>	Water Depth (in): <u>7/8</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)
Bucket: 1-gal 5-gal					

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1205</u>	<u>12.8</u>	<u>293</u>	<u>9.43</u>	<u>7.61</u>	<u>12.7</u>
FIELD REPLICATE						<u>13.3</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>05</u> -03	<u>1205</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>none</u>	
CLARITY	<u>none</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

Overcast / light Rain.

Photos:  Yes  No Greg's Phone

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1240</u>
OUTFALL/NODE ID: <u>319-22</u>	PHYSICAL LOCATION: <u>M. New Wood</u>	

OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)	Bucket	Flow Meter	Time: <u>1240</u>			
Flow Meter	Flow Speed (ft/s): <u>0.28</u>	Water Depth (in): <u>3/8</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						

IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1240</u>	<u>11.43</u>	<u>190</u>	<u>4.79</u>	<u>7.60</u>	<u>4.15</u>
FIELD REPLICATE				<u>9.51</u>		<u>4.55</u>

DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 06-03</u>	<u>1240</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM ___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

STANDARD OBSERVATIONS		
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>musty smell</u>	
COLOR	<u>none</u>	
CLARITY	<u>clear</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>Light sheen down stream</u>	<u>@ pool just downstream of outlet</u>
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:
<u>overcast - light precip.</u>

Photos:  Yes  No Gary's Photo

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>	DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1255</u>
OUTFALL/NODE ID: <u>484-1</u>	PHYSICAL LOCATION: <u>Newsewer North</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle) <u>Bucket</u>	Flow Meter	Time: <u>1255</u>
Flow Meter	Flow Speed (ft/s):	Water Depth (in): <u>1/16</u>
Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)
Time 3 (s)	Time 4 (s)	Total Time
Rate (gal/s)		
Bucket: <u>1-gal</u> 5-gal	<u>143</u>	<u>140</u>
	<u>140</u>	<u>144</u>
		<u>567<sub>sec</sub></u>

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1255</u>	<u>12.23</u>	<u>28</u>	<u>10.16</u>	<u>7.71</u>	<u>88.2</u>
FIELD REPLICATE			<u>52</u>	<u>9.95</u>		<u>89.1</u>

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM07-03</u>	<u>1255</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM07-03 Dup</u>	<u>1255</u>					
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials:

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>None</u>	
COLOR	<u>Brown</u>	<u>as seen in white bucket</u>
CLARITY	<u>opaque</u>	<u>as seen in white bucket.</u>
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS	<u>none</u>	
SHEEN	<u>none</u>	
SURFACE SCUM	<u>none</u>	
DEBRIS	<u>none</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

overcast - no precip.

Photos:  Yes  No Gray's Photo

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1320</u>			
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Survey 42"</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1320</u>	
Flow Meter	Flow Speed (ft/s): <u>1.59</u>		Water Depth (in): <u>1.34</u>		Pipe Diam (in): <u>42</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833.		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1320</u>	<u>10.86</u>	<u>374</u>	<u>10.8</u>	<u>7.29</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08</u> -03	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08</u> -03 Dup	<u>1320</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Strong Fuel odor</u>					
COLOR	<u>none</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>rusty stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gross' s Plu</u>						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>08/29/13</u>	SAMPLE START TIME: <u>1340</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>BOEKE North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1340</u>	
Flow Meter	Flow Speed (ft/s): <u>0.06</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1340</u>	<u>11.97</u>	<u>371</u>	<u>10.51</u>	<u>7.50</u>	<u>6.43</u>
FIELD REPLICATE						<u>6.16</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM09-03</u>	<u>1340</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>still drizzly</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Gary's Phone</u>						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>08/29/13</u>		SAMPLE START TIME: <u>1350</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>BOEKO South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow <u>Meter</u>		Time: <u>1350</u>	
Flow Meter	Flow Speed (ft/s): <u>0.52</u>		Water Depth (in): <u>13 1/2</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time / Rate (gal/s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1350</u>	<u>11.03</u>	<u>317</u>	<u>11.20</u>	<u>7.34</u>	<u>3.83</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>10</u> -03	<u>1350</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>very clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>Rust stain</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>GATYS Photo</u>						

Reviewed By: [Signature]

Date: 8/29/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

Storm #4

STATION ID: SWM <u>01</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1030</u>		
OUTFALL/NODE ID: <u>1040-3</u>		PHYSICAL LOCATION: <u>L. O'Neil &amp; O'Malley</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Time: <u>1030</u>		
Flow Meter		Flow Speed (ft/s): <u>0.11</u>		Water Depth (in): <u>0.4</u>		
Pipe Diam (in): <u>18</u>						
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
Total Time		Rate (gal/s)				
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	
MEASUREMENT	<u>1030</u>	<u>9.25</u>	<u>419</u>	<u>10.69</u>	<u>8.70</u>	
FIELD REPLICATE					<u>23.6</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM01-04</u>	<u>1030</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>SWM___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>None</u>					
COLOR	<u>Clear</u>					
CLARITY	<u>opaque</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>Visible Foam</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low Flow, No Precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME:		
OUTFALL/NODE ID: <u>8471</u>		PHYSICAL LOCATION: <u>Home Depot - Abbot</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1045</u>		
Flow Meter	Flow Speed (ft/s): <u>3.94</u>	Water Depth (in): <u>11 1/8</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1045</u>	<u>8.43</u>	<u>305</u>	<u>12.52</u>	<u>8.11</u>	<u>0.93</u>
FIELD REPLICATE						<u>1.09</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>02-04</u>	<u>1045</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>02-04 Dup</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FIELD QC (Trip/Equip)						<input checked="" type="checkbox"/>
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>green algae @ Rocks, no precip</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1115</u>		
OUTFALL/NODE ID: <u>1724-1</u>		PHYSICAL LOCATION: <u>O. Seward @ Sylvan North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter		Flow Speed (ft/s): <u>0.28</u>		Water Depth (in): <u>3.0</u>		
Pipe Diam (in):		Time 1 (s)		Time 2 (s)		
Bucket Measurements		Time 3 (s)		Time 4 (s)		
Bucket: 1-gal 5-gal		Total Time		Rate (gals)		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
TIME (ADT)		TEMP (°C)		COND (µS/cm)		
DO (mg/L)		pH		TURB (ntu)		
MEASUREMENT		<u>9/15</u>		<u>8.30</u>		
FIELD REPLICATE		<u>261</u>		<u>9.34</u>		
				<u>7.80</u>		
				<u>15.0</u>		
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>03</u> -04	<u>1115</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>Dark/Dark</u>	<u>slight dark color to water</u>				
CLARITY	<u>opaque</u>	<u>slight</u>				
FLOATABLES	<u>some foam</u>	<u>light foam near rocks</u>				
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>No precip. Evidence of significant flow. Missed portion</u>						
<u>of main runoff event.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1125</u>		
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward @ S. Sullivan South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1125</u>	
Flow Meter	Flow Speed (ft/s): <u>0.09</u>		Water Depth (in): <u>2.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1125</u>	<u>10.58</u>	<u>371</u>	<u>10.31</u>	<u>7.62</u>	<u>4.82</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>04-04</u>	<u>1125</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>blue</u>					
DEBRIS	<u>man</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>no reports</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1140</u>		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E 56<sup>th</sup>, Save School</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1140</u>	
Flow Meter	Flow Speed (ft/s): <u>0.12</u>		Water Depth (in): <u>1.4</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1140</u>	<u>10.08</u>	<u>315</u>	<u>11.12</u>	<u>7.60</u>	<u>16.1</u>
FIELD REPLICATE						<u>16.6</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>05</u> -04	<u>1140</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM ___-04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>None Found</u>	<u>Downstream of outfall, minor.</u>				
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>NO PREIP.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>09/19/13</u>	SAMPLE START TIME: <u>1210</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1210</u>		
Flow Meter	Flow Speed (ft/s): <u>0.21</u>	Water Depth (in): <u>6.5</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1210</u>	<u>9.03</u>	<u>163</u>	<u>12.00</u> <sup>BOD</sup>	<u>7.60</u>	<u>3.35</u>
FIELD REPLICATE				<u>10.55</u>		<u>3.36</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>06</u> -04	<u>1210</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM ___-04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Present</u>	<u>not pleasant, no fuel smell, but strong present decay odor.</u>				
COLOR	<u>None</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>No Precip</u>						
Photos: Yes No						

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1225</u>		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>New Seward North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1225</u>	
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>1/16</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gals)
Bucket: <u>5-gal</u>	<u>8m 24sec</u>				<u>564sec</u>	
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT *	<u>1225</u>	<u>9.36</u>	<u>48</u>	<u>11.74*</u>	<u>7.96</u>	<u>54.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
<u>SWM 07-04</u>	<u>1225</u>					
<u>SWM ___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>none</u>					
COLOR	<u>none</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Low flow, sunny w/ no precip.</u>						
<u>* Measurements in Bucket, due to very low flow</u>						
Photos: <u>Yes</u> No	<u>* Enriched DO due to a mixing/aeration in bucket.</u>					

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1245</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Seward South</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter	Time: <u>1245</u>		
Flow Meter	Flow Speed (ft/s): <u>2.55</u>		Water Depth (in): <u>2.5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1245</u>	<u>9.17</u>	<u>394</u>	<u>11.53</u>	<u>7.39</u>	<u>9.16</u>
FIELD REPLICATE						<u>8.44</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>08-04</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>08-04 Dup</u>	<u>1245</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Organic/Fuel</u>	<u>Strong Fuel smell,</u>				
COLOR	<u>None</u>					
CLARITY	<u>Clear</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	<u>None</u>					
SHEEN	<u>None</u>					
SURFACE SCUM	<u>None</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Sunny, no precip.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Awan

Date: 9/25/13

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1310</u>		
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boyle North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Time:		Flow Speed (ft/s):		Water Depth (in):		
Pipe Diam (in):		Flow Meter:		Bucket Measurements		
Time 1 (s)		Time 2 (s)		Time 3 (s)		
Time 4 (s)		Total Time		Rate (gal/s)		
Bucket: 1-gal 5-gal						
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
TIME (ADT)		TEMP (°C)		COND (µS/cm)		
DO (mg/L)		pH		TURB (ntu)		
MEASUREMENT						
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER		TIME (ADT)		SAMPLES COLLECTED (CHECK BOX)		
				FECAL	BOD	TSS
SWM ___ -04						
SWM ___ -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:				Sampler's Initials:		
STANDARD OBSERVATIONS						
PARAMETER		TYPE/SOURCE		EXTENT - COMMENTS		
ODOR						
COLOR						
CLARITY						
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>No samples taken, stormwater maintenance in progress</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>L0</u>		DATE: <u>09/19/13</u>		SAMPLE START TIME: <u>1315</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Booke south</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter		Time: <u>1315</u>	
Flow Meter	Flow Speed (ft/s): <u>6.45</u>		Water Depth (in): <u>2.0</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TIME (ADT)	TEMP (°C)	COND (µS/cm)	DO (mg/L)	pH	TURB (ntu)
MEASUREMENT	<u>1315</u>	<u>10.51</u>	<u>347</u>	<u>11.78</u>	<u>7.32</u>	<u>10.5</u>
FIELD REPLICATE						<u>9.11</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	TIME (ADT)	SAMPLES COLLECTED (CHECK BOX)				
		FECAL	BOD	TSS	TAqH	TAH
SWM <u>L0</u> -04	<u>1315</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials:	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>N/A</u>					
COLOR	<u>N/A</u>					
CLARITY	<u>N/A</u>					
FLOATABLES	<u>N/A</u>					
DEPOSITS or STAINS	<u>N/A</u>					
SHEEN	<u>N/A</u>					
SURFACE SCUM	<u>N/A</u>					
DEBRIS	<u>N/A</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>sunny, no降水</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 9/25/13

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